QUALICERT

Common quality certification & accreditation for installers of small-scale renewable energy systems

Project IEE/08/479

Work Package 2:
Assessment of existing accreditation and training schemes

Deliverable D2.1: List of existing schemes by country and summary of the research work

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Introduction

1. Background

In its recently adopted Energy & Climate Package, the European Union has set ambitious energy & climate targets, the famous 3 x 20 % by 2020. In order to reach these targets, the building sector is a key area to look into as it is on the one hand a big consumer of energy (both electricity & heating) and has on the other hand a great potential for integration of renewable energy technologies. The large up-take of RES installations in the building sector will require a significant number of highly-qualified installers capable to integrate renewable in both new and existing building and to ensure a good functioning of these systems.

2. Summary of the project

In anticipation of the implementation of Article 14 of the Directive on the promotion of the use of energy from renewable sources, obliging Member States by December 2012 to develop & mutually recognize accreditation & certification schemes for installers of small-scale renewable energy installations, QualiCert will conduct a concerted action among different Member States on this topic. The QualiCert project comes timely both for the EU and national agendas as this aspect will also need to be addressed in the National Renewable Energy Action Plans that Members States will have to submit to the European Commission by June 2010. Within QualiCert, a manual of key success criteria for accreditation & certification systems will be developed and validated among key stakeholders.

To guarantee broadest possible support to the future accreditation and certification scheme, QualiCert is relying on an interdisciplinary multi-stakeholder approach involving builders and installers through their EU associations, existing training providers and accrediting bodies, the RES industry through its European associations, and a number of national energy agencies. Beyond the proactive approach anticipating the EU obligation, QualiCert is also addressing the genuine market need for a comprehensive system to certify installers in order to guarantee quality installations and satisfied customers, which in turn will spur further market deployment.

3. Assessment of existing accreditation and certification schemes in Europe

In a first step, the objective is to collect information to assess accreditation & certification schemes existing in the different EU Member States. In order to be sure to take as much available experience and knowledge as possible on board, a survey was conducted among the different stakeholders involved in the RE field. A questionnaire was elaborated and sent by the professional federations and the national energy agencies to their members and networks in order to gather information about certification and accreditation schemes in Europe. The questionnaire was completed by a desktop research (internet, email inquiries, phone interviews).

The questionnaire includes questions about the following topics:

- the procedure for obtaining certification/accreditation
- the procedure for maintaining/renewing certification/accreditation
- the training related to certification/accreditation
- the audit process
- PR/Marketing tools
- personal feedback

Following the first discussions between the partners, it appears that the terms ‘certification’ and ‘accreditation’ do not have the same exact meaning according to the stakeholders in the different Member States. In order to facilitate the data collection, the following definitions were considered,

based on the definitions of the Directive on the promotion of the use of energy from renewable sources:
Certification means that an installer has demonstrated necessary skills, knowledge and ability typically required of a practitioner to competently install, maintain and troubleshoot a small-scale RE system and that certification is normally provided via training programmes for installers. The certification can be delivered to a person who has demonstrated the necessary skills, knowledge and ability required or to a company which employs a person who has demonstrated the necessary skills, knowledge and ability required.

These training programmes in turn need to be **accredited** by a credible authority to make sure they apply sufficiently stringent and uniform training standards and are suitably designed to reach their goals.

Based on this analysis, a set of success criteria for technical, legal, institutional, financial and communication aspects will be distilled. The identified success criteria will be subject to reality checks in a series of stakeholder validation workshops.

4. Overview of the survey results

The survey's results are based on the answers received from the following countries (see Fig. 1):

- Countries where a certification and accreditation scheme or training has been implemented: Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Spain, Slovakia, Sweden, United Kingdom
- Countries where no certification or accreditation schemes have been implemented, and which are interested in the implementation of such a scheme: Cyprus, Hungary, Romania, Poland, Slovenia

