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STANDARDS ANALYSIS
ENERGY SECTOR
LUXEMBOURG

ILNAS
Institut luxembourgeois de la normalisation, de l'accréditation, de la sécurité et qualité des produits et services

ANEC
AGENCE POUR LA NORMALISATION ET L'ÉCONOMIE DE LA CONNAISSANCE

Executive summary

The survey and analysis of European and international standards in the energy sector has been initiated by the *Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services* (ILNAS). Realized in the frame of the implementation of the national standardization strategy 2010-2020, this work is conducted by ILNAS in order to develop an information and exchange network for energy standardization knowledge in the Grand Duchy of Luxembourg.

The energy sector is an active sector at the national standards level with 7 national delegates currently registered by ILNAS. Nevertheless, ILNAS is convinced that this standardization sector could be more "productive", especially since some energy subsectors are not yet covered and some stakeholders are not yet represented. Thus, the purposes of this analysis are first to provide useful information to the national stakeholders regarding standardization activities in the energy field and second to involve them into an integrated and innovative approach.

Conducted in several steps, this survey is basically built on a standards watch that allows the identification of standardization technical committees related to the energy sector at the European and international levels. Detailed information concerning the most interesting formal standardization technical committees (about 47) is provided in the present report. Then, in order to induce stakeholder interest, the national market of the energy sector has been characterized through the definition of 12 categories for which potential interests and opportunities to participate in the standardization process (*via* ILNAS) have been identified.

Conceived as a practical tool, this report is evolving and should be used to quickly identify issues and interests for the national stakeholders of the energy sector. Published for the first time in November 2011, the present report constitutes the second version of this analysis which will continue to be updated on a regularly basis according to the market interest.

Foreword

The *Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services* (ILNAS) is an administration under the supervision of the Minister of the Economy and Foreign Trade in Luxembourg. It was created based on the law of May 20, 2008 and started its operations on June 1, 2008.

For reasons of complementarity, effectiveness and transparency as well as for purposes of administrative simplification, ILNAS is in charge of several administrative and technical legal missions that were previously the responsibility of different public structures. These assignments have been strengthened and new tasks are now assigned to ILNAS. ILNAS thus corresponds to a network of skills for competitiveness and consumer protection.

To promote standardization in Luxembourg, ILNAS has drawn up a national standardization strategy[1], which was approved by the Minister of the Economy and Foreign Trade on June 10, 2010.

This national standardization strategy, directly related to the 2020 strategy of the European Union, is primarily based on the following guiding principle: "Setting standards means setting the market."

The goals of the standardization strategy are:

- to better support the national economy in terms of competitiveness, visibility, and performance;
- to promote a homogeneous standardization culture at the national level;
- to improve the international position of the Grand Duchy of Luxembourg in standardization organizations;
- to launch an innovative and federative way for the national standardization process.

Thus, the act of participating in the standardization process does not only allow for future standards to be anticipated but also allows the market to be guided by meeting its interests at any level. This strategy, including its operational objectives that are regularly updated, will be implemented through a sector-based economic approach and where national needs are identified.

To give new impetus to standardization in Luxembourg, this strategy is based on the five pillars hereafter mentioned:

- a sector-based standards approach as a support for the national economy;
- innovation and research development in the frame of standardization;
- a sector-based development of ILNAS, Luxembourg's national standards body;
- standardization training and public awareness;
- the creation and development of the Economic Interest Grouping "*Agence pour la Normalisation et l'économie de la Connaissance*" (ANEC GIE).

The national standardization strategy 2010-2020 has been updated by ILNAS in January 2013 and approved by the Minister of the Economy and Foreign Trade (the initial strategy remains the reference

[1] http://www.ilnas.public.lu/fr/publications/normalisation/etudes-nationales/ilnas-strategie-normalisation-2010-2020.pdf

framework). Covering the period 2013-2020, this update[2] focuses on four major development axes related to:

- the creation of standards-related education at national level;
- the (inter-) sectoral standardization approach;
- the strengthening of research activities;
- the development of products and services in the field of standardization.

Beginning in October 2010, ILNAS has been supported by ANEC GIE in implementing this strategy. The role of ANEC GIE is to support the development of standardization activities at a national level and to promote the benefits of participating in standardization. Its mission is to create awareness, training and monitoring in the field of standardization and applied research in order to support the competitiveness of companies in Luxembourg. Thus, ILNAS, with the help of ANEC GIE, can effectively contribute to the economic diversification policy pursued by the Government in the expertise niches of tomorrow.

In this context, ILNAS commissioned ANEC GIE to complete the task of a survey and analysis of European and international standards of the energy sector. Indeed, in line with the priorities set by the Grand Duchy of Luxembourg Government, this sector has long been identified as a carrier for the national economy.

[2] http://www.ilnas.public.lu/fr/publications/normalisation/etudes-nationales/luxembourg-standardization-strategy-2013-2020.pdf

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1. INTRODUCTION

"Our future depends on our ability to produce, respecting the environment, the energy strictly necessary for our needs. The world must prepare now for a radical change in energy production, transport and consumption. Lighting, heating, transport, industrial output: without energy we would have none of these essential day-today services without which we and our businesses cannot function. Our stocks of fossil fuels (oil, gas and coal) will not, however, last forever. They need to be judiciously managed while we look into new sources of energy"[3].

"There are synergies from learning together, and some energy efficiency opportunities are impossible without global co-operation and commitment. For instance, international standards and joint efforts by committed Governments working together drove significant advances in appliance and equipment efficiency." said Robert Tromop who heads the Energy Efficiency Unit of the Sustainable Energy Policy and Technology Directorate in the International Energy Agency (IEA)[4].

Initiated by ILNAS, the standards analysis described in this document constitutes indeed a sector-based "snapshot" for fostering and strengthening the national energy sector in its involvement in standardization work. Based on the detailed information provided, the aim is to involve national stakeholders in a global approach to standardization in this sector in the Grand Duchy of Luxembourg in order to support the sector in terms of competitiveness, visibility and performance, while enhancing the international recognition of the Grand Duchy of Luxembourg at the standards level.

The survey and analysis of European and international standards related to energy sector have been realized in several steps listed hereafter:

- execution of a standards watch of the targeted sector (inventory of standards – both published and under development – at the European and international levels; identification and description of technical standardization committees);
- targeting the national market of the related sector by identifying national stakeholders (public and private);
- definition of logical links between the national market, the different stakeholders and the results of the standards watch;
- preparation of a final report of analysis and opportunities;
- transfer of the standards knowledge acquired to various stakeholders.

The report structure follows the same execution sequence. After introductory chapters dedicated to standardization in general (**Chapter 2**) and the context of the energy sector (**Chapter 3**), the method applied for the standards analysis is described in **Chapter 4**.

Chapter 5 then presents the main results of the standards analysis. In order to bring the national stakeholders of the energy sector into an active approach to standardization, logical links were established between the national market and the standards watch results. Thus, this chapter offers an overview of the different subsectors and technical committees identified for the energy sector. In the second step, the potential interests to take part in the standardization process are then highlighted for all stakeholder categories characterizing the national market.

[3] http://europa.eu/pol/ener/flipbook/en/files/energy.pdf
[4] http://www.iea.org/media/ieajournal/Issue4_WEB.pdf

The same potential interests for different stakeholder categories constitute opportunities for the sector as a whole. **Chapter 6** presents them in order to engage not only an individual but also a general perspective about the benefits of standardization.
Considering the results of the standards watch as relevant information, the next chapter (**Chapter 7**) is dedicated to a detailed presentation of each standardization technical committee identified at the European and international levels. Through this form, the information is directly available for someone seeking to estimate his or her interest for a specific technical committee.

Finally, the conclusion points out the main purpose of this standards analysis, which is to provide useful information to the national stakeholders in order to involve them later in the standardization process.

Note: In accordance with the ILNAS policy on participation in standardization technical committees, the term "standardization technical committee" is in this report a generic term that covers also the "technical committees", "subcommittees", "working groups", etc.

2. STANDARDIZATION

2.1. DEFINITIONS

❖ ILNAS:

This acronym designates the "*Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services*". ILNAS, an administration under the authority of the Minister of the Economy and Foreign Trade, was created by the law of May 20, 2008, and began its activities on June 1st, 2008.

❖ OLN:

This acronym designates the "*Organisme luxembourgeois de normalisation*", an ILNAS department and which, according to the law of May 20, 2008, fulfills the ILNAS missions as a national standardization organization. A national standards body recognized at national level is eligible to be a national member of the corresponding international and European standards organizations.

❖ ANEC GIE:

This acronym designates the "*Agence pour la Normalisation et l'Économie de la Connaissance*". Created in October 2010, the role of ANEC GIE is to implement the national standardization strategy established by ILNAS in order to support the development of standardization activities at a national level and to promote the benefits of participating in the standardization process.

❖ STANDARDIZATION:

Standardization is a voluntary, consensus-driven activity, carried out by and for the interested parties themselves, based on openness and transparency, within independent and recognized standards organizations, leading to the adoption of standards with which compliance is voluntary[5]. It is the activity of establishing with regard to actual or potential problems, provision for common and repeated use, aimed at the achievement of the optimum degree of order in a given context[6].

❖ STANDARD:

A standard is a document established by consensus and approved by a recognized body and that provides applicable guidelines for activities. Standards are for common and repeated used rules, guidelines or characteristics for products or related processes and production methods for which compliance is not mandatory[6]. They have a national, regional or international concern. Standards are created by bringing together all interested parties, such as manufacturers, consumers and regulators of a particular material, product, process or service. All parties benefit from standardization. Several categories of standards exist: core standards, standards of analysis and testing, standards of specifications, methodological standards, etc.

[5] Official Journal of the European Communities 2000/C141/01
[6] Based on the definition proposed in the standard EN 45020:2006: Standardization and related activities – General vocabulary

❖ STANDARDS BODY:

A standards body can be defined as a standardizing body recognized at the national, regional or international level that has as its principal function the preparation, approval or adoption of standards that are made available to the public[7].

❖ STANDARDIZATION TECHNICAL COMITTEE:

A technical decision-making body with a precise title, scope and work program, within a European and/or international standardization organism, essentially to manage the preparation of deliverables as standards in accordance with an agreed upon business plan[8].

❖ CEN WORKSHOP AGREEMENT:

A CEN Workshop Agreement (CWA) is a standardization document, developed in a CEN Workshop. The latter is open to the direct participation of anyone with an interest in the development of the agreement. There is no geographical limit on participation and hence participants may be from outside of Europe. The development of a CWA is fast and flexible. It does not have the status of a European standard, and there is no obligation for the national standards bodies to adopt it as national standards[9].

❖ NATIONAL MIRROR COMMITTEE:

A national mirror committee is a national structure to European or international standardization technical committees, ensuring, for example, the formulation of coherent national positions as a first round of consensus finding[10].

2.2. STANDARDIZATION OBJECTIVES

Standardization is an efficient economical tool offering the possibility to pursue various objectives, such as:

- management of the diversity;
- convenience of use;
- compatibility;
- interchangeability;
- health;
- security;
- environmental protection;
- product protection;
- mutual understanding;
- economic performance;
- trade;
- etc.

[7] Based on the definition proposed in the standard EN 45020:2006: Standardization and related activities – General vocabulary
[8] Based on the information available on the CEN website/BOSS
[9] Based on the information available on the CEN website/CEN Workshop Agreements
[10] Based on the information available on the CEN website/Glossary

The standardization principles are:

- voluntary: standardization is open to all and is based on voluntary involvement of all the actors of the market;
- consensus: a standard is approved by consensus; all the positions of all the participants are taken into account (manufacturers, vendors and users, consumer groups, testing laboratories, Governments, engineering professions, research organizations, etc.);
- industry wide: a standard is developed to offer global solutions to satisfy industries and customers all around the world.

2.3. STANDARDIZATION LANDSCAPE

In Europe, the 3 recognized European Standards Organizations (ESO) are:

- the European Committee for Standardization (CEN);
- the European Committee for Electrotechnical Standardization (CENELEC);
- the European Telecommunications Standards Institute (ETSI).

At the international level, the 2 recognized Standards Organizations are:

- the International Organization for Standardization (ISO);
- the International Electrotechnical Commission (IEC).

The standardization frame allows cooperation between the standardization organizations at the same level, but also at different levels, on the same topics:

- CENELEC and IEC are specialized in electrotechnical standards;
- ETSI is focused on telecommunications standards;
- CEN and ISO are in charge of the other types of standards in the other sectors.

Table I presents the main characteristics of the European and international standards bodies.

Table I: Characteristics of European and international standards bodies[11]

European and International Standards Bodies		Date of creation	Number of Members	Number of published standards
ISO	International Organization for Standardization	1946	164	19 573
IEC	International Electrotechnical Commission	1906	82	6 971
CEN	European Committee for Standardization	1961	33	14 885
CENELEC	European Committee for Electrotechnical Standardization	1973	33	6 763
ETSI	European Telecommunications Standards Institute	1988	759[12] (62 countries)	32 570

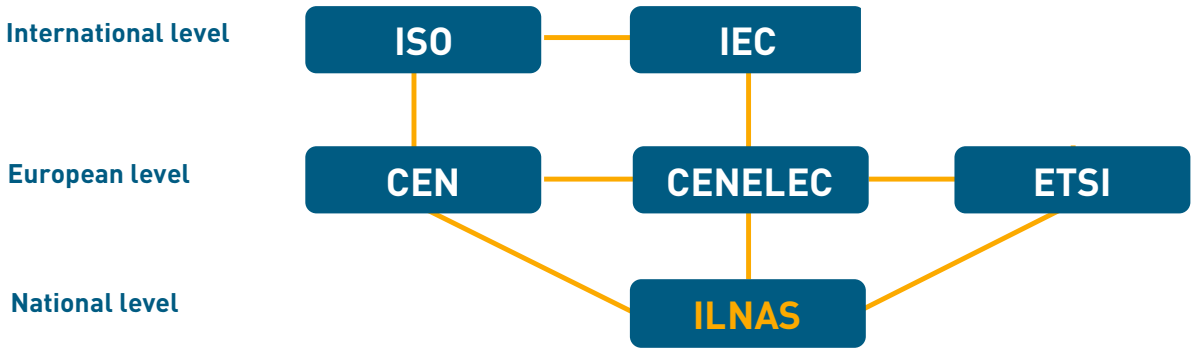
[11] Source: Websites of organizations – July 2013

[12] ETSI has a specific way of working compared to the other recognized organizations, as it works through the direct participation of industry stakeholders.

From a national perspective, one or several standardization bodies protect national interests from within the European and international standardization organizations. In Luxembourg, ILNAS – the only official national standards organization – is a member of the European and international standards organizations CEN, CENELEC, ISO, IEC and ETSI.

Several bridges exist between the national, European and international standardization bodies in order to facilitate the collaboration and coordination of the standardization work on the different fields (Figure 1).

Figure 1: Interactions between the standardization organizations



A strong collaboration exists between the European and international standards bodies. To increase transparency in the work and avoid the duplication of standards, the **Vienna Agreement** was concluded in 1991 between ISO and CEN. This agreement is based on the following guiding principles:

- primacy of international standards and implementation of ISO Standards at European level (EN ISO);
- work at European level (CEN) if there is no interest at international level (ISO);
- notifications of the standardization documents for approval between the two organizations.

Similarly, the **Dresden Agreement** was concluded in 1996 between IEC and CENELEC with the aim of developing intensive consultations in the electrotechnical field. This agreement is based on the following guiding principles:

- development of all new standardization projects by IEC (as much as possible);
- work at European level (CENELEC) if there is no interest at international level (IEC);
- ballots for documents made in parallel at IEC and CENELEC.

Under both agreements, approximately 55% of all European standards ratified by CEN, and about 70% of those ratified by CENELEC, are now technically equivalent or identical to ISO or IEC standards; in that respect, the European and international organizations do not duplicate work.

Agreements also exist between the standards bodies to facilitate their cooperation. The convention established between ISO and IEC allows the creation of joint technical committees (JTC). Similarly, the cooperation between CEN and CENELEC aims to create a European standardization system that is open, flexible and dynamic, such as the following Joint Working Groups (JWG):

- CEN/CENELEC/JWG 1 on energy audits;
- CEN/CENELEC/JWG 2 on guarantees of origin and energy certificates;
- CEN/CENELEC/JWG 3 on energy management and related services;
- CEN/CENELEC/JWG 4 on energy efficiency and saving calculation.

2.4. STANDARDS DEVELOPMENT

Developing a standard is characterized by four main steps:

- proposal: following an identified need, a party proposes a preliminary draft;
- study and preparation: a working group studies the draft and prepares the standard draft;
- public inquiry and approval: the standard draft goes into public consultation and is subject to approval in a second step;
- publication: the ratified standard is published by the standards body.

At each stage, a validation of all participating members of the standardization technical committee is required. This is done automatically as a vote; however, the rules of the vote differ between the European and international levels as outlined in Table II below.

Table II: Voting rules at European and international levels

Organization	Members	Method of adopting standards	Integration into the collections of national standards
International ISO and IEC	National bodies from countries members of ISO (164) and IEC (82)	1 country = 1 voice	Voluntary
European CEN and CENELEC	National bodies from the EU and EFTA[13]countries (33)	Weighted Vote (Treaty of Nice)	Required: countries must eliminate conflicting provisions from their collections

The weighted vote is defined by the Treaty of Nice, which was signed in 2001 by the EU Member States and fixes the distribution of the voices for the European Union Council as show in Table III.

Table III: Distribution of the weighted votes throughout the European Member States[14]

Countries	Weighting of votes
France, Germany, Italy, Turkey, United Kingdom	**29**
Poland, Spain	**27**
Romania	**14**
Netherlands	**13**
Belgium, Czech Republic, Greece, Hungary, Portugal	**12**
Austria, Bulgaria, Sweden, Switzerland	**10**
Croatia, Denmark, Finland, Ireland, Lithuania, Norway, Slovakia	**7**
Cyprus, Estonia, Former Yugoslav Republic of Macedonia, Latvia, Luxembourg, Slovenia	**4**
Iceland, Malta	**3**

Another particularity at the European level is that the European standards approved shall be implemented identically in both technical content and presentation, with no restrictions for application by each national member. This implies enforcing the new standard through publication and withdrawing all conflicting standards already in place at the national level in an average of six months. The new European standard then takes the status of national standard.

[13] EFTA: "European Free Trade Association" whose current members are Norway, Switzerland, Iceland and Liechtenstein
[14] Source: Internal regulation CEN/CENELEC – Part 2 – Annex D (2013)

3. CONTEXT OF THE ENERGY SECTOR

3.1. DEFINITION AND ISSUES OF THE ENERGY SECTOR

The "International Energy Outlook 2013" projects that world energy consumption will grow by 56% between 2010 and 2040. Renewable energy and nuclear power are the world's fastest-growing energy sources, each increasing by 2.5% per year. However, fossil fuels continue to supply almost 80% of world energy use through 2040. Natural gas is the fastest-growing fossil fuel in the outlook. Global natural gas consumption increases by 1.7% per year. Increasing supplies of tight gas, shale gas, and coal bed methane support growth in projected worldwide natural gas use. Coal use grows faster than petroleum and other liquid fuel use until after 2030, mostly because of increases in China's consumption of coal and tepid growth in liquids demand attributed to slow growth in the OECD regions and high sustained oil prices (IEO 2013)[15].

Energy is central to nearly every major challenge and opportunity the world faces today. Be it for jobs, security, climate change, food production or increasing incomes, access to energy for all is essential.

According to the United Nations[16]:

- one in five people still lacks access to modern electricity;
- 3 billion people rely on wood, coal, charcoal or animal waste for cooking and heating;
- energy is the dominant contributor to climate change, accounting for around 60% of total global greenhouse gas emissions;
- reducing the carbon intensity of energy is a key objective in long-term climate goals.

The biggest remaining problem is probably that energy efficiency can be achieved in so many ways, requiring so many individual decisions, and that it will take some time to make all the changes in a building or an industry. Energy efficiency is not difficult but it is complicated! Energy management (in a general sense) has to be developed in many forms and for many purposes[17].

At the European level, on November 10, 2010, the European Commission has adopted the Communication "Energy 2020 - A strategy for competitive, sustainable and secure energy"[18]. The Communication defines the energy priorities for the next ten years and sets the actions to be taken in order to tackle the challenges of saving energy, achieving a market with competitive prizes and secure supplies, boosting technological leadership, and effectively negotiate with international partners.

The European Union (EU) cannot afford to fail in its energy ambitions. Therefore the Commission proposes a new energy strategy towards 2020. This will consolidate the measures which have been taken so far and step up activity in areas where new challenges are emerging. It is the result of extensive debates within the EU institutions and wide-ranging public consultations.

[15] International Energy Outlook 2013 – EIA, July 2013,
[16] Sustainable Energy for All – United Nations
[17] European competitiveness and energy efficiency: Focusing on the real issue – ECEE, May 2013
[18] Europe 2020 initiative - Energy 2020 - A strategy for competitive, sustainable and secure energy

The new EU energy strategy focuses on five priorities:

1. Achieving an energy efficient Europe;
2. Building a truly pan-European integrated energy market;
3. Empowering consumers and achieving the highest level of safety and security;
4. Extending Europe's leadership in energy technology and innovation;
5. Strengthening the external dimension of the EU energy market.

At the national level, energy policy falls within the remit of the Ministry of the Economy and Foreign Trade. It focuses on increasing energy efficiency in all sectors and the development of renewable energy.

National targets have been defined:

- In the National Action Plan on Energy Efficiency[19]:
  - Increase energy efficiency by 9% by 2016.
- In the National Action Plan for Renewable Energy[20]:
  - Share of renewables in final energy consumption in 2020: 11%,
  - Share of renewables in final energy consumption in the transport sector in 2020: 10%.

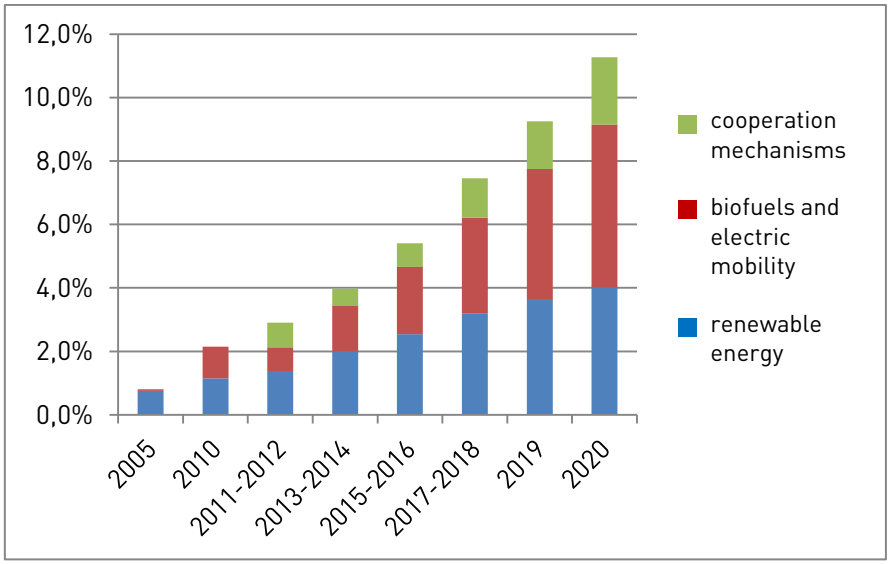
Regarding energy efficiency, several actions have been initiated by the Government and are currently underway to achieve this goal. It should be noted in particular:

- the transposition of EU requirements on the energy performance of residential buildings[21] and functional buildings[22];
- the introduction of the Energy Performance Certificate (energy passport) for residential and functional buildings to increase transparency in the real estate sector;
- the application of strict energy criteria for the construction of new buildings;
- the investment of significant funds in the renovation of existing buildings of the State;
- the continuation of the ambitious program of financial support for citizens who opt for energy efficient buildings, such as houses for low-energy and passive houses;
- the continuation of initiatives in advocacy, information, training and consulting basis.

Regarding renewable energy, the goals tend to increase the use of renewables in the country, particularly through the production of electricity (wind, photovoltaic, biogas, solid biomass, etc.) and heat/cold (biomass, solar thermal, heat pumps, etc.). Other actions concern the incorporation of biofuels (biodiesel, bioethanol) in conventional fuels and development of electric mobility (public and private transport). Finally, the European Commission encourages an increased use of the cooperation mechanisms contained in the Renewable Energy Directive (2009/28/EC). Based on the work areas defined for renewable energy, Figure 2 shows intermediate targets to achieve national goals in 2020.

[19] First National Action Plan on Energy Efficiency–The Ministry of the Economy an Foreign Trade–Government of Luxembourg - February 2008
[20] Second National Action Plan on Energy Efficiency–The Ministry of the Economy an Foreign Trade–Government of Luxembourg -July 2010
[21] Grand-Ducal Regulation of November 30, 2007 on the energy performance of residential buildings
[22] Grand-Ducal Regulation of August 31, 2010 on the energy performance of functional buildings

Figure 2: Luxembourg's targets for renewable energy[23]



Note: In a recent press conference (July 2013) the Minister of the Economy and Foreign Trade confirmed the objective of doubling national renewable energy rate between 2010 and 2014.

[23] Source: Press conference of the Ministry of the Economy and Foreign Trade – Government of Luxembourg – July 22, 2013

3.2. STANDARDS CONTEXT OF THE ENERGY SECTOR

Standardization is an important tool for the implementation of public policies and market access. Indeed, standards support policy decisions related to current energy challenges. *Ad hoc* standardization programs are largely influenced by the priorities resulting from energy constraints. In addition, the European energy market relies heavily on cross-border energy trade and therefore, common standards are needed to regulate and facilitate these exchanges.

In general, standards in the energy sector provide:

- harmonization of definitions;
- assessment methods in terms of energy consumption;
- comparison of energy systems;
- characterization of products and materials;
- increase of energy efficiency;
- consumer confidence.

Many new committees thus appeared in recent years due to the current energy constraints.

At the international level, the International Organization for Standardization (ISO) identified in 2007 energy management as a priority area, encouraging stakeholders to participate in the development of standards.

Consecutively, the ISO Council has established an action plan to strengthen the contribution of ISO in the context of energy efficiency and renewable energy. Five priority areas were identified:

- harmonized terminologies and methodologies relating to energy efficiency, consumption and energy savings, as well as for measuring the energy efficiency of different primary energy sources;
- standards for energy management to provide a systematic approach to the continuous improvement of the energy performance for a more sustainable use of energy. These standards may include the provision of energy, procurement practices for equipment and for energy systems, energy use and all issues related to disposal after use, for all types of organizations;
- liquid and solid biofuels, biomass and biogas, and sustainable production;
- focus on specific standards covering the rehabilitation and restoration to help upgrade facilities and systems in place, such as buildings and industrial facilities;
- further optimization and standardization activities of ISO covering energy efficiency in buildings, giving priority to key projects such as those dealing with the energy efficiency of buildings in a holistic approach.

In order to achieve this, ISO seeks to intensify during the standards development process, collaboration with public institutions and international organizations, including the Organization for Economic Cooperation and Development (OECD), the International Energy Agency (IEA), the World Energy Council (WEC), the United Nations Conference on Trade and Development (UNCTAD) and the United Nations Industrial Development Organization (UNIDO).

Electrotechnical Standardization, led by the International Electrotechnical Commission (IEC), is also involved in the energy sector. IEC works on specific topics concerning electricity as wind turbines, electric vehicles or smart grids. In addition, IEC is associated with ISO under joint technical committees, such as the project committee ISO/IEC JPC2 on energy efficiency and renewable energy.

At European level, an action plan for standardization has recently been developed by European Commission's Directorate-General for Enterprise and Industry. This plan defines the most important standardization initiatives for the period 2010-2013. Related to the energy field, the plan highlights three major areas:

- electric vehicles;
- smart grids;
- nuclear energy.

A "Sector Forum Energy Management" was created in 2006 as a joint CEN and CENELEC platform. The creation of this forum was one of the recommendations of the CEN/CENELEC BT Joint Working Group on Energy Management (2002-2005) which identified a series of standardization priorities in the field of energy management and advised to create a platform to develop a common general strategy for the improvement of energy efficiency standardization[24].

At the national level, the standardization strategy 2010-2020, written by ILNAS and validated by the Minister of the Economy and Foreign Trade (June 10, 2010), is primarily based on the entrepreneurship principle applied to the drafting of standards: "Setting standards means setting the market".

This national standardization strategy is implemented according to the national needs identified and a sector-based economic approach. The main goal is to contribute to the national economic recovery by the standardization knowledge related to the given sector.

In the frame of the European energy policy, Luxembourg should also be involved in the standardization developments, especially regarding the main topics covered by the national actions plans. The role of ILNAS is to increase the participation of national delegates in the standardization process. For that purpose, ILNAS applies in the national standardization strategy the concept of the "**knowledge triangle**" that includes:

- create the standardization knowledge (*via* the work done by the standardization technical committees);
- transfer this knowledge through training and awareness sessions;
- exploit the standardization knowledge to research and innovation applications.

The standards analysis is intended to inform all national stakeholders of the energy sector about the need to contribute to the standardization knowledge.

At the national level, 7 delegates are currently registered among the Luxembourg's national standards body ILNAS. They are actively participating in the selected technical committees (based on the national register of standardization delegates (version 63 of September 17, 2013)):

- **CEN/TC 264** Air quality / **WG33** Greenhouse (GHG) emissions in energy-intensive industries;
- **CEN/CENELEC/JWG 1** Energy audits;
- **CEN/CENELEC/JWG 2** Guarantees of origin and Energy certificates;
- **IEC/TC 69** Electric road vehicles and industrial trucks;
- **ISO/TC 22** Road vehicles ;
- **ISO/IEC JPC 2** Joint project committee – Energy Efficiency and renewable energy sources – Common terminology;
- **ISO/TC 255** Biogas.

[24] CEN-CENELEC Sector Forum 'Energy Management'

Based on the national standardization strategy[25], ILNAS launched several actions in order to promote standardization in Luxembourg and to extend the participation to technical committees either at the European or international level, especially in the energy sector.

[25] http://www.ilnas.public.lu/fr/publications/normalisation/etudes-nationales/luxembourg-standardization-strategy-2013-2020.pdf

4. METHODOLOGY OF THE STANDARDS ANALYSIS

In order to meet the national standardization strategy issues described in the previous chapter, a standards analysis was carried out and is presented in this report. Different steps were followed and are illustrated by Figure 3 below.

Figure 3: Main steps of standards analysis

4.1. SELECTIVE STANDARDS WATCH

A standards watch was carried out in order to identify the standardization technical committees of potential interests for the national stakeholders in the energy sector. These technical committees are linked to formal standards bodies (CEN, CENELEC, ISO, IEC and ETSI as developed in **Chapter 7**).

The different stages processed to carry out the standards watch are described below.

- **Stage 1: Identification of the standardization technical committees in relation with the energy sector**

The objective of this stage is to identify the standardization technical committees in relation to the energy sector. The method used consists in identifying the sources of information available, applying the relevant research criteria and recording interesting and useful data. As mentioned before, the search is mainly focused on formal standards bodies.

Information sources
The following information sources were used (see Table IV).

Table IV: Information sources used

Source	Level	Designation	Website
Formal standards body	European	CEN – European Committee for Standardization	www.cen.eu
		CENELEC – European Committee for Electrotechnical Standardization	www.cenelec.eu
		ETSI – European Telecommunication Standards Institute	www.etsi.eu
	International	ISO – International Organization for Standardization	www.iso.org
		IEC – International Electrotechnical Commission	www.iec.ch
Intergovernmental public-private partnership organization	International	ITU-T – International Telecommunication Union	www.itu.int
Non-formal standards body	International	IEEE – Institute of Electrical and Electronics Engineers	www.ieee.org
Standardization mandates	European	Database of standardization mandates. When the European Commission identifies a particular need of standards to support and implement its policy, it directly mandates the European standardization bodies (CEN-CENELEC-ETSI) to develop new standards.	www.ec.europa.eu
Legislation	European	European directives and regulations – The "new approach" encourages the use of harmonized standards, listed in the appendix of each directive. These standards give those who apply a presumption of conformity to the Directive "new approach".	www.ec.europa.eu www.newapproach.org
	National	National laws and regulations	www.legilux.lu
Sector news	International	World Energy Council (WEC) Organization for Economic Co-operation and Development (OECD) United Nations Development Program (UNDP), etc.	www.worldenergy.org www.oecd.org www.undp.org
	European	Publications and communications of the European Commission (DG ENERGY), National Standards Bodies (AFNOR, DIN, BSI, ILNAS, etc.)	ec.europa.eu/energy
	National	Publications and communications of the Ministry of the Economy and Foreign Trade, GIE Luxinnovation–EcoInnovation Cluster, etc.	www.eco.public.lu www.ecoinnovation cluster.lu

Research criteria

Table V lists the different research criteria used.

Table V: Research criteria

Research Criteria	Source	Explanation
ICS Code	Formal standards bodies	ICS means "International Classification for Standards". At the publication stage, one or more ICS codes are assigned to the standard by the technical committee that drafted it. The international classification aims to classify standards according to codes common to all national, European and international standards bodies. However, the ICS codes being assigned to published standards (or draft standards of advanced stage) do not allow for the identification of standards currently under development in newly established technical committees.
TC Number	Formal standards bodies	TC means Technical Committee. The existing technical committees in the different standards bodies have been reviewed and all those related to the energy sector have been identified.
Keywords (web research)	Non-formal standards bodies	A search was conducted on different websites using keywords such as 'standards', 'energy', 'energy efficiency', 'fuels', etc. Moreover, an analysis of national and international publications related to the sector was conducted.
	Standardization Mandates	
	Legislation	
	Sector news	

Records

Based on applied research criteria, the following data has been recorded, when available:

- standards body (either formal or non-formal);
- technical committee number and designation;
- creation date of the technical committee;
- the secretariat, the name of the secretary and chairperson;
- number and names of member countries (participating and observing countries);
- the website link to the technical committee;
- number of published standards;
- the scope of the committee;
- number of standards under development.

In addition, to facilitate the view and the understanding of the watch results, the energy sector was divided into subsectors (see **Chapter 5**). Finally, the overall standardization technical committees identified were classified according these subsectors.

❖ Stage 2: Selection of the most active standardization technical committees in terms of being current, dynamic and strategic

This stage gives a selective character to the standards watch in the energy sector. The purpose is to keep only the standardization technical committees that could be of potential interest for future national delegates willing to contribute to the standardization and also to be in line with the news and developments of the sector. Therefore, the most active standardization technical committees have been selected based on specific criteria.

Selection criteria

Table VI gives the list of the different criteria used to realize the selection of the most active technical committees.

Table VI: Criteria applied to select the technical committees

Selection criteria	Explanation
Technical committee creation date	A recent creation indicates a new need of standards related to news or regulation.
Number of participating countries	If a technical committee has a large number of participating countries, this reflects a strong mobilization around an important subject.
Standards under development	Standards under development are very concrete elements of participation in standardization. Further study of on-going standards will determine those that are strategic for the energy sector in general.
Link with one or more European directives	The "New Approach" directives encourage the use of harmonized standards published in the Official Journal of the EU. These standards give those who apply them, a presumption of conformity with essential requirements of the directive. The link between legislation and standardization is then obvious since the standards applied allow for complying with legal requirements.

❖ Stage 3: Presentation of the results using identification cards for each standardization technical committees

Identification cards ('ID-Cards') were designed in order to present each selected technical committee through a simple and quick view. The template used for the technical committees is presented on the Figure 4.

Figure 4: ID-Card template

General information			
Committee		Title	
Creation date		MEMBERS 	
Secretariat			
Secretary			
Chairperson			
Involvement of Luxembourg			
Organizations in liaison			
Web site			
Scope			
Structure			
Standardization work			
Published standards			
Standards under development			
Comments			

4.2. STAKEHOLDERS OF THE NATIONAL ENERGY SECTOR

In parallel to the standards watch, the identification of national private and public stakeholders representing the entire energy sector in Luxembourg was conducted. This national panorama of the energy sector proposes a view of the situation based on the experience and expertise of ILNAS. It reflects the situation at a certain moment from a certain point of view and is not intended to be exhaustive but tries to be as complete as possible. If necessary, it would be adjusted following the comments received after the release of this report.

The overall national stakeholders of the energy sector have been reviewed. Based on the available information (documentation, internet websites, conferences, etc.), the analysis was carried out by seeking to identify the maximum number of relationships, connections and interactions between the different national stakeholders.

Then, according to their activities and objectives, they were allocated to different categories in order to draw a full and complete picture of this sector in Luxembourg. This proposed categorization was designed to facilitate the standards analysis. By grouping the different stakeholders into categories, it should facilitate the analysis, as stakeholders of a same category should have similar potential interests in participating to standardization activities. Then, connections between the energy subsectors and the categories of stakeholders should be simplified.

4.3. INTERESTS AND OPPORTUNITIES FOR THE NATIONAL MARKET

After compiling the selected technical committees in relation to the energy into subsectors and categorizing the different stakeholders, an analysis of the potential interests for the national stakeholders to participate to the standardization work was carried on.

This step consists in identifying, for each stakeholder category, the potential interests to follow and participate in the standardization technical committees. In practice, it links a category of stakeholders with energy subsectors as they were defined in the initial stage of the selective standards watch according to their potential interests.

❖ Stage 1: Definition of the potential interests for stakeholders

The potential interests defined were the following:

◆ **Information**	Thanks to the participation to a standardization technical committee, the stakeholders are informed about the last standardization developments relating to their activities, thus allowing them to identify potential future impacts and to anticipate the consequences.
■ **Performance**	Through participation in standardization activities within a technical committee, stakeholders contribute to the increase of their performance in particular: Development of new competencies due to contact with other professionals and experts of the sector (networking); Information on the directions taken by other states or other entities (benchmarking); Translation of the innovations into future rules (knowledge codification); Anticipation of the obligation to comply with European regulatory requirements.

❖ **Services**	The follow-up of standards developments offers in some cases the opportunity for stakeholders to develop new services in line with their activities.
☐ **Projects**	Research projects directly linked to standardization or involving standards in order to codify the acquired knowledge are regularly launched. Stakeholders can access useful information in the framework of a future call for tenders and benefit from specific support to get involved into projects.
O Training	Thanks to the knowledge of standards and process, stakeholders have solid and reliable elements to update, improve or develop training in the energy sector.
$ Investments	Stakeholders could have an interest in investing in a new technology or concept.

❖ Stage 2: Matrix of the potential interests and the energy subsectors

Then, for each stakeholder category, a specific matrix was realized to cross the energy subsectors classifying the selected standardization committees with the potential interests of the national stakeholders (Figure 5).

Figure 5: Example of a specific matrix of standards analysis

Public institutions	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X		X		X
Fuels	X			X		X
Power engineering	X	X		X		X
Renewable energy	X	X	X	X	X	X
Smart grids	X			X		X

The main objective of this approach is to establish a relationship between a specific stakeholder category and some energy subsectors. This link is made by suggesting potential interests specific to each stakeholder category according to particular subsectors.

This information could be interesting for them in order, for example, to increase their competitiveness or to facilitate their European and international exchanges.

❖ Stage 3: Definition of the opportunities for the national market

Finally, from this relationship between the stakeholder categories and the technical committee subsectors, opportunities for the national market have been identified. These opportunities are based on the potential interests' common to all stakeholder categories. However, when interesting, some opportunities could also be dedicated to only a specific category of stakeholders.

These opportunities should be seen by the national market as a series of proposals in order to go further and to engage future actions to take advantage of the standardization.

The opportunities for the national market are developed in the **Chapter 6**.

5. RESULTS OF THE STANDARDS ANALYSIS

5.1. SELECTIVE STANDARDS WATCH

The standards watch of the energy sector has identified 158 standardization technical committees (European and international), which are all listed in a database and presented in the Appendix 9.4. By applying the selection criteria detailed in the previous chapter, 47 technical committees were identified as interesting in terms of being "current, dynamic and strategic" for the energy sector.
In the framework of the standards watch and in particular to establish links between the national market of the energy sector and the watch work results, the technical committees were classified into five subsectors, as shown in Table VII.

Table VII: Definition of the energy subsectors

Subsector 1 Energy management and energy efficiency	Energy management aims to continuously improve energy performance in an organization. This management implies energy efficiency, but also reduction of costs and greenhouse gas emissions. Energy efficiency aims to provide the maximum service with minimized energy consumption.
Subsector 2 Fuels	Fuels are the different possible sources of energy, whether fossil energy (e.g. coal, natural gas, oil, etc.), or nuclear energy (uranium, plutonium). In the frame of the standards analysis, renewable energy is specifically considered in the subsector 4.
Subsector 3 Power engineering	Generation, transmission and distribution of electrical energy.
Subsector 4 Renewable energy	Renewable energy refers to an energy faster renewed than consumed (e.g. solar, wind, biomass, biogas, geothermal, etc.).
Subsector 5 Smart grids	A "smart grid" uses information technology to optimize the production and distribution of energy, allowing to better connect the demand and the supply between consumers and producers. The main goal consists in energy savings. "Smart grid" is also related to "Smart meter".

