



D2.4 – Report presenting quality labels schemes in Europe

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Certifications, standards & labels list

1. SOLAR PV

1.1. Equipment: standards & labels

1.1.1. Standards

1.1.1.1. EU level

- IEC 61215 standard “Crystalline silicon terrestrial photovoltaic (PV) Modules - Design qualification and type approval”
- IEC 61646 “Thin-film terrestrial photovoltaic (PV) Modules - Design qualification and type approval” CEI 61215

These two standards include the examination of all parameters which are responsible for the ageing of PV modules and describes the various qualification tests on the basis of the artificial load of the materials. In particular one differs between radiation testing, thermal testing and mechanical testing.

Both standards have a similar testing sequence and they differ only on the requirements for power degradation. In the IEC 61646 standard is included a further final investigation to evaluate the effect of power degradation due to light exposure (LID – Light Induced Degradation).

- IEC 61730 standard “Photovoltaic (PV) module safety qualification”

It has been issued to further examinations about the PV modules safety against electrical shock hazard, fire hazard, mechanical and structural safety.

The standard EN 61730 (required for CE marking of the PV module) is identical to the IEC 61730 standard with the exception of fire test and some minor modifications.

This standard is divided into 2 separate parts:

- Part 1: requirement for construction: it defines some mandatory requirement for the design of the modules, for physical/chemical properties of the polymeric materials used on the modules as well some requirement of the documentation and labeling of the PV modules (instruction manual).
- Part 2: requirement for testing: it defines some particular additional test to verify the electrical and mechanical safety of the modules according to 3 different classes of application:
 - class A: general application with maximum system voltage greater than 50 VDC with no restricted access to the modules (equivalent to class II)
 - class B: application with maximum system voltage greater than 50 VDC with restricted access to the modules (equivalent to class 0)



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- class A: low voltage application with maximum system voltage lower than 50 VDC with no restricted access to the modules (equivalent to class III).
- IEC standard 62941

IEC TS 62941:2016(E) provides more confidence in the ongoing consistency of performance and reliability of certified PV modules. The requirements of this technical specification are defined with the assumption that the quality management system of the organization has already fulfilled the requirements of a quality management system. By maintaining a manufacturing system in accordance with this guideline, PV modules are expected to maintain their performance as determined from the test sequences in IEC 61215, IEC 61646, or IEC 62108. This technical specification is applicable to all PV modules independent of design and technology i.e. flat panel, concentrator photovoltaic (CPV). This technical specification lays out best practices for product design, manufacturing processes, and selection and control of materials used in the manufacture of PV modules that have met the requirements of IEC 61215, IEC 61646, or IEC 62108.
- EN50380
- English Standard MCS012.
- IEC 60364-4-41

IEC 60364441- Protection against electric shock
Protection against "electric shock" for low voltage electrical installations, and describes the personal safety measures for electrical systems. For systems photovoltaic suggests total isolation and requires special insulation PV modules (according to Class II Security) on the basis of the following requirements:

 - Durability
 - High dielectric strength
 - Mechanical Stability
 - Isolation of sufficient thickness and distances
- IEC 60364-7-712: 2002: Electrical installations of buildings. Part 7-712: rules for special installations and locations. Solar photovoltaic power systems (PV).
- IEC 61701

IEC 61701 - Resistance to salt spray in photovoltaic modules
Solar installations are operating in a highly corrosive environment, as near the sea, they must carry a certificate of panels, with the strength of the panels PV against the corrosive effects of salt. The certification of the panels to the Corrosion is a good idea, if the installation of photovoltaic modules are near the coast or marine applications such as flexible modules pleasure boats, small boats, ships, buoys, beacons and signage sea.

1.1.2. Labels

1.1.2.1. EU level

- IEC 61215 has to be proven by a supplier, often by TÜV label but can also be from VDE or other certification agency.
- EC (European Conformity)



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- SGS
- TÜV (Technischer Überwachungs-Verein)
TÜV Rheinland supports manufacturers and service providers by testing the quality of their PV modules, PV components, and PV systems.

High-quality photovoltaic (PV) modules are subject to a number of requirements. First, they have to deliver the guaranteed rated power reliably, while withstanding an extremely wide range of environmental conditions. They must also be safe and durable, ensuring the system's high yield over the long term. And, they should also be able to generate the total amount of energy that was used to manufacture them in the shortest possible time. They also need to be commercially viable. TÜV Rheinland certifies the quality of your PV modules. They carry out comprehensive tests in test laboratories that comply with applicable national and international standards.