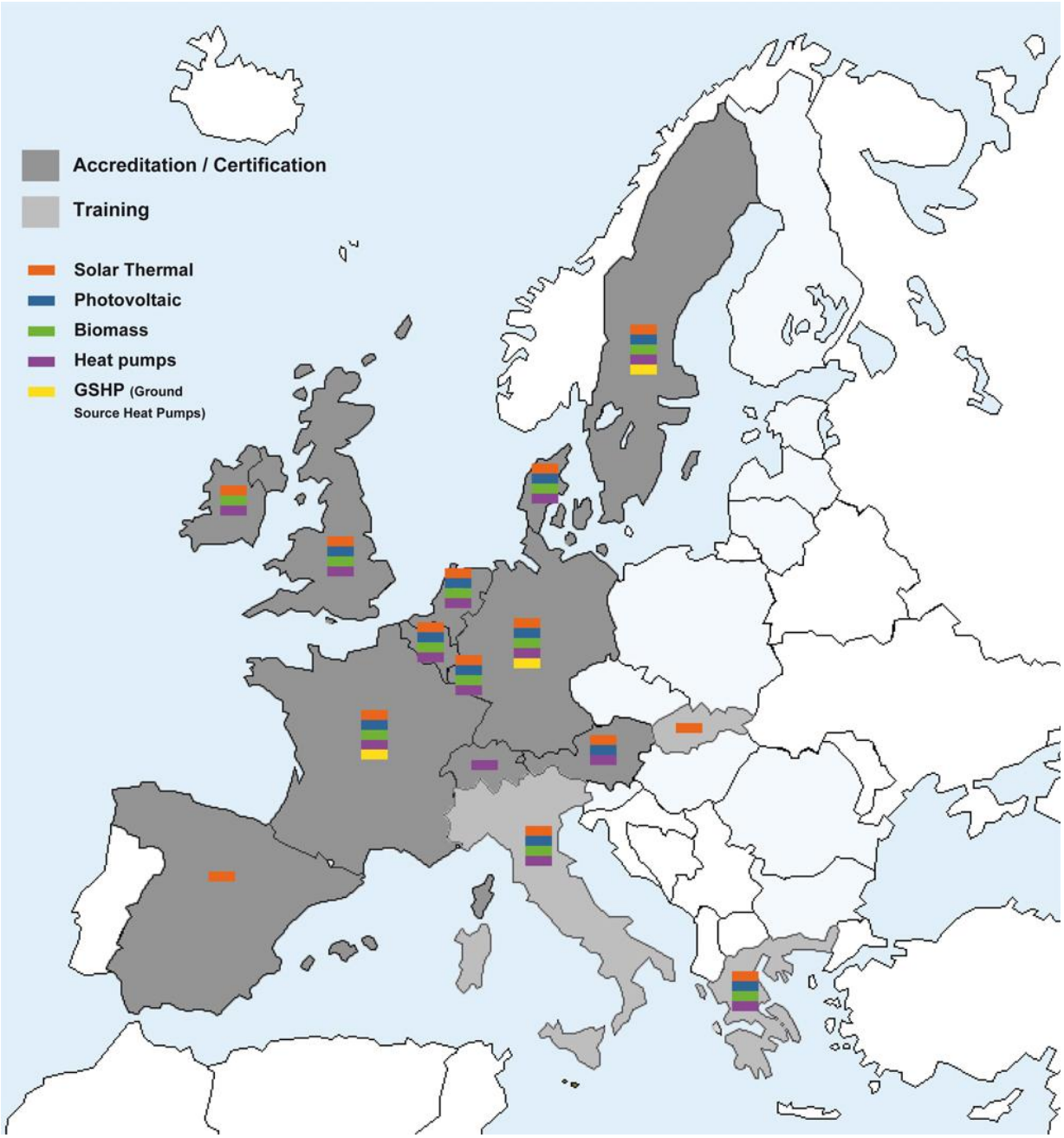

Fig. 1: Existing accreditation and certification schemes in Europe

The different stakeholders stress the importance of implementing a certification and accreditation scheme to improve the quality of RES installations. It is agreed that such a scheme enables to meet regulatory requirements and develop installation standards and best practices. It also increases confidence of the consumers and gives access to a network of qualified installers.

The results show that the scheme may be voluntary or linked to a subsidy scheme for RES and might be implemented by public authorities or private organisms. Some certifying bodies are ISO certified or have been accredited by the National Accreditation body. Other organisms have been created by the stakeholders involved in the RES sector and have been implemented following a collaborative initiative between installers' unions and industry sectors. Most of the schemes implemented have started with one technology (most often for solar thermal installations or heat pumps) and have then been extended to integrate other technologies.

Training for RES installers may be provided by several training infrastructures depending on the country. Training institutions, manufacturers, federations, guilds may offer different types of training. The variety of training structures may therefore cause some confusion and overlapping in competences. The training structures may be accredited by public authorities or by the certifying body with whom they usually sign a partnership agreement.

All certification and accreditation schemes do not contain an audit component. However, there is a general agreement about the crucial role of audit to control the quality, safety and performance of the installations. Different types of audits might be realised: administrative audits based on the documentation sent by the company or/and on-site audits to control the quality of installations.

However, concern is expressed as regards to the costs and administrative burden of a certification and accreditation process. Some stakeholders also stress the lack of training and certification/accreditation infrastructures in some countries and thus the issue of financial resources to set them up. Support from public authorities is considered as necessary for the implementation of a certification and accreditation process. Legal barriers may also be an issue, as new regulations might need to be determined in some countries. Additionally, some installers' unions have expressed their disagreement with a mandatory certification which would oblige already active installers to go through an additional process to be able to continue performing their activities. Finally, it has been stressed that mutual recognition of certificates between different member states might be a barrier to the implementation of a certification process.