Following these subsectors categorizing the energy sector, the selected technical committees were classified. Table VIII below lists the 47 selected standardization technical committees related to the energy according to the five subsectors. In addition, in order to have access to more detail information, a detailed ID-card of each technical committee is presented in **Chapter 7**.

Table VIII: Technical committees selected according to energy subsectors

SUBSECTOR	ORIGINE[26]	TECHNICAL COMMITTEE (TC)	ID-CARD Ref. Page
ENERGY MANAGEMENT AND ENERGY EFFICIENCY	EU	CEN/CENELEC Sector Forum on Energy Management (SFEM)	76
	EU	CEN/CENELEC JWG1 Energy audits	78
	EU	CEN/CENELEC JWG2 Guarantees of origin and energy certificates	79
	EU	CEN/CENELEC JWG3 Energy management and services-General requirement and qualification procedures	80
	EU	CEN/CENELEC JWG4 Energy efficiency and saving calculation	82
	EU	CEN/TC 264 Air quality WG 33 Greenhouse gas (GHG) emissions in energy-intensive industries	83
	EU	CEN/TC 320 Transports – Logistics and services / WG 10 Energy consumption and GHG emissions in relation to transport services	85
	EU	CEN/TC 371 Project Committee – Energy Performance of Building	86
	INT	IEC/TC 69 Electric road vehicles and industrial trucks	88
	INT	IEC/TC 120 Electrical Energy storage (EES) Systems	91
	INT	ISO/TC 22 Road vehicles	92
	INT	ISO/TC 118 Compressors and pneumatics tools, machines and equipment /SC 6 - Air compressors and compressed air systems	96
	INT	ISO/TC 163/WG 4: Joint between ISO/TC 163 and ISO/TC 205 Energy performance of buildings using holistic approach	98
	INT	ISO/TC 207 Environmental management / SC7 Greenhouse gas management and related activities	99
	INT	ISO/TC 242 Energy Management	100
	INT	ISO/TC 244 Industrial furnaces and associated processing equipment	102
	INT	ISO/TC 257 General technical rules for determination of energy savings in renovation projects, industrial enterprises and regions	103
	INT	ISO/TC 265 Carbon capture and Storage (CCS)	105
	INT	ISO/TMB/SAG E Strategic Advisory Group on energy efficiency and renewable energy sources	106
	INT	ISO/IEC JPC 2 Joint Project Committee - Energy efficiency and renewable energy sources - Common terminology	107

[26] **EU**: European origin and **INT**: International origin

SUBSECTOR	ORIGINE	TECHNICAL COMMITTEE (TC)	ID-CARD Ref. Page
FUELS	EU	CEN Sector Forum Gas Infrastructure	110
	EU	CEN/TC 234 Gas infrastructure	112
	INT	ISO/TC 67 Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries	114
	INT	ISO/TC 193 Natural gas	116
	INT	ISO/PC 252 Project committee - Natural gas fuelling stations for vehicles	118
POWER ENGINEERING	EU	CENELEC/TC 8X System aspects of electrical energy supply	120
	EU	CENELEC/TC 13 Equipment for electrical energy measurement and load control	121
	IEC	IEC/TC 8 Systems aspects for electrical energy supply	123
RENEWABLE ENERGY	EU	CEN/TC 19 Petroleum products, lubricants and related products	126
	EU	CEN/TC 312 Thermal solar systems and components	130
	EU	CEN/TC 335 Solid biofuels	132
	EU	CEN/TC 383 Sustainably produced biomass for energy applications	134
	EU	CENELEC/TC 82 Solar photovoltaic energy systems	136
	EU	CEN/CENELEC JWG FCGA Joint Working Group on Fuel cell gas appliances	138
	INT	IEC/TC 4 Hydraulic turbines	139
	INT	IEC/TC 82 Solar photovoltaic energy systems	141
	INT	IEC/TC 88 Wind turbines	144
	INT	IEC/TC 114 Marine energy - wave and tidal energy converters	146
	INT	IEC/TC 117 Solar thermal electric plants	148
	INT	ISO/TC 28/SC 7 Biocombustibles liquides	149
	INT	ISO/TC 238 Solid biofuels	150
	INT	ISO/TC 248 Project committee Sustainability criteria for bioenergy	152
	INT	ISO/TC 255 Biogas	153
SMART GRIDS	EU	CEN-CENELEC-ETSI Smart Grid Coordination Group	155
	INT	IEC/PC 118 Smart grid user interface	157
	INT	IEC/SG 3 Strategic Group on Smart Grid	159
	INT	ISO/IEC JTC1 Information technologies	160

In summary, the 47 selected technical committees, potentially interesting for the energy sector, are distributed as noted in Table IX below.

Table IX: Distribution of the selected technical committees in the energy sector

Subsector	European TC	International TC	Total
Subsector 1 – Energy management and energy efficiency	8	12	**20**
Subsector 2 – Fuels	2	3	**5**
Subsector 3 – Power engineering	2	1	**3**
Subsector 4 – Renewable energy	6	9	**15**
Subsector 5 – Smart grids	1	3	**4**
Total	**19**	**28**	**47**

5.2. INTERESTS FOR NATIONAL STAKEHOLDERS

If the first step was to select potentially interesting technical committees in the energy sector and to categorize them into subsectors, the next step proposes a description of the national market and links between a specific stakeholder category and the subsectors of the energy through possible interests. These links suggest potential participation to standardization works according to a given subsector.

Potential interests for participating in standardization works for the national stakeholders of the energy sector could be the following (as already defined in section 4.3):

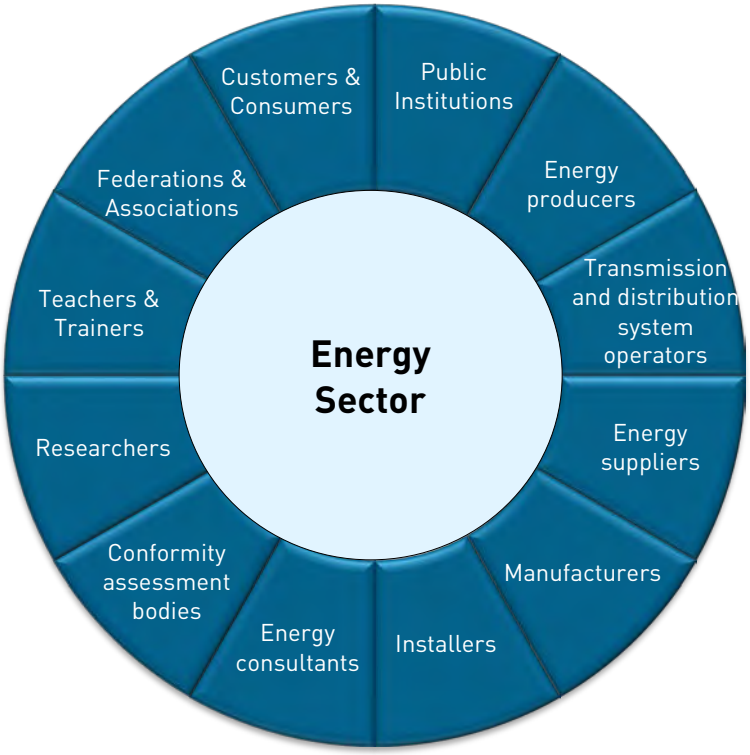
◆ **Information**	Stakeholders could have an interest in learning about standards developments.
■ **Performance**	Stakeholders could have an interest in increasing the performance of their organizations (networking/benchmarking).
❖ **Services**	Stakeholders could have an interest in developing new services.
☐ **Projects**	Stakeholders could have an interest in following or participating in research projects.
✪ **Training**	Stakeholders could have an interest in updating or developing training sessions.
$ Investments	Stakeholders could have an interest in investing in a new technology or concept.

5.2.1. DESCRIPTION OF THE NATIONAL MARKET

The national panorama of the stakeholders of the energy sector gives a vision of the situation based on the experience and expertise of ILNAS. It reflects the situation at a certain moment from a certain point of view and is not intended to be exhaustive. Possible links and interests could have not been identified and corrections can be integrated in order to update the related matrix.

National stakeholders of the energy sector have been reviewed by using several sources of information. Figure 6 presents a summary of the different groups of stakeholders identified during the review who are acting in this specific sector in Luxembourg.

Figure 6: Illustration of the categories of national stakeholders of the energy sector



Each category of stakeholders is described in detail in the following paragraphs of the report.

5.2.2. PUBLIC INSTITUTIONS

a) Presentation

This category of stakeholders encompasses the public institutions in Luxembourg that take part in the development and implementation of the political actions in the national energy sector. Among other actors, it contains the Ministry of the Economy and Foreign Trade, especially the Directorate General for Energy (DG6), and the Ministry of Sustainable Development and Infrastructure.

❖ **Ministry of the Economy and Foreign Trade**

According to the Grand-Ducal Regulation of July 27, 2009 on the constitution of ministries, the national energy policy falls in the remit of the Ministry of the Economy and Foreign Trade. This policy is based on three pillars:

- Maintain and increase security of supply

Luxembourg is highly dependent on its energy supply: almost all energy needs are covered by imports. To ensure supply and to avoid excessive dependence on geographical level, the Government is working to diversify the states providing gas, oil and electricity. It also aims to maintain the quality of energy infrastructure in terms of electricity, natural gas or petroleum products. In this context, improving the storage of natural gas and oil is essential.

- Ensuring the competitiveness of energy prices

The Government seeks to ensure access to energy at competitive prices for all economic actors. An appropriate legislative framework ensures competitive prices for energy carriers and strengthens the international competitiveness of the national economy.

- Ensuring sustainable energy supply

Conventional and fossil fuels do not often meet the criteria of sustainable development. The Government is supporting the development of renewable energy in the country. In addition, it aims to promote energy efficiency and energy savings.

According to its mandate, the Ministry of the Economy and Foreign Trade is divided into seven branches:

- Directorate General for General Affairs (DG 1);
- Directorate General for the Internal Market and Regional Policy (DG 2);
- Directorate General for Industry, Logistics and Infrastructures (DG 3);
- Directorate General for Competitiveness (DG 4);
- Directorate General for the Promotion of Foreign Trade and Investments (DG 5);
- Directorate General for Energy (DG 6);
- Directorate General for Research, Intellectual Property and New Technologies (DG 7).

Directorate General for Energy (DG 6) is responsible for the coordination of the national energy policy. The main missions of the DG6 are presented in Table X.

Table X: Missions of the Directorate General for Energy

Electricity	Supply, transportation, distribution, production
Natural gas	Supply, transportation, distribution, storage, technical rules and standards, technical control and boiler safety
Solid and liquid fuels	Supply, storage, price, *Office commercial du ravitaillement* (OCRA)[27]
Renewable energy	National action plans, regulations, information, education, promotion, training, consulting
Energy efficiency and energy savings	National action plans, regulations, information, education, promotion, training, counseling, voluntary agreements
International relations	International Energy Agency, representation in European and international groups
Others	Promotion activities and energy technologies; myenergy GIE (Economic Interest Grouping)

❖ Ministry of Sustainable Development and Infrastructure

According to the Grand-Ducal Regulation of July 27, 2009 on the constitution of ministries, the Ministry of Sustainable Development and Infrastructure has missions related to the environment, including also energy aspects.

According to its mandate, the Ministry of Sustainable Development and Infrastructure is divided into four departments:

- Department of Land Use Planning;
- Department of the Environment;
- Department of Transport;
- Public Works Department.

The main missions of the Department of the Environment is to implement the Government's environmental agenda, to coordinate the work on sustainable development and to take all appropriate measures for the protection of the natural and human environment, and the fight against climate change.

Turning specifically to the energy sector, the Department of the Environment conducts activities primarily related to:

- climate change;
- emissions of greenhouse gas;
- promotion of energy savings, new and renewable energy;
- studies of environmental impact;
- environmental and energy audits;
- classified establishment;
- missions and tasks of economic interest grouping myenergy GIE.

[27] http://www.etat.lu/annuaire/?idMin=5404

In its missions, the Department of the Environment works with the Administration of the Environment, an administration under his supervision, responsible for monitoring and enforcement of laws and regulations concerning the environment.

❖ myenergy GIE

Established in 2008 as an Economic Interest Grouping (EIG), myenergy is defined as a national information structure focusing on energy efficiency and renewable energy.

myenergy is supported by the State of the Grand Duchy of Luxembourg, represented by the Ministry of the Economy and Foreign Trade, and the Ministry of Sustainable Development and Infrastructure.

The main tasks performed by myenergy are:

- information and awareness;
- basic advice;
- advice for the energy policy.

These missions are part of the Government's efforts to implement a sustainable energy policy that contributes to improve the security of energy supply and the protection of the environment - by reducing the consumption of fossil fuels.

❖ Luxembourg Institute of Regulation

The Luxembourg Institute of Regulation, "*Institut Luxembourgeois de Régulation*" (ILR) is the regulator of the electricity and natural gas market as defined by the law of August 1, 2007[28] related to the organization of the electricity and natural gas market. The mission of the regulator in the field of energy is to ensure non-discrimination, effective competition and efficient functioning of the market for electricity and natural gas. This results in the determination of tariffs and network access conditions. ILR is also responsible for various missions including compliance of universal service, quality of service, transparency of information and the statistical monitoring in this area.

❖ Inspectorate of Labour and Mines

Attached to the Ministry of Labour and Employment, the Inspectorate of Labour and Mines,"*Inspection du Travail et des Mines*" (ITM) is to ensure the implementation of all legislation relating to working conditions and the protection of workers for an employment contract.

The "Health and Safety" department and the service establishments classified of ITM drafting standard terms and conditions applicable in Luxembourg and may refer to standards. Some ITM "*conditions-types*" (requirements) are directly related to the energy sector. For example, some of them are listed below:

- the ITM-SST-1840.1 on wind installations;
- the ITM-CL 152.1 on cogeneration;
- the ITM-CL 187.2 on biogas installations.

[28] http://eli.legilux.public.lu/eli/etat/leg/loi/2007/08/01/n13

In addition, in the frame of the European legislation and the "new approach", ITM works with harmonized standards in order to verify the presumption of conformity with essential requirements of European Directives.

ITM delivers agreements to inspection bodies carrying out inspections on its behalf. The mission of authorized control bodies is to make the necessary checks to ensure the compliance of the works, facilities and equipment both to applicable legal provisions in the field and operating permits issued by the Minister with responsibility for the work as part of the law amended June 10, 1999 on classified establishments.

❖ Luxinnovation GIE– Cluster EcoInnovation & Cluster ICT

Luxinnovation is the National Agency for Innovation and Research in Luxembourg. Positioned at the heart of the national innovation system, its mission is to educate, advise and assist businesses, innovative entrepreneurs and the public research organizations to exploit their innovative potential. It thus helps to boost competitiveness and productivity, diversification and sustainable development of the national economy.

Luxinnovation plays the role of facilitator for access to national and European funding to launch an innovative activity, to professionalize the process of innovation management and to enhance the results of Research and Development and Innovation (RDI).

Aware that the sharing of knowledge, technology transfer and the sharing of skills is a key factor in innovation, Luxinnovation involves at the national level, inter-regional and international levels to strengthen collaboration, consultation and networking. In this regard, Luxinnovation has established a new governance policy clusters to strengthen public-private partnerships and improve regional attractiveness and visibility of economic actors and researchers, particularly abroad.

Among the various clusters led by Luxinnovation, the Cluster EcoInnovation is directly related to the energy sector. Indeed, members of this cluster are active in areas such as:

- eco-construction and eco-materials;
- eco-design;
- renewable energy (biomass, biogas, solar, etc.);
- rational use of energy.

On the other hand, the ICT cluster (active in the field of Information Technology and Communication) supports the development of RDI projects initiated by the European Commission through the "ICT Policy for Sustainable Growth" which aims, in particular, improving energy efficiency through the use of ICT.

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), 2 persons from this category of stakeholders are currently registered as national delegates.

Public institutions	Person	Level	TC	Designation
Ministry of the Economy and Foreign Trade (*special mandate delivered by the Ministry*)	Ferdinand Hencks	European	CEN/TC 264	Air quality
			CEN/TC 264/WG 33	Air quality; Greenhouse gas (GHG) emissions in energy-intensive industries
ANEC GIE	Benoît Dorard	International	ISO/IEC JPC 2	Project committee: Energy efficiency and renewable energy sources – Common terminology
			ISO/IEC JPC 2/WG 3	Project committee: Energy efficiency and renewable energy sources – Common terminology; renewable energy sources – Terms and definitions

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy segment have been identified. This part proposes to draw links between subsectors and a given category through potential interests.

Public institutions	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X		X		X
Fuels	X	X		X		X
Power engineering	X	X		X		X
Renewable energy	X	X		X		X
Smart grids	X	X		X		X

- Public institutions may be interested to follow all the subsectors for information purposes. Maintaining a good level of information on all the energy subsectors may be interesting for them.
- Public institutions may also have an interest in developing and acquiring new competencies and, thus, in increasing their performance, especially in areas directly related to the national energy plans ("Energy management and energy efficiency", "Renewable energy").

- Interest in training and services are weak regarding the public institutions as they are not directly concerned by these issues.
- Public institutions may also be interested to follow all the subsectors in terms of projects and investments.

5.2.3. ENERGY PRODUCERS

a) Presentation

The "energy producers" category includes electricity and natural gas producers.

In general, electricity producers operate nuclear or thermal power plants (coal, oil, natural gas, etc.), as well as installations using renewable energy (hydro, photovoltaic, wind, etc.).

The natural gas producers operate underground deposits of natural gas from which the gas is extracted and transported to consumers.

Energy producers sell the energy produced (electricity / gas) to suppliers who are responsible for resale to final consumers.

Only electricity producers operating various energy sources are present in Luxembourg as presented in Table XI.

Table XI: Electricity generation capacity installed in Luxembourg

	2010		2011		2012	
Energy sources	Number of plants	Power (kW)	Number of plants	Power (kW)	Number of plants	Power (kW)
Co-generation	121	111.703	130	115.340	133	116.495
thermal	2	395.200	2	395.200	2	395.200
hydroelectric	34	1.130.308	34	1.130.308	34	1.130.308
Wind	44	43.727	45	44.527	51	58.327
Biogas	26	7.301	26	7.900	26	8.010
Gas (Wastewater treatment plant)	4	1.922	4	1.922	5	1.978
Landfill gas	1	75	1	75	1	75
Photovoltaic *	2.420	29.451	2.901	40.666	3.644	74.654
Total	2.652	1.719.687	3.143	1.735.938	3.896	1.785.047
Total (excluding pumping station)	**2.651**	**623.687**	**3.142**	**639.938**	**3.895**	**689.047**

**The number of stations is the number of existing contracts between producers and network operators*

Source: http://www.ilr.public.lu/electricite/statistiques/evolution_centrales-2008-2012.pdf

Table XII shows the electricity producers in Luxembourg.

Table XII: Electricity producers in Luxembourg

ENERGY PRODUCERS	ADDRESS
4 ENERGY S.A.	49, an de strachen L-7362 Bofferdange
AA ENERGY AG	Zone Artisanale Et Commerciale L-9085 Ettelbruck
AEROGOLF ENERGY & MANAGEMENT (AEM) S.à.r.l.	8, Avenue De La Gare L-1610 Luxembourg
BIOGAS DE L'OUR - SOCIETE COOPERATIVE	28, Rue Principale L-9834 Holzthum
BIOGAS UN DER ATERT - SOCIETE COOPERATIVE	35, Rue De Reichlange L-8508 Redange
CEDUCO S.A.	Rue Du General Patton L-5326 Contern
CEFRALUX, CENTRALE ELECTRIQUE FRANCO-LUXEMBOURGEOISE S.à.r.l.	2, Rue Pierre D'aspelt L-1142 Luxembourg
CEGYCO S.A.	Av. Gordon smith L-7740 Colmar-Berg
CHEMB S.A R.L., CENTRALE HYDROELECTRIQUE - MOULIN DE BIGONVILLE S.à.r.l.	Moulin De Bigonville L-8814 Bigonville
ELBIPA S.à.r.l.	15, Rue des Moulins L-7784 Bissen
EN-NEO SOLAR GmbH	18, Duchscherstrooss L-6868 Wecker
HAARDWAND S.à.r.l.	Maison 10 L-9770 Rumlange
HEGASO S.A.	5C, Waistrooss L-5450 Stadtbredimus
HELIOS SCP S.A.	97, Waistrooss L-5445 Schengen
KIOWATT S.A.	6, Z.A.C. C. Klengbusbierg L-7795 Bissen
LOBOSOL S.à.r.l.	28, Rue Berg L-6926 Flaxweiler
MEGAWIND S.à.r.l.	Maison 1 L-9645 Derenbach
NORDWAND S.à.r.l.	Maison 30a L-9771 Stockem
SEO, SOCIETE ELECTRIQUE DE L'OUR S.A.	2, Rue Pierre d'Aspelt L-1142 Luxembourg
SOLARPOWER S.A.	2A, Avenue Prince Henri L-6735 Grevenmacher
SOLER, SOCIETE LUXEMBOURGEOISE DES ENERGIES RENOUVELABLES S.A.	2, Rue Pierre d'Aspelt L-1142 Luxembourg

SUN & WORK S.A.	10 An de Laengten L-6776 Grevenmacher
TRADINGGATE SPV S.A.	7, Lauthegaass L-5450 Stadtbredimus
TWINERG S.A.	201, Route. d'Ehlerange L-4108 Esch-Sur-Alzette
WAASSERKRAAFT WAMPACH S.à.r.l.	23, Rue de la Gare L-8710 Boevange-sur-Attert
WALCH - TRIERWEILER, LES HERITIERS.	51, Rue Principale L-7420 Cruchten
WAND & WAASSER S.A.	4, Rue Michel Horman L-6449 Echternach
WANDPARK BENZELT S.A.	2, Rue Pierre d'Aspelt L-1142 luxembourg
WANDPARK BURER BIERG S.A.	2, Rue Pierre d'Aspelt L-1142 Luxembourg
WANDPARK GEMENG HENGISCHT S.A.	2, Kierchestrooss L-9753 Heinerscheid
WANDPARK KEHMEN-HEISCHENT S.A.	1, Schlasswee L-9140 Bourscheid
WINDPARK OP DER HEI AG	16, Rue Michel Weber L-9089 Ettelbruck
WINDPOWER S.A.	8, Schlassstrooss L-6660 Born

Source: STATEC – Répertoire systématique 2012[29]

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), no one from this category of stakeholders is currently registered as national delegate.

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for energy producers. The following table proposes to draw links between subsectors and potential interests of energy producers.

Energy producers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X		X		X
Fuels	X	X	X	X		X
Power engineering	X	X	X	X		X
Renewable energy	X	X	X	X		X
Smart grids	X	X		X		X

[29] http://www.statistiques.public.lu/catalogue-publications/repertoire/fascicule-1.pdf

- Energy producers may be interested to follow all the subsectors for information and performance purposes.
- Energy producers may have an interest in following the subsectors "Fuels", "Power engineering" and "Renewable energy" to improve their services.
- It could be of interest for energy producers to pay attention to the standardization work in all subsectors in term of participation and collaboration in research projects.
- Energy producers may not be directly concerned by training offers.
- Concerning investments, all subsectors may be of interest for energy producers.

5.2.4. TRANSMISSION AND DISTRIBUTION SYSTEM OPERATORS

a) Presentation

Between the production plant and the customer, transport and distribution networks (systems) conduct energy: electrical cables (for electricity) and underground pipelines (for natural gas).

Transport networks are large infrastructures distributing energy on the territory while distribution networks spread this energy between several municipalities, and within the same municipality, between several houses.

The main tasks of the network operators are:

- transport (electricity / gas) to customers on behalf of a supplier;
- operate, maintain and develop networks with a high level of quality and safety.

❖ Electricity network operators

Electricity network operators in Luxembourg are shown in Table XIII.

Table XIII: Electricity network operators in Luxembourg

Type of network	Operator	Network owner
Transport	Creos Luxembourg S.A.	Creos Luxembourg S.A.
Distribution	Creos Luxembourg S.A.	Creos Luxembourg S.A. ; Communes de Steinfort, Vianden,
	Hoffmann frères S.à.r.l. et Cie S.e.c.s.	Hoffmann frères S.à.r.l. et Cie S.e.c.s.
	Sudstroum S.à.r.l. & Cie S.e.c.s.	Administration communale d'Esch-sur-Alzette
	Administration communale de Diekirch	Administration communale de Diekirch
	Administration communale d'Ettelbruck	Administration communale d'Ettelbruck
Industrial	Sotel Réseau et Cie S.e.c.s.	Sotel Réseau et Cie S.e.c.s., ArcelorMittal Belval & Differdange S.A., ArcelorMittal Rodange & Schifflange S.A., Paul Wurth S.A., ELIA Asset S.A.

Source: ILR – Updated on August 20, 2011

❖ Gas network operators

Gas network operators in Luxembourg are shown in Table XIV.

Table XIV: Gas network operators in Luxembourg

Type of network	Operator	Network owner	Comment
Transport	Creos Luxembourg S.A.	Creos Luxembourg S.A.	-
Distribution	Creos Luxembourg S.A.	Creos Luxembourg S.A.	High, medium and low pressure
	Sudgaz S.A.	Sudgaz S.A.	High, medium and low pressure
	Ville de Dudelange	Ville de Dudelange	Medium and low pressure

Source: ILR – Updated on August 11, 2011

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), no one from this category of stakeholders is currently registered as national delegate.

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for transmission and distribution system operators. The following table proposes to draw links between subsectors and potential interests of transmission and distribution system operators.

Transmission and distribution system operators	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X	X	X	X	X
Fuels	X	X	X			X
Power engineering	X					
Renewable energy	X					
Smart grids	X	X	X	X	X	X

- Transmission and distribution system operators may be interested to follow all the subsectors for information purposes.
- Transmission and distribution system operators may be concerned by all potential interests identified in the subsectors "Energy management and energy efficiency" and "Smart grids".
- Transmission and distribution system operators may be interested to follow the subsector "Fuels" (especially for natural gas) in order to improve their performance and to develop new services.

5.2.5. ENERGY SUPPLIERS

a) Presentation

This category includes energy suppliers who sell customers and consumers "retail" electricity and/or natural gas purchased to energy producers.

❖ **Electricity suppliers**

Electricity suppliers in Luxembourg are presented in Table XV.

Table XV: Electricity suppliers in Luxembourg

Electricity suppliers	Headquarters	Ministerial order
Administration communale de la Ville de Diekirch, Services industriels	32, route de Larochette L-9254 Diekirch	March 4, 2008
Administration communale de la Ville d'Echternach	B.P.22 L-6401 Echternach	June 30, 2008
Administration communale de la Ville d'Ettelbruck, Service de l'électricité de la Ville d'Ettelbruck	Place de l'Hôtel de Ville L-9002 Ettelbruck	February 7, 2008
Administration communale de Vianden	B.P. 10 L-9401 Vianden	April 18, 2008
ALPIQ Energie France SAS	15-19, rue Louis-le-Grand F-75002 Paris	December 8, 2009
Anode B.V.	Doormanplein 1 NL-2992 BC Barendrecht	April 18, 2008
ArcelorMittal Energy S.C.A.	19, Avenue de la Liberté L-2930 Luxembourg	October 25, 2011
DONG Energy Markets GmbH	Van der Smissen Strasse 9 D-22767 Hamburg	December 7, 2011
EIDA S.A.	6, Jos Seylerstrooss L-8522 Beckerich	February 26, 2008
ELECTRABEL S.A.	25, Boulevard du Régent 8 B-1000 Bruxelles	August 12, 2008
Energie SaarLorLux AG	Richard-Wagner-Strasse 14-16 D-66111 Saarbrücken	April 18, 2008
ENOVOS Luxembourg S.A.	2, rue Thomas Edison L-1445 Strassen	August 13, 2009
E.ON Energy Trading AG	Karlstrasse 68 D-80335 München	February 8, 2008
E.ON Energy Sales GmbH	Karlstrasse 68 D-80335 München	July 2, 2008
GDF SUEZ Trading	1, Place Samuel de Champlain F-92400 Courbevoie	June 27, 2011
Hoffmann Frères S.à.r.l. et Cie S.e.c.s.	25, rue Grande-Duchesse Charlotte L-7501 Mersch	February 26, 2008

Iekker Energie GmbH	Egellstrasse 21 D-13507 Berlin	December 16, 2010
LEO (Luxembourg Energy Office) S.A.	9, boulevard Roosevelt L-2450 Luxembourg	March 9, 2011
Nordenergie S.A.	Place de l'Hôtel de Ville L-9002 Ettelbruck	June 30, 2008
NUON Energy Trade and Wholesale N.V.	Spaklerweg 20 NL-1096 BA Amsterdam	March 4, 2008
Österreichische Elektrizitätswirtschafts-Aktiengesellschaft	Am Hof 6A A-1010 Vienne	July 25, 2008
Pfalzwerke Aktiengesellschaft	Kurfürstenstrasse 29 D-67061 Ludwigshafen	November 6, 2009 amended by Ministerial Decree of January 6, 2010
Statkraft Markets GmbH	Niederkasseler Lohweg 175 D-40547 Düsseldorf	April 18, 2008
Steinergy S.A.	4, Square Patton L-8443 Steinfort	February 8, 2008
Sudgaz S.A.	150, rue Jean-Pierre Michels L-4243 Esch-sur-Alzette	July 30, 2008
Sudstroum S.à r.l. et Co S.e.c.s.	12, rue Xavier Brasseur L-4040 Esch-sur-Alzette	February 26, 2008
Trianel European Energy Trading GmbH	Lombardenstrasse 28 D-52070 Aachen	April 18, 2008
Twinerg S.A.	201, route d'Ehlerange L-4108 Esch-sur-Alzette	June 11, 2008
Verbund AG	Am Hof 6A A-1010 Vienne	July 25, 2008 amended by July 12, 2013

Source: ILR – Updated on July 19, 2013

❖ Gas suppliers

Gas suppliers in Luxembourg are presented in Table XVI.

Table XVI: Gas suppliers in Luxembourg

Gas suppliers	Headquarters	Ministerial order
ArcelorMittal Energy S.C.A.	19, avenue de la Liberté L-2930 Luxembourg	December 4, 2012
Commune de Dudelange	Place de l'Hôtel de Ville L-3401 Dudelange	July 14, 2005
eni gas & power S.A.	Rue Guimard 1A B-1040 Bruxelles	September 10, 2013
Enovos Luxembourg S.A.	2, rue Thomas Edison L-1445 Strassen	September 16, 2009
Gas Natural Europe S.A.S.	40, avenue Hoche F-75008 Paris	April 27, 2010

GDF SUEZ	16-26, rue du Docteur Lancereaux F-75008 Paris	August 20, 2008
LEO (Luxembourg Energy Office) S.A.	9, boulevard Roosevelt L-2450 Luxembourg	August 5, 2011
Luxgas S.à.r.l.	2, rue Thomas Edison L-1445 Strassen	July 20, 2010
Sudgaz S.A.	150, rue Jean-Pierre Michels L-4243 Esch-sur-Alzette	July 14, 2006

Source: ILR – Updated on September 25, 2013

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), 1 person from this category of stakeholders is currently registered as national delegate.

Energy consultants	Person	Level	TC	Designation
ENOVOS Luxembourg S.A.	Roger Rütze	European	CEN/CENELEC/JWG 2	Guarantees of origin and energy certificates

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for energy suppliers. The following table proposes to draw links between subsectors and potential interests of energy suppliers.

Energy suppliers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X	X	X	X	X
Fuels	X	X	X			
Power engineering						
Renewable energy	X	X	X			
Smart grids	X	X	X	X	X	X

- Because of their activities, energy suppliers may have an interest in terms of information and services in all the subsectors related to the energy sector (except "Power engineering").
- Energy suppliers may be concerned by all potential interests identified in the subsectors "Energy management and energy efficiency" and "Smart grids" (focusing on customers and consumers).
- Energy suppliers may be interested in following the subsectors "Fuels" and "Renewable energy" for performance purposes. It could be a chance for them, *via* a participation in standardization activities, to improve or develop competencies through networking and benchmarking in the sector.
- Energy suppliers may be interested to follow the subsector "Fuels" (especially for natural gas) and "Renewable energy" in order to improve or develop their services.

5.2.6. MANUFACTURERS

a) Presentation

The term "manufacturer" was chosen to gather in the same category all companies that manufacture and place on the market products in relation to the energy sector. Indeed, participating in the standardization process could help to enhance their performance.

Some stakeholders of this category are easily identifiable and also presented as examples in this part of the report. However, it is difficult to list all manufacturers potentially concerned by energy aspects. Thus, national organizations representing manufacturers have been identified.

❖ Fedil - Business Federation Luxembourg [30]

The Fedil - Business Federation Luxembourg, "*Fédération des industriels luxembourgeois*" (FEDIL) is a representative business federation covering sectors of industry, construction and business services. This federation performs a mission of information, assistance and advice to its members.

Five working groups, chaired by a member of the Board of Directors and composed of experts selected among member companies, study and prepare the decisions to be taken by the board:

- Economic and Financial Affairs;
- Industrial Affairs;
- Social Affairs;
- Research and development;
- Information Technology and Communication (ICT).

There is a working group "energy" within the group "Industrial Affairs"

❖ Chamber of Commerce of the Grand Duchy of Luxembourg [31]

As a professional chamber, the Chamber of Commerce oof Luxembourg, "*Chambre de commerce du Grand-Duché de Luxembourg*" includes companies of all economic sectors (except crafts and agriculture) and with very different interests. The primary role of the Chamber of Commerce is to defend their interests.

The Chamber of Commerce has a "business area" which aims to guide and advise any new creation or development of a business in Luxembourg.

❖ Luxembourg Trade Confederation [32]

The Luxembourg Trade Confederation, "*Confédération luxembourgeoise du Commerce*" (CLC) is an umbrella organization for 58 professional federations related to trade, transport and services. It is a representative employers' organization at the national level. The Confederation's mission is to inform, advise, represent companies and their interests. CLC is actively involved in promoting national trade in Luxembourg and the Greater Region.

[30] www.fedil.lu
[31] www.cc.lu
[32] www.clc.lu

The CLC aims to be:

- a representative body towards decision-makers and public authorities: it undertakes lobbying actions towards decision-makers at national and European levels;
- an actor of social dialogue: as a business representative organisation at national level, it fulfils several mandates in all areas of a company's everyday life, serving both common and specific interests;
- a special advisor: it maintains close contacts with the business world and identifies practical and customised solutions;
- a promoter of change: it supports a number of initiatives in order to allow its members to benefit from market opportunities, increase their productivity and competitiveness.

Among the federations' members of the Commerce Division, the "*Association des Grossistes en Appareils Sanitaires et de Chauffage du Luxembourg a.s.b.l.*" includes stakeholders potentially interested in the standards analysis of the energy sector.

❖ Examples of manufacturers

Some manufacturers, easily identified, are briefly presented below:

SOLARtech S.à.r.l. develops and manufactures solutions for renewable energy, including photovoltaic. It develops designs and installs energy systems in the roof construction, integrated into the frame of the roof or installed in the ground. It conducts extensive internal research and development activities (R & D) to identify and combine the best components, and to develop innovative management technologies;

Ceodeux-LPGtec (ROTAREX) designs and manufactures valves for cylinders and tanks of liquefied petroleum gas (LPG). Its skills allow to optimize manufacturing processes and materials, while seeking to develop the performance of the products;

Epuramat S.A. markets a treatment unit for anaerobic residues without waste *via* a mobile container for dehydrated residues and waste water purification in the frame of the biogas production process, using a minimum of energy and chemical components;

Estonteco S.à.r.l. developed a complete concept for the creation of an infrastructure to promote countrywide electric mobility. Estonteco is available for all kinds of electrical installation work and provides consultancy services on energy saving issues both in industry and private homes. Estonteco puts also its relevant experience to work in future-oriented projects on electrical mobility, particularly in relation to electronic payment processes, secure data exchange, website development and ergonomics;

L.e.e. (Landwirtschaft, Energie an Emwelt) is specialized in the planning and management of biogas technics. Its activities are centered on the design and management of a "biomethanization" unit.

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), 1 person from this category of stakeholders is currently registered as national delegate.

Manufacturers	Person	Level	TC	Designation
Estonteco S.à.r.l.	Fréderic-Michael Foeteler	International	IEC/TC 69	Electric road vehicles and electric industrial trucks
		International	ISO/TC 22	Road vehicles

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for manufacturers. The following table proposes to draw links between subsectors and potential interests of manufacturers.

Manufacturers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X		X		X
Fuels	X					
Power engineering						
Renewable energy	X	X		X		X
Smart grids	X	X		X		X

- Manufacturers may have an interest to follow the subsectors "Energy management and energy efficiency", "Fuels", "Renewable energy" and "Smart grids" in order to gather information.
- It could be of interest for manufacturers to pay attention to standardization activities in the subsectors "Energy management and energy efficiency", "Renewable energy" and "Smart grids" to increase their performance (*via* networking or benchmarking issues) and perhaps to take also part in interesting research projects (collaboration or partnerships).
- Regarding economic developments, manufacturers may also have interest in terms of investments in the subsectors "Energy management and energy efficiency", "Renewable energy" and "Smart grids".

5.2.7. INSTALLERS

a) Presentation

This category includes installers of energy systems based on fossil fuels (oil and natural gas boilers, air conditioning, etc.) and renewable energy (solar panels, heat pumps, etc.). These stakeholders must constantly learn about new available technologies and associated standards.

Due to the high number of companies related to this category, only national entities coordinating the installers' activities, the Chamber of Trades of the Grand Duchy of Luxembourg and the Federation of Craftsmen (*Fédération des artisans*), are presented in this section of the report.

❖ **Chamber of Trades of the Grand Duchy of Luxembourg** [33]

The Chamber of Trades of the Grand Duchy of Luxembourg, "*Chambre des métiers du Grand-Duché de Luxembourg*" is a professional chamber whose main objectives are to represent and defend the interests of the Luxembourg craft trades. As an organization based in elective and compulsory membership, the "*Chambre des métiers*" is the institutional voice of about 5.000 small and medium enterprises (SMEs).

The Chamber of Trades provides a directory of 800 companies active in the field of renewable energy and energy efficiency (regrouping among others the installers). The label "*Energie fir Zukunft*", issued by the Chamber of Trades, recognizes companies that have acquired the necessary skills after a training cycle focusing on renewable energy and energy efficiency.

In addition, the department "Centre for Promotion and Research" (CPR) fills, alongside the realization of economic and technological studies on SMEs and crafts, support mission and general council, sectoral and individual in areas related to the management of the company innovation, technology transfer and ecology. CPR carries also technical consultancy in the fields of energy efficiency and renewable energy.

❖ **Federation of Craftsmen of the Grand Duchy of Luxembourg** [34]

The Federation of Craftsmen of the Grand Duchy of Luxembourg, "*Fédération des Artisans*" is the umbrella organization for the Luxembourg craft trades involving 51 professional federations. Together with its members, it defines the general policy of the national craft trades to promote, in a second step, among its members and the public.

The Federation of Craftsmen informs and advises, supports secretarial professional member organizations, represents crafts trades in organizations and institutions both nationally and internationally, assists affiliates in negotiating collective agreements and associations representing the interests of small and medium enterprises.

[33] www.cdm.lu
[34] www.fda.lu

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), no one from this category of stakeholders is currently registered as national delegate.

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for installers. The following table proposes to draw links between subsectors and potential interests of installers.

Installers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X	X			
Fuels	X	X	X			
Power engineering						
Renewable energy	X	X	X			
Smart grids	X	X	X			

- Depending on their activities, installers may have interest in following all the subsectors (except "Power engineering") for information, performance and services purposes. The collection of information in general, as well as the development of performance and services, could constitute a main issue for them.

5.2.8. ENERGY CONSULTANTS

a) Presentation

This category includes all stakeholders offering consulting activities in the energy sector. These activities can take different forms depending on the objective and the customers concerned. Energy consultants offer their services for:

- promoting rational use of energy, which means to reduce energy consumption and increase energy efficiency;
- perform energy performance diagnostics;
- improve energy management through studies, measures, controls, (blower-door) testing, thermography, etc.;
- develop an energy concept;
- develop a new production facility.

The large number of players to be found in this category does not allow to list them easily. Therefore, no list has been established. Finally, it is also to consider the recent creation of a federation dedicated to advisors and energy certification companies called the "*Fédération des conseillers et certificateurs énergétiques*" within the Federation of Craftsmen, "*Fédération des Artisans*".