1.1.2.2. Country level

Belgium :

- Solar PV : Quality label for PV system installation companies.
- NRQual : Label de qualité Wallon pour entreprise d'installation (photovoltaïque, solaire thermique et pompes à chaleur). Par rapport aux labels Solar PV, Thermal et Heat Pump, le référentiel impose aussi le respect d'un contrat-type (PV) ou offre-type (solaire thermique) de la Région Wallonne. Passer par une entreprise disposant de ce label assure le respect par celle-ci des conditions d'octroi de la prime Quali watt.

1.2. Installers: Certifications

- Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC
- In The Netherlands, there are voluntary certification schemes for PV-installers, like 'Zonnekeur'.

Zonnekeur is a voluntary certification scheme for PV-installers. Requirements include certain successfully participating in PV-specific training courses/education (at dedicated independent schooling institutes), but at the moment this requirement doesn't cover all (subcontracted) personnel of an installation company, which is a weak point. There are also requirements around safe working, administration and minimum warranties.

Adherence to these can be obligatory in specific situations like subsidies. Also there are laws and sets of rules that deal with workers safety when working on a roof.

- The Technical Building Code (CTE)
- The Electrical Low Voltage Regulation (REBT)
- The RD self-consumption



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2. SOLAR THERMAL

2.1. Equipment: standards & labels

2.1.1. Standards

2.1.1.1. EU Level

- EN 12975
- EN 12976
- EN 12977
- ISO 9806 (Solar collector safety and endurance tests)
- ISO 9806
- ISO 9459-5

2.1.1.2. Country level

Spain :

- UNE 94002: 2005 - solar thermal systems for domestic hot water. Calculation demand for thermal energy. It is the base for the calculation of the demand needed, for the Regulation of thermal installations.

2.1.2. Labels

2.1.2.1. EU level

- EU Energy label
- Solar Keymark:

The Solar Keymark is a voluntary third-party certification mark for solar thermal products, demonstrating to end-users that a product conforms to the relevant European standards and fulfills additional requirements.

The Solar Keymark is used in Europe and increasingly recognized worldwide.

The Solar Keymark is a CEN/CENELEC European mark scheme, solely dedicated to:

- Solar thermal collectors (based on European standard series EN 12975)
- Factory made solar thermal systems (based on European standard series EN12976)

The Solar Keymark was developed by the European Solar Thermal Industry Federation (ESTIF) and CEN (European Committee for Standardisation) in close co-operation with leading European test labs and with the support of the European Commission. It is the main quality label for solar thermal products and is widely spread across the European market and beyond.)



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2.1.2.2. Country level

Belgium:

- Belsolar est une association professionnelle fondée pour encourager l'utilisation de l'énergie solaire. Elle a développé un programme efficace pour les services et produits des fournisseurs de systèmes d'énergie solaire thermique (boilers solaires). Les fournisseurs qui répondent aux critères stipulés et respectent une série de critères de qualité, peuvent devenir membres de la fédération.
- Solar Thermal : Label de qualité pour entreprises d'installation de chauffe-eau solaires
- NRQual : Label de qualité Wallon pour entreprise d'installation (photovoltaïque, solaire thermique et pompes à chaleur). Par rapport aux labels Solar PV, Thermal et Heat Pump, le référentiel impose aussi le respect d'un contrat-type (PV) ou offre-type (solaire thermique) de la Région Wallonne. Passer par une entreprise disposant de ce label assure le respect par celle-ci des conditions d'octroi de la prime Qualiwatt.
- Soltherm : Indique que l'installateur peut placer des chauffe-eau solaires qui donnent droit à une prime SOLTHERM dans la Région wallonne.)

2.2. Installers: Certifications

- Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC
- In The Netherlands, there are voluntary certification schemes for PV-installers, like 'Zonnekeur'.

Zonnekeur is a voluntary certification scheme for PV-installers. Requirements include certain successfully participating in PV-specific training courses/education (at dedicated independent schooling institutes), but at the moment this requirement doesn't cover all (subcontracted) personnel of an installation company, which is a weak point. There are also requirements around safe working, administration and minimum warranties.

Adherence to these can be obligatory in specific situations like subsidies. Also there are laws and sets of rules that deal with workers safety when working on a roof.