AUSTRIA

1. AIT

1.1. Framework

The certification scheme is managed by the Austrian Institute of Technology (AIT), a private non-profit organism. As part of the EUCERT.HP project (see European projects below), AIT has developed specific training courses and certification schemes for installers and planners of heat pumps (since 2005); and for installers and planners of solar thermal and photovoltaic installations (to be implemented in the next weeks). AIT is accredited by the Austrian notified body and the certification process follows the ISO 17024 standard. The certificate is delivered to the installer or planner.

1.2. Quality scheme

In order to obtain the quality certificate, the installer has to fulfil the following requirements:

- Participate in an educational training in the technology concerned
- Pass the final exam
- Provide proof of relevant education or professional experience in the related field
- The employer of a certified installer must be a licensed enterprise offering the planning and/or the installation of the concerned technology AND/OR the installer himself is the owner of the licensed enterprise.
- Provide specific data about reference plants (one to three depending on the technology)
- Signature of a contract
- The reference plant must be mainly designed by the person who wants to obtain the certificate
- A sampling check of the plants is done by the certification body

Additionally, the examiners within the certification body have to fulfil the following requirements:

- Extensive technical knowledge or practical experience in the relevant field
- Knowledge of the relevant standards
- Further education proofs
- Knowledge of rules, procedures and documents of the certification body

The certification is valid for 3 years and costs 260 €per person. The certificate can be renewed for another 3 years without extra certification requirements, but under the obligation to take part in training and information activities (1 full day per year).

1.3. Requirements for renewal

The certificate owner needs to prove within the three-year period:

- Activity in the relevant field
- Participation in further trainings to keep up to date
- The certification body must be informed of any recordings of objections about the quality

At the end of the certificate's validity, the installer needs to fulfil the same requirements as for obtaining the certificate. Renewing the certification costs 200 € per person.

1.4. Training

The training centres accredited by AIT have to fulfil the following requirements:

- Provide proofs of relevant training equipment, laboratories and tools
- Qualified staff
- Content of the training must be approved by the certification body

The certification body audits the training centres every year and assesses the documentation and data about the staff of the training centre.

Trainers of the training centres have to fulfil the following requirements:

- Extensive technical knowledge or practical experience in the relevant sector
- Relevant training
- Proof of at least 3-year professional experience
- Further education proofs

The training centres sign a contract agreement with the certification body.

The training standards have been elaborated in collaboration with different stakeholders: national initiative, European/national project, working group of experts and guilds and are updated at least once a year.

Training for installers is aimed at professionals in the relevant field and varies from 5 to 8 days, depending on the technology.

1.5. Audit

The installations are audited by the certification body and the audits are performed during the works or after the realisation of the installation based on complaints and installation references. The audit results may lead to a suspension or withdrawal of the certificate. An audit costs over 100 €.

A marketing campaign is carried out in order to promote the certification schemes and marketing tools are provided to installers (logo, website, stickers…).

BELGIUM

1. Q-DIRECT

The Q-Direct project aims at developing a reference framework for a quality scheme for distributed renewable energy concept. The objective is to develop a methodology to operate a Microgeneration quality scheme. The project is financed by a public organism: the Belgian Federal Science Policy Office.

Q-DIRECT covers six RES in their domestic applications: solar thermal, solar photovoltaic, biomass, heat pumps, ventilation systems and urban wind turbines. A complete quality referential for each technology will be developed.

2. QUEST: Quality Centre for Sustainable Energy Technologies

2.1. Framework

Quest is a non-profit association founded by technical expertise centres and sector federations. It was initiated by the Flemish Energy Agency in 2007 and is operational since 2009. The organism is financed by public authorities, sector federations and installers/suppliers' fees and manages quality labels for products and installers of small-scale RES.

Quest operates quality control for photovoltaic systems so far and is currently developing a quality label for solar thermal installations and heat pumps (end 2009-2010). It is foreseen to develop later a quality control for biomass heating systems as well.

2.2. Quality scheme

The certification scheme developed by Quest is a voluntary labelling system. It has no direct link with regional financial support schemes. The label is delivered by a technical commission composed of independent experts following specific requirements. The objective is to develop different certification levels: for products, systems, integration to building, installations. The target groups are the installers, suppliers and developers. Since the implementation of the scheme, it is worth noting a low participation from the sector but a high interest from the consumers. Marketing tools are being developed.

In order to obtain the quality label, the installer has to fulfil the following requirements:

- Provide documentation about quotes and contracts
- installation content
- installation design
- components used: the technical requirements for products are included in the requirements to obtain the label for the installer
- work delivery
- the installer has to provide 3 installation references

The installer has to sign a commitment contract with Quest. Once delivered, the label is valid for 2 years and can be extended. The cost of the label is of 1 250 €.

2.3. Training

There is no obligation to attend a professional training and pass a final examination in order to obtain the label. The option is however under consideration and might be developed at later stages.

2.4. Audit

The delivering of the quality label depends on the on-site inspection of an installation by a third-party body (that can be accredited). The audits focus on the quality, safety and performance of the installation and check technical documentation and sales/after-sales conditions. The audit is realized after the realisation of the installation, based on installation references.
No audits have been realized yet, as the quality scheme has just been implemented.