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), 1 person from this category of stakeholders is currently registered as national delegate.

Energy consultants	Person	Level	TC	Designation
EG Energy S.à.r.l.	Emmanuel Glaude	European	CEN/CENELEC/JWG 1	Energy audits

c) Interests to participate in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for energy consultants. The following table proposes to draw links between subsectors and potential interests of energy consultants.

Energy consultants	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X	X		X	
Fuels	X	X	X		X	
Power engineering						
Renewable energy	X	X	X		X	
Smart grids	X	X	X		X	

- Energy consultants may be interested in following all the subsectors (except "Power engineering") for information, performance, services and also for training purposes.
- Energy consultants should be interested in following all the subsectors for information purposes. In order to provide a high level of expertise, they should be informed in all the relevant energy subsectors.
- In addition, they could have an interest in terms of performance and services in following specific standardization technical committees. They could improve the quality of their services and also perhaps develop new services.
- Finally, energy consultants may have an interest in terms of training. They could offer relevant trainings based on standards.

5.2.9. CONFORMITY ASSESSMENT BODIES

a) Presentation

The implementation of the legislation implies the intervention of organizations working with standards and technical specifications. In this report, this term includes:

- the organizations accredited under the Act of April 21, 1993 on the approval of persons or entities public or private, other than the State to carry out technical tasks of investigation and verification in the field of environment;
- the organizations accredited under Ministerial Regulation of May 6, 1996 concerning the involvement of regulators within the powers and functions of the Inspectorate of Labour and Mines (ITM);
- persons accredited under the Grand-Ducal Regulation of February 10, 1999 as amended by the Grand-Ducal Regulation of November 30, 2007 on the energy performance of residential buildings and that of August 31, 2010 on the energy performance of functional buildings.

Under the Act of April 31, 1993, the Department of Environment (Ministry of Sustainable Development and Infrastructure) publishes a list of persons or entities (public or private), other than the State, which have an accreditation to carry out technical tasks of investigation and verification in the field of environment. This accreditation is issued for certain areas of expertise and, more specifically, for some topics.

Fields of expertise considered in the current analysis are:

- *Étude d'impact*: Section E8 "*Audits et études énergétiques*";
- *Réceptions relatives aux autorisations d'exploitation*: Section F1 "*Réception de tout équipement et toute installation mis en œuvre sauf ceux repris sous F2 et F3*"/ Section F11 "*Réceptions d'établissements du domaine industriel*" / Section F111 "*Réceptions d'établissements du domaine artisanal y compris le domaine de compétence F121*" / Section F12 "*Réceptions d'établissements du domaine pétrolier*" / Section F121 "*Réception de réservoirs fixes et de tuyauteries annexes, y compris la mise en place*" / Section F13 "Réceptions d'établissements du domaine des immeubles";
- *Management environnemental et audit*: Section G1 "*Vérificateurs environnementaux dont question au règlement (CE) 761/2001 du 19 mars 2001*".

Table XVII shows the organizations accredited with a potential link to the energy sector.

Table XVII: Accredited organizations in the framework of the law of 21 April 1993

Accredited organizations	Address	Fields of expertise
AIB VINÇOTTE LUXEMBOURG a.s.b.l.	74, Mühlenweg L-2155 Luxembourg	F1, G1
BLS ENERGIEPLAN INGENIEURS-CONSEILS S.À.R.L.	64, rue Charles Martel L-2134 Luxembourg	E8
BUREAU TECHNIQUE LUXEMBOURGEOIS	80, route de Luxembourg L-3515 Dudelange	F1
ENECO S.A.	22, rue Edmond Reuter Zone artisanale Weiergewan L-5326 Contern	F1

ENERGIE ET ENVIRONNEMENT S.A.	99, rue Andethana L-6970 Hostert (Nideranven)	E8, F1
FUGRO ECO CONSULT S.À.R.L.	Zone industrielle L-5366 Münsbach	F13
ITM TECHNOLOGIES	Parc scientifique Créalys 2, Rue Léon Morel B-5032 Gembloux	F121
LUXCONTROL a.s.b.l.	B.P. 350 L-4004 Esch-sur-Alzette	F1
LUXCONTROL S.A.	B.P. 349 L-4004 Esch-sur-Alzette	F1
LUXENVIRONNEMENT S.A.	41, route d'Arlon L-8211 Mamer	E8, F11, F13
NOVATEC G.M.B.H.	26, rue de Mondorf L-5541 Remerschen	F1
PROSOLUT S.A.	6, Wëllemslach L-5331 Moutfort	F11, F111, F13
RMC CONSULTING	312, rue de Cessange L-1321 Luxembourg	E8
SECOLUX a.s.b.l.	77, route d'Arlon L-8310 Capellen	F111, F13, G1
SOCOTEC LUXEMBOURG S.À.R.L.	Rue de Turi L-3378 Livange	F1
TÜV RHEINLAND ENERGIE UND UMWELT G.M.B.H.	Am Grauen Stein D-51105 Köln	E8
TÜV RHEINLAND INDUSTRIE SERVICE G.M.B.H.	Am Grauen Stein D-51105 Köln	E8

Source: www.environnement.public.lu/guichet_virtuel/org_agrees – Updated on August 2013

The involvement of organizations within the powers and functions of the ITM is defined by the Ministerial Regulation of May 6, 1996. The mission of control is to make the necessary checks to ensure the compliance of the works, facilities and equipment both to applicable legal provisions in the field and operating permits issued by the Minister with responsibility for the work as part of the law amended June 10, 1999 on classified establishments. In addition, the recognized organizations are likely to perform any other task assigned by ITM.

Table XVIII presents the companies approved by ITM and potentially affected by the standards analysis of the energy sector.

Table XVIII: Accredited organizations by the Ministerial Regulation of 6 May 1996

Accredited organizations	Address
AIB-VINÇOTTE Luxembourg a.s.b.l.	74 Muehlenweg L-2155 Luxembourg
LUXCONTROL a.s.b.l.	1, avenue des Terres Rouges BP 349 L-4004 Esch-sur-Alzette
SECOLUX a.s.b.l.	77 rte d'Arlon L-8310 Capellen

National legislation on the energy performance of residential buildings[35] and functional buildings[36] introduced minimum requirements and the principle of the buildings' classification for energy efficiency. In order to quantify the compliance of a building with these requirements, an **energy performance certificate** (energy passport) must be established for the given building.

The Grand-Ducal Regulation of February 10, 1999[37] related to the calculation of energy performance certificate defines that persons or entities could be officially recognized for this task. Thus, several lists are regularly updated by the Ministry of the Economy and Foreign Trade. These lists, available on the Ministry of the Economy and Foreign Trade website[38], show three categories of people:

- the persons authorized under the Grand-Ducal Regulation of February 10, 1999;
- consulting engineers (who are still authorized to carry out feasibility studies under Article 5 of the Grand-Ducal Regulation of November 30, 2007);
- architects.

Authorized persons in relation to the energy performance of residential buildings:
List of persons referred to in Article 3 (10) of the Grand-Ducal Regulation of 30 November 2007 on the energy performance of residential buildings - *Updated July 12, 2013*

Authorized persons in relation to the energy performance of functional buildings:
List of persons referred to in Article 4 (11) of the Grand-Ducal Regulation of 31 August 2010 on the energy performance of functional buildings - Energy performance certificates based on the measured energy consumption (existing functional buildings) - *Updated July 12, 2013*

List of persons referred to in Article 4 (11) of the Grand-Ducal Regulation of 31 August 2010 on the energy performance of functional buildings - Energy performance certificates based on the calculated energy requirement (new functional buildings) - *Updated Mai 21, 2013*

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), no one from this category of stakeholders is currently registered as national delegate.

c) Interests in participating in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for conformity assessment bodies. The following table proposes to draw links between subsectors and potential interests of conformity assessment bodies.

[35] Grand-Ducal Regulation of 30 November 2007 on the energy performance of residential buildings
[36] Grand-Ducal Regulation of 31 August 2010 on the energy performance of functional buildings
[37] Explanatory notice relating to the Grand-Ducal Regulation of 10 February 1999 on the approval of persons to establish the calculation and energy performance certificate
[38] http://www.eco.public.lu/attributions/dg6/d_durables/energyefficient

Conformity assessment bodies	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X		X			
Fuels	X		X			
Power engineering	X		X			
Renewable energy	X		X			
Smart grids	X		X			

- Conformity assessment bodies should be interested in following all the subsectors for information purposes (most of them have a clear mission of information).
- In addition, it should also be interesting for them through the follow-up of the specific standardization committees to improve or extend their services.
- Conformity assessment bodies may not have particular interest in terms of performance, projects, training or investments in any identified subsectors.

5.2.10. RESEARCHERS

a) Presentation

CEN and CENELEC are taking into account the numerous EU policy initiatives calling for more links between research and standardization. In order to address this challenge, the CEN and CENELEC Technical Boards agreed in October 2008 on the creation of a joint strategic Working Group to address STAndardization, Innovation and Research, in short: STAIR. The STAIR Group prepares strategic advice to the two Technical Boards in order to reach an integrated approach between research and innovation and standardization[39].

STAIR launched a sectorial 'STAIR Platform'[40]. The STAIR Platform will facilitate dialogue and communication on standardization policy in relation to a specific research subject, between the research and innovation communities and the relevant standardization actors in Europe.

In the framework of STAIR a new informal network has been created, with the aim of bridging the gap between Research, Development and Innovation (RDI) activities and standardization at an operational level: RDI-COR.

RDI-COR will work in close cooperation with the Research Integration Unit at the CEN/CENELEC Management Centre (CCMC), in order to identify project opportunities within FP7, the current EU Framework Programme for research and innovation.

In order to help the national members of CEN and CENELEC get ready for the next waves of calls under FP7 (July 2012) and Horizon 2020 (which will be launched in 2014), the CCMC Research Integration Unit is developing a set of information materials explaining how standards organizations can actively engage with EU research and innovation projects.

Furthermore, ILNAS is member of STAIR and RDI-COR that allows collecting information for the national stakeholders on research projects addressing standardization activities.

Within the Europe 2020 strategy for a smart, sustainable and inclusive economy, the European Commission has launched "Horizon 2020"[41], the EU Framework Programme for Research and Innovation that will run from 2014 to 2020. By the end of 2013 final calls under the 7th Framework Programme (FP7) for Research will be opened to bridge gap towards Horizon 2020. The projects related to energy are identified on the website "HORIZON2020PROJECTS"[42].

In this report, the term "researcher" has been defined to gather in the same category, all entities that conduct research or projects related to the energy sector.

However, this section will only focus on public researchers because it is difficult to identify research activities undertaken in the private sector.

[39] CEN-CENELEC STAIR
[40] STAIR Platform
[41] "Horizon 2020": The EU Framework Programme for Research and Innovation
[42] HORIZON2020PROJECTS - Energy

❖ Public Research Centre Henri Tudor – Resource Centre for Environmental Technologies (CRTE)

Created in 1997 by a cooperation agreement between the Ministry of Environment and the Public Research Centre Henri Tudor, the Resource Centre for Environmental Technologies (CRTE) became operational in 1998.

The main objective of CRTE is to combine the socio-economic development, in Luxembourg and the Greater Region, protection of the environment through an integrated and proactive approach to protecting the environment. Particular attention is given to the sustainable management of flows of matter and energy, as well as projects in the field of environmental technologies.

With a network of multidisciplinary expertise at national and international level, the CRTE has developed three main areas of expertise:

- Multi Assessment and Environmental Management (with the analysis and management of material flows and energy cycle analysis (LCA) of products, processes and services, eco-design, evaluation and management environmental risks);
- Clean Technologies and Process Engineering (instrumentation, control and automation, process optimization through modeling and simulation);
- Environmental Modeling (integrated modeling and meta-modeling, analysis and management of spatial data).

CRTE activities include Research and Development (R&D), doctoral research, scientific advice, technology transfer, training, and awareness. They are associated with one of the following three areas:

- cleaner production;
- renewable energy, rational use of energy;
- urban water cycle.

The Public Research Centre Henri Tudor conducts several projects related to energy, including:

INNERS is a project made up of eleven partners from across North West Europe with the aim of rethinking the urban water cycle to optimize the energy balance of urban water systems. Specific focuses are assessing the energy balance of the urban water cycle, optimizing thermal energy recovery technologies, developing new approaches to operational and chemical energy, and enabling implementation of innovative approaches.

Currently, the energy efficiency of wastewater treatment plants (WWTPs) is assessed based on 'offline' historical data, often years after it was collected. In addition to the outdated nature of this data, there is often a delay before new energy efficiency measures recommended by the assessment can be implemented. In Luxembourg there are numerous wastewater treatment plants that will require optimization over the coming years. In order to assess and optimize these plants using the most accurate data, a new approach is required[43];

LUCAS aims to develop a methodology to assess the indirect consequences of increased biogas production in Luxembourg, focusing on the consequences of indirect land use change linked to biomass cultivation. This methodology will then be used to assess the specific case of biomethane production from maize. To meet the 2020 target, Luxembourg will either need to produce or import

[43] INNERS

more biomass to be used for biogas. The project will simulate the local consequences of increased maize cultivation as well as the worldwide consequences of increased import of maize through a comprehensive model that expands the Life Cycle Inventory to give a global view of the effects of bioenergy use. It will build on the development of a partial economic equilibrium model for Luxembourg's agricultural sector. The model will make it possible to assess changes in land use and the resulting chain of consequences. The results obtained from the model will be used in Consequential Life Cycle Assessment (LCA) of the production of biogas from corn.

The project will also focus on creating public and Governmental awareness of the need for this comprehensive view. Intermediate project results were presented in Luxembourg at the international workshop "Managing Complexity in Land Use and Environmental Impacts Modelling" and in Berlin at the international scientific conference "6th SETAC World Congress", in May 2012[44].

Thanks to the research conducted within the project, LUCAS paved the way for another project called MUSA[45] - "MUlti agent Simulation for consequential Life Cycle Assessment of Agrosystems", also funded by the FNR. Dealing with the same issue from a different angle and with a new approach, it will complete the results from LUCAS.

The European **EINSTEIN II project** (Expert system for an Intelligent Supply of Thermal Energy in INdustry and other large scale applications) is very characteristic in that it includes a section dedicated to the standardization of energy audit tool developed. The results of this project will be operated through projects and new European standards. Normalization in this way to transfer the knowledge gained while standardizing practices associated.

The EINSTEIN II project will go beyond what was achieved in the previous project, setting the following objectives[46]:

- consolidate the EINSTEIN thermal energy audit methodology and extend it to non-industrial uses;
- realize an intensive training programme with relevant actors (energy auditors) in additional countries, including the larger European countries (UK, France, Germany);
- test and validate the improved and consolidated methodology in an audit campaign in the participating countries;
- development of standards and contribution to standardization activities ongoing in the European Committee for Standardization - CEN/CENELEC Sector Forum Energy Management SFEM, in CEN/CENELEC BT TF 189 Energy Management and Related Services – General Requirements and Qualification Procedures, in CEN/CENELEC BT TF 190 Energy Efficiency and Saving Calculations, and in the CEN/CENELEC Joint Working Group Energy audits.

❖ Public Research Centre Gabriel Lippmann (Department EVA)

CRP - Gabriel Lippmann is a public establishment for applied scientific research and technological development and technology transfer and permanent high-level training. Its activities are aimed at strengthening the national economy through the creation of new technological skills and the transfer of know-how to companies.

[44] LUCAS
[45] LUCAS paved the way for another project - *Published on Monday, August 5, 2013*
[46] EINSTEIN II

The structure of the CRP - Gabriel Lippmann is based on three departments[47]:

- the cooperative computing based on ICT, e-commerce, knowledge management are the subject of research and the transfer of skills to ISC (Informatics, Systems and Collaboration Department);
- the study of ecosystems, hydro-climatological monitoring, agro-biotechnology component, is in the context of EVA (Department of Environment and Agro-biotechnologies);
- the analysis of materials at the atomic scale for improvement or development of innovative materials, instrumental development, as well as the recent establishment of a European Centre for Nanotechnology spring SAM (Science and Department analysis of Materials).

Born of Hydrobiology Unit created in 1988, "**Environment and Agro-biotechnologies**" department (EVA) has experienced strong growth and now has more than 100 researchers and technicians. The department has developed into echoing the major challenges of sustainable development, particularly at the national level. For over twenty years, the department supports the actors involved in the development of a system of sustainable management of natural resources and risks. EVA has developed a centre of multidisciplinary expertise in the areas "environment" and "agro-biotechnology." In 2012, the department has implemented an implementation of major research and innovation up to 2020, with a focus on two strategic areas to achieve critical mass and sufficient visibility to become an international player[48].

Department Environment and Agro-biotechnologies (EVA) study the complex mechanisms of how natural and anthropogenic ecosystems and the development of tools to assess ways to save resources and protect the quality. Specialized in the study of plants, the department has two research streams closely related to the energy sector.

The first phase of research is to optimize biomass production systems for use in the production of renewable energy (biogas, bioethanol, biodiesel). Indeed, climate change is causing temperatures to rise in our regions, new climate conditions are in favor of the introduction of new energy plants require less water and more efficient from the point of view photosynthetic. These new cultures must be integrated into sustainable systems of production and benefit agriculture.

The second phase of research is in turn optimizing the transformation of biomass into energy and biomaterials, more easily recyclable than petroleum-derived polymers. The biological process of transformation of biomass into energy is often limited by the poor or slow degradation of lignocellulose by micro-organisms. Whether for biogas or bioethanol, lignocellulose must first be degraded into fermentable molecules (soluble sugars) before being converted to methane or ethanol.

The process of anaerobic digestion (biogas) and fermentation are not fully understood. Thus, the study of parameters that can learn the proper functioning of these processes and their integration into their management tends to improve the yields of these energy systems.

EVA department has a system for assessing the power of various methanogenic substrates from agriculture or from agro-food industries. The main research projects in progress on this topic are ALFABIOPOL, GASPOP, GASPOPTHES, GAZOAL, HYPERSPEC[49].

[47] CRP Gabriel Lippmann
[48] CRP Gabriel Lippmann - Department Environment and Agro-biotechnologies (EVA)
[49] CRP Gabriel Lippmann - Research Projects and technological assistance activities

❖ University of Luxembourg – Research Unit in Engineering Science (RUES)

The University of Luxembourg's research unit in Engineering, "*Université du Luxembourg*", is an interdisciplinary group active in the classical domains of civil, electrical and mechanical engineering. The main focus of research is on:

- the development of technological solutions;
- the sustainable and economical use of all kind of resources;
- the establishment of a centre of expertise for the technological requirements of Luxembourg's industrial and public actors.

The main research activities are cooperative efforts of specialists in the classical engineering domains organized in four main clusters:

- construction & design;
- energy & environment;
- automation & mechatronics;
- geophysics.

Special emphasis is given to numerical simulation to reduce the required experimental effort, but the validation of the models will remain an essential asset. All the treated projects have as well an applied and a fundamental character in engineering research. All research activities are integrated into a network of national, regional and international public and industrial research institutions.

The Research Unit in Engineering includes 23 permanent academic members and several PhD students. The members participate in the curricula of the Bachelor professional with specialization in:

- electro-technics;
- electrical energy systems, Telecommunication;
- energy & Environment;
- civil Engineering and Construction;
- civil Engineering in Town- and Land use planning;
- mechatronics;
- mechanic;
- geophysics.

Furthermore a Bachelor completes the educational offer. Master courses are currently elaborated[50].

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), 1 person from this category of stakeholders is currently registered as national delegate.

[50] Université du Luxembourg – Research Unit in Engineering Science (RUES)

Energy consultants	Person	Level	TC	Designation
CRP Gabriel Lippmann	Frédéric Mayer	International	ISO/TC 255	Biogas

c) Interests in participating in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for researchers. The following table proposes to draw links between subsectors and potential interests of researchers.

Researchers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X		X		
Fuels	X	X		X		
Power engineering	X	X		X		
Renewable energy	X	X		X		
Smart grids	X	X		X		

- Researchers may be interested in following all the subsectors for information and performance purposes. In order to provide a high level of expertise (on the research field), researchers should stay informed in all the energy subsectors.
- In addition, researchers may have an interest in terms of research projects addressing relevant energy topics *via* related standardization activities.
- Because of their activities, researchers may not have particular interest in terms of services, training or investments in any identified subsectors.

5.2.11. TEACHERS & TRAINERS

The category 'Teachers and Trainers' regroups national stakeholders involved in initial training and lifelong learning related to the energy sector.

a) Presentation

❖ **Chamber of Trades of the Grand Duchy of Luxembourg**

The Chamber of Trades of the Grand Duchy of Luxembourg, "*Chambre des métiers du Luxembourg*" organizes specific training modules dedicated to renewable energy and energy efficiency.

The modules aims to upgrade the participants in the various technologies developed for renewable energy and energy efficiency (depending on the facilities and various equipment covered by the Grand-Ducal Regulation of December 21, 2007).

Companies whose employees participated in training courses receive the label "*Energie fir d'Zukunft*"[51]. To date, over 50 companies have been awarded the "*Energie fir d'Zukunft*".

❖ **Institute for training in the construction industry**

The activities of the Institute for training in the construction industry, "*Institut de Formation Sectoriel du Bâtiment*" (IFSB) are organized on the basis of areas of expertise and are as follows:

- implement the system of sectorial training provided in the collective Agreement;
- develop and conduct the relevant technical training;
- offer a multidisciplinary training and multi categories;
- promote the dissemination of technical information, legal and managerial;
- actively participate in the development of innovative projects;
- develop a series of strong partnerships with various national and international actors;
- develop and follow the concept of sustainable construction and social responsibility;
- ensure the promotion and enhancement of sustainable construction trades.

IFSB pursues the concept of sustainable construction and participates in the project FORMIDAD[52] (Integrated Development for a Sustainable Future and Training) which is to develop and adapt a set of courses that integrate the concepts of Sustainable Construction and Energy Performance of Buildings. These courses take into account the requirements for the successful implementation of energy-efficient buildings, as well as the adaptation of technical and safety skills of employees concerning with new materials, equipment and procedures.

IFSB, the professional chambers and myenergy form the consortium in Luxembourg "LuxBuild2020". The project "LuxBuild2020"[53] will prepare Luxemburg's building sector in general and specially the blue collar workers to face the challenges resulting from the 2020 targets. It assembles all important stakeholders to develop a national qualification roadmap.

[51] Energie fir d'Zukunft+
[52] FORMIDAD
[53] LuxBuild2020

From 2017 on the passive house will be the obligatory standard for new constructions in Luxemburg. Building clients would like to build passive already, but doubt to find craftsmen who master the needed skills. The buildup skills initiative can approve these skills and reassure clients that passive house constructions are no field of experiment. A main goal is to increase the acceptance of highly efficient energy performance of buildings and of installations of renewable energies.

The focus will be on the question, how to build up sustainable skills in the building sector, considering the steps:

- understand the status quo (collection of existing data, on-site enquiry);
- describe the main contents and needs of future training programs;
- create a "culture of change";
- sustain the training program:
  - by regular measurements of the results,
  - by continuous motivation for participating in the program.

❖ Energieagence

The Energieagence is an approved as continuing professional education. The Energieagence provides training[54] in the field of passive house, the energy management, energy performance of residential and functional buildings.

The training is a varied as architects, engineers, trades, municipal employees and public administrations, business leaders...

Under the mandate of the Ministry of the Economy and Foreign Trade, Energieagence organizes 3 experts courses about the Grand-Ducal Regulations on the energy performance of residential and functional buildings (energy passport) following:

- training expert residential buildings;
- expert training new and existing functional buildings;
- existing buildings functional training expert.

In collaboration with the Luxembourg School of Commerce (LSC), the Energieagence organizes also a training cycle "Energy efficiency and renewable energy".

❖ Chamber of Trades of the Grand Duchy of Luxembourg – Luxembourg School for Commerce (LSC)

In connection with the energy sector, the Luxembourg School for Commerce (LSC) is currently offering:

- training of electronics energy whose purpose is to plan and implement energy supply facilities. This includes the installation, startup and maintenance of facilities;
- training "Achieve a carbon footprint (Bilan Carbone®): what interest?" This course provides a clear understanding of climate and energy issues and allows to discover a recognized

[54] Program proposed by Energieagence courses

assessment greenhouse gas emission related to a business or an event (industrial site administration building method, company party, etc.);
- a series of "Energy efficiency and renewable energy" training, organized with Energieagence (see previous paragraph).

❖ Public Research Centre Henri Tudor – Resource Centre for Environmental Technologies

The Resource Centre for Environmental Technologies, "*Centre de Ressources des Technologies pour l'Environnement*" (CRTE), part of the Public Research Centre Henri Tudor, develops activities related to eco-innovation to public and private actors at national and international level.

These activities include research and development (R&D), doctoral research, scientific advice, technology transfer, training and awareness.

❖ Luxcontrol S.A.

The company Luxcontrol S.A. offers the following courses related to the field of the energy management:

- the principles of a system of energy management according to ISO 50001;
- Bilan Carbone ®: What for?

❖ University of Luxembourg

The Faculty of Science, Technology and Information is international and multidisciplinary. It currently offers[55] four bachelors and height masters. The three courses listed below seem potentially impacted by standards developments in the energy sector:

Bachelor of Engineering (professional):
The Bachelor (training conducted over 3 years) has 8 different tracks that all have courses related to energy. The sector "Energy and Environment" is particularly full. However at this stage of training, standards are only mentioned, but are not actually treated as a tool.

Bachelor in Science and Engineering (academic):
The Bachelor (training conducted over 3 years) offers three different sectors including industry "engineering" which offers courses related to the energy sector. At this stage of training, standards are only mentioned, but are not actually treated as a tool.

Master in Sustainable Development (professional):
This master (training carried out 2 years after bachelor) offers courses related to the energy sector. At this stage of training, standards are discussed and presented as a tool.

[55] Université du Luxembourg – Bachelors and Masters

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), no one from this category of stakeholders is currently registered as national delegate.

c) Interests in participating in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for teachers and trainers. The following table proposes to draw links between subsectors and potential interests of teachers and trainers.

Teachers and trainers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X				X	
Fuels	X				X	
Power engineering	X				X	
Renewable energy	X				X	
Smart grids	X				X	

- Teachers and trainers may be considered more as standards users than as actors involved in the standardization process. However, they could have some interests in following all the energy subsectors for information and training purposes.

5.2.12. FEDERATIONS & ASSOCIATIONS

a) Presentation

This category presents the main federations and associations having interests and activities related to the energy sector in Luxembourg.

❖ Higher Council for Sustainable Development[56]

The missions of the Board of the Higher Council for Sustainable Development, "*Conseil Supérieur du Développement durable*" (CSDD) are set out in Article 4 of the Law of June 25, 2004. According to the latter, the Board will act as a discussion forum on sustainable development. It will provide research and studies in all areas related to sustainable development. It will establish links with similar committees of the member countries of the European Union.

On the other hand, it will create the largest public and private organizations as well as citizens to achieve these objectives participation.

Finally, it will advise on all measures relating to national sustainable development policy taken or envisaged by the Government, particularly at the national level for sustainable development and the implementation of international commitments of Luxembourg. The Higher Council shall perform the tasks mentioned above on its own initiative or at the request of the Government.

The Higher Council for Sustainable Development meets on average every six weeks in plenary.

In order to better fulfill its mission, the Supreme Council for Sustainable Development has decided to organize its work in the framework of working groups. Currently there are three working groups on the following issues:

- biomass;
- public Finance;
- ecological Footprint;
- what objectives for a national plan for sustainable development and sustainable development indicators?

The secretariat of the CSDD is provided by officials of the Ministry of the Environment.

❖ MyClimateLux[57]

myclimate is a Swiss foundation that is making a significant and innovative contribution to climate protection and sustainable development. myclimate is well-connected globally and is a leading quality provider of climate education and Carbon Management Services. myclimate is also a renowned partner for carbon offsetting solutions via effective carbon offset projects.

MyClimateLux a.s.b.l. was founded in June 2008 by Energieagence, the Public Research Centre Henri Tudor and Enovos Luxembourg.

[56] www.csdd.public.lu
[57] MyClimateLux

The main function of myclimatelux is to offer the following products and services to Luxembourg-based companies and private households:

- creating awareness of the causes and effects of climate change;
- advising companies how to work towards reducing greenhouse gases;
- assistance with voluntary emissions reduction;
- carrying out climate protection projects in Luxembourg.

The activities of the association concentrate primarily on programmes and projects initiated to reduce greenhouse gases, from 2002 onwards. In this context, myclimatelux has now also entered into a partnership agreement with the Swiss foundation The Climate Protection Partnership.

❖ Greenpeace Luxembourg[58]

Greenpeace campaigned on several issues in the fight against climate change. Through various expeditions, Greenpeace is working to document the impacts of climate change and to give a voice to those affected by these populations.

At the political level, Greenpeace fights for the entry into force of the Kyoto Protocol and ambitious commitments from countries having ratified it. Greenpeace also fighting against energy waste and the development of renewable energy sources such as solar and wind energy.

❖ Mouvement écologique a.s.b.l.[59]

The activities of this organization is to publish positions, develop new ideas, submit concrete proposals for sustainable development, evaluate bills, get involved in business licensing procedures or change plans urbanization, engage for liveable towns and for greater democracy.

The Ecological Movement also takes concrete actions such as "Environment Week" in which projects in the field of sustainable development are presented throughout the country, or the "Energy Week" offering visits or renovated buildings, energy efficient homes.

In July, the Ecological Movement and natur&ëmwelt published, as national organizations of the environment, a position on the implementation of Government policy on renewable energy, particularly in relation to decision into account criteria for protection of the natural environment.

❖ natur&ëmwelt[60]

natur&ëmwelt is the main organization for the protection of nature and environment in Luxembourg, which includes a non-profit foundation:

- natur&ëmwelt a.s.b.l.
- natur&ëmwelt Foundation Hëllef fir d'Natur.

The association conducts a number of national and international projects.

[58] Greenpeace Luxembourg
[59] http://mouvement.oeko.lu
[60] www.naturemwelt.lu

❖ Eurosolar Luxembourg a.s.b.l.[61]

EUR solar Lëtzebuerg a.s.b.l. is a section of Euro Solar eV (European Association for Renewable Energy). Euro Solar is a nonprofit founded in 1988, European Association for Renewable Energies (www.eurosolar.org), independently of political parties, institutions, corporations and interest groups.

Eurosolar Luxembourg a.s.b.l. fills promotion missions through information, education and public relations. It is responsible include:

- the organization of conferences, workshops, seminars and exhibitions;
- the creation of working groups;
- the publication of information (hardware);
- the launch of new studies.

Note: The 8th International Renewable Energy Storage Conference and Exhibition (IRES 2013)[62] will be organized by Euro Solar eV. The event will be held at the Berliner Congress Center, November 18-20, 2013. The conference series has emerged as the central platform for sharing knowledge and exchanging ideas on one of the key issues of future energy supply, having attracted more than 3,100 participants since its beginnings in 2006.

❖ Votum Klima[63]

"Votum Klima" is an initiative of "Caritas Luxembourg", "Action Solidarité Tiers Monde", "Ecological Movement and Greenpeace", to show that the climate and energy shift of Luxembourg is possible. The slogans include reducing the consumption of fossil fuels, promotion, development and use of process energy efficient production and investment in new technologies, renewable energy, clean energy buildings and energy advice.

❖ Elektromobiliteit.lu[64]

www.elektromobiliteit.lu is a platform for exchange and communication on electric mobility. Dedicated to electromobility, the targets are:

- provide innovative solutions for Luxembourg as well as recommendations for the direction of national policy;
- for end users, the platform provides a centralized point of official contact with its members through optimal knowledge to provide professional advice on electric mobility;
- inform, share expertise and develop a national and international networking;
- propose a technology and business intelligence available to members.

[61] www.eurosolar.lu
[62] 8th International Renewable Energy Storage Conference and Exhibition (IRES 2013)
[63] Votum Klima
[64] Elektromobiliteit.lu

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), no one from this category of stakeholders is currently registered as national delegate.

c) Interests in participating in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for federations and associations. The following table proposes to draw links between subsectors and potential interests of teachers and trainers.

Federations and associations	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X					
Fuels	X					
Power engineering	X					
Renewable energy	X					
Smart grids	X					

- Federations and associations may have interest in following all the subsectors (depending on the scope of the federation or association) for information purposes (in order to disseminate information to the members). The collection of information could constitute a general concern for them.

5.2.13. CUSTOMERS & CONSUMERS

The category "Customers & Consumers" of the energy sector regroups homes, cities, communities, administrations and businesses.

a) Presentation

Although there may be an interest to be informed on standards developments in the sector, participation of these stakeholders in the standardization process seems very limited, except maybe for energy-intensive businesses. Thus, in the standards analysis of the national energy sector, the "Customers & Consumers" category refers mainly to businesses which may use standardization to reduce their energy consumption and comply with relevant legal requirements. The energy-intensive activities in Luxembourg are essentially:

- the steel production;
- the clinker production (cement);
- the glass production;
- the aviation sector.

b) Current national delegates

Based on the national register of standardization delegates (version 63 of September 17, 2013), 1 person from this category of stakeholders is currently registered as national delegate.

Manufacturers	Person	Level	TC	Designation
ArcelorMittal S.A.	Joël Leroy	European	CEN/TC 264/WG 33	Air quality; Greenhouse gas (GHG) emissions in energy-intensive industries

c) Interests in participating in the standardization process

Based on the results of the standards watch, several subsectors of the energy sector have been identified as relevant for customers and consumers. The following table proposes to draw links between subsectors and potential interests of customers and consumers.

Customers & Consumers	Information	Performance	Services	Projects	Training	Investments
Energy management and energy efficiency	X	X				
Fuels	X	X				
Power engineering	X	X				
Renewable energy	X	X				
Smart grids	X	X				

- Customers and consumers (mainly focused on energy-intensive businesses) may be interested in following all the subsectors for information and performance purposes.

6. OPPORTUNITIES FOR THE NATIONAL MARKET

The main purpose of this analysis is to increase the participation of the national stakeholders in the standardization activities. Previous steps of the standards analysis have permitted the identification and selection of standardization technical committees in terms of being current, dynamic and strategic and, through a link with the different stakeholder categories involved in the energy sector in Luxembourg, to point out potential interests for the national players to follow standardization activities. Then, thanks to the potential interests identified for each stakeholder category, opportunities for the national market dedicated to the energy sector can be identified and recommended in this report. Indeed, based on common interests shared between different categories of stakeholders, opportunities for future developments in order to give an answer to these identified needs can be proposed.

The following matrix (Figure 7), encompassing the overall categories, provides a clear picture of all potential interests shared between the national stakeholders. This matrix intends to help in proposing opportunities for the market by identifying the common interests of the national market.

Figure 7: Global matrix

Energy sector	Subsector 1 Energy management & energy efficiency	Subsector 2 Fuels	Subsector 3 Power engineering	Subsector 4 Renewable energy	Subsector 5 Smart grids
Public institutions	◆■□$	◆■□$	◆■□$	◆■□$	◆■□$
Energy Producers	◆■□$	◆■❖□$	◆■❖□$	◆■❖□$	◆■□$
Transmission and distribution system operators	◆■❖□○$	◆■❖$	◆	◆	◆■❖□○$
Energy suppliers	◆■❖□○$	◆■❖	-	◆■❖	◆■❖□○$
Manufacturers	◆■□$	◆	-	◆■□$	◆■□$
Installers	◆■❖	◆■❖	-	◆■❖	◆■❖
Energy consultants	◆■❖○	◆■❖○	-	◆■❖○	◆■❖○
Conformity assessment bodies	◆❖	◆❖	◆❖	◆❖	◆❖
Researchers	◆■□	◆■□	◆■□	◆■□	◆■□
Teachers & Trainers	◆○	◆○	◆○	◆○	◆○
Federations & Associations	◆	◆	◆	◆	◆
Customers & Consumers	◆■	◆■	◆■	◆■	◆■

◆ Information ■ Performance ❖ Services □ Projects ○ Training $ Investments

Based on the matrix, it appears that the majority of stakeholders share some common interests covering all the energy subsectors. For these common interests, therefore, opportunities for the market can be identified and proposed for discussion.

Of course, the opportunities that are listed below are only proposals. They are therefore submitted for comment to the national stakeholders of the energy sector.

❖ Hosting a national forum dedicated to standards developments

Based on the common interest identified for all the stakeholder categories in terms of need of information, the hosting of a national platform dedicated to the energy sector could be an interesting initiative. This "Energy Standardization Forum" conducted by ILNAS could be the place for the respective stakeholders to collect, share, and exchange information and knowledge related to the energy sector in terms of standards development.
It could be an interesting opportunity to create a group encompassing members that would like to follow in more detail information related to the standardization work realized in the energy sector. ILNAS, helped by ANEC GIE, would conduct this forum and when possible would transmit pertinent and useful information to the members.

This platform could share some activities with the EcoInnovation Cluster of Luxinnovation, a national initiative already in place to facilitate the exchange between players acting in the energy, environment and sustainable development sectors.

❖ Supporting national delegates involved in standardization

In being the Luxembourg's national standards body, one of the missions of ILNAS is to provide support to national delegates and to coordinate the activities of the different committees at the national level. These duties are of primary importance and well stated in the national standardization strategy[65] through the following objectives:

- Ensure the sector-based economic approach of the "*Organisme Luxembourgeois de Normalisation*" (pillar III);
- Provide support to technical committees and delegates in standardization (role of the ANEC GIE) (pillar V).

Thus, a result expected from the standards analysis focusing on the energy sector is to raise awareness and increase the participation of the Luxembourg stakeholders in standardization technical committees, either at a European or an international level, in this sector.

Based on the identification of needs for new standards, ILNAS would provide specific support to stakeholders' initiatives to engage the development of new standards. Luxembourg could like this be a key player at the European and international level in the development of new standards and take the lead in innovative fields and emerging related services.

[65] http://www.ilnas.public.lu/fr/publications/normalisation/etudes-nationales/ilnas-strategie-normalisation-2010-2020.pdf

❖ Providing services in relation to standards evolutions

ILNAS, with the support of ANEC GIE, developed products and services related to standardization in order to give an answer to the expectations of the national stakeholders of the sector.

Products and services in relation to standards and their development are proposed to the energy sector; they consist of, among others, a standards' watch focusing on a specific subsector (such as smart grids or a thematic search associating regulatory requirements and standardization duties), a standardization diagnostic which is a tool for evaluating a standardization knowledge in a company or the creation of an online standards shop in order to access standards easily (ILNAS e-shop[66]).

❖ Following research projects involving standardization

If the energy sector was identified as a promising sector for the national economic market by the Minister of the Economy and Foreign Trade, this is partly because a lot of projects in this domain are initiated in Europe and around the world.

As mentioned by the CENELEC[67], many EU calls for research and innovation place standardization as a key activity, deliverable, or expected outcome of future projects. In the energy sector, compliance with requirements is of great importance. So it might be extremely worthwhile for researchers carrying out projects to participate in standardization work. It would help researchers in preparation and project activities, in the codification of the state of the art. Taking into account standards when conducting projects ensures the compliance of the project results with regulatory requirements (e.g. Directive 2012/27/EU on energy efficiency), and it can also enhance the interoperability, comparability, and compatibility of the project results with what already exists.

With the support of ILNAS, national stakeholders of the energy sector could have opportunities to be involved in these research projects.

❖ Strengthen the existing training offers for the sector

Modules dedicated to standardization in the field of energy have been integrated as a service from ILNAS and ANEC GIE. These modules deal with five main objectives: understanding standardization applied to the energy sector, knowing issues of standardization in the field of energy, identifying relevant standards for its activity, finding out how to participate in standardization and finally studying a specific standard. "By training the trainers" on standardization activities and development related to this sector, it would guarantee that the trainers, and thus the trainees, would be in line with the state of the art at the European and international levels.