- The Technical Building Code (CTE)
- The RITE, Regulation of thermal installations.
- In Belgium, Quest. Certification organism certifying that the Installer of solar panels complies with the norm



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3. HEAT PUMP FOR HEATING & COOLING

3.1. Equipment: standards & labels

3.1.1. Standards

3.1.1.1. EU level

- EN 14825
- EN 14511
- EN 810:1997-06 (Dehumidification test)
- EN 60704-2-7 (Sound test)
- EN 60 335-1
- EN 60 335-2-40 for Electrical safety

3.1.2. Labels

3.1.2.1. EU level

- The EU ecolabel :

It guarantees:

- o Improved energy efficiency during heating and cooling modes
- o Reduction or prevention of the risks for the environment and for human health related to the use of hazardous substances
- o Lower global warming impact
- o Contains instructions for correct environmental use

It can be awarded to electrically driven, gas driven or gas absorption heat pumps with the purpose of space heating or the opposite process space cooling, with a maximum heating capacity of 100 kW. Heat pumps exclusively providing hot water for sanitary use, and those only extracting heat from a building are excluded.

- EHPA Quality label: The EHPA Quality Label is a label that shows the end-consumer a quality heat pump unit or model range on the market. The heat pumps that receive the label need to undergo tests according to the international standard EN14511 and EN16147. These tests are executed by EN17025 accredited test centres.

3.1.2.2. Country level

Spain:

- Some UNE-EN standards from Spain's national law about thermal installations in buildings. For Environmental and safety request: UNE-EN 378 and for confort: UNE EN ISO 7730. They are to verify the good conditions of the heating and cooling installation.

3.2. Installers: Certifications

- 2009/28/CE
- In Portugal: UE REGULATION N.o 517/2014



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4. THERMODYNAMIC WATER HEATER

4.1. Equipment: standards & labels

4.1.1. Standards

4.1.1.1. EU level

- EN 16147
- EN 255-3

4.1.2. Labels

4.1.2.1. EU level

- The EU ecolabel :

It guarantees:

- Improved energy efficiency during heating and cooling modes
- Reduction or prevention of the risks for the environment and for human health related to the use of hazardous substances
- Lower global warming impact
- Contains instructions for correct environmental use

It can be awarded to electrically driven, gas driven or gas absorption heat pumps with the purpose of space heating or the opposite process space cooling, with a maximum heating capacity of 100 kW. Heat pumps exclusively providing hot water for sanitary use, and those only extracting heat from a building are excluded.

- EHPA Quality label: The EHPA Quality Label is a label that shows the end-consumer a quality heat pump unit or model range on the market. The heat pumps that receive the label need to undergo tests according to the international standard EN14511 and EN16147. These tests are executed by EN17025 accredited test centres.

4.1.2.2. Country level

Belgium:

- Label « Heat pump » : Label de qualité pour entreprises d'installation de pompes à chaleur
- NRQual : Label de qualité Wallon pour entreprise d'installation (photovoltaïque, solaire thermique et pompes à chaleur). Par rapport aux labels Solar PV, Thermal et Heat Pump, le référentiel impose aussi le respect d'un contrat-type (PV) ou offre-type (solaire thermique) de la Région Wallonne. Passer par une entreprise disposant de ce label assure le respect par celle-ci des conditions d'octroi de la prime Qualiwatt.

4.2. Installers: Certifications



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- 2009/28/CE
- In Portugal: UE REGULATION N.o 517/2014
- In Belgium: Quest. Certification organism certifying that the Installer of thermodynamic water heater complies with the norm

5. PELLET STOVES

5.1. Equipment: standards & labels

5.1.1. Standards

5.1.1.1. EU level

- EN 14785
- EN 15270: 2007; pellet burners for boilers small heating. Definitions, requirements, testing and marked:
- EN 303-5:1999: Heating boilers - Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW - Terminology, requirements, testing and marking
- EN 12809: Residential independent boilers fired by solid fuel. Nominal heat output up to 50 kW. Requirements and test methods.
- EN 50165 about electrical safety,
- EN 13240 roomheaters fired by solid fuel (requirements and test method), and
- EN 13229 inset appliances including open fires fired by solid fuels (requirements and test methods)

5.1.1.2. Country level

Portugal:

- NP EN 14785-2008. Country specific emissions limits.

Spain:

- For the chimney in the national law for thermal installations in buildings: UNE-EN 13384.
- The Technical Building Code (CTE)
- The RITE, Regulation of thermal installations.

5.1.2. Labels

5.1.2.1. Country level

Belgium:

- CIV: Indicates that the device meets the efficiency and emission requirements.

5.2. Installers: Certifications

- 2009/28/CE



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