3. Soltherm Training

3.1. Framework

The Soltherm training has been set up by the Walloon region since 2002. It was a voluntary scheme until 2004 and is since linked to the regional subsidy scheme. The solar thermal installer has to attend a mandatory training to be certified as a Soltherm installer and benefits from the subsidy scheme. The qualification is valid for 2 years and may be renewed after a written examination.
The Soltherm training scheme covers the solar thermal systems only.

Marketing tools were available at the launch of the scheme but they are no longer available. The Soltherm installers used to get a Soltherm package composed of the Soltherm logo, Soltherm stickers for vehicles; Soltherm panels for construction site, etc… Those marketing tools were financed by a former energy minister who initiated the Soltherm action plan in Walloon.

3.2. Training

The general content of Soltherm training is delivered by training centres and manufacturers provide specialized training. The training centres have to provide evidence of experience in training of SME co-workers. There are no specific requirements for technical equipment but it is encouraged. The trainers of training centres have to be solar thermal installer themselves.
The training standards are elaborated by a working group of experts and updated by a third-party operator (3E) with Soltherm trainers. They are mainly composed of theory and knowledge in the solar thermal sector. Some training centres organize practice exercises. In order to validate training, the installer has to pass a final examination.

3.3. Audit

The audits are realized by a third-party body after the realisation of the installation, based on complaints and installation references.
The audit standards (called KISST: Key Indicator System Solar Thermal) are elaborated through a working group of experts and updated by experts based on return of experience. A feedback is given to the Soltherm trainers twice a year stressing recurrent installation troubleshot.
Concerns about ways to standardize the audits and manage their costs have been expressed.

4. PVQUAL

The Renewable Business Facilitator, a private association gathering a network of 300 manufacturers, installers and research centres manages the PVQual label for photovoltaic installations. As part of this voluntary certification process, the installer signs a Quality Charter with 11 commitments (registration in the relevant professional activities, works achieved following best practices, advice to the consumer, after-sale…). The installer commits that technical staff and subcontractors attend relevant training (within 18 months from the date of application) or provides evidence of relevant experience of at least 2 years in the field of PV systems.

5. EUCERT TRAINING

From 2010 onwards, Belgium will execute trainings according to the EUCERT program (see description of EUCERT project below).

CYPRUS

There is no existing certification and accreditation scheme in Cyprus. However, the stakeholders involved in the renewable energy sector are currently considering implementing a quality scheme and would be interested in QualiCert outputs.

DENMARK

KSO SCHEME

1. Framework

The KSO scheme is managed by the Technological Institute, a non-profit centre accredited by the National Accreditation Body, Danish DANAK, which received public subsidies from the Danish Energy Agency for the implementation of the KSO scheme. The KSO scheme was first developed for solar

thermal installations and was then extended to photovoltaic systems, biomass systems and heat pumps.

2. Quality scheme

The installers have to fulfil the following requirements to obtain the certification:

- Provide a full Danish plumber education
- Provide evidence of attendance to a 3-day-professional training in the related area
- Pass a written test

There are no requirements to provide installation references or previous experience to obtain the label. However, it is requested to declare each installation realized by the installer.

The certification is valid for 3 years and costs 150 €. The certificate is delivered to the installer. If a company employs an installer with a valid certificate, it can be member of the KSO scheme. The installer has to install at least 2 systems over the 3-year period. Although it is not mandatory, it is recommended to attend a further one-day training. Regarding the audit of installations, 10% of installed systems are controlled.

3. Training

The three-day training session for installers includes a written theoretical test censored by external examiners. An installer can take part in the final examination without having attended the training course.
Training centres have to provide evidence of prerequisites in the related field and evidence of training equipment for biomass and heat pumps trainings.

FINLAND

Finland joined the EUCERT program in 2007. (See details at EUCERT project)

FRANCE

1. Qualibat

1.1. Framework

Qualibat is an Association under private Law which issues qualifications and certifications in the construction sector. Its governing bodies as well as its decisions making bodies are composed with equal shares of representatives of users, of general interest and of contractors.
Qualibat is accredited for its activities by COFRAC, the French accreditation body.
In the fields of solar energy, of wood energy and of geothermal energy, Qualibat manages a certification scheme, in order to assess the technical skills of installers.

1.2. Quality scheme

The company has to fulfil the following requirements:

- Provide legal and administrative documents about the company's existence, activities, fulfilment of tax obligations, staff, equipment…
- Provide evidence of insurance liability and decennial insurance
- Proof of relevant education and training
- List of all installations realised by the company (list as complete as possible)

- Documentation about 3 installation references representative of the technical qualifications of the company
- Technical operating process

1.3. Audits

A technical audit performed within the firm enables to test the knowledge of the staff, the correct implementation of the operating process and an audit on the site enables to check the quality of an installation.