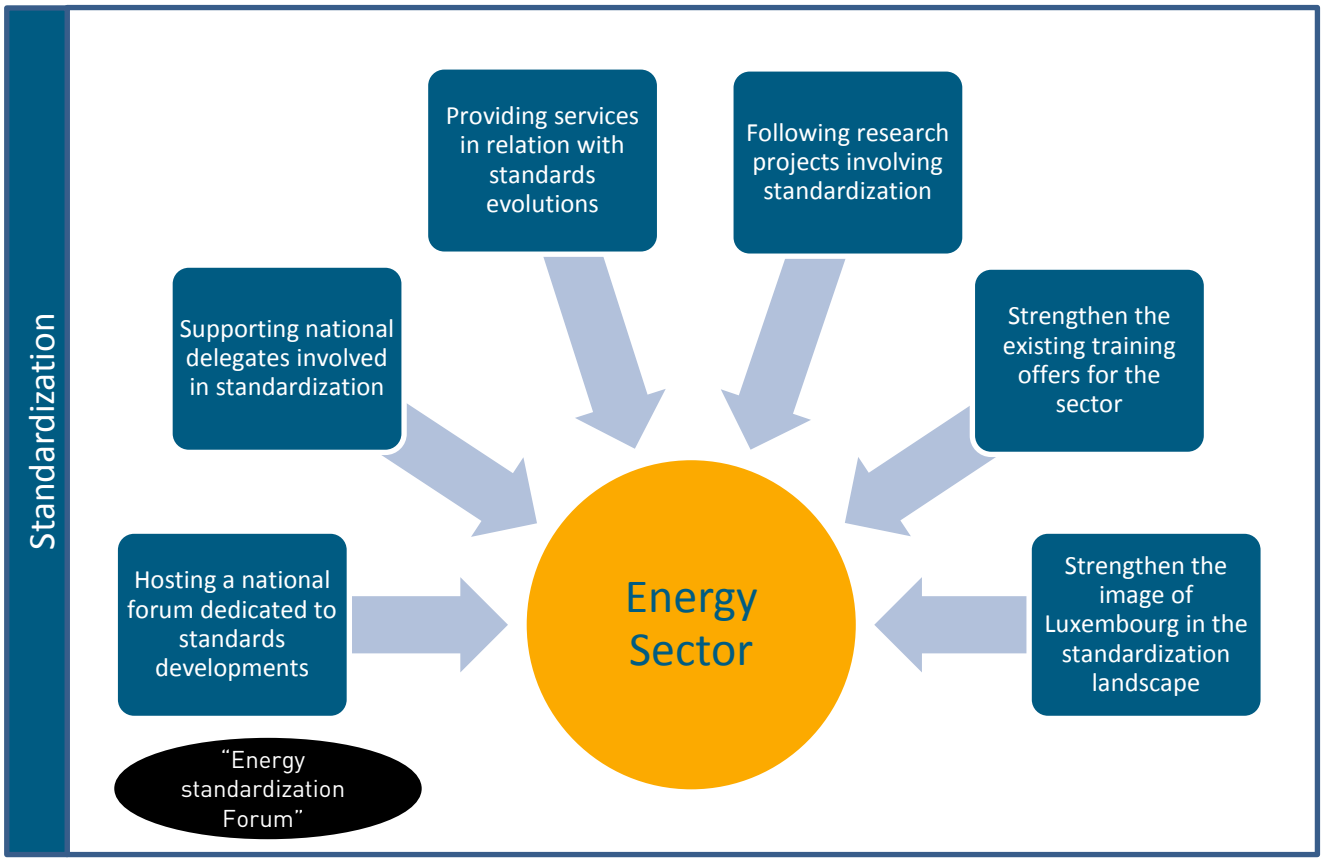
❖ Strengthen the image of Luxembourg in the standardization landscape

Through an enhancement of the participation in the standardization work and the implementation of the opportunities listed above, Luxembourg should strengthen its presence in the standardization field and significantly improve its image at the European and international levels.

[66] https://ilnas.services-publics.lu
[67] http://www.cencenelec.eu/News/Publications/Publications/LinkingResearch.pdf

To summarize, opportunities identified for the national market related to the standardization activities of the energy sector are illustrated in Figure 8.

Figure 8: Opportunities for the national market



As long as the stakeholders of the sector wish to seize these opportunities, ILNAS, supported by ANEC GIE, will provide an active contribution and support.

In being Luxembourg's national standards body, ILNAS offers the possibilities to national stakeholders to follow specific standardization works of technical committees, either at the European or international level.

ILNAS supports interested persons in their participation in standardization activities through appropriate information and training. Therefore, resources from ILNAS and ANEC GIE are specifically dedicated to these aspects and are able to efficiently support and inform the future national delegates.

7. SELECTED STANDARDIZATION TECHNICAL COMMITTEES IN DETAIL (STANDARDS WATCH)

As stated before, the technical committees were classified into five different subsectors:

- Subsector 1: Energy management and energy efficiency
- Subsector 2: Fuels
- Subsector 3: Power engineering
- Subsector 4: Renewable energy
- Subsector 5: Smart grids

The different ID-Cards are thus following this classification.

Note: The information contained in the ID-Cards was extracted on September 30, 2013.

7.1. SUBSECTOR 1 – ENERGY MANAGEMENT & ENERGY EFFICIENCY

"What simple tool offers the entire world an extended energy supply, increased energy security, lower carbon emissions, cleaner air and extra time to mitigate climate change? Energy efficiency. What's more, higher efficiency can avoid infrastructure investment, cut energy bills, improve health, increase competitiveness and enhance consumer welfare – all while more than paying for itself." says Mrs Maria van der Hoeven, Executive Director of the International Energy Agency (IEA), as first words of introduction from the IEA Energy report (Issue 4 – Spring 2013)[68].

On October 25, 2012, the EU adopted the Directive 2012/27/EU on energy efficiency[69].

This Directive establishes a common framework of measures for the promotion of energy efficiency within the Union in order to ensure the achievement of the Union's 2020 20 % headline target on energy efficiency and to pave the way for further energy efficiency improvements beyond that date. It lays down rules designed to remove barriers in the energy market and overcome market failures that impede efficiency in the supply and use of energy, and provides for the establishment of indicative national energy efficiency targets for 2020[70].

The biggest remaining problem is probably that energy efficiency can be achieved in so many ways, requiring so many individual decisions, and that it will take some time to make all the changes in a building or an industry. "Energy efficiency is not difficult but it is complicated!" Energy management (in a general sense) has to be developed in many forms and for many purposes[71].

For this subsector, 20 standardization technical committees were identified as interesting (8 at a European level and 12 at an international level).

[68] http://www.iea.org/media/ieajournal/Issue4_WEB.pdf
[69] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:315:0001:0056:EN:PDF
[70] http://ec.europa.eu/energy/efficiency/eed/eed_en.htm
[71] European competitiveness and energy efficiency: Focusing on the real issue - European Council for an Energy Efficient Economy (eceee) with support from Energifonden.

7.1.1. CEN/CENELEC Sector Forum on Energy Management (SFEM)

General information			
Committee	**SFEM**	**Title**	**Sector Forum on Energy Management**
Creation date	2006	**MEMBERS** 	Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Ireland, Italy, **Luxembourg**, Netherlands, Norway, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, USA.
Secretariat	AFNOR (France)		
Secretary	Mrs. Crozet		
Convenor	Mr. Gindroz		
Involvement of Luxembourg	**Mr. B. Dorard, ANEC GIE** **Mr. F. Hencks (Luxembourg)** **Mr. G. Perrodin, Property partners**		
Organizations in liaison	EU, ISO, AFECOR, AIE, ANEC GIE, CECED, CEFACD, CONCAWE, ECOS, CSNPE, EHI, EURELECTRIC, EURIMA, IEA, MARCOGAZ, PU Europe		
Web site	-		
Scope	The Sector Forum on Energy Management acts as an advisory and coordinating body to the CEN and CENELEC BTs on political and strategic matters related to this field. It is designed: - to maintain and enlarge the network of partners created during the lifetime of the CEN/CENELEC BT JWG "Energy Management", especially with regards to new members; - to initiate further investigation and to evaluate in which field or for which subject, further standardization work is needed and including subjects identified as Priority B or C by the former CEN/CENELEC BT JWG "Energy Management"; - to coordinate on-going European Standardization activities concerning Energy Management and energy efficiency; - to organize the CEN and CENELEC response to European legislation and Europe general strategy in the energy management and energy efficiency sector; - to maintain the exchange of information, experience and prospecting especially on the initiatives in course in the different countries or at European level.		
Structure	The access to the forum is opened to all. There is no obligation to send a request to a national standardization body. - CEN/CENELEC JWG1 Energy audits - CEN/CENELEC JWG2 Guarantees of origin and Energy certificates - CEN/CENELEC JWG3 Energy Management and related services - CEN/CENELEC JWG4 Energy efficiency and saving calculation		

Standardization work	
Published standards	SFEM has no vocation to publish standards
Standards under development	SFEM has no vocation to publish standards

Comments
Mr. Hencks is registered as national delegate appointed by the Ministry of the Economy and Foreign Trade. CEN/CENELEC Sector Forum 'Energy Management' (SFEM) organized its last annual seminar under the theme 'Global Energy Challenge and Energy Transition – The role of Energy Management and related standards'. The event was hosted by the EFTA Secretariat in Brussels on September 18, 2012[72]. The next seminar is scheduled to take place in January 30, 2014.

[72] CEN/CENELEC Sector Forum 'Energy Management' (SFEM) Seminar 2012

7.1.2. CEN/CENELEC/JWG 1 Energy audits

General information			
Committee	**CEN/CENELEC/JWG 1**	**Title**	**Energy audits**
Creation date	2009	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	BSI (United Kingdom)		
Secretary	Mr. D. I. Hyde		
Chairperson	Mr. M. Fry		
Involvement of Luxembourg	**Mr. E. Glaude, EG Energy S.à.r.l.**		
Organizations in liaison	EINSTEIN II Project		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=700835&title=Energy%20audits		
Scope	This workgroup was created within the framework of the Sector Forum on Energy Management, further to the recommendations of the workgroup "Energy audits". The Article 12 of the Directive 2006-32 "Energy end-use efficiency and energy services" makes reference to the point: "ensure the availability of efficient, high-quality energy audit schemes which are designed to identify potential energy efficiency improvement measures and which are carried out in an independent manner, to all final consumers, including smaller domestic, commercial and small and medium-sized industrial customers." So the theme of the energy audits was identified as person who has right of way by Sector Forum on Energy Management (SFEM).		
Structure	-		
Standardization work			
Published standards	1		
Standards under development	- prEN 16247-2: Energy audits - Part 2: Buildings - prEN 16247-3: Energy audits - Part 3: Processes - prEN 16247-4: Energy audits - Part 4: Transport - prEN 16247-5 : Energy audits - Part 5: Competence of energy auditors		
Comments			
The first meeting of the Joint working group took place on September 11, 2009. The Part 1 is dealing with general aspects of energy audits (public inquiry began on February 24, 2011 and ends on July 24, 2011). The standard EN 16247-1:2012 'Energy audits' – Part 1 : General requirement, has been published in July 2012. The working groups begin Parts 2, 3 and 4 which deal respectively with specific recommendations in the areas of buildings, industrial processes and transport. The last meeting was held in Cyprus on the June 5, 2013. The members decided considering the urgency of developing a standard prEN 16247-5 'Energy Audits' to submit comments on the document WD2 prEN 16247-5 'Energy audits' – Part 5: Competence of energy auditors, by 26th August in advance of the 2nd meeting of TG6 at BSI on October 22 and 23, 2013, when it is hoped that a finalized version of the draft ready for CEN Enquiry can be agreed. As the next step for prENs 16247-2, -3 and -4 is Formal vote. No meeting date for a JWG1 meeting has been set.			

7.1.3. CEN/CENELEC/JWG 2 Guarantees of origin and Energy certificates

General information			
Committee	**CEN/CENELEC/JWG 2**	**Title**	**Guarantees of origin and Energy certificates**
Creation date	2010	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	SIS (Sweden)		
Secretary	Ms S. Björk		
Chairperson	Mr. I. Pierre		
Involvement of Luxembourg	**Mr. R. Rütze, Enovos Luxembourg S.A.**		
Organizations in liaison	AIB		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/TCStruc.aspx?param=763502&title=Guarantees%20of%20origin%20and%20Energy%20certificates		
Scope	CEN-CLC/JWG 2 Guarantees of origin and Energy certificates works on European standardization on guarantees of origin for trading and/or disclosure/labeling of electricity and CHP (co-generation of heat and power) and on energy certificates.		
Structure	-		
Standardization work			
Published standards	2		
Standards under development	- EN 16325:2013/prA1: Guarantees of Origin related to energy - Guarantees of Origin for Electricity No (-) Under Approval 2014-04		
Comments			
Following the conclusions of a working group on Energy certificates within the CEN-CENELEC Sector Forum on Energy Management and the organization by CEN and CENELEC of a seminar on 'Guarantees of origin and Energy certificate systems' on April 23, 2008, SIS (Swedish Standards Institute) submitted a proposal for new standardization work in this area to CEN and CENELEC in December 2009. The CEN and CENELEC Technical Boards have approved this proposal and as a result a new CEN-CENELEC Joint Working Group was created in April 2010. The European Standard EN 16325:2013 was published on February 22, 2013. It specifies requirements for Guarantees of Origin of electricity from all energy sources. This standard will establish the relevant terminology and definitions, requirements for registration, issuing, transferring and cancellation in line with the RES, Cogeneration and IEM Directives. This standard will also cover measuring methods and auditing procedures. These Guarantees of Origin (GO) may be traded and/or used for Disclosure/Labelling. The content of this standard can, for example, be applied, after necessary modifications, to heating, cooling, and gas (including biogas). These modifications are not part of this standard. This European Standard will not establish any sustainability criteria, this work is done elsewhere. This standard is suitable for certification purposes.			

7.1.4. CEN/CENELEC/JWG 3 Energy Management and related services – General requirements and qualification procedures

General information			
Committee	**CEN/CENELEC/JWG 3**	**Title**	**Energy Management and related services – General requirements and qualification procedures**
Creation date	2009	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	UNI (Italy)		
Secretary	Mr. M. Panvini		
Chairperson	Mr. E. Piantoni		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	-		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=738432&title=Energy%20Management%20and%20related%20services%20%20General%20requirements%20and%20qualification%20procedures		
Scope	This working group (formerly CEN / CENELEC / BT / TF 189 Energy Management and related services General requirements and qualification procedures) was established under the Energy Sector Management Forum, following the recommendations of the working group "Benchmarking methodologies on energy use in industry and other Subsectors." The JWG 3 aims to develop European standards for energy management and related services: - Systems Energy Management: definition and recommendations; - Energy Service Companies: definition, recommendations and qualification.		
Structure	-		
Standardization work			
Published standards	3		
Standards under development	-		
Comments			
- EN 15900:2010 Energy efficiency services - Definitions and requirements: This standard was developed to meet a need in the market and in the framework of Directive 2006/32/EC, and the action plan of the European Community Action Plan 20-20-20 - EN ISO 50001:2011 Energy management systems - Requirements with guidance for use (ISO 50001:2011) (replaces EN 16001:2009 Energy management systems - Requirements with guidance for use) - EN 16231 Energy efficiency benchmarking methodology. The goal is to establish a benchmarking best practice for energy efficiency			

Mr. Panvini, secretary, says: "since JWG 3 is not an independent TC but a CEN/CLC JWG with a specific mandate now finished, we don't have any program in the short time. Probably the first step we'll be asked to solve will be the revision of EN 15900 in 2015 when the first five years will be finished. Another possibility is to work (under Vienna agreement) to the revision of ISO 50001 but for this ISO/TC 242 has to start the process. Within this framework and without any other input coming from members we don't have any meeting scheduled in 2013 and in the first half of 2014, but we are ready to meet again if any new need arises."

7.1.5. CEN/CENELEC/JWG 4 Energy efficiency and saving calculation

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>CEN/CENELEC/JWG 4</td><td>Title</td><td>Energy efficiency and saving calculation</td></tr>
<tr><td>Creation date</td><td>2009</td><td rowspan="5">MEMBERS
  </td><td rowspan="5">33 members of CEN/CENELEC</td></tr>
<tr><td>Secretariat</td><td>NEN (Netherlands)</td></tr>
<tr><td>Secretary</td><td>Mr. B. Dijkstra</td></tr>
<tr><td>Chairperson</td><td>Mr. JL. PLazy (France)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>-</td><td colspan="2"></td></tr>
<tr><td>Web site</td><td colspan="3">http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=738433&title=Energy%20efficiency%20and%20saving%20calculation</td></tr>
<tr><td>Scope</td><td colspan="3">Standards for common methods of calculation of energy consumption, energy efficiencies and energy savings and for a common measurement and verification of protocol and methodology for energy use indicators.</td></tr>
<tr><td>Structure</td><td colspan="3">-</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">1</td></tr>
<tr><td>Standards under development</td><td colspan="3">-</td></tr>
<tr><th colspan="4">Comments</th></tr>
<tr><td colspan="4">This JWG was previously entitled “CEN/CENECLEC BT/TF 190”

The standard EN 16212:2012 Energy Efficiency and Savings calculation, has been published on the 28th February 2013. The scope of the standard is: “This European Standard provides a general approach for energy efficiency and energy savings calculations with top-down and bottom-up methods. The general approach is applicable for energy savings in buildings, cars, appliances, industrial processes, etc. This European Standard covers energy consumption in all end-use sectors. The standard does not cover energy supply, e.g. in power stations, as it considers only final energy consumption. This European Standard deals with savings on energy supplied to end-users”.</td></tr>
</table>

7.1.6. CEN/TC 264 Air quality / WG33 Greenhouse gas (GHG) emissions in energy-intensive industries

General information			
Committee	**CEN/TC 264/WG 33**	**Title**	**Air quality / Greenhouses (GHG) emissions in energy-intensive industries**
Creation date	2008	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	DIN (Germany)		
Secretary	Dr. R. Neuroth		
Chairperson	Dr. T. Hafkenscheid		
Involvement of Luxembourg	**Mr. Hencks (Luxembourg) CEN/TC 264 & WG 33** **Mr. Leroy, ArcelorMittal S.A. CEN/TC 264/WG 33**		
Organizations in liaison	-		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=6245&title=Air%20quality		
Scope	The general public and/or the environment can be exposed to hazardous substances in air, which occur naturally or are released by industrial processes, household appliances, transport or products. These hazardous substances can be very toxic, harmful, odorous or corrosive, be irritants, sensitizers, carcinogenic, mutagenic, teratogenic, or pathogenic. Therefore, the presence of these substances in air, emissions to air, and in indoor air needs to be limited. To be able to measure the concentrations of air pollutants, inter alia showing compliance with limit values, monitoring the environment, demonstrating efficiency of abating equipment, standardization of measurement methods is necessary to realize consistency throughout Europe. CEN/TC 264 prepares standards as tools, which allow the air quality to be measured and to obtain comparable results. This is an ongoing process because of political changes and increase of knowledge concerning the influence of air pollutants on human health and the environment. These changes lead to new pollutants to be measured and lower concentration levels of known air pollutants, continuously requiring new standards. Political changes and developments in toxicology can influence what are deemed to be safe levels of air quality for the public or the environment.		
Structure	-		
Standardization work			
Published standards	0		
Standards under development	-		

Comments

Mr. Neuroth, secretary, confirms the following points. In WG 33 (with its 6 Sub Groups) the following 6 draft Standards are under preparation at the moment: Stationary source emissions — Determination of Greenhouse gas (GHG) emissions in energy-intensive industries —.

Part 1: General Aspects / Part 2: Steel Industry / Part 3: Cement Industry / Part 4: Aluminium industry / Part 5: Lime Industry / Part 6: Ferro-alloy Industry

The preparation of the six standards is based on verification tests at five plant types in Europe and started in spring this year. It is to be expected that the Draft Standards will be published in summer 2014.

7.1.7. CEN/TC 320 Transports – Logistics and services / WG 10 Energy consumption and GHG emissions in relation to transport services

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>CEN/TC 320/WG 10</td><td>Title</td><td>Transports – Logistics and services / Energy consumption and GHG emissions in relation to transport services</td></tr>
<tr><td>Creation date</td><td>2008</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">33 members of CEN/CENELEC</td></tr>
<tr><td>Secretariat</td><td>NEN (Netherlands)</td></tr>
<tr><td>Secretary</td><td>Mr. A. Carlebur</td></tr>
<tr><td>Chairperson</td><td>Mr. R. van Bockel</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>-</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=6301&title=Transport%20-%20Logistics%20and%20services</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization of a common methodology (general rules) for the calculation, declaration and reporting on energy consumption and GHG emissions of transport services to provide coherent measurement rules for energy consumption and GHG emissions declarations for goods or passengers transport operations carried out by companies on behalf of another[73].</td></tr>
<tr><td>Structure</td><td colspan="3">-</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">1</td></tr>
<tr><td>Standards under development</td><td colspan="3">-</td></tr>
<tr><th colspan="4">Comments</th></tr>
<tr><td colspan="4">The standard EN 16258:2012 specifies a methodology for calculation and declaration of energy consumption and GHG emissions of transport services (freight and passengers). The standard was published in June 2013.</td></tr>
</table>

[73] http://www.cen.eu/cen/Sectors/Sectors/TransportAndPackaging/Railway/Documents/Cottignies.pdf

7.1.8. CEN/TC 371 Project Committee – Energy Performance of Building

General information			
Committee	**CEN/TC 371**	**Title**	**Project Committee Energy Performance of Building**
Creation date	2008	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	NEN (Netherlands)		
Secretary	Mrs. A. van der Horn		
Chairperson	Mr. J. Hogeling		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	EPEE		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=628909&title=Project%20Committee%20-%20Energy%20Performance%20of%20Building%20project%20group		
Scope	This standard provides a systematic, comprehensive and modular overall structure on the integrated energy performance of buildings, in order to ensure consistency among all CEN standards required to calculate the energy performance of buildings according to the EPBD (2010/31/EU).		
Structure	- CEN/TC 371/WG 1 EPBD Standards group		
Standardization work			
Published standards	1		
Standards under development	- prEN 15603: Energy performance of buildings - Overarching standard EPBD No (2010/31/EU) Under Approval 2015-02 - FprCEN/TR 15615: rev Explanation of the general relationship between various European standards and the Energy Performance of Buildings Directive (EPBD) - Umbrella Document No (2010/31/EU) Under Approval 2014-06 - FprCEN/TS 16628: Energy Performance of Buildings - Basic Principles for the set of EPBD standards No (2010/31/EU) Under Approval 2014-06 - FprCEN/TS 16629: Energy Performance of Buildings - Detailed Technical Rules for the set of EPB-standards No (2010/31/EU) Under Approval 2014-06		

Comments

To support the implementation of the directive 2010/31 EU (Energy Performance of Buildings Directive - EPBD), recast of directive 2002/91/EC, the European Commission issued in December 2010 a Standardization Mandate M/480 to CEN, CENELEC and ETSI for the elaboration and adoption of standards for a methodology calculating the integrated energy performance of buildings and promoting the energy efficiency of buildings. The horizontal coordination of the work under M/480 has been allocated to CEN/TC 371 - "Project Committee - Energy Performance of Building project group". The horizontal coordination of the work under M/480 has been allocated to CEN/TC 371 - "Project Committee - Energy Performance of Building project group".

Five CEN technical committees have been assigned the task of developing the required standards:

- CEN/TC 89 Thermal performance of buildings and building components;
- CEN/TC 156 Ventilation for buildings;
- CEN/TC 169 Light and lighting;
- CEN/TC 228 Heating systems in buildings;
- CEN/TC 247 Building automation, controls and building management.

The standard EN 15603:2008 Energy performance of buildings - Overall energy use and definition of energy ratings was published in July 2008.

The next meeting will be Wednesday March 5, 2014 in Delft or Brussels.

7.1.9. IEC/TC 69 Electric road vehicles and industrial trucks

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>IEC/TC 69</td><td>Title</td><td>Electric road vehicles and industrial trucks</td></tr>
<tr><td>Creation date</td><td>1969</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (28):
Croatia, Finland, France, Hungary, India, Ireland, Israel, Italy, Japan, Republic of Korea, Luxembourg, Malaysia, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Singapore, Slovakia, South Africa, Spain, Sweden, Ukraine, United Kingdom, USA

Observing Countries (12):
Belgium, Australia, Austria, Brazil, Bulgaria, Canada, China, Czech Republic, Denmark, Egypt, Germany, Switzerland</td></tr>
<tr><td>Secretariat</td><td>CEB BEC (Belgium)</td></tr>
<tr><td>Secretary</td><td>Mr. P. van des Bossche (Belgium)</td></tr>
<tr><td>Chairperson</td><td>Mr. Bleijs (France)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>Mr. F-M. Foeteler, Estonteco S.à.r.l.</td></tr>
<tr><td>Organizations in liaison</td><td>-</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:1255,25</td></tr>
<tr><td>Scope</td><td colspan="3">To prepare international standards for road vehicles, totally or partly electrically propelled from self-contained power sources, and for electric industrial trucks.</td></tr>
<tr><td>Structure</td><td colspan="3">Working Groups
- WG 2 Motors and motor control systems
- WG 4 Power supplies and chargers

Project Teams
- PT 61851-23 Electric vehicle charging station
- PT 61851-24 Electric vehicles conductive charging system - Part 24: Control communication protocol between off-board d.c. charger and electric vehicle
- PT 62831 User identification in Electric vehicle Service Equipment using a smartcard
- PT 62840 Electric vehicle battery exchange infrastructure safety requirements

Joint Working Groups
- JWG 1 Vehicle to Grid Communication Interface (V2G CI)
- JWG 69 Li - TC21/SC21A/TC69 - Lithium for automobile/automotive applications Managed by TC 21
- JWG 69 Pb-Ni - TC 21/SC 21A/TC 69 - Lead Acid and Nickel based systems for automobile/automotive applications Managed by TC 21

Joint Project Teams
- JPT 61851- linked to ISO/TC 22
- JPT 61980-1 Electric vehicle wireless power transfer systems linked to ISO/TC 22/SC 21</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">8</td></tr>
</table>

Standards under development	- IEC 61851-1 Ed. 3.0: Electric vehicle conductive charging system - Part 1: General requirements - IEC 61851-21 Ed. 2.0: Electric vehicle conductive charging system - Part 21: Electric vehicle requirements for conductive connection to an a.c./d.c. supply - IEC 61851-21-1 Ed. 1.0: Electric vehicle conductive charging system - Part 21-1 Electric vehicle onboard charger EMC requirements for conductive connection to a.c./d.c. supply - IEC 61851-21-2 Ed. 1.0: Electric vehicle conductive charging system - Part 21-1: EMC requirements for OFF board electric vehicle charging systems - IEC 61851-23 Ed. 1.0: Electric vehicle conductive charging system - Part 2-3: D.C electric vehicle charging station - IEC 61851-24 Ed. 1.0: Electric vehicle conductive charging system - Part 24: Digital communication between a dc EV charging station and an electric vehicle for control of d.c. charging - IEC 61851-3-1 Ed. 1.0: Electric Vehicles conductive power supply system - Part 3-1: General Requirements for Light Electric Vehicles (LEV) AC and DC conductive power supply systems - IEC 61851-3-2 Ed. 1.0: Electric Vehicles conductive power supply system - Part 3-2: Requirements for Light Electric Vehicles (LEV) DC off-board conductive power supply systems - IEC 61851-3-3 Ed. 1.0: Electric Vehicles conductive power supply system - Part 3-3: Requirements for Light Electric Vehicles (LEV) battery swap systems - IEC 61851-3-4 Ed. 1.0: Electric Vehicles conductive power supply system - Part 3-4: Requirements for Light Electric Vehicles (LEV) communication - IEC 61980-1 Ed. 1.0: Electric vehicle wireless power transfer systems (WPT) - Part 1: General requirements - IEC 61980-2 Ed. 1.0: Electric equipment for the supply of energy to electric road vehicles using an inductive coupling - Part 2: Manual connection system using a paddle - IEC 61981 Ed. 1.0: On board electric power equipment for electric road vehicles - IEC 62763 Ed. 1.0: Pilot function through a control pilot circuit using PWM modulation and a control pilot wire - IEC 62831 Ed. 1.0: User identification in Electric vehicle Service Equipment using a smartcard - IEC 62840 Ed. 1.0: Electric vehicle battery exchange infrastructure safety requirements - ISO 15118-3 Ed. 1.0: Road vehicles - Vehicle to grid Communication Interface - Part 3: Physical and data link layer requirements - ISO/IEC 15118-1 Ed. 1.0: Road vehicles - Vehicle to grid communication interface - Part 1: General information and use-case definition - ISO/IEC 15118-2 Ed. 1.0: Road vehicles - Vehicle-to-Grid Communication Interface - Part 2: Technical protocol description and Open Systems Interconnections (OSI) layer requirements - ISO/IEC 15118-3 Ed. 1.0: Road Vehicles - Vehicle to grid communication interface - Part 3: Physical layer and Data Link layer requirements - ISO/IEC 17409 Ed. 1.0: Electrically propelled road vehicles - Connection to an external electric power supply - Safety specifications - PNW 69-235 Ed. 1.0: (Future IEC 61980-3): Electric vehicle wireless power transfer (WPT) systems - Part 3 specific requirements for the magnetic field power transfer systems. - PNW 69-243 Ed. 1.0: Electric Double-Layer Capacitors for automotive applications - Test Methods for Electrical Characteristics, Life-Time and Durability, Environmental Performance and Safety - PNW/TS 69-234 Ed. 1.0: (Future IEC 61980-2): Electric vehicle wireless power transfer (WPT) systems - Part 2 specific requirements for communication between electric road vehicle (EV) and infrastructure with respect to wireless power transfer (WPT) systems - PWI 69-1 Ed. 1.0: Electric vehicle conductive charging system - Part 24: Communication protocol between off-board charger and electric vehicle - PWI 69-2 Ed. 1.0: Battery exchange infrastructure

Comments
International standardization of electrotechnology for road vehicles (i.e.: the related equipment including electrical and electronic systems and components) is the scope of this ISO/IEC agreement concerning standardization of electrotechnology for road vehicles and the cooperation between ISO/TC22[74] "Road vehicles" and IEC technical committees. In order to ensure the optimal use of expertise in both organizations, ISO and IEC, this agreement defines the allocation of standardization work between the related committees (ISO/TC 22 and IEC committees) using the existing modes of cooperation cited in ISO/IEC Directives, Part 1 clause B.4.2.2.

[74] http://www.iso.org/iso/mou_ev.pdf

7.1.10. IEC/TC 120 Electrical Energy storage (EES) Systems

General information			
Committee	**IEC/TC 120**	**Title**	**Electrical Energy storage (EES) Systems**
Creation date	2012	**MEMBERS** 	**Participating Countries (14)**: Japan, Australia, Austria, Canada, China, Denmark, France, Germany, Italy, Republic of Korea, South Africa, Spain, Switzerland, USA **Observing Countries (7)**: Brazil, Czech Republic, Iraq, Israel, New-Zealand, Poland, Saudi Arabia
Secretariat	JISC (Japan)		
Secretary	Mr. Hideki Hayashi		
Chairperson	Mr. Eric Wolf		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	-		
Web site	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:9463,25		
Scope	Standardization in the field of grid integrated EES system implementing system approaches to understand their complex constructions.		
Structure	-		
Standardization work			
Published standards	0		
Standards under development	-		
Comments			
Recognizing that the proportion of Renewable Energy (RE) is likely to increase in all major electricity markets, but that large-scale incorporation of RE into existing electricity grids remains complex, the IEC has created IEC/TC 120: EES (Electrical Energy Storage) Systems. RE integration into grid is paramount. The aim of the new TC 120 is to accelerate the integration of RE into the grid and to enable a more reliable and efficient supply of electrical energy. As successful RE integration depends on Electrical Energy Storage, small and big centralized and decentralized EES systems will become increasingly important to meet growing global energy needs. EES systems will also become a crucial element of Smart Grids. With them utilities will be able to store more energy for ulterior consumption. Utilities will also be able to maintain a reliable energy supply by controlling fluctuations in energy demand and support users during network failures. Finally, EES will allow utilities to adjust power quality, frequency and voltage. Overall EES will make energy supply more efficient[75].			

[75] http://www.iec.ch/etech/2012/etech_1112/tc-3.htm

7.1.11. ISO/TC 22 Road vehicles

General information			
Committee	**ISO/TC 22**	**Title**	**Road vehicles**
Creation date	1947	**MEMBERS** 	**Participating Countries (25)**: France, Armenia, Austria, Belarus, Belgium, Brazil, Canada, China, Germany, India, Islamic Republic of Iran, Italy, Japan, Kenya, Republic of Korea, **Luxembourg**, Malaysia, Netherlands, Philippines, Russian Federation, Saudi Arabia, Spain, Sweden, Switzerland, United Kingdom, USA **Observing Countries (45)**: Algeria, Argentina, Australia, Bosnia and Herzegovina, Bulgaria, Cameroon, Colombia, Costa Rica, Croatia, Cuba, Czech Republic, Denmark, Egypt, Finland, Greece, Hong Kong, Hungary, Iceland, Indonesia, Ireland, Israel, Kazakhstan, Democratic People's Republic of Korea, Libya, Republic of Moldova, Mongolia, New Zealand, Norway, Oman, Pakistan, Poland, Portugal, Qatar, Romania, Serbia, Singapore, Slovakia, South Africa, United Republic of Tanzania, Thailand, Tunisia, Turkey , Ukraine, Viet Nam
Secretariat	AFNOR (France)		
Secretary	Mrs. Michèle Maitre		
Chairperson	Mr. Michel Potvin		
Involvement of Luxembourg	**Mr. F-M. Foeteler, Estonteco S.à.r.l.**		
Organizations in liaison	CLEPA, EC, FIMITIC, IMMA, OICA, UN, UNECE, WCO, WHO		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=46706		
Scope	All questions of standardization concerning compatibility, interchangeability and safety, with particular reference to terminology and test procedures (including the characteristics of instrumentation) for evaluating the performance of the following types of road vehicles and their equipment as defined in the relevant items of Article 1 of the convention on Road Traffic, Vienna in 1968 concluded under the auspices of the United Nations: mopeds (item m); motor cycles (item n); motor vehicles (item p); trailers (item q); semi-trailers (item r); light trailers (item s); combination vehicles (item t); articulated vehicles (item u).		
Structure	- ISO/TC 22/WG 1 Piston rings - ISO/TC 22/JWG 1 Joint ISO/TC 22-IEC/TC 79 WG : Alarm systems for road vehicles - ISO/TC 22/WG 5 Car radio - ISO/TC 22/WG 9 Piston pins - ISO/TC 22/WG 12 Tyre pressure monitoring - ISO/TC 22/WG 14 Mobile Air Conditioning (MAC) Systems - ISO/TC 22/WG 15 Commercial vehicles - Tyre pressure monitoring - ISO/TC 22/SC 1 Ignition equipment - ISO/TC 22/SC 2 Braking systems and equipment - ISO/TC 22/SC 3 Electrical and electronic equipment - ISO/TC 22/SC 4 Caravans and light trailers - ISO/TC 22/SC 5 Engine tests - ISO/TC 22/SC 7 Injection equipment and filters for use on road vehicles - ISO/TC 22/SC 8 Lighting and light-signaling - ISO/TC 22/SC 9 Vehicle dynamics and road-holding ability - ISO/TC 22/SC 10 Impact test procedures		

	- ISO/TC 22/SC 11 Safety glazing materials - ISO/TC 22/SC 12 Passive safety crash protection systems - ISO/TC 22/SC 13 Ergonomics applicable to road vehicles - ISO/TC 22/SC 15 Interchangeability of components of commercial vehicles and buses - ISO/TC 22/SC 17 Visibility - ISO/TC 22/SC 19 Wheels - ISO/TC 22/SC 21 Electrically propelled road vehicles - ISO/TC 22/SC 22 Motorcycles - ISO/TC 22/SC 23 Mopeds - ISO/TC 22/SC 25 Vehicles using gaseous fuels **Joint working groups under the responsibility of another committee** - ISO/TC 43/SC 1/WG 27 Joint TC 43/SC 1-TC 22 WG Effect of temperature on tyre/road noise testing - ISO/TC 43/SC 1/WG 42 Joint TC 43/SC 1-TC 22 WG Measurement of noise emission (external) from road vehicles - ISO/TC 146/SC 6/WG 13 Joint between ISO/TC 146/SC 6 and ISO/TC 22 WG Determination of volatile organic compounds in car interiors
Standardization work	
Published standards	769
Standards under development	**Projects under the direct responsibility of ISO/TC 22/SC 21 Secretariat: Electrically propelled road vehicles** - ISO/DIS 6469-4: Electrically propelled road vehicles -- Safety specifications -- Part 4: Post crash electrical safety requirements - ISO/DIS 12405-3: Electrically propelled road vehicles - Test specification for Lithium-ion traction battery packs and systems -- Part 3: Safety performance requirements; - ISO/DIS 17409: Electrically propelled road vehicles -- Connection to an external electric power supply -- Safety requirements - ISO/NP 18300: Electrically propelled road vehicles -- Specifications for lithium-ion cell and battery coupled with other types of battery and capacitor; - ISO/DIS 23828: Fuel cell road vehicles - Energy consumption measurement -- Vehicles fuelled with compressed hydrogen - ISO/IEC CD 62752: In cable control and protective device for mode 2 charging of electric road vehicles -- (IC-RCD) **Projects under the direct responsibility of ISO/TC 22/SC 22 Secretariat: Motorcycles** - ISO/AWI 6460-2: Motorcycles -- Measurement method for gaseous exhaust emissions and fuel consumption -- Part 2: Test cycles and specific test conditions; - ISO/CD 18580: Motorcycles -- Verification of total running resistance force during mode running on a chassis dynamometer. Projects under the direct responsibility of ISO/TC 22/SC 23 Secretariat: Mopeds - ISO/NP 13062: Electric mopeds and motorcycles - Terminology and classification - ISO/CD 18243: Electrically propelled mopeds and motorcycles -- Specifications and safety requirements for lithium-ion traction battery systems - ISO/CD 18246: Electrically propelled mopeds and motorcycles -- Principles and requirements for conductive charging -- Vehicle safety during charging from mains, grid and/or stationary external energy supply **Projects under the direct responsibility of ISO/TC 22/SC 25 Secretariat: Vehicles using gaseous fuels** - ISO/DIS 12614-1: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 1: General requirements and definitions - ISO/DIS 12614-2: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 2: Performance and general test methods - ISO/DIS 12614-3: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 3: Check valve - ISO/DIS 12614-4: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 4: Manual valve

- ISO/DIS 12614-5: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 5: Tank pressure gauge
- ISO/DIS 12614-6: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 6: Overpressure regulator
- ISO/DIS 12614-7: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 7: Pressure relief valve
- ISO/DIS 12614-8: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 8: Excess flow valve
- ISO/DIS 12614-9: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 9: Gas-tight housing and ventilation hose
- ISO/DIS 12614-10: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 10: Rigid fuel line in stainless steel
- ISO/DIS 12614-11: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 11: Fittings
- ISO/DIS 12614-12: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 12: Rigid fuel line in material other than stainless steel
- ISO/DIS 12614-13: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 13: Pressure control regulator
- ISO/DIS 12614-14: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 14: Differential pressure fuel content gauge
- ISO/DIS 12614-15: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 15: Capacitance fuel content gauge
- ISO/DIS 12614-16: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 16: Heat exchanger - vaporizer
- ISO/DIS 12614-17: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 17: Natural gas detector
- ISO/DIS 12614-18: Road vehicles -- Liquefied natural gas (LNG) fuel system components -- Part 18: Gas temperature sensor
- ISO/DIS 12617: Liquefied natural gas vehicles -- Connector for reflueling vehicles
- ISO/FDIS 12619-1: Road vehicles -- Compressed gaseous hydrogen (CGH2) and hydrogen/natural gas blend fuel system components -- Part 1: General requirements and definitions
- ISO/FDIS 12619-2: Road vehicles -- Compressed gaseous hydrogen (CGH2) and hydrogen/natural gas blend fuel system components -- Part 2: Performance and general test methods
- ISO/FDIS 12619-3: Road vehicles -- Compressed gaseous hydrogen (CGH2) and hydrogen/natural gas blend fuel system components -- Part 3: Pressure regulator
- ISO/AWI 14469-1: Road vehicles -- Compressed natural gas (CNG) refuelling connector -- Part 1: 20 MPa (200 bar) connector
- ISO/AWI 14469-2: Road vehicles -- Compressed natural gas (CNG) refuelling connector -- Part 2: 20 MPa (200 bar) connector, size 2
- ISO/AWI 14469-3: Road vehicles -- Compressed natural gas (CNG) refuelling connector -- Part 3: 25 MPa (250 bar) connector
- ISO/WD 15500-1: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 1: General requirements and definitions
- ISO/WD 15500-7: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 7: Gas injector
- ISO/WD 15500-8: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 8: Pressure indicator
- ISO/WD 15500-10: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 10: Gas-flow adjuster
- ISO/WD 15500-11: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 11: Gas/air mixer
- ISO/WD 15500-12: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 12: Pressure relief valve (PRV)
- ISO/WD 15500-15: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 15: Gas-tight housing and ventilation hose
- ISO/WD 15500-20: Road vehicles -- Compressed natural gas (CNG) fuel system components -- Part 20: Rigid fuel line in material other than stainless steel
- ISO/DIS 16380: Road Vehicles -- Blended Fuels Refueling Connector

Comments

ISO/IEC agreement concerning standardization of electrotechnology for road vehicles and the cooperation between iso/tc 22 "road vehicles" and iec technical committees[76].

The allocation of work between IEC and ISO is based on the agreed principle that all questions relating to international standardization in the electrical and electronic engineering fields are reserved to IEC, the other fields being reserved to ISO, as stipulated in ISO/IEC Directives Part 1 Annex B. Accordingly, the emergence of electrically propelled vehicles is the basis for two industries, road vehicle industry and electrical energy providers, in the past separated, to converge. This presents the need for new assessment of the standardization efforts between ISO and IEC. The purpose of this agreement is to create a framework of cooperation between ISO/TC 22 and IEC TCs/SCs using the existing modes of cooperation cited in Annex B clause B.4.2.2 to define the responsibilities of ISO and IEC for the standardization of electrotechnology for road vehicles. This agreement shall be fully applicable for all current and future technologies that are relevant for road vehicles.

The agreement aims to ensure an effective and professional development of standards for road vehicles and to avoid duplication in standardization. It shall support efficient work processes, because the availability of experts from all partners and resources for standardization are limited.

It is essential that standards for road vehicles can be used by their respective vehicle industries and that they are applicable in all international markets. Therefore ISO/TC 22, which has the standards development responsibility for road vehicles, and IEC, which has standards development responsibility for the electrotechnical area, are important collaboration partners in the development of standards related to electrically propelled vehicles.

For the specific case of an externally chargeable vehicle, when in the road position (not being connected to a source of external electrical energy), standards shall be generally considered as being under the responsibility of ISO/TC 22. When connected to an external source of electrical energy, the standards that apply to electrical equipment used in similar circumstances are applicable.

[76] http://www.iso.org/iso/mou_ev.pdf

7.1.12. ISO/TC 118 Compressors and pneumatics tools, machines and equipment /SC 6 - Air compressors and compressed air systems

General information			
Committee	**ISO/TC 118/SC 6**	**Title**	**Compressors and pneumatics tools, machines and equipment**
Creation date	2003	**MEMBERS** 	**Participating Countries (13)**: Belgium, Brazil, China, France, Germany, Italy, Republic of Korea, Netherlands, Russian Federation, Saudi Arabia, Sweden, United Kingdom, USA **Observing Countries (4)**: New Zealand, Poland, Romania, Ukraine
Secretariat	SIS (Sweden)		
Secretary	Ms. Lena Fagervall		
Chairperson	Mrs Jenny Buck		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	CAGI, EC, ICAAMC, ILO, PNEUROP, WCO		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=51850		
Scope	The growth of industry throughout the world creates new opportunities for compressors and power tools in both large and small industrial organizations. The handling and maintaining of compressors ought to be more safe and easy, as they are long-lasting products, especially the small ones used by non-professional users. Control systems tend to be more sophisticated, such as energy management systems, remote control and monitoring, and open the possibilities to keep the parameters within more narrow limits. New requirements on energy effectiveness put more demanding requirements on control systems. Increased concern about the environment has resulted in regulatory requirements in several countries and the disposal of used machines and of contaminants from compressed air receives particular attention. In many of these areas, the standards of ISO/TC 118 fulfill important functions, providing fair bases for the specification of compressors, for the comparison of similar equipment, as well as the ability to compare characteristics and performance of equipment based on different technologies.		
Structure	- ISO/TC 118/SC 1 Process compressors - ISO/TC 118/SC 3 Pneumatic tools and machines - ISO/TC 118/SC 4 Compressed air purity specification and compressed air treatment equipment - ISO/TC 118/SC 6 Air compressors and compressed air systems		
Standardization work			
Published standards	9		
Standards under development	- ISO/CD 18623-1: Air compressors and compressed air systems -- Air compressors -- Part 1: Safety requirements - ISO/WD 18623-2: Air compressors and compressed air systems -- Compressed air systems -- Part 2: Good practice - ISO/AWI 18740: Turbocompressors -- Performance test code -- Complementary to ISO 5389		

Comments
The standard ISO 11011:2013 was published in August 2013. ISO 11011:2013 sets requirements for conducting and reporting the results of a compressed air system assessment that considers the entire system, from energy inputs to the work performed as the result of these inputs[77]. The next TC118 meeting (in conjunction with subcommittees) is planned to be held from 10th to 14th March, 2014 in London. The ISO/TC118-plenary meeting will be held the last day, March 14.

[77] http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=46580

7.1.13. ISO/TC 163/WG4 Joint working group between ISO/TC 163 and ISO/TC 205: Energy performance of building using holistic approach

General information			
Committee	**ISO/TC 163/WG 4**	**Title**	**Energy performance of building using holistic approach**
Creation date	2009	**MEMBERS** 	Austria, Belgium, Canada, China, Denmark, Egypt, Finland, France, Germany, India, Japan, Korea, Netherlands, Norway, Russian Federation, South Africa, Sweden, Switzerland, United Kingdom, USA
Secretariat	NEN (Netherlands)		
Secretary	Mrs. Klaas De Winkel		
Co-convenors	Mr. Dick van Dijk Prof. Dr. Essam E. Khalil		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	CIE, EAA, EURIMA, FESI, OIML, UNECE		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=53476		
Scope	Energy performance of buildings using holistic approach.		
Structure	-		
Standardization work			
Published standards	0		
Standards under development	- ISO/AWI 17772 Energy performance of buildings - Indoor environmental input parameters - ISO/NP 18523 Energy performance of buildings -- Schedules and conditions of built environment zones and room usage for energy calculation		
Comments			

Further to the work carried out by the WG 4, the followings standards have been published by the technical committee ISO/TC 163

- ISO 12655:2013 Energy performance of buildings -- Presentation of measured energy use of buildings;
- ISO 16343:2013 Energy performance of buildings -- Methods for expressing energy performance and for energy certification of buildings;
- ISO 16346:2013 Energy performance of buildings -- Assessment of overall energy performance

The technical report ISO/TR 16344:2012 Energy performance of buildings -- Common terms, definitions and symbols for the overall energy performance rating and certification was also published in October 2012.

The last meeting has been held in Stockholm, Sweden on the 9th and 10th of September 2013.

7.1.14. ISO/TC 207 Environmental management/ SC7 Greenhouse gas management and related activities

General information			
Committee	**ISO/TC 207/SC7**	**Title**	**Greenhouse gas management and related activities**
Creation date	2007	**MEMBERS** 	**Participating Countries (56)**: Canada, China, Argentina, Australia, Austria, Belgium, Brazil, Chile, Colombia, Costa Rica, Czech Republic, Côte d'Ivoire, Denmark, Egypt, Finland, France, Germany, India, Indonesia, Iraq, Ireland, Italy, Japan, Jordan, Kenya, Republic of Korea,, Kuwait, Lebanon, Libya, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Norway, Poland, Portugal, Russian Federation, Saudi Arabia, Serbia, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syrian Arab Republic , United Republic of Tanzania,, Thailand, Trinidad and Tobago, Tunisia, United Kingdom, USA, Uruguay, Yemen, Zimbabwe **Observing Countries (17)**: Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Hong Kong, Islamic Republic of Iran, Israel, State of Palestine, Qatar, Romania, Rwanda, Saudi Arabia, Slovakia, Sudan, Swaziland, Uganda, Ukraine
Secretariat	SCC (Canada) twinned with SAC (China)		
Secretary	Mr. Jose Luis Hernandez		
Chairperson	Dr. Kook Weng Chan		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	ANEC, APO, CEPI, CI, EC, ECOLOGIA, ECOS (Europe), EDF, EEB, ENEP, FIDIC, GEN, IAF, IAI, IAQ, ICC, IISD, INEM, INLAC, IQNet, ITC, OECD, SIERRA Club, UNCTAD, UNEP, UNFCCC, WBCSD, WFSGI, WHO, WRI, WTO, World Steel Association		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=546318		
Scope	Standardization in the field of greenhouse gas management.		
Structure	- ISO/TC 207/SC 7/WG 4 Quantification and reporting of greenhouse gas emissions and removals at organizational level - ISO/TC 207/SC 7/WG 5 Quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements for projects - ISO/TC 207/SC 7/WG 6 Validation and verification of greenhouse gas assertions and bodies for use in accreditation or other forms of recognition		
Standardization work			
Published standards	7		
Standards under development	-		
Comments			
The next meeting of ISO TC207/SC7 will held during the week of May 25, 2014 in Panama City.			

7.1.15. ISO/TC 242 Energy Management

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 242</td><td>Title</td><td>Energy management</td></tr>
<tr><td>Creation date</td><td>2008</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (50):
Brazil, USA, Argentina, Australia, Barbados, Brazil, Canada, Chile, China, Colombia, Denmark, Ecuador, Egypt, Finland, France, Germany, India, Indonesia, Islamic Republic of Iran, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Republic of Korea, Malaysia, Mauritius, Mexico, Morocco, Namibia, Netherlands, Nigeria, Norway, Pakistan, Peru, Poland, Portugal, Russian Federation, Saint Lucia, Singapore, South Africa, Spain, Sweden, Thailand, Tunisia, Turkey, United Kingdom, Uruguay, Yemen, Zimbabwe

Observing Countries (18):
Belgium, Bosnia and Herzegovina, Bulgaria, Costa Rica, Croatia, Czech Republic, Greece, Hong Kong, Iceland, Montenegro, Romania, Serbia, Slovakia, Sri Lanka, Switzerland, Tajikistan, Trinidad and Tobago, Zambia</td></tr>
<tr><td>Secretariat</td><td>ANSI (USA) twinned with ABNT (Brazil)</td></tr>
<tr><td>Secretary</td><td>Mr. Jason Knopes</td></tr>
<tr><td>Chairperson</td><td>Mr. Roland Risser</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>EVO, IPIECA, OLADE, UNIDO, WEC</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=558632</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization in the field of energy management, including for example: energy efficiency, energy performance, energy supply, procurement practices for energy using equipment and systems, and energy use as well as measurement of current energy usage, implementation of a measurement system to document, report, and validate continual improvement in the area of energy management.</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/TC 242/CAG Chairman advisory group
- ISO/TC 242/TG 1 Task Group MSS
- ISO/TC 242/WG 1 Energy Management
- ISO/TC 242/WG 2 Energy performance metrics
- ISO/TC 242/WG 3 Joint TC 242 - TC 257 WG: Measurement & verification of organizational energy performance - General principles and guidelines
- ISO/TC 242/WG 4 Opportunities for Improvement

Joint working groups under the responsibility of another committee
- ISO/TC 257/JWG 4 Joint TC 257-TC 242 WG: General calculation methods on energy efficiency and savings for organizations and other enterprises</td></tr>
</table>

Standardization work	
Published standards	1
Standards under development	- ISO/DIS 50002: Energy audits - ISO/DIS 50003: Energy management systems -- Requirements for bodies providing audit and certification of energy management systems - ISO/CD 50004: Energy management systems -- Guidance for the implementation, maintenance and improvement of an energy management system - ISO/CD 50006: Energy baseline and energy performance indicators (EnPIs) -- General principles and guidance - ISO/DIS 50015: Energy management systems -- Energy management systems - Measurement and Verification of Organizational Energy Performance -- General Principles and Guidance

Comments

Published in June 2011, ISO 50001 has experienced a rapid international uptake and is already implemented in 44 countries worldwide.

Announcing the award winner, ISO President, Dr. Boris Aleshin, pointed out that energy is critical to organizational operations and can be a major cost to organizations, whatever their activities. In addition to the economic costs of energy to an organization, energy can impose environmental and societal costs by depleting resources and contributing to problems such as climate change.

"Individual organizations cannot control energy prices" he said, "but they can improve the way they manage their energy consumption. Improved energy performance can provide rapid benefits for an organization by maximizing the use of its energy sources and energy-related assets.

"ISO 50001 provides a framework for industrial plants; commercial, institutional, or Governmental facilities; or entire organizations to manage energy. Targeting broad applicability across national economic sectors, it is estimated that the standard could influence up to 60 % of the world's energy use."

ISO identified energy management as one of the top five fields for the development of international standards and in 2008 created a project committee, ISO/PC 242, Energy management, to carry out the work. ISO/PC 242 was led by ISO members for the USA (ANSI) and Brazil (ABNT). In addition, its leadership included the ISO members for China (SAC) and the United Kingdom (BSI) to ensure that developed and developing economies participate together in the strategic direction and administration of the project committee. It was transformed into a technical committee in June 2011, signifying that it will be developing additional standards.

Today, experts from the national standards bodies of 50 ISO member countries participate within ISO/TC 242, with another 18 countries as observers[78].

[78] http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref1647

7.1.16. ISO/TC 244 Industrial furnaces and associated processing equipment

General information			
Committee	**ISO/TC 244**	**Title**	**Industrial furnaces and associated processing equipment**
Creation date	2008	**MEMBERS** 	**Participating Countries (19)**: Japan, Argentina, Australia, Austria, Belgium, Canada, China, Egypt, France, Germany, India, Italy, Japan, Republic of Korea, Netherlands, Poland, Romania, Sweden, United Kingdom, USA **Observing Countries (6)**: Colombia, Czech Republic, Finland, Malaysia, South Africa, Spain
Secretariat	JISC (Japan)		
Secretary	Mr. Yutaka Suzuki		
Chairperson	Mr. Masaru Okado		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	AFECOR, CECOF, EUnited Metallurgy		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=561961		
Scope	Standardization of the requirements for industrial furnaces and associated processing equipment. This includes heated enclosures such as furnaces, ovens, kilns, lehrs and dryers, and their heating equipment such as burners and heating control equipment.		
Structure	- ISO/TC 244/WG 1 General safety requirements - ISO/TC 244/WG 2 Safety requirements for combustion and fuel handling systems - ISO/TC 244/WG 3 Method of energy balance and efficiency - ISO/TC 244/WG 4 Vocabulary - ISO/TC 244/WG 5 Protective system - ISO/TC 244/WG 6 Safety requirements for generation and use of protective and reactive gases		
Standardization work			
Published standards	5		
Standards under development	- ISO/DIS 13574: Industrial furnaces and associated processing equipment -- Vocabulary - ISO/DIS 13577-2: Industrial furnaces and associated processing equipment -- Safety -- Part 2: Combustion and fuel handling systems - ISO/CD 13577-3: Industrial furnace and associated processing equipement -- Safety -- Part 3: Generation and use of protective and reactive atmosphere gases - ISO/DIS 13577-4: Industrial furnace and associated processing equipment -- Safety -- Part 4: Protective systems		
Comments			
The last meeting has been held from 9 to 13 September 2013 in Munich.			

7.1.17. ISO/TC 257 General technical rules for determination of energy savings in renovation projects, industrial enterprises and regions

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 257</td><td>Title</td><td>General technical rules for determination of energy savings in renovation projects, industrial enterprises and regions</td></tr>
<tr><td>Creation date</td><td>2010</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (20):
China, Argentina, Belgium, Brazil, China, Finland, France, Germany, India, Islamic Republic of Iran, Israel, Italy, Japan, Malaysia, Netherlands, Portugal, South Africa, Spain, Sweden, United Kingdom, USA

Observing Countries (14):
Bulgaria, Canada, Colombia, Czech Republic, Denmark, Hong Kong, Ireland, Lithuania, Norway, Poland, Singapore, Slovakia, Switzerland, Thailand</td></tr>
<tr><td>Secretariat</td><td>SAC (China)</td></tr>
<tr><td>Secretary</td><td>Mr. Pengcheng Li</td></tr>
<tr><td>Chairperson</td><td>Mr. Tienan Li</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>EVO, IEA</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=622828</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization in the field of energy savings through general technical rules and specific methodologies for the calculation of energy savings in projects, organizations and regions, and guidance on measurement, verification and assessment of data quality as it relates to these calculations.</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/TC 257/WG 1 Definition of a methodological framework applicable to calculation and reporting on energy savings
- ISO/TC 257/WG 2 General calculation methods on energy efficiency and savings for countries, regions or cities
- ISO/TC 257/WG 3 General technical rules for measurement, calculation and verification of energy savings of projects
- ISO/TC 257/JWG 4 Joint TC 257-TC 242 WG General calculation methods on energy efficiency and savings for organizations and other enterprises

Joint working groups under the responsibility of another committee
- ISO/TC 242/WG 3 Joint TC 242 - TC 257 WG Measurement & verification of organizational energy performance - General principles and guidelines</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">0</td></tr>
<tr><td>Standards under development</td><td colspan="3">- ISO/NP 17741: General technical rules for measurement, calculation and verification of energy savings of projects
- ISO/CD 17742: General calculation methods on energy efficiency and savings for countries, regions or cities
- ISO/CD 17743: Definition of a methodological framework applicable to calculation and reporting on energy savings
- ISO/NP 17747: Determination of energy savings in organizations</td></tr>
</table>

Comments

The first plenary meeting of ISO/TC 257, to be held from 31 May to 1 June 2011 in Beijing, China, will focus on the scope and details of the technical committee's working program and roadmap of related standards development. This meeting could be a milestone in international efforts to harmonize standards for energy savings. Because the proposed standard covers both producers and users of energy resources, their beneficiaries will be highly diverse. The new standards will help avoid technical barriers to trade while stimulating the market for energy efficiency services providers, most of which are small- and medium-sized enterprises.

The standards will make efficiency measures more reliable and competitive in energy management and public administration. They will also reduce technical barriers in energy savings trade and, hopefully, ignite a flourishing market.

Several advantages may be achieved by developing international standards on energy savings:
- encouragement of new energy efficiency projects and policy instruments;
- facilitation of access to new energy savings markets;
- increased awareness of energy efficiency measures among providers and users;
- acceptance of energy efficiency products with high added value;
- innovation of in saving mechanisms in both developed and developing countries;
- solid support for greenhouse gas emission reductions[79].

The next meeting will be held 1st Quarter 2014 in the Netherlands.

[79] http://webstore.ansi.org/Documents/ISO_Focus_11_05.pdf

7.1.18. ISO/TC 265 Carbon dioxide capture, transportation, and geological storage

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 265</td><td>Title</td><td>Carbon dioxide capture, transportation, and geological storage</td></tr>
<tr><td>Creation date</td><td>2011</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (16):
Canada, China, Australia, France, Germany, Italy, Japan, Republic of Korea, Malaysia, Netherlands, Norway, South Africa, Spain, Switzerland, United Kingdom, USA

Observing Countries (11):
Argentina, Brazil, Czech Republic, Egypt, Finland, India, Islamic Republic of Iran, New Zealand, Serbia, Sri Lanka, Sweden</td></tr>
<tr><td>Secretariat</td><td>SCC (Canada) twinned with SAC (China)</td></tr>
<tr><td>Secretary</td><td>Mr. Jeff Walker</td></tr>
<tr><td>Chairperson</td><td>Ms. Sandra Locke</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>CSLF, EIGA, GCCSI, IEA, IEAGHG, WRI</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=648607</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization of design, construction, operation, environmental planning and management, risk management, quantification, monitoring and verification, and related activities in the field of carbon dioxide capture, transportation, and geological storage (CCS).</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/TC 265/WG 1 Capture
- ISO/TC 265/WG 2 Transportation
- ISO/TC 265/WG 3 Storage
- ISO/TC 265/WG 4 Quantification and Verification
- ISO/TC 265/WG 5 Cross Cutting Issues</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">0</td></tr>
<tr><td>Standards under development</td><td colspan="3">-</td></tr>
<tr><th colspan="4">Comments</th></tr>
<tr><td colspan="4">The third meeting of TC265 has been held in September 24-25, 2013 in Beijing.</td></tr>
</table>

7.1.19. ISO/TMB/SAG E Strategic Advisory Group on energy efficiency and renewable energy sources

General information			
Committee	**ISO/TMB/SAG E**	**Title**	**Strategic Advisory Group on Energy Efficiency**
Creation date	2008	**MEMBERS** 	Brazil, France, USA, UK, Germany, Singapore, Netherlands, Israel, Norway, Sudan, Sweden, Japan, South Korea, Australia, South Africa and Canada
Secretariat	ISO		
Secretary	Mrs Kirsi Silander – van Hunen		
Convenor	Mr. Wang Geng		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	IEC, IEA, WEC, UNIDO		
Web site	-		
Scope	The mission of the Strategic Advisory Group is to provide to the Technical Management Board recommendations on the development of standards in the related field.		
Structure	-		
Standardization work			
Published standards	SAG E has not for vocation to publish standards		
Standards under development	SAG E has not for vocation to publish standards		
Comments			

In 2008, ISO created the Strategic Advisory Group on energy efficiency and renewable energy (SAG-E). The group's objectives include:

- provide advice and guidance on the development of ISO standards on energy efficiency and renewable energy sources;
- further develop the portfolio/gap analysis undertaken by the previous Council Task Force on Energy and identify high-priority standardization subjects;
- assess the need to strengthen, promote or re-orientate standards work to better serve public policy objectives;
- develop proposals for future actions and possible further study.

7.1.20. ISO/IEC JPC 2 Joint project committee – Energy Efficiency and renewable energy sources – Common terminology

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/IEC JPC 2</td><td>Title</td><td>Energy Efficiency and renewable energy sources – Common terminology</td></tr>
<tr><td>Creation date</td><td>2009</td><td rowspan="5">MEMBERS
  </td><td rowspan="5">Participating Countries (24):
France, Algeria, Argentina, Armenia, Austria, Brazil, Canada, China, Egypt, Finland, France, Germany, Italy, Republic of Korea, Mexico, Netherlands, Norway, Pakistan, Russian Federation, South Africa, Spain, Sweden, United Kingdom, USA, Uruguay

Observing Countries (25):
Australia, Belgium, Bosnia and Herzegovina, Bulgaria, Czech Republic, Denmark, El Salvador, Hong Kong, Hungary, Ireland, Israel, Jordan, Luxembourg, Montenegro, Morocco, Poland, Portugal, Singapore, Slovakia, Sri Lanka, Switzerland, Thailand, Trinidad and Tobago, Turkey, Ukraine</td></tr>
<tr><td>Secretariat</td><td>AFNOR (France)</td></tr>
<tr><td>Secretary</td><td>Mrs. Sylvie Fernandez</td></tr>
<tr><td>Chairperson</td><td>Mr. Hervé Lefebvre</td></tr>
<tr><td>Involvement of Luxembourg</td><td>Mr. B. Dorard, ANEC GIE
ISO/IEC JPC 2 & WG 3</td></tr>
<tr><td>Organizations in liaison</td><td>EVO</td><td colspan="2"></td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=585141</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization in the field of Energy efficiency and renewable energy sources - Common terminology</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/IEC JTC 2/WG 1 Energy efficiency - Concepts and diagrams
- ISO/IEC JTC 2/WG 2 Inputs from existing reference documents
- ISO/IEC JTC 2/WG 3 Renewable energy sources - Terms and definitions</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">0</td></tr>
<tr><td>Standards under development</td><td colspan="3">- ISO/IEC DIS 13273-1: Energy efficiency and renewable energy sources -- Common international terminology -- Part 1: Energy Efficiency
- ISO/IEC DIS 13273-2: Energy efficiency and renewable energy sources -- Common international terminology -- Part 2: Renewable Energy Sources</td></tr>
<tr><th colspan="4">Comments</th></tr>
<tr><td colspan="4">Chair of ISO/IEC JPC 2, Hervé Lefebvre commented: "It is clear today that both energy efficiency and the need for renewable energy sources are at the top of the world's policy agenda. Not only are they important to ensure energy security, but also to reduce greenhouse gas emissions, while enhancing economic development objectives."

This has drawn a plurality of actors from different sectors: energy, building, industry, transport, agriculture, equipment and network design, services, etc., as well as public authorities, NGOs, and other stakeholders. Harmonized definitions are in this context a prerequisite to enable the different stakeholders to work together and develop shared tools.</td></tr>
</table>

The international standard is expected to support and facilitate global understanding of energy efficiency and renewable energy sources and contribute to:

- the elaboration of regional and national regulations;
- clarification of relations between providers and clients (procurement, contracts, services);
- standards writing; coordination between the different standardization technical committees working in related subjects; users' understanding of the standards and their application[80].

[80] http://www.iso.org/iso/news.htm?refid=Ref1297

7.2. SUBSECTOR 2 – FUELS

Under "Fuels" is to consider various possible sources of energy, whether fossil energy (coal, natural gas, oil), the nuclear energy (uranium, plutonium) or renewable energy (solar, wind, hydroelectric energy, biomass, biogas, geothermal science, etc.).

Coal, oil and natural gas are fossil fuels derived from plants and animals that lived millions of years ago. These fuels are extracted from land and below the sea to provide heat and power throughout the world. But supplies of fossil fuels are limited and one day they will run out[81].

Note: As already mentioned, renewable energy is not included in this subsector but in the dedicated subsector 4 "Renewable energy".

For this subsector, 5 standardization technical committees were identified as interesting (2 at a European level and 3 at an international level).

[81] http://www.energyzone.net/aboutenergy/energy_efficiency.asp

7.2.1. CEN Sector Forum Gas Infrastructure

General information			
Committee	**CEN SF Gas Infrastructure**	**Title**	**Sector Forum Gas Infrastructure**
Creation date	2000	**MEMBERS** 	Gas suppliers , gas sector technical committees , consumer groups , national standards bodies with responsibility for gas issues , Government regulatory agencies concerned with gas issues , CEN consultant appointed by CEN for the 'new approach' directives , other experts as required , other sectors of CEN, CENELEC , representatives from the European Commission and EFTA
Secretariat	DIN (Germany)		
Secretary	Mr. F. Dupin		
Chairperson	Mr. C. Meyer		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	AEGPL, CEIR, CEOC International , EFMA, EPERC, ESA, EU-RAY, FARECOGAZ, MARCOGAZ, OIML, SIGTTO, TEPPFA		
Web site	http://www.cen.eu/cen/Sectors/Sectors/UtilitiesAndEnergy/GasForum/Pages/default.aspx		
Scope	The field of activity of SFGas Infrastructure (SFGas_I) covers all issues related to gas supply systems (including associated plants) from the input of gas to the transport system (gas transmission, distribution systems and storage) up to the inlet connection of gas appliances. Gas refers to combustible gases, which are gaseous at 15°C and 1013 mbar, that means mainly natural gas, liquefied petroleum gases (LPG) and manufactured gases. In all these fields close contacts will be established between SFG_I and the corresponding European federations, interested parties and relevant TCs to define and update the scope of activities and to identify areas where conflicts or problems of horizontal nature exist in connection with standardization work.		
Structure	- WG 'Impact of the Pressure Equipment Directive PED' - WG 'CO2 Measurement under the Emission Trading Directive' - WG 'Safety of Domestic Gas Installations' (Joint Working Group with SFG_U) - WG 'CPR' (Joint Working Group with SFG_U)		
Standardization work			
Published standards	CEN SF has not for vocation to publish standards		
Standards under development	CEN SF has not for vocation to publish standards		

Comments
The missions are: - coordination of the CEN technical committees which deal with the standardization activities in the gas supply sector; - identifying and meeting the sector needs and working out horizontal guidance documents; - providing solutions for the problems arising due to the drafting of European Standards within the gas infrastructure technical committees; - interfacing with the EC and EFTA partners and other stakeholders on policy issues; - channeling appropriately and as needed, information on the sector developments and requirements; - ensuring that useful information and advice is passed on to the CEN Technical Board and other relevant committees; - CEN/TC 10 Sealing materials and lubricants for gas appliances and gas equipment; - CEN/TC 12 Materials, equipment and offshore structures for petroleum and natural gas industries; - CEN/TC 69 Industrial valves; - CEN/TC 74 Flanges and their joints; - CEN/TC 121 Welding; - CEN/TC 133 Copper and copper alloys; - CEN/TC 155 Plastics piping systems and ducting systems; - CEN/TC 234 Gas infrastructure; - CEN/TC 235 Gas pressure regulators and associated safety devices for use in gas transmission and distribution; - CEN/TC 236 Non industrial manually operated shut-off valves for gas and particular valves – Other products; - CEN/TC 262 Metallic and other organic coatings; - CEN/TC 267 Industrial piping and pipelines; - CEN/TC 282 Installation and equipment for LNG; - CEN/TC 286 Liquefied petrol gas equipment and accessories; - CEN/TC 326 Gas supply for Natural Gas Vehicles (NGV). On regulatory aspects, the European Commission has developed an internet site gathering information about directives on gas and pressure equipment[82].

[82] http://ec.europa.eu/enterprise/sectors/pressure-and-gas/documents/ped/index_en.htm

7.2.2. CEN/TC 234 Gas infrastructure

General information			
Committee	**CEN/TC 234**	**Title**	**Gas Infrastructure**
Creation date	2007	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	DIN (Germany)		
Secretary	Mrs. H. Schülken		
Chairperson	Mr. C. Meyer		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	AEGPL, EASEE-gas, ECISS/TC110, ENTSORG, EPERC, FARECOGAS, GIE, MARCOGAZ, NGVA Europe, TEPPFA, UIIG		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=6215&title=Gas%20infrastructure		
Scope	CEN/TC 234 elaborates functional standards and standards related to the safe and efficient operation of gas systems. These specify the function of technically complex systems, function meaning: "the work or activity something is designed to do". The functional standards for gas supply therefore cover the many activities related to the creation of gas supply systems, and to their proper operation and maintenance. Therefore, the term functional refers in broad terms to all of the technical and operational activities necessary to ensure that gas supply systems fulfill their purpose, i.e. to provide a safe, continuous and reliable supply of gas to consumers.		
Structure	- CEN/TC 234/WG 7 Gas compression - CEN/TC 234/WG 6 Gas pressure regulation - CEN/TC 234/WG 8 Industrial piping - CEN/TC 234/WG 11 Gas Quality - CEN/TC 234/WG 10 Service Lines - CEN/TC 234/WG 2 Gas supply systems up to and including 16 bar and pressure testing - CEN/TC 234/WG 1 Gas installations - CEN/TC 234/WG 3 Gas Transportation - CEN/TC 234/WG 5 Gas measuring - CEN/TC 234/WG 4 Gas underground storage		
Standardization work			
Published standards	25		
Standards under development	- prEN 12007-5: Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 5: Service lines - Specific functional requirements - FprEN 12583: Gas Infrastructure - Compressor stations - Functional requirements - prEN 12186: Gas infrastructure - Gas pressure regulating stations for transmission and		

	distribution - Functional requirements - prEN 1918-2: rev Gas infrastructure - Underground gas storage - Part 2: Functional recommendations for storage in oil and gas fields - prEN 1918-3: rev Gas infrastructure - Underground gas storage - Part 3: Functional recommendations for storage in solution-mined salt cavities - prEN 1918-4: rev Gas infrastructure - Underground gas storage - Part 4: Functional recommendations for storage in rock caverns - prEN 1918-1: rev Gas supply systems - Underground gas storage - Part 1: Functional recommendations for storage in aquifers - prEN 1918-5: rev Gas infrastructure - Underground gas storage - Part 5: Functional recommendations for surface facilities - prEN 12007-3: Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 3: Specific functional requirements for steel - prCEN/TR 13737-2: Gas infrastructure - Implementation Guide for Functional Standards prepared by CEN/TC 234 - Part 2: National Pages related to CEN/TC 234 standards - 00234070: Gas infrastructure - Quality of natural gas - Group H - prEN 1776: rev Gas infrastructure - Gas measuring systems - Functional requirements - EN 12732:2013/FprA1: Gas infrastructure - Welding steel pipework - Functional requirements
Comments	
The next meeting will be held on May 13 and 14, 2014 in the Netherlands.	

7.2.3. ISO/TC 67 Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries / WG 10 Liquefied Natural Gas (LNG) installations and equipment

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 67/WG 10</td><td>Title</td><td>Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries / Liquefied Natural Gas (LNG) installations and equipment</td></tr>
<tr><td>Creation date</td><td>1947</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Argentina, Australia, Belgium, Brazil, Canada, China, Czech Republic, Denmark, France, Germany, Indonesia, Italy, Japan, Korea, Netherlands, Norway, Qatar, Russian Federation, Spain, Sweden, Ukraine, United Arab Emirates, United Kingdom, USA</td></tr>
<tr><td>Secretariat</td><td>NEN (Netherlands)</td></tr>
<tr><td>Secretary</td><td>Mr. Christian Brissard (France)</td></tr>
<tr><td>Chairperson</td><td>Mr. Christophe Thomas (France)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>IADC, OGP, WCO, WMO</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=49506</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization of the materials, equipment and offshore structures used in the drilling, production, transport by pipelines and processing of liquid and gaseous hydrocarbons within the petroleum, petrochemical and natural gas industries.</td></tr>
<tr><td>Structure</td><td colspan="3">Project team
- PT 1 Guidelines for systems and installations for supply of LNG as fuel to ships
- PT 2 Ship to shore interface and port operations
- PT 3 Guidance on performing risk assessments in the design of onshore LNG installations including the ship/shore interface
- PT 4 Characteristics of LNG and materials suitable for construction of equipment for cryogenic uses
- PT 5 Technical Report for conception, design and testing of LNG storage tanks
- PT 6 Installation and equipment for LNG - Design and testing of marine transfer arms for conventional onshore terminals
- PT 7 Unconventional LNG transfer systems
- PT 8 Acceptance testing for LNG valves</td></tr>
</table>

Standardization work	
Published standards	-
Standards under development	- ISO/DTS 16901: Guidance on performing risk assessment in the design of onshore LNG installations including the ship/shore interface - ISO/DIS 16903: Characteristics of LNG influencing design and material selection - ISO/DIS 16904: Petroleum and natural gas industries - Design and testing of LNG marine transfer arms for conventional onshore terminals
Comments	
The objective of the ISO TC 67 WG 10 is the development of international guidelines for bunkering of gas-fuelled vessels focusing on requirements for the LNG transfer system, the personnel involved and the related risk of the whole LNG bunkering process. The members of the WG 10 decided to develop a technical report as a high level document to be finalized by 2014.	

7.2.4. ISO/TC 193 Natural gas

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 193</td><td>Title</td><td>Natural gas</td></tr>
<tr><td>Creation date</td><td>1988</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (28):
Netherlands, Algeria, Armenia, Austria, Bahrain, Belgium, China, Czech Republic, Egypt, France, Germany, Hungary, India, Italy, Kazakhstan, Kenya, Republic of Korea, Malaysia, Norway, Poland, Qatar, Russian Federation, Spain, Thailand, Trinidad and Tobago, Ukraine, United Kingdom, USA

Observing Countries (30):
Argentina, Bosnia and Herzegovina, Brazil, Canada, Chile, Croatia, Cuba, Côte d'Ivoire, Denmark, Finland, Hong-Kong, Islamic Republic of Iran, Iraq, Ireland, Japan, Lithuania, Republic of Moldova, Mongolia, New Zealand, Oman, Pakistan, Portugal, Romania, Serbia, Singapore, Slovakia, Sweden, Switzerland, Tunisia, Turkey</td></tr>
<tr><td>Secretariat</td><td>NEN (Netherlands)</td></tr>
<tr><td>Secretary</td><td>Mr. Pim Bijl</td></tr>
<tr><td>Chairperson</td><td>Mr. William P. (Bill) Donkervoet</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>ECTA, GERG, IANGV, OIML, WLPGA</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=54448</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization of terminology, quality specifications, methods of measurement, sampling, analysis and test for natural gas and natural gas substitutes (gaseous fuel), in all its facets from production to delivery to all possible end users across national boundaries.
Recognition of work related to natural gas in other technical committees and in liaison with these technical committees.</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/TC 193/WG 2 Quality designation
- ISO/TC 193/WG 4 Terminology
- ISO/TC 193/WG 5 Odorization
- ISO/TC 193/WG 6 Methane number
- ISO/TC 193/WG 7 Energy determination
- ISO/TC 193/SC 1 Analysis of natural gas
- ISO/TC 193/SC 3 Upstream area</td></tr>
</table>

Standardization work	
Published standards	53
Standards under development	**ISO/TC 193** - ISO/FDIS 13734: Natural gas -- Organic components used as odorants -- Requirements and test methods - ISO/DIS 14532: Natural gas -- Vocabulary - ISO/DTR 16922: Natural gas -- Odorization - ISO/AWI 18222: Olfactory method for the evaluation of odour intensity - ISO/DTR 22302: Natural gas -- Calculation of methane number **ISO/TC 193/SC 1** - ISO/DIS 6974-5: Natural gas -- Determination of composition and associated uncertainty by gas chromatography -- Part 5: Isothermal method for nitrogen, carbon dioxide, C1 to C5 hydrocarbons and C6+ hydrocarbons - ISO/NP 6976: Natural gas -- Calculation of calorific values, density, relative density and Wobbe index from composition - ISO/DIS 16960: Natural gas -- Determination of sulfur compounds -- Determination of total sulfur by oxidative microcoulometry method - ISO/DIS 20765-2: Natural gas -- Calculation of thermodynamic properties -- Part 2: Single-phase properties (gas, liquid, and dense fluid) for extended ranges of application
Comments	
The next meeting will be held on June 23-27, 2014 in London.	

7.2.5. ISO/TC 252 Project committee: Natural gas fuelling stations for vehicles

General information			
Committee	**ISO/TC 252**	**Title**	**Project committee : Natural gas fuelling stations for vehicles**
Creation date	2010	**MEMBERS** 	**Participating Countries (21)**: Netherlands, Argentina, Armenia, Australia, Belgium, Canada, Czech Republic, Germany, India, Islamic Republic of Iran, Israel, Italy, Republic of Korea, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, USA **Observing Countries (10)**: Austria, Ecuador, Finland, France, Japan, Morocco, Oman, Poland, Portugal, Trinidad and Tobago
Secretariat	NEN (Netherlands)		
Secretary	Mr. Jarno Dakhorst		
Chairperson	Mr. Martin Seifert		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	IANGV, OIML, UN		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=606615		
Scope	Design, construction and operation of stations for fuelling CNG/LNG to vehicles; including equipment, safety devices and maintenance.		
Structure	- ISO/TC 252/WG 1 CNG stations for fuelling vehicles - ISO/TC 252/WG 2 LNG stations for fuelling vehicles		
Standardization work			
Published standards	0		
Standards under development	- ISO/CD 16923: Compressed natural gas (CNG) vehicle filling stations - ISO/CD 16924: Liquefied natural gas (LNG) vehicle filling stations		
Comments			

Both CNG and LNG are being used in many countries as a greener vehicle fuel alternative to gasoline, diesel and propane. Already, there are more than eight million CNG vehicles worldwide, with a majority in developing countries. Because natural gas is lighter than air and disperses quickly when released, CNG is also safer than traditional fuels in the event of a spill. CNG fueled buses are rapidly spreading in many countries.

The Chair of ISO/PC 252, Martin Seifert, stressed the urgency of the market need for the standards. "With growing concerns about the security and availability of the oil supply, local air pollution and greenhouse gases, more and more vehicles are being developed and manufactured to run on CNG and LNG"

Mr. Dakhorst, secretary of the committee, says: "The working groups are finalizing their documents on LNG and CNG fuelling stations to be submitted for DIS ballot. Our next meeting will take place in Berlin or Brussels in June 2014; venue and date to be confirmed."

7.3. SUBSECTOR 3 – POWER ENGINEERING

Power engineering is a subfield of electrical engineering that deals with the generation, transmission and distribution of electric power as well as the electrical devices connected to such systems including generators, motors and transformers.

The importance of variable renewables like wind and solar is making a holistic approach to managing the power system increasingly urgent. A portfolio of options is available to back up renewables, from interconnections between power systems - as exemplified by the Nordic region - to storage, flexible generation and demand-side participation[83].

For this subsector, 3 standardization technical committees were identified as interesting (2 at a European level and 1 at an international level).

[83] Eurelectric - Power Statistics & Trends 2012 Edition

7.3.1. CENELEC/TC 8X System aspects for electrical energy supply

General information			
Committee	**CENELEC/TC 8X**	**Title**	**System aspects for electrical energy supply**
Creation date	2002	**MEMBERS** 	33 members of CENELEC
Secretariat	Italy		
Secretary	Mr. Simone BOTTON		
Chairperson	Mr. Hervé ROCHEREAU (France)		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	CECAPI, DERlab, ECI, ORGALIME		
Web site	http://www.cenelec.eu/dyn/www/f?p=104:7:3470226148622850		
Scope	To prepare the necessary standards framework and coordinate the development, in cooperation with other TC/SCs, of CENELEC standards needed to facilitate the functioning of electricity supply systems in open markets.		
Structure	- WG 01 Physical characteristics of electrical energy (former BTTF 68-6) - WG 03 Requirements for connection of generators to distribution networks - WG 04 Ah WG 38 - Endorsement of IEC 60038 as European Standard - WG 06 System aspects for HVDC grid		
Standardization work			
Published standards	10		
Standards under development	- CLC/FprTR 50609:2013(pr=24711): Technical Guidelines for Radial HVDC Networks - CLC/FprTR 50608:2013(pr=23226): Smart grid projects in Europe - CLC/TR 50422:201X(pr=23209): Guide for the application of the European Standard EN 50160 - CLC/FprTS 50549-2:2011(pr=23224): Requirements for the connection of generators above 16 A per phase - Part 2: Connection to the MV distribution system - CLC/FprTS 50549-1:2011(pr=20863): Requirements for the connection of generators above 16 A per phase - Part 1: Connection to the LV distribution system - FprEN 50438:2013(pr=22109): Requirements for micro-generating plants to be connected in parallel with public low-voltage distribution networks		
Comments			
The next meeting will be held the November 21, 2013 in Brussels.			