The certification is valid for 4 years and must be renewed every year. An annual supervision of the companies is performed through a follow-up questionnaire. In order to renew the certification, the company has to fulfil the same requirements as for obtaining the certification. A probationary certification may also be delivered for 2 years in case the company cannot provide enough installation references when applying for the certification.

2. Qualifelec

2.1. Framework

Qualifelec is a private association which delivers qualifications to electrician companies. A new qualification has been developed for photovoltaic installations, which is linked to the electrotechnics qualification. A Committee gathering representatives of professional organizations and consumers examines the request for qualification and decides whether to deliver the qualification or not.

2.2. Quality scheme

The installer has to fulfil the following requirements:

- Documentation about the company's existence and activities, legal status and tax obligations
- Documentation about the company's technical equipment and staff
- Proof of relevant education of the technical referents
- Documentation about recent photovoltaic installation references.

2.3. Audits

The Committee assesses the application of the company based on the documentation sent and might carry a technical audit of the installations realised by the company.

The certification is valid for 4 years and should be revised every 2 years.

3. Qualit'EnR

3.1. Framework

Qualit'EnR is a non-profit association created in 2006 by professional organizations and industrial associations. The quality label for solar thermal installations was first implemented by the French National Energy Agency, ADEME, and then transferred to Qualit'EnR in 2006.

Qualit'EnR manages quality labels for installers of small-scale RES:

- Qualisol for solar thermal installations
- QualiPV for photovoltaic installations
- Qualibois for biomass systems
- QualiPAC for heat pumps (from January 2010)

3.2. Quality scheme

The quality scheme is a voluntary certification process. The label is delivered to the company which commits for a 3-year-period. The label should be renewed every year over the commitment period. Marketing tools are provided to installers: stickers, flyers, panels, newsletter…

The company has to fulfil the following requirements:

- Provide legal and administrative documents attesting the company's existence, activities, insurances
- Technical skills of referents: provide proof of previous experience by providing installation references
- Or proof of relevant training
- Provide at least one installation reference each year
- Signature of the Quality Charter

3.3. Training

The training centres providing training to installers have to prove prerequisites in the related area and evidence of specific training equipment. Additionally, the trainers should have attended a train-the-trainer training. An audit process for training centres is currently being developed. The training standards were elaborated through a national initiative gathering experts and are regularly updated. The training of installers lasts from 2 to 5 days and is composed of theoretical and practical exercises. The installer has to pass a final examination.

3.4. Audits

The quality scheme contains an audit component to control technical and legal standards. The audits are realized after the realisation of the installation, based on complaints and installation references.

4. AFPAC (from 2006 to 2009)

4.1. Framework

The French Association for heat pumps (AFPAC) has been managing the QualiPAC label for heat pumps installers. The quality scheme is being transferred from AFPAC to Qualit'EnR and will be operational from beginning of 2010.

4.2. Quality scheme

The company has to fulfil the following requirements:

- Provide legal and administrative documents attesting the company's existence and activities
- Proof of civil liability insurance
- Technical skills of referents: provide proof of Eucert training or equivalent qualifications
- Provide documentation about installation references
- Signature of a quality charter

4.3. Training

AFPAC is a member of the European heat pump association and has participated in the EU-CERT.HP project on heat pump installer training. It has contributed in the development of the training material which is now used for training in France. The training is provided by training institutions collaborating with AFPAC. The installer has to pass a final examination.

4.4. Audits

When requesting the quality label, the company has to provide recent installation references, among which 2 installations are audited by an independent body.

The label is valid for one year and has to be renewed.

5. BRGM/Qualiforage

Qualiforage is a quality label for ground source installers set up by ADEME-BRGM-EDF and managed by BRGM, a public organism.
It is a voluntary process and the installer signs a quality Charter and commits to comply with technical standards and good practices
The installer has to provide evidence of adequate equipment and administrative documents such as the decennial insurance.

GERMANY

1. DVGW CERT GmbH

1.1. Framework

The quality scheme is managed by DVGW, a private organism, since 2000 and follows the ISO standards 17024 and 17011. The certification covers Ground source installations and is delivered to companies. It is a voluntary process but the national supervisory authority often requires a certification for the permission for drilling and installing a ground-source system.

1.2. Quality scheme

The installer has to fulfil the following requirements:

- Proof of vocational education qualifications
- Installation references
- Third-party insurance
- Evidence of technical equipment
- Skilled staff

The technical referent should provide evidence of:

- pre-requisites in the related area
- knowledge of standards, official legislation
- relevant training in the related area

The certification is valid for 5 years. A surveillance audit is realized after 2,5 years. The installations are audited on the basis of installation references.
The certification costs 2 000 €.

1.3. Requirements for renewal

In order to renew the certification, a new audit is realized and installation references are required. The technical referent of the company has to attend training for professional development every two years.

1.4. Training

DVGW does not provide training but checks if the requirements for training are fulfilled. Vocational education constitutes an apprenticeship including theoretical and practical training and the advanced training is mostly theoretical.