7.3.2. CENELEC/TC 13 Equipment for electrical energy measurement and load control

General information			
Committee	**CENELEC/TC 13**	**Title**	**Equipment for electrical energy measurement and load control**
Creation date	1990	**MEMBERS** 	33 members of CENELEC
Secretariat	France		
Secretary	Mr. Pascal TANTIN		
Chairperson	Mr. Bernd SCHULZ (Germany)		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	Digitaleurope, EC, ECOS, ESNA, Montenegro, ZigBee		
Web site	http://www.cenelec.eu/dyn/www/f?p=104:7:3470226148622850		
Scope	Standardization in the field for metering equipment and systems (using whenever possible IEC standards), including smart metering systems, for electrical energy measurement, tariff- and load control, customer information and payment, for use in power stations, along the network and at energy end users, as well as to prepare international standards for meter test equipment and methods. Excluded: Standardization for the interface of metering equipment for interconnection lines and industrial consumers and producers requiring energy management type interfaces to the control system, covered by IEC/TC 57.		
Structure	- WG 01 Electricity meters for active energy of class a, b and c - WG 02 Data models and protocols for additional functionality of and data exchange in interoperable multi-utility smart metering systems		
Standardization work			
Published standards	35		
Standards under development	- CLC/prTS 52056-8-7(24550) : Electricity metering data exchange - The DLMS/COSEM suite - Part 8-7: Communication profile for power line carrier neighbourhood networks using CX1 - CLC/prTS 50590(24549) : Electricity metering data exchange - CX1 lower layer Specification - Physical layer, and data link layer - CLC/prTS 52056-8-5(24432) : Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 2 profile - CLC/prTS 52056-8-4(24431) : Electricity metering data exchange - The DLMS/COSEM suite - Part 8-4: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 1 profile		

	- CLC/prTS 50568-8(24429) : Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 8: DLC profile based on B-PSK modulation - CLC/prTS 50568-4(24426) : Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 4: Physical layer based on B-PSK modulation + Data Link Layer - EN 62056-5-3:201X(23229) : Electricity metering data exchange - The DLMS/COSEM suite - Part 5-3: DLMS/COSEM application layer - FprEN 62056-1-0:2013(24909) : Electricity metering data exchange - The DLMS/COSEM suite - Part 1-0: Smart metering standardization framework - FprEN 62052-31:2013(24522) : Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 31: Safety requirements and tests - FprEN 62053-24:2012(24516) : Electricity metering equipment (a.c.) - Particular requirements - Part 24: Static meters for fundamental component reactive energy (classes 0,5 S, 1S and 1) - EN 62056-9-7:201X(23398) : Electricity metering data exchange - The DLMS/COSEM suite - Part 9-7: Communication profile for TCP-UDP/IP networks - EN 62056-3-1:201X(23017) : Electricity metering data exchange – The DLMS/COSEM suite - Part 3-1: Use of local area networks on twisted pair with carrier signalling - prEN 62056-5-8(23403) : SML container services
Comments	
The next meeting will be held the November 13, 2013 in Brussels.	

7.3.3. IEC/TC 8 Systems aspects for electrical energy supply

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>IEC/TC 8</td><td>Title</td><td>Systems aspects for electrical energy supply</td></tr>
<tr><td>Creation date</td><td>2001</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (31):
Italy, Australia, Austria, Belgium, Canada, China, Czech Republic, Denmark, Egypt, Finland, France, Germany, Hungary, India, Indonesia, Ireland, Japan, Republic of Korea, Malaysia, Netherlands, Norway, Portugal, Russian Federation, Serbia, Slovenia, South Africa, Spain, Sweden, Switzerland, United Kingdom, USA

Observing Countries (13):
Bulgaria, Croatia, Greece, Israel, Mexico, New Zealand, Oman, Poland, Romania, Saudi Arabia, Singapore, Slovakia, Ukraine</td></tr>
<tr><td>Secretariat</td><td>Italy</td></tr>
<tr><td>Secretary</td><td>Mr. Simone Botton</td></tr>
<tr><td>Chairperson</td><td>Mr. Richard Schomberg (France)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>EURELECTRIC</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iec.ch/dyn/www/f?p=103:7:0</td></tr>
<tr><td>Scope</td><td colspan="3">To prepare and coordinate, in co-operation with other TC/SCs, the development of international standards and other deliverables with emphasis on overall system aspects of electricity supply systems and acceptable balance between cost and quality for the users of electrical energy.</td></tr>
<tr><td>Structure</td><td colspan="3">Subcommittees
- SC 8A Grid Integration of Large-capacity Renewable Energy (RE) Generation
Working Groups:
- WG 1 Terminology
- WG 2 HV systems and transmission aspects
- WG 5 Methodology and Tools
- WG 6 Generic Smart Grid Requirements

Project Teams
- PT 2 Power quality aspects from the energy supplier point of view
- PT 62786 Domain Side Energy Source Interconnection with the Grid
Maintenance Teams:
- MT 1 Maintenance of IEC 60038, IEC 60059 and IEC 60196

Advisory Groups
- AG 1 Chairman's Advisory Group (CAG)</td></tr>
</table>

Standardization work	
Published standards	8
Standards under development	- IEC 62559-2 Ed1.0: Use case methodology - Part 2: Definition of use case template, actor list and requirement list - IEC 62786 Ed1.0: Smart Grid User Interface: Demand Side Energy Sources Interconnection with the Grid - IEC/TR 62511 Ed1.0: A Guide for the Design of Interconnected Power Systems - IEC/TS 62749 Ed1.0: Assessment of power quality - Characteristics of electricity supplied by public networks - PNW/TS 8-1326 Ed1.0: Guidelines for the General Planning and Design of the Micro-Grid - PNW/TS 8-1327 Ed1.0: Technical requirements for Operation and Control of Micro-Grid - PNW 8-1334 Ed. 1.0 : Future IEC 62559-3 Ed.1: Use case methodology - Part 3: Definition of use case template artefacts into an XML serialized format
Comments	
The next TC8 meeting is scheduled on November 8, 2013 in Rome.	

7.4. SUBSECTOR 4 – RENEWABLE ENERGY

On March 27, 2013, the European Commission published its first Renewable Energy Progress Report under the framework of the 2009 Renewable Energy Directive. Since the adoption of this directive and the introduction of legally binding renewable energy targets, most Member States experienced significant growth in renewable energy consumption. 2010 figures indicate that the EU as a whole is on its trajectory towards the 2020 targets with a renewable energy share of 12.7%. Moreover, in 2010 the majority of Member States already reached their 2011/2012 interim targets set in the Directive. However, as the trajectory grows steeper towards the end, more efforts will still be needed from the Member States in order to reach the 2020 targets[84].

For this subsector, 15 standardization technical committees were identified as interesting (6 at a European level and 9 at an international level).

[84] European Commission - Energy Renewable energy - Progress reports

7.4.1. CEN/TC 19 Petroleum products, lubricants and related products

General information			
Committee	**CEN/TC 19**	**Title**	**Petroleum products, lubricants and related products**
Creation date	2009	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	NEN (Netherlands)		
Secretary	Mr. O.M. Costenoble		
Chairperson	Mrs L. Jansen		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	AEGPL, CEFIC-ATC, CONCAWE and EUROPIA, UPEI, ACEA, AECC and CEC,EBB, eBio and UEPA, CETOP		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=6003&title=Gaseous%20and%20liquid%20fuels,%20lubricants%20and%20related%20products%20of%20petroleum,%20synthetic%20and%20biological%20origin		
Scope	Main objectives of the TC are: - to provide, especially for new European parties, a platform for discussion on the standardization for every area of the sector, as well as on the implementation and use of Standards; - to elaborate any standards requested by the EC, or needed, without formal EC-request, in view of EC; Directives, in particular specification standards for automotive (bio-)fuels; - to shorten the period of development of its Standards, with a goal to have 90% of its work items published within the three-years period as targeted by CEN and using shorter procedural possibilities where feasible; - to elaborate the Memorandum of Understanding with ISO/TC 28 and ASTM D02 resulting in minimizing the duplication of work and standards with the final result of one standard for all from a process that suits all; - to develop any European fuels standards for new "European" subjects, when enough CEN members find it more efficient or necessary to draft an European standard rather than write national standard.		
Structure	- CEN/TC 19/WG 34 Diesel fuel cold operability correlation - CEN/TC 19/WG 35 Ignition quality testing and correlation - CEN/TC 19/WG 31 Total contamination - CEN/TC 19/WG 33 Bio-lubricants - CEN/TC 19/WG 39 Lubricity - CEN/TC 19/WG 40 Distillation characteristics - CEN/TC 19/WG 36 Precision evaluation		

	- CEN/TC 19/WG 38 New Fuels Coordination and Planning - CEN/TC 19/WG 14 Cold flow properties - CEN/TC 19/WG 15 Vapour pressure methods - CEN/TC 19/JWG 1 Vegetable fats and oils and their by-products for use in automotive fuels (Joint working group with CEN/TC 307) - CEN/TC 19/WG 9 Chromatographic test methods - CEN/TC 19/WG 24 Specification of distillate fuels - CEN/TC 19/WG 27 Elemental analysis of petroleum and related products - CEN/TC 19/WG 21 Specification for unleaded petrol - CEN/TC 19/WG 23 Specification of automotive LPG and related test method
Standardization work	
Published standards	180
Standards under development	- prCEN ISO/TS 15029-3: Petroleum and related products - Determination of spray ignition characteristics of fire-resistant fluids - Part 3: Spray test - Large scale method - prEN 15199-4: Petroleum products - Determination of boiling range distribution by gas chromatography method - Part 4: Light fractions - FprEN 12662: Liquid petroleum products - Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters - prEN 14538 rev: Fat and oil derivatives - Fatty acid methyl ester (FAME) - Determination of Ca, K, Mg and Na content by optical emission spectral analysis with inductively coupled plasma (ICP OES) - prEN 16476: Liquid Petroleum products - Determination of Sodium, Potassium, Calcium, Phosphorus, Copper and Zinc contents in diesel fuel - Methold via Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) - prEN 16270 rev: Automotive fuels - Determination of high-boiling components including fatty acid methyl esters in petrol and ethanol automotive fuels - Gas chromatography 19400- Automotive fuels - High FAME diesel blends (B10 - B30)- Requirements and test methods - prEN ISO 3171 rev: Petroleum liquids - Automatic pipeline sampling 19408 - Automotive diesel fuels - Cold operability testing and fuel performance correlation - prEN ISO 10370: Petroleum products - Determination of carbon residue - Micro method (ISO/DIS 10370:2012) - prEN 15940: Automotive fuels - Paraffinic diesel from synthesis or hydrotreatment - Requirements and test methods - FprEN 1601: Liquid petroleum products - Unleaded petrol - Determination of organic oxygenate compounds and total organically bound oxygen content by gas chromatography (O-FID) - prEN 12916 rev: Petroleum products - Determination of aromatic hydrocarbon types in middle distillates - High performance liquid chromatography - prEN 116 rev: Diesel and domestic heating fuels - Determination of cold filter plugging point by stepwise cooling procedure 19423 - Round Robin report on improvement study for cold filter plugging point determination methods - prEN 589 rev: Automotive fuels - LPG - Requirements and test methods - EN 16423:2013: Liquefied petroleum gases - Determination of dissolved residue - Gas chromatographic method using liquid, on-column injection - FprEN 15751: Automotive fuels - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by accelerated oxidation method - prEN ISO 22854 rev: Liquid petroleum products - Determination of hydrocarbon types

and oxygenates in automotive-motor gasoline - Multidimensional gas chromatography method (ISO/DIS 22854:2012)
- FprEN ISO 8311 rev: Refrigerated hydrocarbon and non-petroleum based liquefied gaseous fuels - Calibration of membrane tanks and independent prismatic tanks in ships - Manual and internal electro-optical distance-ranging methods (ISO/FDIS 8311:2013)
- prEN 16136: Automotive fuels - Determination of manganese and iron content in unleaded petrol - Inductively coupled plasma optical emission spectrometry (ICP OES) method
- prEN ISO 6743-4: Lubricants, industrial oils and related products (class L) - Classification - Part 4: Family H (Hydraulic systems) (ISO/DIS 6743-4:2013)
- prEN 16568: Automotive fuels - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by rapidly accelerated oxidation method at 120 °C
- prEN 14078: Liquid petroleum products - Determination of fatty methyl ester (FAME) content in middle distillates - Infrared spectrometry method
- FprEN ISO 5163: Petroleum products - Determination of knock characteristics of motor and aviation fuels - Motor method (ISO/FDIS 5163:2013)
- FprEN ISO 5164: Petroleum products - Determination of knock characteristics of motor fuels - Research method (ISO/FDIS 5164:2013)
- prEN ISO 4263-3: Petroleum and related products - Determination of the ageing behaviour of inhibited oils and fluids using the TOST test - Part 3: Anhydrous procedure for synthetic hydraulic fluids (ISO/DIS 4263-3:2013)
- prEN 15195: Liquid petroleum products - Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber
- prEN 15376: Automotive fuels - Ethanol as a blending component for petrol - Requirements and test methods
- FprCEN/TR 16680: Liquid petroleum products - Investigation on internal diesel injector sticking deposits mechanisms and the impacts of corrosion inhibitors
- prCEN/TR 15367-1 rev: Petroleum products - Guidelines for good housekeeping - Part 1: Automotive diesel fuels
- prEN 16576: Automotive fuels - Determination of manganese and iron content in middle distillate fuels - Inductively coupled plasma optical emission spectrometry (ICP OES) method
- EN 14214:2012/FprA1: Liquid petroleum products - Fatty acid methyl esters (FAME) for use in diesel engines and heating applications - Requirements and test methods
19459 - Automotive fuels - Diesel containing 10%(V/V) of fatty acid methyl esters (FAME) - Requirements and test methods
19460 - Petroleum products - Density vs. temperature relationships of current fuels, biofuels and biofuel components
19461 - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability - Report on the determination of the oxidative stability of Diesel/FAME blends by acid number determination
- prEN 15471 rev: Liquefied petroleum gases - Determination of dissolved residues - High temperature gravimetric method
- prEN ISO 20844 rev: Petroleum and related products - Determination of the shear stability of polymer-containing oils using a diesel injector nozzle (ISO 20844:2004)
19466 - Liquid petroleum products - Determination of derived cetane number (DCN) of middle distillate, ignition and combustion delay using a constant volume combustion chamber method
- prCEN/TR 15745 rev: Liquid petroleum products - Determination of hydrocarbon types and oxygenates via multidimensional gas chromatography method - Round Robin

	research report - prEN 15984 rev: Petroleum industry and products - Determination of composition of refinery heating gas and calculation of carbon content and calorific value - Gas chromatography method - EN ISO 12185:1996/prA1: Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method (ISO 12185:1996) - prEN ISO 3679 rev: Determination of flash no-flash and flash point - Rapid equilibrium closed cup method

Comments

CEN/TC 19 has set-up co-ordination and co-operation with CEN/TC 139 "Paints and varnishes". A Joint Working Group (JWG) on flash point test methods is maintained, to pursue a coherent set of European standards in this area. This JWG is meanwhile paralleled in ISO as a JWG between ISO/TC 28 and ISO/TC 35. The intention is to extend to the field of adhesives, ISO/TC 61(/SC 11) and CEN/TC 193. Mandated work on biodiesel (FAME) has been done in coordination with CEN/TC 307 "Fats and oils".

For the petroleum products that are world-wide business, standards should preferably be developed on the international level, i.e. in ISO. Therefore, the liaison with ISO/TC 28 "Petroleum products and lubricants" is firmly established. In 2002 a Memorandum of Understanding (MoU) has been set up between three technical standardization committees in the petroleum product field: ISO/TC 28, ASTM D02 and CEN/TC 19.

7.4.2. CEN/TC 312 Thermal solar systems and components – Structure

General information			
Committee	**CEN/TC 312**	**Title**	**Thermal solar systems and components - Structure**
Creation date	1993	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	ELOT (Greece)		
Secretary	Mrs. V. Drosou		
Chairperson	Mr. C. Travasaros		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	ESTIF, IEA-SOLAR Paces, JISC, REHVA		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=6293&title=Thermal%20solar%20systems%20and%20components		
Scope	The CEN/TC312 has already elaborated a set of products in the solar thermal energy field including solar collectors, factory made systems, solar energy vocabulary and custom built systems, and is currently working on revised set for custom built systems and solar combustors.		
Structure	- CEN/TC 312/WG 1 Solar collectors - CEN/TC 312/WG 2 Factory made systems - CEN/TC 312/WG 3 Thermal solar systems and components; Custom built systems - CEN/TC 312/WG 4 Labelling and Marking		
Standardization work			
Published standards	10		
Standards under development	- prEN ISO 9488: rev Solar energy - Vocabulary - prEN 12975-1: Thermal solar systems and components - Solar collectors - Part 1: General requirements - FprEN ISO 9806: Solar energy - Solar thermal collectors - Test methods (ISO/FDIS 9806:2013) - prEN ISO 22975-3: Thermal solar systems and components - Solar collectors - Part 3-1: Qualification of solar absorber surface durability - prEN ISO 22975-1: Solar Energy - Collector components and materials, Part 1: Evacuated tubes - Durability and Performance - prEN ISO 22975-2: Solar Energy - Collector components and materials, Part 2: Heat-pipes for evacuated tubes - Durability and performance - 00312035: Thermal solar systems and components - Factory made systems - Part 2: Test methods - 00312036: Thermal solar systems and components - Factory made systems - Part 1: General requirements - 00312037: Thermal Solar Systems and components-Code of Practice - Minimizing the risk of Legionella in solar assisted hot water systems		

Comments
The European Standards and Technical Specifications developed by CEN/TC312: - contribute to the elimination of trade barriers and favour the global market; - support SME's; - provide agreed test methods; - support European Commission policy for environmental friendly technologies; - contribute to the aim of CO_2 emissions reduction; - support the increase of EU market for solar thermal quality products; - assist manufacturers of solar thermal products and components for improved products; - reduce testing costs according to local requirements; - provide an efficient tool for subsidies, funding schemes and energy service companies; - support public awareness for quality and "green" products.

7.4.3. CEN/TC 335 Solid biofuels

General information			
Committee	**CEN/TC 335**	**Title**	**Solid biofuels**
Creation date	2000	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	SIS (Sweden)		
Secretary	Mr. L. Sjöberg		
Chairperson	Mr. J. Wilde		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	IAE, AEBIOM, CEFACD		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=19930&title=Solid%20biofuels		
Scope	The objective of CEN/TC 335 is elaboration of Standards on terminology, fuel specifications and classes, quality assurance, sample preparation, physical and mechanical test methods, chemical test methods.		
Structure	- CEN/TC 335/WG 1 Terminology, Definitions and description - CEN/TC 335/WG 2 Fuel specifications, classes and quality assurance - CEN/TC 335/WG 3 Sampling and sample reduction - CEN/TC 335/WG 4 Physical and Mechanical Test Methods - CEN/TC 335/WG 5 Chemical Test Methods		
Standardization work			
Published standards	38		
Standards under development	- FprCEN/TR 15149-3: Solid biofuels - Determination of particle size distribution - Part 3: Rotary screen method - prEN ISO 17225-1: Solid biofuels - Fuel specifications and classes - Part 1: General requirements (ISO/DIS 17225-1:2012) - prEN ISO 17225-2: Solid biofuels - Fuel specifications and classes - Part 2: Graded wood pellets (ISO/DIS 17225-2:2012) - prEN ISO 17225-3: Solid biofuels - Fuel specifications and classes - Part 3: Graded wood briquettes (ISO/DIS 17225-3:2012) - prEN ISO 17225-4: Solid biofuels - Fuel specifications and classes - Part 4: Graded wood chips (ISO/DIS 17225-4:2012) - prEN ISO 17225-6: Solid biofuels - Fuel specifications and classes - Part 6: Graded non-woody pellets (ISO/DIS 17225-6:2012) - prEN ISO 17225-7: Solid biofuels - Fuel specifications and classes - Part 7: Graded non-woody briquettes (ISO/DIS 17225-7:2012) - prEN ISO 17225-5: Solid biofuels - Fuel specifications and classes - Part 5: Graded		

	firewood (ISO/DIS 17225-5:2012) - prEN ISO 16559: Solid biofuels - Terminology, definitions and descriptions (ISO/DIS 16559:2013) No (2000/76/EC) - prEN ISO 16948: Solid biofuels - Determination of total content of carbon, hydrogen and nitrogen (ISO/DIS 16948:2013) - prEN ISO 16967: Solid biofuels - Determination of major elements (ISO/DIS 16967:2013) - prEN ISO 16968: Solid biofuels - Determination of minor elements (ISO/DIS 16968:2013) - prEN ISO 16994: rev Solid biofuels - Determination of total content of sulphur and chlorine (ISO/DIS 16994:2013) - prEN ISO 16995: rev Solid biofuels - Determination of the water soluble content of chloride, sodium and potassium (ISO/DIS 16995:2013) - prEN ISO 16993: rev Solid biofuels - Conversion of analytical results from one basis to another (ISO/DIS 16993:2013) - prEN ISO 16996: Solid biofuels - Determination of elemental composition by X-ray fluorescence - prEN ISO 18134-1: Solid biofuels - Determination of moisture content - Oven dry method - Part 1: Total moisture - Reference method - prEN ISO 17831-2: Solid biofuels - Determination of mechanical durability of pellets and briquettes - Part 2: Briquettes - prEN ISO 18122: Solid biofuels - Determination of ash content No (2000/76/EC) - prEN ISO 17831-1: Solid biofuels - Determination of mechanical durability of pellets and briquettes - Part 1: Pellets - prEN ISO 18134-2: Solid biofuels - Determination of moisture content - Oven dry method - Part 2: Total moisture - Simplified method - prEN ISO 18134-3: Solid biofuels - Determination of moisture content - Oven dry method - Part 3: Moisture in general analysis sample - prEN ISO 18123: Solid biofuels - Determination of the content of volatile matter - prEN ISO 17828: Solid biofuels - Determination of bulk density

Comments

In July and August 2012, the following standards were published:

- EN 15234 (Parts 2, 3, 4, 5, 6) : Solid biofuels – Fuels quality assurance ;
- EN 16126 : Solid biofuels - Determination of particle size distribution of disintegrated pellets;
- EN 16127 : Solid biofuels - Determination of length and diameter of pellets.

7.4.4. CEN/TC 383 Sustainably produced biomass for energy applications

General information			
Committee	**CEN/TC 383**	**Title**	**Sustainably produced biomass for energy applications**
Creation date	2008	**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	NEN (Netherlands)		
Secretary	Mr. O.M. Costenoble		
Chairperson	Pr. H. Udo de haes		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	AEBIOM, CEPI, CONCAWE, COPA-COGECA, EBB, eBio, ECOS, ERFO, EUBIA, Fediol, IUCN, RSB, UEPA, WWF		
Web site	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=648007&title=Sustainably produced biomass for energy applications		
Scope	Standardization in the field of sustainably produced biomass, to provide agreements for producers to improve sustainable production, for certifiers to test for compliance, and for authorities to set requirements to biomass applied. The objective is to include sustainability principles, criteria and indicators including their verification and auditing schemes, for as a minimum, but not restricted to, biomass for energy applications. Included are greenhouse gas emission and fossil fuel balances, biodiversity, environmental, economic and social aspects and indirect effects within each of the aspects.		
Structure	- CEN/TC 383/WG 1 Terminology, consistency of evaluation methods and other cross-cutting issues - CEN/TC 383/WG 2 GHG emission balance, fossil fuel balance, and respective calculations, using a life-cycle approach - CEN/TC 383/WG 3 Biodiversity and environmental aspects - CEN/TC 383/WG 5 Verification and auditing - CEN/TC 383/WG 6 Indirect effects		
Standardization work			
Published standards	3		
Standards under development	- FprCEN/TS 16214-2: Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 2: Conformity assessment including chain of custody and mass balance		

Comments
More specifically, the proposed project has several benefits: - reduction of GHG emissions like CO2 is a major objective for using biomass in transport and energy applications. The CEN Standard shall provide requirements and evaluation methodologies to preserve biodiversity, to prevent unwanted land use change and loss of carbon stocks and to preserve the quality of soil, surface water, groundwater and air; - biomass plays an important role in transferring the European energy market into a more sustainable one. This should increase the security of energy supply within Europe, due to decreasing dependence of fossil oil and gas; - the EU has set targets for the share of renewable energy. Biomass is a major energy source to achieve these targets, but the biomass applied should be sustainable to meet the consideration of the targets and to meet the market needs and demands. The CEN/TC provides a set of principles and criteria, which can be used to establish the sustainability of the biomass; - biomass offers new business opportunities for both large industries and SMEs. Conversion and processing of produced biomass in useful end products need innovative technologies, which also contribute to the European knowledge economy. The development of parts 1, 3 and 4 of European Standard EN 16214 have been finalized by CEN/TC 383: - EN 16214-1: Sustainably produced biomass for energy applications - Principles, criteria, indicators and verifiers for biofuels and bioliquids - Part 1: Terminology, was published by CEN in August 2012; - EN 16214-3: Sustainably produced biomass for energy applications - Principles, criteria, indicators and verifiers for biofuels and bioliquids - Part 3: Biodiversity and environmental aspects related to nature protection purposes, was published by CEN in August 2012; - EN 16214-4: Sustainably produced biomass for energy applications - Principles, criteria, indicators and verifiers for biofuels and bioliquids - Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis, was published in January 2013. CEN/TC 383 is still working on part 2 of the standard. CEN/TS 16214-2 Sustainably produced biomass for energy applications - Principles, criteria, indicators and verifiers for biofuels and bioliquids. Part 2: Conformity assessment including chain of custody and mass balance should be published before the end of 2013 as a Technical Specification.

7.4.5. CENELEC/TC 82 Solar photovoltaic energy system

General information			
Committee	**CENELEC/TC 82**	**Title**	**Solar photovoltaic energy system**
Creation date	2001	**MEMBERS** 	33 members of CENELEC
Secretariat	Italy		
Secretary	Mr. Salvatore GUASTELLA		
Chairperson	Dr. Werner KNAUPP (Germany)		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	EC, Georgia, JISC, Montenegro		
Web site	http://www.cenelec.eu/dyn/www/f?p=104:7:8925288502590534		
Scope	To prepare European Standards for systems of and components for photovoltaic conversion of solar energy into electrical energy and for all elements in the entire photovoltaic energy system. The standards will deal with EMC, Machine, CPD and LVD directives. The CLC/TC 82 will especially develop standards in areas where there are special European concerns. The CLC/TC 82 will cooperate closely with IEC TC 82 and the National Committees. The aim will be to support the accelerated market introduction by harmonization of standards.		
Structure	- WG 01 Wafers, cells and modules - WG 02 Bos components and systems		
Standardization work			
Published standards	50		
Standards under development	- prEN 50583:2012 (pr=23051): Photovoltaics in buildings Draft for ENQ - prEN 50583:2012 FprEN 62790:2013 (pr=24830): Junction boxes for photovoltaic modules - Safety requirements and tests - FprEN 62852:2013 (pr=24829): Connectors for DC-application in photovoltaic systems - Safety requirements and tests - FprEN 61853-2:2013 (pr=23038): Photovoltaic (PV) module performance testing and energy rating - Part 2: Spectral response, incidence angle and module operating temperature measurements - FprEN 62116:2012 (pr=24112): Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters - FprEN 62670-1:2012 (pr=24302):Concentrator photovoltaic (CPV) performance testing - Part 1: Standard conditions - FprEN 60904-8:2012 (pr=24290): Photovoltaic devices - Part 8: Measurement of spectral response of a photovoltaic (PV) device - FprEN 61829:2012 (pr=24024): Crystalline silicon photovoltaic (PV) array - On-site measurement of I-V characteristics - FprEN 62817:2013 (pr=24760): Solar trackers for photovoltaic systems - Design qualification		

Comments
The standard EN 62716:2013 Photovoltaic (PV) modules - Ammonia corrosion testing was published in August 2013. The next meeting will be held on February 13, 2014 in Brussels.

7.4.6. CEN/CENELEC JWG FCGA Joint Working Group on Fuel cell gas appliances

General information			
Committee	**CEN/CENELEC JWG FCGA**	**Title**	**Joint Working Group on Fuel cell gas appliances**
Creation date		**MEMBERS** 	33 members of CEN/CENELEC
Secretariat	DKE (Germany)		
Secretary	Dr. G. Imgrund		
Chairperson	Dipl.-Ing. J. Endisch		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	-		
Web site	http://www.cenelec.eu/dyn/www/f?p=104:22:3406448706326126		
Scope	Product standards are to be elaborated for gas fired appliances with combined heating and power to be harmonized with the essential requirements of the Gas Appliance Directive (90/396/EC). To avoid overlapping with other technical bodies, the focus of the standards to be elaborated is materials, design, construction of the appliances to ensure safe operation and performance.		
Structure	- WG 01 European product standard for combined heating power systems using gas fuel		
Standardization work			
Published standards	1		
Standards under development	- prEN 50465 European product standard for combined heating power systems using gas fuel		
Comments			
The standard EN 50465:2008 Gas appliances - Fuel cell gas heating appliances - Fuel cell gas heating appliance of nominal heat input inferior or equal to 70 kW was published in May 2009. This European Standard applies to the construction, the safety, the functional requirements and the test methods, as well as the classification and the marking of a fuel cell gas heating appliance, which will be operated predominantly heat followed, meeting the following boundary conditions: – maximum heat load (gas input): 70 kW – maximum electrical output: 11 kW. Note: Due to the fact, that there are national deviations on the maximum electrical output in Europe, this maximum electrical output is independent referring the number of connected phases to the public low voltage grid.		

7.4.7. IEC/TC 4 Hydraulic turbines

General information			
Committee	**IEC/TC 4**	**Title**	**Hydraulic turbines**
Creation date	1913	**MEMBERS** 	**Participating Countries (19)**: Canada, Austria, Belgium, China, Czech Republic, Egypt, France, Germany, India, Italy, Japan, Netherlands, Norway, Russian Federation, Spain, Sweden, Switzerland, United Kingdom, USA **Observing Countries (15)**: Finland, Greece, Hungary, Indonesia, Ireland, Israel, Republic of Korea, Malaysia, Mexico, New Zealand, Poland, Romania, Serbia, Slovenia, Ukraine
Secretariat	Canada		
Secretary	Mr. Robert Arseneault		
Chairperson	Mr. Jean-Paul Rigg		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	CIGRE/SC A2, IAPWS		
Web site	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID:1228		
Scope	To prepare international standards and reports for hydraulic rotating machinery and associated equipment allied with hydro-power development.		
Structure	**Working Groups** - WG 14 Hydroelectric Power Plant Automation and Turbine Governing Systems - WG 18 Scale effects - WG 25 Acceptance tests for small hydraulic turbines - WG 27 Revision of IEC 60609 (1978): Cavitation pitting evaluation in hydraulic turbines, storage pumps and pump-turbines - WG 29 Particle Erosion - WG 30 Guide for Installation procedures of hydropower machines - WG 33 Preparation of IEC 62882/Ed1 **Maintenance Teams** - MT 28 Revision of IEC 60041 Field acceptance tests to determine the hydraulic performance of hydraulic turbines, storage pumps and pump-turbines - MT 31 Turbine components life assessment - MT 32 Revision of IEC 60193 Joint Working Groups - JWG 1 with ISO - Vibrations in hydraulic machines		
Standardization work			
Published standards	26		
Standards under development	- IEC 61365 Ed. 1.0: Evaluation of Discharge measurement methods (confirmation of equivalence of existing methods) - IEC 62097 am1 Ed. 1.0: Amendment 1: Hydraulic machines, radial and axial - Performance conversion method from model to prototype - IEC 62882 Ed. 1.0: Hydraulic machines - Guide for Francis turbine pressure fluctuation transposition, from model to prototype		

	- PWI 4-00 Ed. 1.0: To revise the ISO 7919-5 and issue a double logo standard on vibrations in hydraulic machines - PWI 4-1 Ed. 1.0: IEC 60041/Ed4: Field acceptance tests to determine the hydraulic performance of hydraulic turbines, storage pumps and pump-turbines - PWI 4-2 Ed. 1.0: Maintenance on IEC 61116: Electromechanical equipment guide for small hydroelectric installations - PWI 4-3 Ed. 1.0: Maintenance of IEC 62256: Hydraulic turbines, storage pumps and pump-turbines - Rehabilitation and performance improvement - PWI 4-4 Ed. 1.0: Maintenance of IEC 60193: Hydraulic turbines, storage pumps and pump-turbines - Model acceptance tests - PWI 4-5 Ed. 1.0: Creation of document for installation hydro equipment - PWI 4-6 Ed. 1.0: Maintenance of IEC 60308: Hydraulic turbines - Testing of control systems

Comments

Hydropower is currently the most common form of renewable energy and plays an important part in global power generation. In 2010, hydroelectricity accounted for 16% of the total electrical energy consumption and is regaining its status of green energy after more than one decade of disparagement and disinformation. The Word Bank recently declared "hydropower now is viewed as an integral factor in addressing energy security, climate change, water security, and regional cooperation".

Regarding Greenhouse Gas generation, reservoirs in temperate and boreal regions are not responsible for more equivalent carbon emission per kWh of generation than wind or nuclear power. Greenhouse Gas emission per kWh is limited to few per cent of emissions from fossil fuel generating stations. In rain forest regions, it remains well below any of the fossil fuel emissions (less than natural gas and 1/3 to 1/5 of most existing technologies), the smaller the reservoir being the better.

Greater implementation of intermittent types of energies, mainly wind and solar, necessitating greater requirements for grid stability. Benefiting from both Large and Small hydropower, energy storage and pump turbines enable the electricity grid to cope with random disturbances induced by all other renewable energies, existing and emerging.

Hydraulic turbines have the particularity of not being individually designed in large quantities; they are always unique designs for specific given hydraulic sites. Exceptionally for low head applications and large flows, we have been able to have some twenty identical units.

The next IEC/TC 4 Plenary Meeting (reviewing complete ongoing work of TC 4) is planned for early June 2014 in Norway.

Additionally IEC/TC 4 is starting a new technical Working Group on Pressure Fluctuations in Hydraulic Machines, who will have their first meeting on October 10-11 in Innsbruck, Austria, following the HYDRO 2013 Conference. Mr. Daqing QIN (Harbin, China) will be leading this new group, with TC 4 Chairman and TC 4 Secretary participating during the initial Working Group meeting in Innsbruck.

7.4.8. IEC/TC 82 Solar photovoltaic energy system

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>IEC/TC 82</td><td>Title</td><td>Solar photovoltaic energy system</td></tr>
<tr><td>Creation date</td><td>2001</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (35):
USA, Algeria, Australia, Austria, Belgium, Canada, China, Cyprus, Czech Republic, Denmark, Finland, France, Germany, India, Indonesia, Ireland, Israel, Italy, Japan, Kenya, Republic of Korea, Malaysia, Mexico, Netherlands, Nigeria, Norway, Portugal, Romania, Russian Federation, Singapore, South Africa, Spain, Switzerland, Thailand, United Kingdom

Observing Countries (13):
Brazil, Bulgaria, Hungary, Iran, New Zealand, Oman, Poland, Saudi Arabia, Serbia, Slovenia, Sweden, Turkey, Ukraine</td></tr>
<tr><td>Secretariat</td><td>USA</td></tr>
<tr><td>Secretary</td><td>Mr. George Kelly</td></tr>
<tr><td>Chairperson</td><td>Dr. H. Alexander Ossenbrink (Denmark)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>EC, IEA</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID:1276</td></tr>
<tr><td>Scope</td><td colspan="3">To prepare international standards for systems of photovoltaic conversion of solar energy into electrical energy and for all the elements in the entire photovoltaic energy system. In this context, the concept "photovoltaic energy system" includes the entire field from light input to a photovoltaic cell to and including the interface with the electrical system(s) to which energy is supplied.</td></tr>
<tr><td>Structure</td><td colspan="3">Working Groups
- WG 1 Glossary
- WG 2 Modules, non-concentrating
- WG 3 Systems
- WG 6 Balance-of-system components
- WG 7 Concentrator modules

Joint Working Groups
- JWG 1 JCG TC 82/TC 88/TC 21/SC 21A
- JWG 32 Electrical safety of PV system installations Managed by TC 64</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">61</td></tr>
<tr><td>Standards under development</td><td colspan="3">- IEC 60904-11 Ed. 1.0 : Photovoltaic devices - Part 11: Measurement of initial light-induced degradation of crystalline silicon solar cells and photovoltaic modules
- IEC 60904-8 Ed. 3.0 : Photovoltaic devices - Part 8: Measurement of spectral response of a photovoltaic (PV) device
- IEC 61215 Ed. 3.0 : Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
- IEC 61683 Ed. 2.0 : Photovoltaic systems - Power conditioners - Procedure for measuring efficiency
- IEC 61730-1 Ed. 2.0 : Photovoltaic (PV) module safety qualification - Part 1:</td></tr>
</table>

Requirements for construction
- IEC 61730-2 Ed. 2.0 : Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
- IEC 61829 Ed. 2.0 : Crystalline silicon photovoltaic (PV) array - On-site measurement of I-V characteristics
- IEC 61853-2 Ed. 1.0 : Photovoltaic (PV) modules performance testing and energy rating - Part 2: Spectral response, incidence angle and module operating temperature measurements
- IEC 62109-3 Ed. 1.0 : Safety of power converters for use in photovoltaic power systems - Part 3: Particular requirements for PV modules with integrated electronics
- IEC 62109-4 Ed. 1.0 : Safety of power converters for use in photovoltaic power systems - Part 4: Particular requirements for combiner box
- IEC 62116 Ed. 2.0 : Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters
- IEC 62446 Ed. 2.0 : Grid connected PV systems - Minimum requirements for system documentation, commissioning tests and inspection
- IEC 62670-2 Ed. 1.0 : Concentrator photovoltaic (CPV) module and assembly performance testing and energy rating - Part 2: Energy rating by measurement
- IEC 62688 Ed. 1.0 : Concentrator photovoltaic (CPV) module and assembly safety qualification
- IEC 62759-1 Ed. 1.0 : ransportation testing of photovoltaic (PV) modules - Part 1: Transportation and shipping of PV module stacks
- IEC 62775 Ed. 1.0 : Cross-linking degree test method for Ethylene-Vinyl Acetate applied in photovoltaic modules - Differential Scanning Calorimetry (DSC)
- IEC 62782 Ed. 1.0 : Dynamic mechanical load testing for photovoltaic (PV) modules
- IEC 62787 Ed. 1.0 : Concentrator photovoltaic (CPV) solar cells and cell-on-carrier (COC) assemblies - Reliability qualification
- IEC 62788-1-2 Ed. 1.0 : Measurement procedures for materials used in photovoltaic modules - Part 1-2: Encapsulants - Measurement of volume resistivity of photovoltaic encapsulation and backsheet materials
- IEC 62788-1-3 Ed. 1.0 : Measurement procedures for materials used in photovoltaic modules - Part 1-3: Encapsulants - Measurement of dielectric strength
- IEC 62788-1-4 Ed. 1.0 : Measurement procedures for materials used in Photovoltaic Modules - Part 1-4: Encapsulants - Measurement of optical transmittance and calculation of the solar-weighted photon transmittance, yellowness index, and UV cut-off frequency
- IEC 62788-1-5 Ed. 1.0 : Measurement procedures for materials used in photovoltaic modules - Part 1-5: Encapsulants - Measurement of change in linear dimensions of sheet encapsulation material under thermal conditions
- IEC 62788-2 Ed. 1.0 : Measurement procedures for materials used in photovoltaic modules - Part 2: Polymeric materials used for frontsheets and backsheets
- IEC 62790 Ed. 1.0 : Junction boxes for photovoltaic modules - Safety requirements and tests
- IEC 62804 Ed. 1.0 : System voltage durability qualification test for crystalline silicon modules
- IEC 62805-1 Ed. 1.0 : Test method for total haze and spectral distribution of haze of transparent conductive coated glass for solar cells
- IEC 62805-2 Ed. 1.0 : Test method for transmittance and reflectance of transparent conductive coated glass for solar cells
- IEC 62817 Ed. 1.0 : Solar trackers for photovoltaic systems - Design qualification
- IEC 62852 Ed. 1.0 : Connectors for DC-application in photovoltaic systems - Safety requirements and tests

	- IEC 62891 Ed. 1.0 : Indoor testing, characterization and evaluation of the efficiency of photovoltaic grid-connected inverters - IEC 62892-1 Ed. 1.0 : Comparative testing of PV modules to differentiate performance in multiple climates and applications - Part 1: Overall test sequence and method of communication - IEC/TS 61836 Ed. 3.0 : Solar photovoltaic energy systems - Terms, definitions and symbols - IEC/TS 62738 Ed. 1.0 : Design guidelines and recommendations for photovoltaic power plants - IEC/TS 62748 Ed. 1.0 : PV systems on buildings - IEC/TS 62789 Ed. 1.0 : Specification of concentrator cell description - PNW 82-771 Ed. 1.0 : Future IEC 60904-8-1: Photovoltaic devices - Part 8-1: Measurement of spectral response of multi-junction photovoltaic (PV) devices - PNW 82-772 Ed. 1.0 : Future IEC 60904-1-1, Photovoltaic devices - Part 1-1: Measurement of current-voltage characteristics of multi-junction photovoltaic devices - PNW 82-791 Ed. 1.0 : Non-uniform snow load testing for photovoltaic (PV) modules - PNW/TS 82-752 Ed. 1.0 : Concentrator Photovoltaic (CPV) modules and assemblies - Design qualification and type approval - Part 9: Retest guidelines (proposed project 62108-9) - PNW/TS 82-782 Ed. 1.0 : Photovoltaic (PV) Modules - Retesting for type approval, design and safety qualification - PNW/TS 82-783 Ed. 1.0 : Bypass diode electrostatic discharge susceptibility testing - PNW/TS 82-784 Ed. 1.0 : Test procedure of Low Voltage Ride-Through (LVRT) measurement for utility-interconnected photovoltaic inverter
Comments	
The last meeting has been held from 12 to 15 October 2012 in Tokyo (Japan).	

7.4.9. IEC/TC 88 Wind turbines

General information			
Committee	**IEC/TC 88**	**Title**	**Wind turbines**
Creation date	1987	**MEMBERS** 	**Participating Countries (26)**: Denmark, Austria, Canada, China, Finland, France, Germany, Greece, India, Iran, Ireland, Israel, Italy, Japan, Republic of Korea, Moldova, Netherlands, Norway, Portugal, Russian Federation, South Africa, Spain, Sweden, Switzerland, United Kingdom, USA **Observing Countries (12)**: Australia, Belgium, Brazil, Bulgaria, Czech Republic, Egypt, New Zealand, Poland, Romania, Serbia, Slovenia, Ukraine
Secretariat	Denmark		
Secretary	Mrs Christine Weibøl Bertelsen		
Chairperson	Mr. C.P. Sandy Butterfield (USA)		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	IEA		
Web site	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:1282,25		
Scope	To prepare international standards for wind turbines that convert wind energy into electrical energy. These standards address design requirements, engineering integrity, measurement techniques and test procedures. Their purpose is to provide a basis for design, quality assurance and certification. The standards are concerned with all subsystems of wind turbines, such as mechanical and internal electrical systems, support structures and control and protection systems. They are intended to be used together with appropriate IEC/ISO standards.		
Structure	**Working Groups** - WG 3 Design requirements for offshore wind turbines - WG 27 Wind turbines - Electrical simulation models for wind power generation **Project Teams** - PT 61400-3-2 Design requirements for floating offshore wind turbines - PT 61400-5 Wind turbines - Part 5: Rotor blades - PT 61400-6 Wind turbines: Tower and foundation design - PT 61400-12-2 Power performance measurements verification of electricity producing wind turbines - PT 61400-26 Availability for wind turbines and wind turbine plants **Maintenance Teams** - MT 1 Design requirements for wind turbines - MT 2 Safety of small wind turbines - MT 11 Acoustic noise measurement technique - MT 12-1 Wind turbine power performance testing - MT 13 Measurement of mechanical loads - MT 21 Measurement and assessment of power quality characteristics of grid connected wind turbines		

	- MT 22 Revision of IEC WT 01, IEC System for Conformity Testing and Certification of Wind Turbines - Rules and procedures - MT 23 Full-scale structural testing of rotor blades - MT 24 Lightning protection for wind turbines **Joint Working Groups** - JWG 1 Wind turbine gearboxes - JWG 25 Communications for monitoring and control of wind power plants linked to TC 57 **Ad-Hoc Groups** - AHG 1 Terminology in the field of wind turbines
Standardization work	
Published standards	22
Standards under development	- IEC 61400-12-1 Ed. 2.0: Wind turbines - Part 12-1: Power performance measurements of electricity producing wind turbines - IEC 61400-13 Ed. 1.0: Wind turbines - Part 13: Measurement of mechanical loads - IEC 61400-2 Ed. 3.0: Wind turbines - Part 2: Small wind turbines - IEC 61400-21 Ed. 3.0: Wind turbines - Part 21: Measurement and assessment of power quality characteristics of grid connected wind turbines - IEC 61400-23 Ed. 1.0: Wind turbines - Part 23: Full-scale structural testing of rotor blades - IEC 61400-25-2 Ed. 2.0: Wind turbines - Part 25-2: Communications for monitoring and control of wind power plants - Information models - IEC 61400-25-3 Ed. 2.0: Wind turbines - Part 25-3: Communications for monitoring and control of wind power plants - Information exchange models - IEC 61400-27-1 Ed. 1.0: Wind turbines - Part 27-1: Electrical simulation models for wind power generation - IEC 61400-27-2 Ed. 1.0: Wind turbines - Part 27-2: Electrical simulation models for wind power generation - Wind power plants - IEC 61400-6 Ed. 1.0: Wind Turbines: Tower and foundation design - IEC/TS 61400-26-2 Ed. 1.0: Wind turbines - Part 26-2: Production based availability for wind turbines - IEC/TS 61400-3-2 Ed. 1.0: Wind turbines - Part 3-2: Design requirements for floating offshore wind turbines - PNW 88-451 Ed. 1.0: Future IEC 61400-15: Assessment of site specific wind conditions for wind power stations - PNW/TS 88-446 Ed. 1.0: Wind turbines - Part 26-3: Availability for wind power stations (future IEC 61400-26-3 TS Ed.1)
Comments	
The last meeting has been held from 4 to 10 April 2013 in Kyoto (Japan).	

7.4.10. IEC/TC 114 Marine energy – Wave, tidal, and other water current converters

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>IEC/TC 114</td><td>Title</td><td>Marine energy – Wave, tidal, and other water current converters</td></tr>
<tr><td>Creation date</td><td>2008</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (14):
United Kingdom, Canada, China, Denmark, France, Germany, Ireland, Japan, Republic of Korea, Netherlands, Norway, Spain, Sweden, USA

Observing Countries (8):
Brazil, Czech Republic, Italy, Poland, Portugal, Romania, Russian Federation, Ukraine</td></tr>
<tr><td>Secretariat</td><td>United Kingdom</td></tr>
<tr><td>Secretary</td><td>Mr. Danny Peacock</td></tr>
<tr><td>Chairperson</td><td>Mr. Neil Rondorf (USA)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>IEA</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID:1316</td></tr>
<tr><td>Scope</td><td colspan="3">To prepare international standards for marine energy conversion systems. The primary focus will be on conversion of wave, tidal and other water current energy into electrical energy, although other conversion methods, systems and products are included. Tidal barrage and dam installations, as covered by TC 4, are excluded.
The standards produced by TC 114 will address:
- system definition;
- performance measurement of wave, tidal and water;
- current energy converters;
- resource assessment requirements, design and survivability;
- safety requirements;
- power quality;
- manufacturing and factory testing;
- evaluation and mitigation of environmental impacts.</td></tr>
<tr><td>Structure</td><td colspan="3">Project Teams
- PT 62600-1 Terminology
- PT 62600-2 Design requirements for marine energy systems
- PT 62600-10 Assessment of mooring system for marine energy converters
- PT 62600-20 Guideline for design assessment of Ocean Thermal Energy Conversion (OTEC) system
- PT 62600-30 Electrical power quality requirements for wave, tidal and other water current energy converters
- PT 62600-101 Wave energy resource assessment and characterization
- PT 62600-102 Wave energy converter power performance assessment at a second location using measured assessment data
- PT 62600-103 Guidelines for the early stage development of wave energy converters

Best practices and recommended procedures for the testing of pre-prototype scale devices
- PT 62600-201 Tidal energy resource assessment and characterization</td></tr>
</table>

	Ad-Hoc Groups - AHG 2 Power performance assessment of electricity producing river current energy converters - AHG 3 Assessment of information received on IEC TS 62600-100, Power performance assessment of electricity producing wave energy converters - AHG 4 Assessment of information received on IEC TS 62600-200, Power performance assessment of electricity producing tidal energy converters
Standardization work	
Published standards	3
Standards under development	- IEC/TS 62600-10 Ed. 1.0: Marine energy - Wave, tidal and other water current converters - Part 10: The assessment of mooring system for marine energy converters (MECs) - IEC/TS 62600-101 Ed. 1.0: Marine energy - Wave, tidal and other water current converters - Part 101: Wave energy resource assessment and characterization - IEC/TS 62600-102 Ed. 1.0: Marine energy - Wave, tidal and other water current converters - Part 102: Wave energy converter power performance assessment at a second location using measured assessment data - IEC/TS 62600-103 Ed. 1.0: Marine energy - Wave, tidal and other water current converters - Part 103: Guidelines for the early stage development of wave energy converters: Best practices & recommended procedures for the testing of pre-prototype scale devices - IEC/TS 62600-2 Ed. 1.0: Marine energy - Wave, tidal and other water current converters - Part 2: Design requirements for marine energy systems - IEC/TS 62600-20 Ed. 1.0: Marine energy - Wave, tidal, and other water current converters - Part 20: Guideline for design assessment of Ocean Thermal Energy Conversion (OTEC) system - IEC/TS 62600-201 Ed. 1.0: Marine energy - Wave, tidal and other water current converters - Part 201: Tidal energy resource assessment and characterization - IEC/TS 62600-30 Ed. 1.0: Marine Energy - Wave, tidal and other water current converters - Part 30: Electrical power quality requirements for wave, tidal and other water current energy converters - PNW/TS 114-121 Ed. 1.0. : River energy resource assessment and characterization
Comments	
One of the more recent of the IEC TCs (Technical Committees), TC 114, is responsible for International Standards for marine energy conversion systems. It has issued its first publication, specifying the most important renewable energy terms relating to ocean and marine energy. At the end of 2011, IEC TC 114: Marine energy - Wave, tidal and other water current converters, issued its first publication, IEC/TS 62600-1, Marine energy - Wave, tidal and other water current converters - Part 1: Terminology. IEC TS (Technical Specification) 62600-1 defines the terms used in the marine renewable energy industry and relevant to ocean and marine energy. These renewable sources include wave, tidal, current, and other water current energy converters. Providing uniform terminology for use at an international level helps organizations and individuals to communicate with each other and thus facilitates interaction between them[85]. The US mirror committee has developed an Internet site: http://www.tc114.us The canadian mirror committee has developed an Internet site: http://www.tc114.oreg.ca	

[85] http://www.iec.ch/etech/2012/etech_0312/store-2.htm

7.4.11. IEC/TC 117 Solar thermal electric plants

General information			
Committee	**IEC/TC 117**	**Title**	**Solar thermal electric plants**
Creation date	2011	**MEMBERS** 	**Participating Countries (11)**: China, France, Germany, Israel, Italy, Japan, South Africa, Spain, Sweden, Switzerland, USA **Observing Countries (11)**: Australia, Austria, Brazil, Canada, Czech Republic, Denmark, Republic of Korea, Mexico, Poland, Portugal, United Kingdom
Secretariat	Spain		
Secretary	Mr. Eduardo García Iglesia		
Chairperson	Mr. Ammon Mahalalel		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	-		
Web site	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID:7851		
Scope	To prepare international standards for systems of Solar Thermal Electric (STE) plants for the conversion of solar thermal energy into electrical energy and for all the elements (including all sub-systems and components) in the entire STE energy system. The standards would cover all of the current different types of systems in the STE field, as follows: - parabolic trough; - solar tower; - linear Fresnel; - dish; - thermal storage. The standards would define terminology, design and installation requirements, performance measurement techniques and test methods, safety requirements, "power quality" issues for each of the above systems. The standards would also address issues of connectivity and interoperability with the power grid related to connections, bi-directional communicates and centralized control (Smart Grid) and environmental aspects.		
Structure	- AHG 1 General subjects - AHG 2 Systems and components - AHG 3 Energy storage		
Standardization work			
Published standards	0		
Standards under development	-		
Comments			
The next meeting will be held from the 18th to the 20th November 2014 in Northbrook (USA).			

7.4.12. ISO/TC 28/SC7 Liquid biofuels

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 28/SC7</td><td>Title</td><td>Liquid biofuels</td></tr>
<tr><td>Creation date</td><td>2007</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (26):
Brazil, Argentina, Australia, Austria, Canada, China, France, Germany, India, Indonesia, Islamic Republic of Iran, Israel, Italy, Japan, Republic of Korea, Malaysia, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, Thailand, United Kingdom, USA, Uruguay

Observing Countries (6):
Belarus, Belgium, Bulgaria, Czech Republic, Finland, Switzerland</td></tr>
<tr><td>Secretariat</td><td>ABNT (Brazil)</td></tr>
<tr><td>Secretary</td><td>Mrs. Carolina Martins</td></tr>
<tr><td>Chairperson</td><td>Mr. Sergio A. M. Fontes</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>AOCS, WEC</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=551957</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization in the field of liquid biofuels</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/TC 28/SC 7/WG 3 JWG with TC34/SC11 Input/output quality for feedstocks and fatty acid esters used in biodiesel
- ISO/TC 28/SC 7/WG 4 Ethanol test methods
- ISO/TC 28/SC 7/WG 5 Biodiesel test methods</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">-</td></tr>
<tr><td>Standards under development</td><td colspan="3">- ISO/DIS 17306: Petroleum products -- Biodiesel -- Determination of free and total glycerin and mono-, di- and tracylglycerols by gas chromatography
- ISO/DIS 17307: Petroleum products -- Biodiesel -- Determination of total esters content by gas chromatography
- ISO/DIS 17308: Test method for electrical conductivity in ethanol
- ISO/DIS 17315: Ethanol -- Determination of total acidity by potenciometric titration</td></tr>
<tr><th colspan="4">Comments</th></tr>
<tr><td colspan="4">The next meeting will take place in Fortaleza (Brazil), in September 2014.</td></tr>
</table>

7.4.13. ISO/TC 238 Solid biofuels

General information			
Committee	**ISO/TC 238**	**Title**	**Solid biofuels**
Creation date	2007	**MEMBERS** 	**Participating Countries (24)**: Sweden, Austria, Barbados, Belgium, Canada, China, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Republic of Korea, Malaysia, Netherlands, Norway, Poland, South Africa, Spain, Switzerland, Thailand, United Kingdom, USA **Observing Countries (13)**: Argentina, Armenia, Colombia, Croatia, Czech Republic, India, Islamic Republic of Iran, Israel, Japan, Romania, Serbia, Slovakia, Sri Lanka
Secretariat	SIS (Sweden)		
Secretary	Mr. Lars Sjöberg		
Chairperson	Mr. Jonas Wilde		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	-		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=554401		
Scope	Standardization of terminology, specifications and classes, quality assurance, sampling and sample preparation and test methods in the field of raw and processed materials originating from arboriculture, agriculture, aquaculture, horticulture and forestry to be used as a source for solid biofuels. Excluded: areas covered by ISO/TC 28/SC 7 Liquid biofuels, ISO/TC 193 Natural gas.		
Structure	- ISO/TC 238/WG 1 Terminology - ISO/TC 238/WG 2 Fuel specifications and classes - ISO/TC 238/WG 4 Physical and mechanical test methods - ISO/TC 238/WG 5 Chemical test methods - ISO/TC 238/WG 6 Sampling and sample preparation		
Standardization work			
Published standards	0		
Standards under development	- ISO/DIS 16559: Solid biofuels -- Terminology, definitions and descriptions - ISO/DIS 16948: Solid biofuels -- Determination of total content of carbon, hydrogen and nitrogen - ISO/DIS 16967: Solid biofuels -- Determination of major elements - ISO/DIS 16968: Solid biofuels -- Determination of minor elements - ISO/DIS 16993: Solid biofuels -- Conversion of analytical results from one basis to another - ISO/DIS 16994: Solid biofuels -- Determination of total content of sulphur and chlorine - ISO/DIS 16995: Solid biofuels -- Determination of the water soluble content of chloride, sodium and potassium - ISO/CD 16996: Solid biofuels -- Determination of elemental composition by X-ray fluorescence - ISO/DIS 17225-1: Solid biofuels -- Fuel specifications and classes -- Part 1: General requirements - ISO/DIS 17225-2: Solid biofuels -- Fuel specifications and classes -- Part 2: Graded		

	wood pellets - ISO/DIS 17225-3: Solid biofuels -- Fuel specifications and classes -- Part 3: Graded wood briquettes - ISO/DIS 17225-4: Solid biofuels -- Fuel specifications and classes -- Part 4: Graded wood chips - ISO/DIS 17225-5: Solid biofuels -- Fuel specifications and classes -- Part 5: Graded firewood - ISO/DIS 17225-6: Solid biofuels -- Fuel specifications and classes -- Part 6: Graded non-woody pellets - ISO/DIS 17225-7: Solid biofuels -- Fuel specifications and classes -- Part 7: Graded non-woody briquettes - ISO/CD 17588: Solid biofuels -- Fuel quality assurance - ISO/CD 17827-1: Solid Biofuels -- Determination of particle size distribution for uncompressed fuels -- Part 1: Horizontally oscillating screen using sieve for classification of samples with a top aperture of 3.15 mm and above - ISO/CD 17827-2: Solid Biofuels -- Determination of particle size distribution for uncompressed fuels -- Part 2: Vertically vibrating screen using sieve for classification of samples with a top aperture of 3.15 mm and below - ISO/CD 17828: Solid Biofuels -- Determination of bulk density - ISO/CD 17829: Solid Biofuels -- Determination of length and diameter of pellets - ISO/CD 17830: Solid Biofuels -- Determination of particle size distribution of disintegrated pellets - ISO/CD 17831-1: Solid Biofuels -- Methods for the determination of mechanical durability of pellets and briquettes -- Part 1: Pellets - ISO/CD 17831-2: Solid Biofuels -- Methods for the determination of mechanical durability of pellets and briquettes -- Part 2: Briquettes - ISO/CD 18122: Solid biofuels -- Determination of ash content - ISO/CD 18123: Solid biofuels -- Determination of the content of volatile matter - ISO/CD 18134-1: Solid biofuels -- Determination of moisture content -- Oven dry method -- Part 1: Total moisture -- Reference method - ISO/CD 18134-2: Solid biofuels -- Determination of moisture content -- Oven dry method -- Part 2: Total moisture - Simplified method - ISO/CD 18134-3: Solid biofuels -- Determination of moisture content -- Oven dry method -- Part 3: Moisture in general analysis simple - ISO/CD 18846: Solid biofuels -- Determination of fines content in quantities of pellets -- Manual sieve method using 3,15 mm sieve aperture - ISO/DIS 18847: Solid biofuels -- Determination of particle density
Comments	
The next meeting will take place on September 2014 in Brazil	

7.4.14. ISO/TC 248 Project committee: Sustainability criteria for bioenergy

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/TC 248</td><td>Title</td><td>Project committee: Sustainability criteria for bioenergy</td></tr>
<tr><td>Creation date</td><td>2009</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating Countries (33):
Brazil, Germany, Argentina, Australia, Bangladesh, Canada, China, Colombia, Denmark, Finland, France, Indonesia, Islamic Republic of Iran, Israel, Italy, Kenya, Republic of Korea, Malaysia, Morocco, Netherlands, Norway, Pakistan, Rwanda, South Africa, Spain, Sri Lanka, Sweden, Switzerland, United Republic of Tanzania, Uganda, United Kingdom, USA, Viet Nam

Observing Countries (12):
Belgium, Burundi, Cambodia, Czech Republic, Iraq, Japan, Nepal, Portugal, Slovakia, Swaziland, Thailand, The Former Yugoslav Republic of Macedonia</td></tr>
<tr><td>Secretariat</td><td>DIN (Germany) twinned with ABNT (Brazil)</td></tr>
<tr><td>Secretary</td><td>Dipl.-Geoök. Reiner Hager</td></tr>
<tr><td>Chairperson</td><td>Mr. Humberto Siqueira Brandi (Brazil)</td></tr>
<tr><td>Involvement of Luxembourg</td><td>NO (no registered delegate)</td></tr>
<tr><td>Organizations in liaison</td><td>EBB, ECOS (Europe), FAO, FSC, GRFA, IPIECA, IUCN</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=598379</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization in the field of sustainability criteria for production, supply chain and application of bioenergy. This includes terminology and aspects related to the sustainability (e.g. environmental, social and economic) of bioenergy.</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/TC 248/WG 1 Cross cutting issues (including terminology and verification and audit)
- ISO/TC 248/WG 2 Greenhouse gases
- ISO/TC 248/WG 3 Environmental, economic and social aspects
- ISO/TC 248/WG 4 Indirect effects</td></tr>
<tr><th colspan="4">Standardization work</th></tr>
<tr><td>Published standards</td><td colspan="3">0</td></tr>
<tr><td>Standards under development</td><td colspan="3">- ISO/CD 13065: Sustainability criteria for bioenergy</td></tr>
<tr><th colspan="4">Comments</th></tr>
<tr><td colspan="4">The next meeting will take place from September 30 to October 4, 2013 in Stockholm.

Dipl.-Geoök. Reiner Hager, secretary, says: “Three of the four working groups (WG 1, 2, 3) are working on different parts/clauses of ISO 13065. WG 4 is discussing the issue of indirect effects, with the aim of screening results of scientific research and making proposals whether certain issues should be addressed in the standard. The project ISO 13065 -Sustainability criteria for bioenergy- is currently at the stage of the 2nd Committee Draft, which is out for comments and vote until beginning of September. At the meeting, we will hopefully be able to proceed to the Draft International Standard. Therefore the main agenda item (apart from all the formal administrative issues) is the resolution of comments on ISO/CD 13065.2.”</td></tr>
</table>

7.4.15. ISO/TC 255 Biogas

General information			
Committee	**ISO/TC 255**	**Title**	**Biogas**
Creation date	2010	**MEMBERS** 	**Participating Countries (15)**: China, Barbados, Belgium, France, Germany, India, Israel, Italy, Kenya, Republic of Korea, Luxembourg, Netherlands, Norway, Sweden, United Kingdom **Observing Countries (16)**: Australia, Austria, Bosnia and Herzegovina, Czech Republic, Denmark, Finland, Japan, Malaysia, New Zealand, Russian Federation, Slovakia, South Africa, Spain, Sri Lanka, Thailand, USA
Secretariat	SAC (China)		
Secretary	Mrs Liying Sun		
Chairperson	Mr. Jingming Li until		
Involvement of Luxembourg	**Mr. F. Mayer, Research Public Centre Gabriel Lippmann**		
Organizations in liaison	-		
Web site	http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=617083		
Scope	Standardization in the field of biogas.		
Structure	-		
Standardization work			
Published standards	0		
Standards under development	-		

Comments

The objectives of TC255 are:

- to design biogas industry international standardization system; and to draft development goals and time-table for TC 255 following the international trade and market demand;
- to ensure that TC255 standards are in line with international policy, technology and market development trend; and to meet the needs of development in biogas industry;
- to increase the member countries of TC255; to encourage the participation of countries with large amount of biogas production and use as well as developing countries; to ensure that all countries fully participate in standard drafting, modifying and applying; and to improve the efficiency of standards and guarantee the quality of standards;
- to strengthen the communications with other ISO TCs; and to ensure the compatibility between TC 255 standards and other standards.

The first meeting has been held from 23 to 24 October 2012 in Beijing.
Many "New Work Item Proposal" (NWI) are in the drafting stage by different countries. These cover the design features of domestic digesters for household and burners and flares for biogas.

7.5. SUBSECTOR 5 – SMART GRIDS

Electric energy is the ultimate just-in-time product. It needs to be used the moment it is generated and must be supplied continuously. Today's Grids are deeply rooted in technology that was modern more than 100 years ago, long before the first microchip. Most Smart Grid Project managers are now charged with updating those legacy systems. And the big question is how[86].

A "smart grid" uses information technology to optimize the production and distribution of energy, allowing to better connect the demand and the supply between consumers and producers. The main goal consists in energy savings. "Smart grid" is also related to "Smart meter".

For this subsector, 4 standardization technical committees were identified as interesting (1 at a European level and 3 at an international level).

[86] IEC - Smart Grid - Optimal electricity delivery

7.5.1. CEN/CENELEC/ETSI Smart Grid Coordination Group (SG-CG)

General information			
Committee	**CEN-CENELEC-ETSI Smart Grid Coordination Group**	**Title**	**Smart Grid Coordination Group**
Creation date	2009	**MEMBERS** 	Representatives of members of CEN and CENELEC, representatives of technical committees of CEN, CENELEC and ETSI active in the sector, the European Commission, representatives of environmental organizations (OSCE) and consumers (ANEC GIE). Partners (CEN technical connections) and CENELEC (Coopeating Parnters) active in the sector are also involved. Relationships with the groups in charge of the EC mandate M/441 (CEN-CENELEC-ETSI Smart Metering Coordination Group) and the EC mandate M/468 (CEN-CENELEC eMobility Coordination Group).
Secretariat	CEN/CENELEC Management Center (CCMC)		
Secretary	Mrs. Catherine Vigneron		
Chairperson	-		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	ISO, IEC as observer, The Smart Grids ETP		
Web site	http://www.cenelec.eu/aboutcenelec/whatwedo/technologysectors/smartgrids.html		
Scope	This working group should give its opinion on the European recommendations on the area of standardization for Smart Grids and oversee the standardization activities related to Smart Grids.		
Structure	A main group, the Smart Grid Coordination Group, and 4 working groups, all working under the responsibility of the main group: - WG Reference Architecture - WG First Set of Standards - WG Sustainable Processes - WG Security In 2012, the above-mentioned working groups worked intensively to produce reports.		
Standardization work			
Published standards	SG-CG has not for vocation to publish standards		
Standards under development	SG-CG has not for vocation to publish standards		
Comments			
A smart grid is an electricity network that can integrate in a cost efficient manner the behaviour and actions of all users connected to it - generators, consumers and those that do both - in order to ensure economically efficient, sustainable power system with low losses and high levels of quality and security of supply and safety (as per the definition given by the Expert Group 1 of the EU Commission Task Force for Smart Grids). Standardization is a key issue for smart grids due to the involvement of many different sectors along the value chain - from the generation to the appliances in the households. Because the smart grid is broad in		

its scope, the potential standards landscape is also very large and complex.

This is why the three European Standards Organizations created a Joint Working Group (JWG), which produced a report that outlines Europe's standardization views in the area of smart grids, taking due account of existing global activities.

In 2010, the European Standards Organisations (ESOs), CEN, CENELEC and ETSI set up a Joint Working Group (JWG) on standards for smart grids, which prepared and published in 2011 a report on the European Smart Grids standardization. The final report of the Working Group was published in March 2011: "Final report of the CEN/CENELEC/ETSI Joint Working Group on standards for smart grids"[87].

In order to perform the requested mandated work, the European standardization Organisation (ESOs) established in July 2011, together with the relevant stakeholders, the CEN-CENELEC-ETSI Smart Grid Coordination Group (SG-CG), being responsible for coordinating the ESOs reply to M/490 (successor of the JWG on standards for smart grids).

In 2012, the Smart Girds Coordination Group focused on the following mandated aspects:

- a Technical Reference Architecture;
- a Set of Consistent Standards;
- sustainable Standardization Processes.

The ESOs also investigated standards for information security and data privacy[88].

In 2012, the Smart Girds Coordination Group worked intensively to produce the following reports (approved by the CEN and CENELEC Technical Boards in December 2012 and by ETSI Board in January 2013):

- - Sustainable Processes[89];
- - First Set of Consistent Standards[90];
- - Reference Architecture[91];
- - Investigate standards for information security and data privacy[92].

In addition, SG-CG produced a Framework Document[93] which provides an overview of the activities. It describes how the different elements mentioned above fit together as to provide the consistent framework for Smart Grids, as requested by M/490.

[87] ftp://ftp.cencenelec.eu/CENELEC/Smartgrid/SmartGridFinalReport.pdf
[88] http://www.cenelec.eu/aboutcenelec/whatwedo/technologysectors/smartgrids.html
[89] ftp://ftp.cen.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/Sustainable%20Processes.pdf
[90] ftp://ftp.cen.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/First%20Set%20of%20Standards.pdf
[91] ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/Reference_Architecture_final.pdf
[92] ftp://ftp.cen.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/Security.pdf
[93] ftp://ftp.cen.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/Framework%20Document.pdf

7.5.2. IEC/PC 118 Smart Grid user interface

General information			
Committee	**IEC/PC 118**	**Title**	**Smart Grid user interface**
Creation date	2011	**MEMBERS** 	**Participating Countries (17)**: Australia, China, Denmark, Egypt, France, Germany, India, Italy, Japan, Republic of Korea, Poland, Russian Federation, Spain, Sweden, Switzerland, United Kingdom, USA **Observing Countries (10)**: Austria, Brazil, Canada, Czech Republic, Israel, Malaysia, Netherlands, Norway, Singapore, South Africa
Secretariat	SAC (China)		
Secretary	Mr. Like Wang		
Chairperson	Mr. Richard Schomberg (France)		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	ITU, UCAlug, Zigbee Alliance, WI-FI Alliance, ECHONET, KNX, ASHRAE, OASIS, CIGRE, IEEE, openADR Alliance and regional organizations		
Web site	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:8701,25		
Scope	Standardization in the field of information exchange for demand response and in connecting demand side equipment and/or systems into the smart grid.		
Structure	**Working Groups** - WG 1 Exchange interface between demand-side smart equipment and the grid - WG 2 Power demand response **Advisory Groups** - AG CAG Chairman's Advisory Group		
Standardization work			
Published standards	0		
Standards under development	- 118/21A/AC : Revised document - Change of meeting location - MTGS 2013 - Next meeting to be held in Rosslyn, Virginia, USA from 4th to 6th March 2013 (Announcement) - 118/22/DA : Draft agenda for the meeting to be held in Rosslyn, Virginia, USA, on 2013-03-06 (starting time: 9:00, approximate finishing time: 18:00) - 118/23/AC : MTGS 2013 - Next meeting to be held in Rosslyn, VA, USA from 4th to 6th March 2013 (On-line registration) - 118/24/INF : Call for NC review of proposed IEC Technical Report: Smart grid user interface (V0.6) - 118/25/MTG : Reports and presentations given at the PC 118 meeting in Rosslyn, VA, USA, 2013-03-04/06 - 118/26/INF : Request from the OpenADR Alliance to set up a category D liaison with WGs 1 and 2 of PC 118 - 118/27/RM : Unconfirmed minutes of the 2nd Plenary meeting of IEC PC 118 held in Rosslyn, U.S.A., on March 6, 2013		

	- 118/28/Q : Request from OASIS to set up a Category D liaison with WGs 1 and 2 of PC 118 - 118/29/PAS : IEC/PAS 62746-199 Ed.1: System interfaces and communication protocol profiles relevant for systems connected to the smart grid - Open Automated Demand Response (OpenADR 2.0 Profile Specification)

Comments

PC118 was established on November 11, 2011 based on the two new proposals for smart grid user interface and demand response. It has two working groups. The task of WG1 is to develop an IS on Exchange interface between demand-side smart equipment and the grid, while WG2 is focused on developing IS on demand response.
The objectives of the IEC/PC118 are to unify and standardize information model and communication protocol of large amount of systems/equipments at user side to make them interact with power grid effectively.

Develop standards to:

- facilitate value added service provided for users by using grid side resources;
- ensure the availability of standardized "Interface for information exchange between power grid and user side smart equipment";
- ensure the availability of standardized interface to support "Demand response" application;
- ensure the openness and interoperability of formulated standards;
- emphasize the safety of network and privacy of users;
- ensure the quality, consistency and testability of standards for effective certification.

The 3rd plenary meeting of IEC PC118 and the 6th WG1 and WG2 meetings will be held on March 3, 4, and 5, 2014. The venue of the meeting and the agenda will be decided in early November 2013.

The 5th WG1 and WG2 meetings will be held in Geneva, Switzerland, on November 13 and 14, 2013.

7.5.3. IEC/SG3 Strategic Group on Smart Grid

General information			
Committee	**IEC/SG3**	**Title**	**Strategic Group on Smart Grid**
Creation date	2008	**MEMBERS** 	Australia, Brazil, Canada, China, France, Germany, Israel, Italy, Japan, Netherlands, Republic of Korea, Spain, Sweden, Switzerland, United Kingdom, USA
Secretariat	IEC SMB		
Secretary	Mr. Peter J. Lanctot		
Chairperson	Mr. Richard Schomberg (France)		
Involvement of Luxembourg	**NO (no registered delegate)**		
Organizations in liaison	NIST (US National Institute of Standards and Technology)		
Web site	http://www.iec.ch/smartgrid/		
Scope	SG 3 (Strategic Group) on Smart Grid, set up by the IEC SMB (Standardization Management Board), provides advice on fast-moving ideas and technologies likely to form the basis for new International Standards or IEC TCs (Technical Committees) in the area of Smart Grid technologies. It has developed the framework and provides strategic guidance to all Technical Committees involved in Smart Grid work and has developed the Smart Grid Roadmap which covers standards for interoperability, transmission, distribution, metering, connecting consumers and cyber security.		
Structure	-		
Standardization work			
Published standards	Has not for vocation to publish standards because not identified as a technical committee		
Standards under development	Has not for vocation to publish standards because not identified as a technical committee		
Comments			
SG 3 was established in 2008 with the primary responsibility for the development of a framework that includes protocols and model standards to achieve interoperability of smart grid devices and systems and to develop a long term strategic plan for the IEC where future new standards work is needed. A Smart Grid web portal on the IEC website[94] is maintained by the SG 3 secretariat, providing a "one-stop shop" for industry including ready-to-use standards and guidance documents, as well as ongoing projects. Mr. Lanctot, IEC Market Strategy Board Secretary and Strategic Groups 3 Smart Grid & 6 E-mobility - Secretary, says: "IEC/SG3 will next meet in Seoul, South Korea on 19 and 20 November 2013. The agenda has not yet been finalized but the Strategic Group has been transformed into a Systems Evaluation Group (SEG) on Smart Grid. The SEG will discuss a full transformation of SG3 into a full Systems Committee. In the meantime, the members continue to work on the next edition of the IEC Smart Grid roadmap and the Smart Grid on-line Mapping Tool."			

[94] http://www.iec.ch/smartgrid/

7.5.4. ISO/IEC JTC1 Information technology

<table>
<tr><th colspan="4">General information</th></tr>
<tr><td>Committee</td><td>ISO/IEC JTC 1</td><td>Title</td><td>Information technology</td></tr>
<tr><td>Creation date</td><td>1987</td><td rowspan="6">MEMBERS
  </td><td rowspan="6">Participating countries (35):
USA, Armenia, Australia, Austria, Belgium, Canada, China, Czech Republic, Côte d'Ivoire, Denmark, Finland, France, Germany, India, Ireland, Italy, Jamaica, Japan, Kenya, Republic of Korea, Lebanon, Malaysia, Malta, Netherlands, , Nigeria, Norway, Pakistan, Russian Federation, Singapore, South Africa, Spain, Sweden, Switzerland, United Arab Emirates, United Kingdom

Observing countries (56):
Algeria, Argentina, Azerbaijan, Belarus, Bosnia and Herzegovina, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Ghana, Greece, Hong Kong, Hungary, Iceland, Indonesia, Islamic Republic of Iran, Israel, Kazakhstan, Democratic People's Republic of Korea, Libya, Lithuania, Luxembourg, Mauritius, Mexico, Mongolia, Morocco, New Zealand, Peru, Philippines, Poland, Portugal, Romania, Saudi Arabia, Serbia, Slovakia, Slovenia, Sri Lanka, Swaziland, Thailand, The former Yugoslav Republic of Macedonia, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Uzbekistan, Viet Nam</td></tr>
<tr><td>Secretariat</td><td>ANSI (USA)</td></tr>
<tr><td>Secretary</td><td>Mrs. Lisa Rajchel</td></tr>
<tr><td>Chairperson</td><td>Ms. Karen Higginbottom</td></tr>
<tr><td>Involvement of Luxembourg</td><td>4 delegates
(JTC 1 and related WG only)

38 delegates
(JTC 1 and related SC)</td></tr>
<tr><td>Organizations in liaison</td><td>EC, Ecma International, ITU</td></tr>
<tr><td>Web site</td><td colspan="3">http://www.iso.org/iso/fr/jtc1_home</td></tr>
<tr><td>Scope</td><td colspan="3">Standardization in the field of information technology</td></tr>
<tr><td>Structure</td><td colspan="3">- ISO/IEC JTC 1/SWG 1 Accessibility (SWG-A)
- ISO/IEC JTC 1/SWG 2 Directives (SWG-D)
- ISO/IEC JTC 1/SWG 3 Planning (SWG-P)
- ISO/IEC JTC 1/SWG 4 Smart Grid
- ISO/IEC JTC 1/SWG 5 Internet of Things
- ISO/IEC JTC 1/SWG 6 Management
- ISO/IEC JTC 1/AHG 1 Incubator
- ISO/IEC JTC 1/AHG 2 Structure
- ISO/IEC JTC 1/WG 7 Sensor Networks
- ISO/IEC JTC 1/WG 8 Governance of IT
- ISO/IEC JTC 1/SC 2 Coded character sets
- ISO/IEC JTC 1/SC 6 Telecommunications and information exchange between systems
- ISO/IEC JTC 1/SC 7 Software and systems engineering
- ISO/IEC JTC 1/SC 17 Cards and personal identification
- ISO/IEC JTC 1/SC 22 Programming languages, their environments, and system software interfaces
- ISO/IEC JTC 1/SC 23 Digitally Recorded Media for Information Interchange and Storage
- ISO/IEC JTC 1/SC 24 Computer graphics, image processing, and environmental data representation
- ISO/IEC JTC 1/SC 25 Interconnection of information technology equipment
- ISO/IEC JTC 1/SC 27 IT Security techniques</td></tr>
</table>

	- ISO/IEC JTC 1/SC 28 Office equipment - ISO/IEC JTC 1/SC 29 Coding of audio, picture, multimedia and hypermedia information - ISO/IEC JTC 1/SC 31 Automatic identification and data capture techniques - ISO/IEC JTC 1/SC 32 Data management and interchange - ISO/IEC JTC 1/SC 34 Document description and processing languages - ISO/IEC JTC 1/SC 35 User interfaces - ISO/IEC JTC 1/SC 36 Information technology for learning, education and training - ISO/IEC JTC 1/SC 37 Biometrics - ISO/IEC JTC 1/SC 38 Distributed application platforms and services (DAPS) - ISO/IEC JTC 1/SC 39 Sustainability for and by Information Technology
Standardization work	
Published standards	Total number of published ISO standards related to the technical committee and its SCs (number includes updates): 2649 Number of published ISO standards under the direct responsibility of JTC 1 (number includes updates): 341
Standards under development	578

Comments

ISO/IEC JTC 1 is currently the main standardization committee in the information and communication technology domain, regarding the number of published standards and the number of standards users. Among the standards developed by ISO/IEC JTC 1, the following standards are particularly relevant[95]:

- ISO/IEC 20000-1 (Information technology -- Service management -- Part 1: Service management system requirements);
- ISO/IEC 20000-2 (Information technology -- Service management -- Part 2: Guidance on the application of service management systems);
- ISO/IEC 27003 (Information technology -- Security techniques -- Information security management system implementation guidance);
- ISO/IEC 27004 (Information technology -- Security techniques -- Information security management – Measurement);
- ISO/IEC 27005 (Information technology -- Security techniques -- Information security risk management);
- ISO/IEC 38500 (Corporate governance of information technology);
- ISO/IEC 24762 (Information technology -- Security techniques -- Guidelines for information and communications technology disaster recovery services).