1.5. Audits

The audits are based on installation references. There are 3 types of audits depending on the defects. The audits standards are developed by a technical working group and are regularly updated. Feedback is given to the training centres by the auditors.

2. National Energy Agency – Federal Ministry of Economics and Technology

The Federal Institute for Vocational Education and Training, on behalf of the Federal Ministry of Economics and Technology develops legally binding directives and framework curricula for the professional education for trades and industry as well as for advanced training. Therefore, there is no certification and accreditation scheme in Germany.
The dual training system for installers implies that the vocational schools provide the theoretical part of the education and companies provide the practical training. In order for a craftsman to run its own business, advanced training resulting in a Master's degree is necessary
Additionally, the system provides a profound advanced learning culture organized by manufacturers and trade organizations. The most important institutions involved in training are the Chamber of Crafts and the German Guilds. For example, the SHK Guild and the Chamber of Crafts develop and provide courses for solar thermal installers.

There are four main types of seminars offered:

- Accredited and certified long-term fulltime training
- Long or medium-term training accompanying the occupation
- Accredited and certified medium-term training (guilds)
- Short-term training

3. The German Heat Pump Association

The German Heat Pump Association executes trainings according to the EUCERT program (see EUCERT project below). They execute trainings in four training centers distributed across Germany. The certificate is personal and is issued by the German Heat Pump Association.

GREECE

1. State of the art

There is no official certification or accreditation scheme for RES installers in Greece.
However, there are some organisations (29 up to now) that provide certification and inspection services in Greece, which are all members of the Hellenic Association of Accredited Certification & Inspection Bodies (HellasCert). The body responsible for the management of the accreditation system in Greece is the Hellenic Accreditation System S.A. (ESYD), while the National Accreditation Centre for Continuing Vocational Training (EKEPIS) provides accreditation to training centres.

2. Training structures in Greece

Technical and vocational education and/or training are within the competence of both the Greek National Vocational Education and Training System and the Manpower Employment Organisation.
The technical vocational schools provide technical training programmes which are developed according to the labour market needs.

There are different training structures in Greece that may be potential training providers to the small-scale RES systems installers:

- **The Vocational Training Institutes (IEKs):** no RE courses are offered at present.

- **Vocational Training Centres (KEKs):** they should be accredited by the National Accreditation Centre for Continual Vocational Training (EKEPIS) in order to be eligible to provide continuous training to installers and technicians in the RE field. The trainers should also be certified by EKEPIS. A KEK in Athens offers training for installers of solar energy. However, no KEK would be willing to provide RE training programme if they cannot manage the financial costs of the training.

- **CRES** is the only agency organizing training courses for professionals in the field of RES within the frame of various EU-funded projects. CRES develops the training standards so that all training programmes and material are used by training centres. CRES has been particularly involved in the SUNTRAIN project for European Solar Water Heating Accreditation and Certification and in the EARTH project (Extend Accredited Renewables Training for Heating). Two training programmes were organized and implemented by CRES as part of the EARTH project: training for biomass systems and training for ground source heat pumps.

It is worth mentioning that RES systems related seminars have been organized by the Technical Chamber of Greece. Training programmes have also been provided by private companies in the field of photovoltaic, solar water heating (SWH) and Ground Source Heat Pumps (GSHP) installations for example. The trainees get a company certificate that they have followed certain seminars but it is not an official accreditation. Some universities and technical schools are also offering seminars on RES.
The Ministry of Development has initiated a register of PV installers in order to facilitate the new rooftop PV program that was launched in June 2009. In order to be enlisted, a company or an installer has to agree on certain terms and in particular that they will follow a Best Practice Guide for PV prepared by CRES in cooperation with the Hellenic Association of Photovoltaic Companies (HELAPCO).

There is currently an ongoing initiative led by the Technical Chamber of Greece for the establishment of a Body for the Certification of the Professional Adequacy of Physical Persons that practice technical professions. As part of this discussion, the National Accreditation Centre for Continuing Vocational Training (EKEPIS) is currently defining “professional profiles” corresponding to technical specialties in order to identify “certified professional profiles”. The aim is to identify prerequisites for being an installer and to develop training standards in order to implement a mandatory training for the “certified professionals”.

3. Framework for the implementation of a certification/accreditation process

Both the State and the market actors are deeply interested in training courses that lead to certification. It would contribute to the improvement of the quality of installations and would increase the consumers’ confidence and the market of small-scale RES applications. The KEKs seem more appropriate than the IEKs for the purpose of implementation of training courses.

However, installers, associations and guilds demonstrate some resistance to a certification and accreditation process. It is then essential to communicate on the advantages and added value of being certified. Additionally, the existence of several organisms providing several services may lead to an overlapping of competences.

HUNGARY

There is no official certification and accreditation scheme for RES installers in Hungary.
Training for installers is sometimes organized by manufacturers or training centres, on a random basis when training is required for a minimum number of installers.
Different stakeholders in the area of RE have expressed their interest to implement a common system to certify RES installers. The ArchEnerg Cluster (Regional Cluster for Renewable Energy and Building Trade), composed of SMEs working in the RE field, is willing to participate in the implementation of a certification and accreditation scheme in Hungary.