ISO/IEC JTC 1/SWG 4 – Smart Grid

JTC 1 recognizes the continuing and important evolution of Smart Grid technologies, and notes that many standards consortia are planning to develop Smart Grid standards. JTC 1 believes that it has specific interest in this area on a continuing basis.
Terms of Reference:

- periodically review and revise identified market requirements and standardization gaps for Smart Grid with particular attention to standards supporting the interoperability of Smart Grid technology and needed international standardization;
- encourage JTC 1 SCs to address the need for ISO/IEC Smart Grid International Standards. Conduct education sessions with JTC 1 SCs whose work is relevant to smart grids;

[95] ISO/IEC JTC 1 best-selling standards from the www.iso.org Web site since 2008

- promote JTC 1 developed international standards for Smart Grid and encourage them to be recognized and utilized by the industry and SDOs. Such promotion will be based on the SWG on Smart Grid Awareness Plan and the SWG Smart Grid Liaison and Harmonization Plan;
- coordinate JTC 1 Smart Grid activities with IEC, ISO, ITU-T, other SDOs, and major regional and national initiatives that are developing or coordinating specifications for Smart Grid, especially the IEC SMB Strategic Group 3 on Smart Grid;
- periodically report results and recommendations to JTC 1 SWG on Planning and coordinate ongoing work with related plans;
- provide a written report of activities and recommendations in advance of the annual JTC 1 Plenary meetings.

8. CONCLUSION

Europe is facing major challenges concerning the energy sector with the climate change, the dependence on imports, the strain on energy resources and access for all users to affordable, secure energy. In parallel, this sector is seen by the European Commission as a driver for growth, encouraging innovation and employing highly qualified workforce.

Therefore, an "innovative" development of the energy sector is required to correctly address these issues. In Luxembourg, the Government has already launched major national initiatives in favor of the development of this sector, focusing mainly on energy efficiency, renewable energy and electromobility.

In this context, standardization activities constitute a key element to strengthen the implementation of the national energy strategy and the development of the energy sector in Luxembourg.

Based on the national standardization strategy initiated by ILNAS, this standards analysis has as main objectives to, primarily, inform the national stakeholders of the energy sector on the standards developments and, secondly, to raise their consciousness of the potential benefits that they could gain in following and participating in standardization.

This standards analysis is based on a standards watch that identified technical committees potentially interesting to the national stakeholders. In parallel, to convince them of the interest to take part to standardization activities, their potential interests according the different energy subsectors are detailed and opportunities for the market are presented.

However, more than a simple presentation of a standardization panorama of the energy sector, this standards analysis should be seen as a starting point for further discussions and involvement. Indeed, the main aim of this analysis is to increase awareness of the national stakeholders for participating in standardization and to perceive this issue as an interesting and efficient economic leverage. As participation in standardization is a voluntary process, a clear understanding of these concerns is of primary importance in order to master the challenges linked with standardization in the energy sector and to consider a potential participation.

ILNAS, supported by ANEC GIE, will provide an active contribution and support future national delegates by offering training and information.

9. APPENDIX

9.1. LIST OF ACRONYMS

ACRONYM	TITLE
ABNT	Associação Brasileira de Normas Técnicas (Brazilian standardization organization)
ACEA	European Automobile Manufacturers' Association
AEBIOM	European Biomass Association
AECC	Association for Emissions Control by Catalyst
AEGPL	European LPG Association
AFECOR	European Control Manufacturers' Association
AFNOR	Agence Française de Normalisation (French standardization organization)
AG	Advisory Groups
AHG	Ad hoc Group
AIB	Association of Issuing Bodies
AIE	Australian Institute of Energy
ANEC	European consumer voice in standardisation
ANEC GIE	Agence Nationale pour la Normalisation et l'Économie de la Connaissance
ANSI	American National Standards Institute (American standardization organization)
AOCS	American Oil Chemists' Society
APO	Asian Productivity Organization
ASB	Associated Body (CEN)
AWI	Approved Work Item
BSI	British Standards Institution (British standardization organization)
BT	Technical Board (of CEN and/or CENELEC)
BT TCMG	Technical Board Technical Committee Management Group (CEN)
CA	Administrative Board (of CEN)
CAB	Conformity Assessment Body
CAGI	Compressed Air & Gas Institute
CCB	CEN Certification Board
CCMC	CEN CENELEC Management Centre
CD	Committee Draft
CEB BEC	Belgian Electrotechnical Committee
CEC	Commission of the European Communities
CECAPI	European Committee of Electrical Installation Equipment Manufacturers
CECED	European Committee of Domestic Equipment Manufacturers
CECOF	European Committee of Industrial Furnace and Heating Equipment Associations
CEFACD	Trade association representing European manufacturers of domestic independent space heating and cooking appliances fuelled by coal, wood, gas or fuel oil
CEFIC-ATC	European Chemical Industry Council-Technical Committee of Petroleum Additive Manufacturers in. Europe

ACRONYM	TITLE
CEIR	European Committee for the Valve Industry
CEN	European Committee for Standardization
CEN/TR	Technical Report
CEN/TS	Technical Specification
CENELEC	European Committee for Electrotechnical Standardization
CEOC International	International Confederation of Inspection and Certification Organisations
CEPI	Confederation of European Paper Industries
CETOP	European Fluid Power Committee
CI	Consumers International
CIB	Committee-Internal Balloting
CIE	International Commission on Illumination
CIGRE	International Council on Large Electric Systems
CLEPA	European Association of Automotive Suppliers
COGECA	General Confederation of Agricultural Cooperatives
CONCAWE	CONservation of Clean Air and Water in Europe
COPA	Committee of Professional Agricultural Organisations
CRP	Public Research Centre
CSLF	Carbon Sequestration Leadership Forum
CSNPE	Construction Sector Network Project Environment
CWA	CEN Workshop Agreement
dav	Date of Availability
DERlab	European Distributed Energy Resources Laboratories
DEVCO	ISO committee on developing country matters
DEVT	Development and Training Services - ISO
DIN	Deutsches Institut für Normung (German standardization organization)
DIS	Draft International Standard
DKE	Deutsche Kommission Elektrotechnik (German electrotechnical standardization organization)
doa	Date of Announcement
dop	Date of Publication
dor	Date of Ratification
dow	Date of Withdrawal
DPAS	Draft Publicly Available Specification
DTR	Draft Technical Report
DTS	Draft Technical Specification
EAA	European Aluminium Association
EASEE-gas	European Association for the Streamlining of Energy Exchange-gas
EBB	European biodiesel board
eBio	European bioethanol fuel producers association

ACRONYM	TITLE
EC	European Commission
ECISS	European Committee for Iron and Steel Standardization
Ecma international	European Computer Manufacturers Association
ECOLOGIA	ECOlogists Linked for Organizing Grassroots Initiatives and Action
ECOS	European environmental Citizens Organization for Standardization
ECTA	European Chemical Transport Association
EDF	Environmental Defense Fund
EEB	European Environmental Bureau
EFMA	European Fittings Manufacturers' Association
EFTA	European Free Trade Association
EHI	Association of the European Heating Industry
EIA	Energy Information Administration (USA)
EIG	Economic Interest Grouping
EIGA	European Industrial Gases Association
ELOT	Hellenic Organization for Standardization (Greek standardization organization)
EN	European Norm (ENs are adopted and implemented by all members of CEN and CENELEC)
ENEP	European Network of Environmental Professionals
ENTSO-E	European Network of Transmission System Operators for Electricity
EPBD	Energy Performance of Buildings Directive
EPEE	European Partnership for Energy and the Environment
EPERC	European Pressure Equipment Research Council
ERFO	European Association of producers of Solid Recovered Fuels
ESA	European Sealing Association
ESNA	Energy Services Network Association
ESO	European Standards Organizations
ESTIF	European Solar Thermal Industry Federation
ETSI	European Telecommunications Standards Institute
EU	European Union
EUBIA	European Biomass Industry Association
EUnited Metallurgy	European Metallurgical Equipment Association
EU-RAY	European Association of Surface Heating and Cooling
EURELECTRIC	Union of the Electricity Industry
EURIMA	European Insulation Manufacturers Association
EUROPIA	European Petroleum Industry Association
EVO	Efficiency Valuation Organization
FAO	Food and Agriculture Organization of the United Nations
FARECOGAZ	European Association of the Manufacturers of Gas Meters, Gas Pressure Regulators and Associated Safety Devices and Stations

ACRONYM	TITLE
FCD	Final Committee Draft
FDIS	Final Draft International Standard
FEDIOL	European Vegetable Oil and Proteinmeal Industry Federation
FESI	European Federation of Associations of Insulation Contractors
FIDIC	International Federation of Consulting Engineers
FIMITIC	International Federation of Persons with Physical Disability
FNR	National Research Fund
FprEN	Final draft European Standard
FSC	Forest Stewardship Council
FWD	Final Working Draft
GCCSI	Global Carbon Capture and Storage (CCS) Institute
GD	Global Directory
GDP	Gross Domestic Product
GEN	Global Ecolabelling Network
GERG	European Gas Research Group
GHG	Greenhouse gas
GIE	Gas Infrastructure Europe
GRFA	Global Renewable Fuels Alliance
IADC	International Association of Drilling Contractors
IAF	International Accreditation Forum, Inc.
IAI	International Aluminium Institute
IANGV	International Association for Natural Gas Vehicles
IAPWS	International Association for the Properties of Water and Steam
IAQ	International Academy for Quality
ICAAMC	International Compressed Air and Allied Machinery Committee
ICS	International Classification for Standards
ICT	Information and Communication Technology
ID-Cards	Identification Cards
IEA	International Energy Agency
IEAGHG	IEA Greenhouse Gas R&D Programme
IEC	International Electrotechnical Commission
IEEE-SA	Institute of Electrical and Electronics Engineers Standards Association
IISD	International Institute for Sustainable Development
ILNAS	Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services (Luxembourg standardization organization)
ILO	International Labour Organization
ILR	Institut Luxembourgeois de Régulation
IMMA	International Motorcycle Manufacturers Association
INEM	International Network for Environmental Management

ACRONYM	TITLE
INLAC	Latinoamerican Institute for Quality Assurance
IPIECA	Global oil and gas industry association for environmental and social issues
IQNet	IQNet Association - The International Certification Network
IS	International Standard
ISO	International Organization for Standardization
ISO/CS	International Organization for Standardization Central Secretariat
ISO/TR	Technical Report (Ex: CEN/TR, ISO/TR)
ISO/TS	Technical Specification (Ex: CEN/TS, ISO/TS)
IT	Information Technology
ITC	International Trade Centre
ITU	International Telecommunication Union
ITU-T	ITU's Telecommunication Standardization Sector
IUCN	International Union for Conservation of Nature
IWA	International Workshop Agreement
JCG	Joint ISO/CEN Co-ordinating Group of the Technical Boards
JISC	Japanese Industrial Standards Committee (Japanese standardization organization)
JPG	Joint Presidents Group CEN/CENELEC/ETSI
JTC	Joint Technical Committee
JWG	Joint Working Group
MARCOGAZ	Technical Association of the European Natural Gas Industry
MB	Member Body
MBUA	Member Body User Administrator
NEN	Dutch standardization organization
NGVA Europe	Natural and bio Gas vehicle Association
NIST	National Institute of Standards and Technology
NMC	National Mirror Committee
NP	New Proposal
NSB	National Standard Body
NWIP	New Work Item Proposal
OECD	Organisation for Economic Co-operation and Development
OGP	International Association of Oil and Gas Producers
OICA	International Organization of Motor Vehicle Manufacturers
OIML	International Organization of Legal Metrology
OLADE	Latin American Energy Organization
OLN	Organisme luxembourgeois de normalisation
ORGALIME	European engineering industries association
OWG	Other working group
PAS	Publicly Available Specification

ACRONYM	TITLE
PG	Project Group
PL	Project Leader
PNEUROP	European Committee of Manufacturers of Compressors, Vacuum Pumps and Pneumatic Tools
PNR	Pre-Normative Research
prEN	Draft European Standard
PU Europe	European voice of the polyurethane (PUR / PIR) insulation industry
R&D	Research and Development
RE	Renewable Energy
REHVA	Federation of European Heating, Ventilation and Air-conditioning Associations
RSB	Roundtable on Sustainable Biomaterials
SAC	Standardization Administration of the People's Republic of China (Chinese standardization organization)
SC	Sub-Committee
SCC	Standards Council of Canada (Canadian standardization organization)
SDO	Standards Developing Organizations
SEC	Secretary
SFEM	Sector Forum on Energy Management
SG	Study group
SIGTTO	Society of International Gas Tanker and Terminal Operators
SIS	Swedish Standards Institute
SSO	Single Sign On
SWG	Special Working Groups (Advisory Groups (AG) within ISO/IEC JTC 1)
TC	Technical Committee
TEPPFA	European Plastics Pipe and Fittings Association
TF	Task Force
TPM ISO/CS	Technical Programme Manager
UAP	Unique Acceptance Procedure
UEPA	European Union of Ethanol Producers
UIIG	Union Internationale de l'Industrie du Gaz (IGU, International Gas Union)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNI	Italian standardization organization
UNIDO	United Nations Industrial Development Organization
UPEI	Union of European Petroleum Independents
WBCSD	World Business Council for Sustainable Development
WCO	World Customs Organization

ACRONYM	TITLE
WD	Working Draft
WEC	World Energy Council
WFSGI	World Federation of the Sporting Goods Industry
WG	Working Group
WLPGA	World LP Gas Association
WMO	World Meteorological Organization
WRI	World Resources Institute
WTO	World Trade Organization
WWF	World Wide Fund

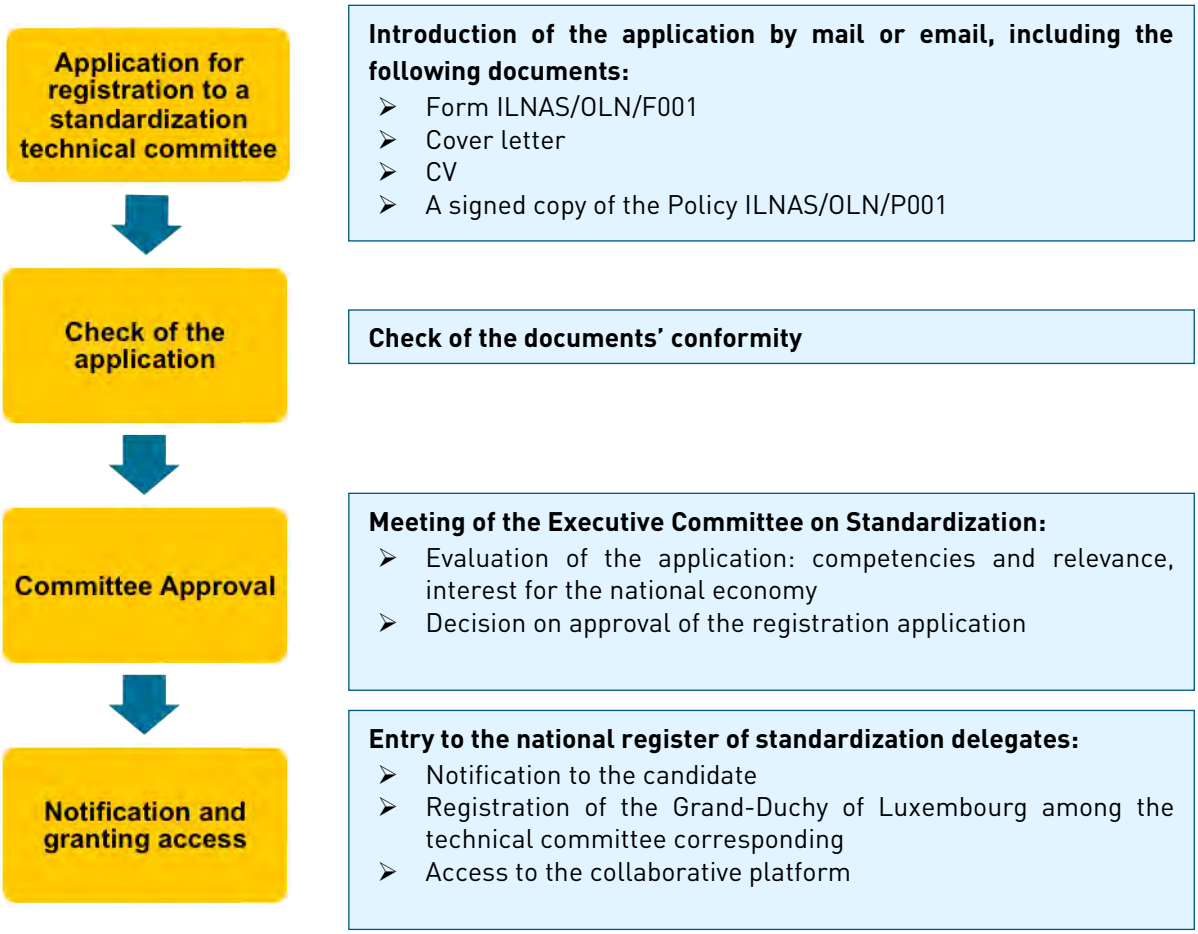
9.2. PARTICIPATION IN STANDARDIZATION PROCESS

To participate in standardization activities at the national, European or international level, each interested person has to become registered within Luxembourg's national standards body, ILNAS. A specific department, the "*Organisme luxembourgeois de normalisation*" (OLN), fulfills the ILNAS missions as a national standardization organization.
Indeed, in the framework of the standardization process, a national standards body recognized at national level is eligible to be a national member of the corresponding international and European standards organizations. In addition, the OLN can surround itself with experts from administrations, public services, professional organizations, groups, associations or institutions interested in standardization, as well as all persons or legal entities interested in participating in standardization.
In order to give access to standardization processes to all national socio-economic stakeholders, the registration as national delegate is entirely free of charge in Luxembourg.
To propose a framework for the standardization work of the national delegates and their participation in standardization technical committees, ILNAS has released a policy giving the main guidelines to the delegates regarding standardization processes and activities. This document, entitled "*Politique relative à la participation dans les comités techniques de normalisation*" is referenced as ILNAS/OLN/P001.

❖ Registration process to a standardization technical committee

Figure 9 (below) summarizes the process for registering as a national delegate to a standardization technical committee.

Figure 9: Registration process to a standardization technical committee



Detailed information on the registration process is available through the following internet link: http://www.ilnas.public.lu/fr/normes-normalisation/participation-aux-travaux-de-normalisation/comites-techniques.

The OLN represents Luxembourg's interests in the European standardization organizations as CEN, CENELEC and ETSI, as well as the international standardization organizations ISO and the IEC. Thus, each delegate has to specify the name of the European/international technical committee, but also sub-committee and working group, on which he or she wants to participate.

❖ National register of standardization delegates registered for standardization technical committees

The national register of the standardization delegates participating in standardization technical committees is updated regularly. This register can be accessed through the following internet link: http://www.ilnas.public.lu/fr/normes-normalisation/participation-aux-travaux-de-normalisation/comites-techniques.

❖ Rights and duties of a national delegate in standardization

According the actual version of the Policy (ILNAS/OLN/P001 - version 3.1), national delegates in standardization have the right to:

- access any documents of the technical committee through a collaborative platform;
- work on standards under development of a technical committee;
- take a position during the validation or approval process;
- participate in European and/or international meetings;
- give feedback to the OLN, if necessary, on malfunctions;
- use the logo "Member of ILNAS Network" in technical contributions.

In return, national delegates have to respect some duties, such as:

- the respect of the standardization policy of the OLN and the terms and conditions of use of the logo "Member of the ILNAS Network" (ILNAS/OLN/A003);
- the commitment of nondisclosure of the technical committee's documents to third parties;
- active participation in the standardization process is required when registered to a national standardization study committee;
- providing a periodic review to the OLN (personal activities, active participation, commentaries, etc.).

In conclusion, if you have skills and experience in the field of energy or if you want to anticipate future requirements and influence the market, then do not hesitate to join the standardization process. A simple registration form has to be completed and introduced with the required documents (CV, cover letter, a signed copy of the policy). After the approval of your application, ILNAS will grant you full access to standardization works and you will become a full member of the standards network. ILNAS, supported by ANEC GIE, provides active support to new delegates in order to give them all the necessary information to efficiently participate in the standardization process.

9.3. LIST OF EU STANDARDIZATION MANDATES

This list of EU standardization mandates related to energy was extracted from the database dedicated to the European mandates[96] – Extraction date: September 2013.

Ref.	Mandate title	Object	Related Directives	Transmission date to EU standardisation bodies
M/017	Standardisation mandate to CEN in the field of equipment and installation for the transmission and distribution of gas	Equipment and installation for the transmission and distribution of gas	90/531/EEC	July 19, 1993
M/046	Mandate to CEN/CENELEC for the Elaboration and adoption of measurement standards for household refrigerators and freezers	Measurement standards for household refrigerators and freezers	92/75/EEC	-
M/047	Mandate to CENELEC for the elaboration and adoption of measurement standards for household washing machines	Adoption of measurement standards for household washing machines	92/75/EEC	-
M/048	Mandate to CENELEC for the elaboration and adoption of measurement standards for household dryers	Measurement standards for household dryers	92/75/EEC	-
M/049	Mandate to CENELEC for the elaboration and adoption of measurement standards for household dishwashers	Measurement standards for household dishwashers	92/75/EEC	-
M/066	Standardisation mandate to CEN concerning efficiency requirements for boilers	Efficiency requirements for boilers	90/396/EEC	-
M/074	Mandate to CEN/CENELEC for the elaboration of a programme for measurement standards for certain type of household appliances	Household appliances	92/75/EEC	-
M/077	Proposal for a mandate to CEN/CENELEC on standards for thermal solar systems and components	Thermal solar systems and components	93/500/EEC	-

[96] http://ec.europa.eu/enterprise/standards_policy/mandates/database/

Ref.	Mandate title	Object	Related Directives	Transmission date to EU standardisation bodies
M/083	Standardisation mandate to CEN and CENELEC concerning the revision of CEN and CENELEC standards to ensure their full coherence in relation with the low voltage and Machinery Directives	Low Voltage and Machinery Directives	73/23/EC	-
M/087	Mandate to CEN and CENELEC for standardisation in the field of wind turbines	Wind Turbines	93/500/EEC	-
M/202	Mandate to CEN and CENELEC for the elaboration and adoption of measurement standards for household light sources	Measurement standards for household light sources	92/75/EEC	-
M/203	Mandate to CEN and CENELEC for the elaboration and adoption of measurement standards for household ovens	Measurement standards for household ovens	92/75/EEC	-
M/204	Mandate to CEN and CENELEC for the elaboration and adoption of measurement standards for household water heater and hot-water storage appliances	Measurement standards for household water heater and hot-water storage appliances	92/75/EEC	-
M/230	Standardisation Mandate to CEN and CENELEC for equipment and installations for the transmission and distribution of electricity	Equipment and installations for the transmission and distribution of electricity	93/38/EEC	-
M/231	Mandate to CEN and CENELEC for the elaboration and adoption of measurement standards for ballasts for fluorescent lamps	Measurement standards for ballasts for fluorescent lamps	PACE Programme SAVE Programme	-
M/244	Standardisation mandate to CEN and CENELEC for test methods and for the measurement, calculation and designation of efficiency of general purpose low voltage three phase induction electric motors	Test methods and measurement, calculation and designation of efficiency of general purpose low voltage three phase induction electric motors	PACE Programme SAVE Programme	-
M/245	Standardisation mandate to CEN concerning minimum requirement specifications including test methods for fatty acid methyl-ester, (FAME), as fuel for diesel engines and for space heating	Test methods for fatty acid methyl-ester, (FAME), as fuel for diesel engines and for space heating	SAVE Programme PACE Programme	-

Ref.	Mandate title	Object	Related Directives	Transmission date to EU standardisation bodies
M/267	Mandate to CEN/CENELEC for the elaboration and adoption of standards for the designation of operational modes and for the measurement method for the power consumption of audio systems	Power consumption of audio systems English	PACE Programme SAVE Programme	-
M/268	Mandate to CEN/CENELEC for the elaboration and adoption of standards for the measurement method for the determination of the efficiency of fluorescent lighting	Efficiency of fluorescent lighting	PACE Programme SAVE Programme	-
M/274	Standardisation mandate to CEN/CENELEC for the measurement method for the determination of the efficiency of individual air conditioners	Efficiency of individual air conditioners	92/75/EEC PACE Programme SAVE Programme	-
M/341	Mandate to CEN, CENELEC, and ETSI for programming standardisation in the field of Eco-design of energy-using products	Eco-design of energy-using products	2002/95/EC 76/769/EEC 67/548/EEC COM(2003) 453 Final COM(2003) 302 Final COM(2001) 274 Final	-
M/343	Standardisation mandate to CEN, CENELEC and ETSI for a methodology calculating the integrated energy performance of buildings and estimating the environmental impact	Energy performance of buildings	2002/91/EC	-
M/344	Mandate to CEN on Ethanol as an oxygen extender to gasoline	Ethanol as an oxygen extender to gasoline	COM(2001) 547 COM(97) 599 Final	-
M/349	Mandate addressed to CEN, CENELEC and ETSI for the elaboration of a feasibility study in the area of hydrogen and fuel cells	Hydrogen and fuel cells	98/34/EC	Mars 19, 2004
M/350	Standardisation mandate to CEN for the development of horizontal standardized methods for the assessment of the integrated environmental performance of building	Integrated environmental performance of building	2002/91/EC	-
M/353	Mandate to CEN and CENELEC for the elaboration and adoption of measurement standards for household appliances : vaccum cleaners	Vaccum cleaner	92/75/EEC	July 6, 2004

Ref.	Mandate title	Object	Related Directives	Transmission date to EU standardisation bodies
M/393	Mandate to CEN for standards for fatty acid ethyl ester for use in diesel engines and heating fuels	FAEE for use in diesel engines and heating fuels	2003/30/EC	November 20, 2006
M/394	Mandate to CEN on the revision of EN 590 to increase the concentration of FAME and FAEE to 10% V/V	Revision on EN 590	2003/30/EC	November 20, 2006
M/400	Mandate to CEN for standardisation in the field of gas qualities	Gas qualities	2003/55/EC	January 18, 2007
M/439	Mandate to CEN, CENELEC and ETSI for standardisation in the field of standby and off modes power consumption measurement for energy using products (EUPS)	Standby and off modes power consumption measurement for energy using products (EUPS)	2005/32/EC	December 18, 2008
M/441	Standardisation mandate to CEN, CENELEC and ETSI in the field of measuring instruments for the development of an open architecture for utility meters involving communication protocols enabling interoperability	Measuring instruments for the development of an open architecture for utility meters involving communication protocols enabling interoperability	2006/32/EC 2004/22/EC	Mars 16, 2009
M/450	Mandate to CEN, CENELEC and ETSI for standardisation in the field of measurements of no-load condition electric power consumption and average active efficiency of external power supplies	Measurements of no-load condition electric power consumption and average active efficiency of external power supplies	2005/32/EC	September 17, 2009
M/451	Mandate to CEN, CENELEC and ETSI for standardisation in the field of power consumption measurement of simple set-top boxes in active and standby modes	Power consumption measurement of simple set-top boxes in active and standby modes	2005/32/EC	September 17, 2009
M/468	Standardisation mandate addressed to CEN and CENELEC and ETSI concerning the charging of electric vehicles	Charging of electric vehicles	2006/95/EC	June 29, 2010
M/475	Mandate to CEN for standards for biomethane for use in transport and injection in natural gas pipelines	Biomethane for use in transport and injection in natural gas pipelines	2009/28/EC	November 16, 2010
M/479	Mandate to CEN, CENELEC and ETSI for elaboration of standards regarding energy audits	Energy audits	2006/32/EC	December 16, 2010

Ref.	Mandate title	Object	Related Directives	Transmission date to EU standardisation bodies
M/480	Mandate to CEN, CENELEC and ETSI for the elaboration and adoption of standards for a methodology calculating the integrated energy performance of buildings and promoting the energy efficiency of buildings, in accordance with the terms set in the recast of the Directive on the energy performance of buildings (2010/31/EU)	Energy performance of buildings (2010/31/EU)	2010/31/EU 2002/91/EC	December 16, 2010
M/481	Mandate to CEN, CENELEC and ETSI for standardisation in the field of household dishwasher	Household dishwasher	2009/125/EC 2010/30/EU 2005/32/EC	January 12, 2011
M/485	Mandate to CEN, CENELEC and ETSI for standardisation in the field of fluorescent lamps, high-intensity discharge lamps, ballasts and luminaires able to operate such lamps	fluorescent lamps, high-intensity discharge lamps, ballasts and luminaires able to operate such lamps	2005/32/EC 2009/125/EC	February 7, 2011
M/490	Smart Grid Mandate Standardization Mandate to European Standardisation Organisations (ESOs) to support European Smart Grid deployment	Smart Grid Mandate Standardization Mandate to European Standardisation Organisations (ESOs) to support European Smart Grid deployment	None	-

9.4. LIST OF ALL IDENTIFIED STANDARDIZATION TECHNICAL COMMITTEES

The standards watch of the energy sector has identified 158 standardization technical committees (European and international), which are presented in the following table.

In **bold** and between brackets, the number of national delegates registered in the national register of standardization delegates (version 63 of September 17, 2013) managed by ILNAS. In red, the most active technical committees in terms of being current, dynamic and strategic (**47** in total).

SUBSECTORS	ORIGINE	TECHNICAL COMMITTEES (TC)
ENERGY MANAGEMENT AND ENERGY EFFICIENCY	**CEN**	CEN/TC 89 Sustainability of construction works
		CEN/TC 110 Heat exchangers
		CEN/TC 113 Heat pumps and air conditioning units
		CEN/TC 131 Gas burners using fans
		CEN/TC 164 Water supply
		CEN/TC 182 Refrigerating systems, safety and environmental requirements
		CEN/TC 228 Heating systems in buildings
		CEN/TC 262 Metallic and other inorganic coatings
		CEN/TC 264 Air quality WG 33 Greenhouse gas (GHG) emissions in energy-intensive industries **(2 national delegates)**
		CEN/TC 268 Cryogenic vessels
		CEN/TC 269 Shell and water-tube boilers
		CEN/TC 270 Internal combustion engines
		CEN/TC 301 Road vehicles
		CEN/TC 320 Transports – Logistics and services / WG 10 Energy consumption and GHG emissions in relation to transport services
		CEN/TC 371 Project Committee – Energy Performance of Building
		CEN/SS B09 Energy Performance of Buildings Directive (EPBD)
		CEN/SS F23 Energy
		CEN/SS/H 99 Products for household and leisure use
	CENELEC	CENELEC/TC 111X Environment
		CENELEC/TC 72 Automatic controls for household use
		CENELEC/SR 72 Automatic controls for household use
		CENELEC/TC 76 Optical radiation safety and laser equipment
		CENELEC/SR 76 Optical radiation safety and laser equipment
	CEN/ CENELEC	CEN/CENELEC Sector Forum on Energy Management (SFEM)
		CEN/CENELEC JWG1 Energy Audits **(1 national delegate)**
		CEN/CENELEC JWG2 Guarantees of origin and energy certificates **(1 national delegate)**
		CEN/CENELEC JWG3 Energy management and services - General requirement and qualification procedures
		CEN/CENELEC JWG4 Energy efficiency and saving calculation
	IEC	IEC/TC 1 Terminology
		IEC/TC 61 Safety of household and similar electrical appliances
		IEC/TC 69 Electric road vehicles and industrial trucks **(1 national delegate)**
		IEC/TC 120 Electrical Energy storage (EES) Systems

SUBSECTORS	ORIGINE	TECHNICAL COMMITTEES (TC)
ENERGY MANAGEMENT AND ENERGY EFFICIENCY	**ISO**	ISO/TC 10 Technical product documentation
		ISO/TC 11 Boilers and pressure vessel
		ISO/TC 22 Road vehicles **(1 national delegate)**
		ISO/TC 70 Internal combustion engines
		ISO/TC 86 Refrigeration and air-conditioning
		ISO/TC 108 Mechanical vibration, shock and condition monitoring
		ISO/TC 118 Compressors and pneumatics tools, machines and equipment /SC 6 - Air compressors and compressed air systems
		ISO/TC 163/WG 4 Joint working group between ISO/TC 163 and ISO/TC 205: Energy performance of building using holistic approach
		ISO/TC 203 Technical energy systems
		ISO/TC 205 Building environment design
		ISO/TC 207 Environmental management / SC7 Greenhouse gas management and related activities
		ISO/TC 208 Thermal turbines for industrial application (steam turbines, gas expansion) – STANDBY
		ISO/TC 242 Energy Management
		ISO/TC 244 Industrial furnaces and associated processing equipment
		ISO/TC 257 General technical rules for determination of energy savings in renovation projects, industrial enterprises and regions
		ISO/TC 265 Carbon capture and Storage (CCS)
		ISO/TMB/SAG EE 1 Strategic Advisory Group on Energy Efficiency
	ISO / IEC	ISO/IEC JPC 2 Joint Project Committee - Energy efficiency and renewable energy sources - Common terminology **(1 national delegate)**
FUELS	**CEN**	CEN/TC 12 Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries
		CEN/TC 47 Atomizing oil burners and their components - Function - Safety – Testing
		CEN/TC 57 Central heating boilers
		CEN/TC 58 Safety and control devices for burners and appliances burning gaseous or liquid fuels
		CEN/TC 88 Thermal insulating materials and products
		CEN/TC 105 Steels for heat treatment, alloy steels, free-cutting steels and stainless steels
		CEN/TC 109 Central heating boilers using gaseous fuels
		CEN/TC 181 Dedicated liquefied petroleum gas appliances
		CEN/TC 343 Solid recovered fuels
		CEN/SS N02 Solid fuels
		CEN Sector Forum Gas Infrastructure
		CEN/TC 23 Transportable gas cylinders
		CEN/TC 48 Domestic gas-fired water heaters
		CEN/TC 49 Gas cooking appliances
		CEN/TC 62 Independent gas-fired space heaters
		CEN/TC 234 Gas infrastructure
		CEN/TC 235 Gas pressure regulators and associated safety devices for use in gas transmission and distribution
		CEN/TC 236 Non industrial manually operated shut-off valves for gas and particular combinations valves-other products
		CEN/TC 237 Gas meters
		CEN/TC 238 Test gases, test pressures and categories of appliances

SUBSECTORS	ORIGINE	TECHNICAL COMMITTEES (TC)
FUELS	**CEN**	CEN/TC 282 Installation and equipment for LNG
		CEN/TC 299 Gas-fired sorption appliances, indirect fired sorption appliances, gas-fired endothermic engine heat pumps and domestic gas-fired washing and drying appliances.
		CEN/TC 326 Gas supply for Natural Gas Vehicles (NGV)
		CEN/SS N21 Gaseous fuels and combustible gas
	ISO	ISO/TC 5 Ferrous metal pipes and metallic fittings
		ISO/TC 17 Steel
		ISO/TC 20 Aircraft and space vehicles
		ISO/TC 27 Solid mineral fuels
		ISO/TC 45 Rubber and rubber products
		ISO/TC 67 Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries
		ISO/TC 109 Oil and gas burners
		ISO/TC 131 Fluid power systems
		ISO/TC 156 Corrosion of metals and alloys
		ISO/TC 161 Control and protective devices for gas and/or oil burners and appliances
		ISO/TC 85 Nuclear energy, nuclear
		ISO/TC 58/SC 4 Operational requirements for gas cylinders
		ISO/TC 158 Analysis of gases
		ISO/TC 192 Turbines à gaz
		ISO/TC 193 Natural gas
		ISO/TC 197 Hydrogen technologies
		ISO/TC 252 Project committee Natural gas fuelling stations for vehicles
POWER ENGINEERING	**CENELEC**	CENELEC/TC 8X System aspects of electrical energy supply
		CENELEC/SR 9 Electrical equipment and systems for railways
		CENELEC/TC 13 Equipment for electrical energy measurement and load control
		CENELEC/SR 17 Switchgear and control gear
		CENELEC/TC 20 Electric cables
		CENELEC/SR 20 Electric cables
		CENELEC/TC 21X Secondary cells and batteries
		CENELEC/SR 21 Secondary cells and batteries
		CENELEC/SR 21A Secondary cells and batteries containing alkaline or other non-acid electrolytes
		CENELEC/SR 22 Power electronic systems and equipment
		CENELEC/TC 22X Power electronics
		CENELEC/SR 32B Low-voltage fuses
		CENELEC/SR 34 Lamps and related equipment
		CENELEC/SR 34A Lamps
		CENELEC/TC 34Z Luminaires and associated equipment
		CENELEC/TC 57 Power systems management and associated information exchange
		CENELEC/SR 57 Power systems management and associated information exchange
		CENELEC/TC 108X Safety of electronic equipment within the fields of Audio/Video, Information Technology and Communication Technology

SUBSECTORS	ORIGINE	TECHNICAL COMMITTEES (TC)
POWER ENGINEERING	**CENELEC**	CENELEC/SR 108 Safety of electronic equipment within the fields of Audio/Video, Information Technology and Communication Technology
	IEC	IEC/TC 7 Overhead electrical conductors
		IEC/TC 8 Systems aspects for electrical energy supply
		IEC/TC 9 Electrical equipment and systems for railways
		IEC/TC 14 Power transformers
		IEC/CIS/D Electromagnetic disturbances related to electric/electronic equipment on vehicles and internal combustion engine powered devices
RENEWABLE ENERGY	**CEN**	CEN/TC 19 Petroleum products, lubricants and related products
		CEN/TC 312 Thermal solar systems and components
		CEN/TC 335 Solid biofuels
		CEN/TC 383 Sustainably produced biomass for energy applications
	CENELEC	CENELEC/TC 82 Solar photovoltaic energy systems
		CENELEC/SR 82 Solar photovoltaic energy systems
	CEN/ CENELEC	CEN/CENELEC JWG FCGA Joint Working Group on Fuel cell gas appliances
	IEC	IEC/TC 4 Hydraulic turbines
		IEC/TC 82 Solar photovoltaic energy systems
		IEC/TC 88 Wind turbines
		IEC/TC 114 Marine energy - wave and tidal energy converters
		IEC/TC 117 Solar thermal electric plants
	ISO	ISO/TC 60 Gears
		ISO/TC 28/SC 7 Biocombustibles liquides
		ISO/TC 180 Solar energy
		ISO/TC 238 Solid biofuels
		ISO/TC 248 Project committee Sustainability criteria for bioenergy
		ISO/TC 255 Biogas **(1 national delegate)**
SMART GRIDS	**CEN/ CENELEC**	CEN/CENELEC/ETSI Working Group on Smart Grids
	ISO/IEC	ISO/IEC JTC1 Information technology
	IEC	IEC/SC 22F Power electronics for electrical transmission and distribution systems
		IEC/SC 23H Industrial plugs and socket-outlets
		IEC/SC 65A System aspects
		IEC/SC 65C Industrial networks
		IEC/SC 77A Low frequency phenomena
		IEC/SC 77B High frequency phenomena
		IEC/SC 77C High power transient phenomena
		IEC/TC 105 Fuel cell technologies
		IEC/TC 13 Electrical energy measurement, tariff- and load control
		IEC/TC 21 Secondary cells and batteries
		IEC/TC 38 Instrument transformers
		IEC/TC 57 Power systems management and associated information exchange
		IEC/TC 64 Electrical installations and protection against electric shock
		IEC/TC 65 Industrial-process measurement, control and automation

SUBSECTORS	ORIGINE	TECHNICAL COMMITTEES (TC)
SMART GRIDS	**IEC**	IEC/TC 66 Safety of measuring, control and laboratory equipment
		IEC/TC 69 Electric road vehicles and electric industrial trucks
		IEC/TC 77 Electromagnetic compatibility
		IEC/TC 95 Measuring relays and protection equipment
		IEC/PC 118 Smart grid user interface
		IEC/SG 3 Strategic Group on Smart Grid
		IEC/TC 82 Solar photovoltaic energy systems
		IEC/TC 88 Wind turbines
		IEC/TC 114 Marine energy - wave and tidal energy converters

9.5. CONTACTS

ILNAS
Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services – Organisme luxembourgeois de normalisation
1, avenue du Swing
L-4367 Belvaux
Phone: (+352) 247 743 40
E-mail: normalisation@ilnas.etat.lu

ANEC GIE
Agence pour la Normalisation et l'Économie de la Connaissance
1, avenue du Swing
L-4367 Belvaux
Phone: (+352) 247 743 70
E-mail: ANEC GIE@ilnas.etat.lu

ILNAS

Institut luxembourgeois de la normalisation,
de l'accréditation, de la sécurité et qualité
des produits et services

ANEC

AGENCE POUR LA NORMALISATION ET
L'ÉCONOMIE DE LA CONNAISSANCE

CONTACT :

ILNAS & ANEC

Southlane Tower I · 1, avenue du Swing · L-4367 Belvaux

Tel. : (+352) 24 77 43 -70 · Fax : (+352) 24 79 43 -70

E-mail : anec@ilnas.etat.lu

www.ilnas.lu

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