IRELAND

Sustainable Energy Ireland (SEI)

1. **Framework**

The certification process for RES is managed by Sustainable Energy Ireland, the National Energy Agency following the ISO 17024 standard and has been implemented in 2008.
The Further Education and Training Awards Council (FETAC) is the national awarding body for further education and training in Ireland. All the training courses are FETAC accredited and installers must receive the relevant FETAC award.
The certification and accreditation process covers solar thermal, biomass and geothermal installations.

2. **Quality scheme**

The certificate is delivered to the installer and is mandatory as the certification is required for compliance with national building regulations as well as for grant eligibility on existing homes.

The installer has to fulfil the following requirements:

- Tax Clearance Certificate (requires annual renewal to remain registered)
- National Craft Certificate in the relevant profession (relevant training in the related area)
- No previous experience required

3. **Training**

The installer has to attend a training provided by an accredited FETAC training provider with specific standard equipment. The training centres must also prove that they have qualified training and experienced instructors in the related area. The duration of the training varies between 40 and 60 hours and the installer has to pass a final examination composed of theoretical and practical exercises.
The academic certification is valid for life
The target group of the training is already qualified plumbers and heating engineers. The installer must already hold a National Craft Certificate (FETAC Advanced Certificate) or equivalent in a relevant technology.

All training centres are inspected by a SEI inspector to ensure compliance with the published technical requirements for a training facility. SEI inspectors visit every training centre prior to any approved training taking place.

The train-the-trainers courses were developed as part of a cross-border initiative between SEI and Action Renewables (Northern Ireland) in a project termed the "Renewable Energy Installers Academy" (REIA). International experts were contracted to develop the courses to best European courses. The following partners took part in the project: AIT, Austrian Bioenergy Centre and Danish Energy Agency. A contract is signed between the training body and REIA.

4. Audit

Audits are realized by the certification body after the realisation of the installation, based on installation references. There are 3 categories of results that may lead to suspension from the quality scheme.

ITALY

1. State of the art

There is no official certification and accreditation scheme for RES installers in Italy. However, training in the field of RE systems is organized by different actors.
There are two certified courses in Italy:

- ENEA, the Italian Energy Agency, organizes certified training accredited by CEPAS, the Italian Certification Body for Personal and Training Body. ENEA has developed e-learning courses on solar photovoltaic and solar thermal, biomass and geothermal installations. ENEA has launched a spin-off, Mesos, for the certification of different professional skills in the field of RES both for designers and installers (the free e-learning courses are considered as a prerequisite for the on-site courses).
- CREA (Energy saving and environmental quality research centre) recognized by ESAcert (European System for Accreditation and Certification Bodies energy and environmental, based on CEN standards) also provides certified training on heat pumps.

2. Legal framework

Based on the Ministerial Decree (22 January 2008 N°37) for installers, companies are allowed to install small plants among which plants as defined in art. 14 of the EU directive 2009/28, if at least one of the employee has one out of the five following professional requirements:

1. University technical degree
2. High school technical degree together with two years of experience in plant installations
3. Other qualification together with four years of experience in plant installations
4. Three years of experience as specialised installer
5. Six years of experience as owner of an installing company

In order to install a new plant, the company has to inform the local Chamber of Commerce of the start of the activity (DIA). At this stage, the company has to comply with the requirements foreseen by the legislation and will be then recorded at the Chamber of Commerce register.

The Chamber of Commerce verifies, on a random basis, if the company comply with the foreseen requirements and operates properly. The customers on the other hand have the possibility to complain to the chamber of Commerce about the truthfulness of the declarations.

The company can receive a document assessing the requirements of installers to the Chamber of Commerce.

3. **Training structures**

Training in the RE field is provided by different stakeholders such as training centres and manufacturers but few courses include a final examination. The training offer range from master courses, to higher technical education financed by regional funds, to courses offered by companies working in the sector and to courses organized by educational institutions. Training is mainly organized in the fields of Photovoltaic and solar thermal.

The courses provided by the companies in the sector do not require specific entrance criteria and the trainees do not have to pass a final examination. They receive a certificate of attendance at the end of the training.
The training courses organized by training institutions associated with universities or research centres are primarily aimed at professionals of the field in order to update and/or deepen their knowledge on the design of photovoltaic systems or technical regulations.
Vocational education in the field of RE systems has been developed for young science graduates.

LUXEMBOURG

"Energie für die Zukunft" Label

1. **Framework**

The label "Energie für die Zukunft" was created on the initiative of the Ministry of Environment and the skilled craft organisation (Chambre des Métiers) in 2001. The label aims at helping the consumers to identify the qualified installers in the field of RE.
The certification scheme has been developed for solar thermal and photovoltaic systems, biomass heating systems and heat pumps. The label is delivered to companies working in the construction sector.
The certification is based on the incentives scheme implemented by the State. A label Committee, composed of a representative of the Ministry of Environment, the Chambre des Métiers, and two experts has been created and decides whether to grant the label to the installers or not. The certification scheme is supported by a marketing campaign, carried out from the launch of the scheme. Promotion on the certification scheme and communication tools have been developed: specialised newspapers articles including interview of best practices, press conference, press releases, fairs, internet.

2. **Requirements for obtaining the label**
   - The company must be a member of Chambre des metiers
   - The installer must have a "Brevet de maîtrise" or equivalent qualifications or provide evidence of professional experience

The installer has to follow a training organized by the Chambre des Métiers. It is mandatory to attend the general module at the Chambre des Métiers and it is possible to attend the two other modules in another training centre approved by the Committee. The training standards are elaborated by a group of experts?

- The installer has to pass a final examination.

3. Withdrawal of the label

The Committee may withdraw the label:

- If the installer does not work according to good work practices
- If the installer who passes the test leaves the company
- In case of misuse of the label

NETHERLANDS

1. Kiwa Nederland BV

1.1. Framework

The quality scheme is managed by Kiwa Nederland BV, a private organism certified ISO 17021 (for system certification) and 45011 (for product certification).

The certification scheme has been developed for heat pumps and a label for ground sources installations is under development. The certification is linked to the Dutch Building Regulations but it is a voluntary process. The label is delivered to installation companies.

1.2. Quality scheme

The installer has to fulfil the following requirements:

- Provide legal documents about the company's existence, legal and tax obligations, and insurances
- Attestation of relevant experience in the related field: the installer should provide information about at least one operating quality system realized within 3 months before applying for the label.
- Relevant training in the related area
- Documentation about at least one installation reference for every certified field of activity

The certification is valid for 3 years and costs 2 200 € each year.

1.3. Training

The training for installers is composed of technical modules for professionals in the field and is voluntary for obtaining the certification. The installer has to pass a final examination. The training standards were elaborated on Kiwa's private initiative.
The training centre offering the training should provide evidence of technical prerequisites in the related area.

1.4. Audit

The installations are audited by Kiwa during the works in order to control the realization of the installations. There are different categories of audit results which may lead to the suspension or withdrawal of the certificate if the company does not solve the defects.

2. KBI

1.1. Framework

KBI is an NGO developing and maintaining certification schemes for the installation sector and which is accredited by the Dutch Accreditation Council. The certification schemes have been developed for solar thermal and photovoltaic systems, heat pumps, and ground source installations and are carried out by EN 45011 accredited certification institutes. KBI signs contracts with the certifying bodies which follow clear procedures and a Council monitor the process. The certificate is developed and delivered to installing companies. This voluntary certification was implemented in 2000.

A marketing campaign promoting the certification scheme has been carried out at the launch of the scheme and at different moments to increase awareness within target groups.

1.2. Quality scheme

The company has to fulfil administrative requirements and provide evidence of skilled employed staff. The installer has to prove relevant training in the related area or relevant professional experience by providing at least 2 or more installation references (depending on the size of the installation company). There is no training component developed within the scheme. However, the installer has to pass a final examination in order to determine the professional level.
The certification is valid for 3 years with yearly audits.

2.3. Audit

Based on the installation references provided by the company, the certification body performs audits either during the design and installation or after completion of the works. Auditors of the certification body should have at least the same competence level of the staff of the installation company, and generally one level higher. The audit results may lead to a suspension or withdrawal of the certificate. The audit standards are regularly evaluated by the Council of experts of KBI and may lead to update the certification process, exams or technical guidelines.

POLAND

There is no official certification and accreditation scheme for installers of small-scale renewable energies in Poland. The stakeholders involved in the field of RES express their interest to implement such a scheme.

However, many stakeholders who are solar collectors, heat pumps producers or other RES heat technologies producers provide training for installers on the proper use of RES technologies (mainly solar collectors) conducted by their training centres. The trainees receive a graduation certificate at the end of the training although it is not an official accreditation.

Moreover, the “Panel of Manufacturers and Installers of Solar Energy Systems'” named the Solar Panel 20x2020 has been created. It associates 9 companies (Action, Ferroli, Junkers, Rapid, Euro-Baltic Therm SUNEX, Viessmann, Vaillant, Watt), covering a significant part of the Polish market for solar energy, as well as the largest Polish exporters of solar panels. The Panel was created as a result of the discussion that took place at the Second Solar Energy Industry Forum, held at the Fair GreenPower May 21, 2009, and in response to the publication of the European Directive 2009/28/EC on the promotion of the use of energy from renewable sources. Some of the associated companies have expressed their interest in the implementation of a certification scheme for installer of RES systems and signed the declaration of interest to QualiCert project.

It could be noticed that Viessmann company established post-secondary vocational school for installers of solar collectors and heat pumps. Until now, 500 students graduated from the school. The school is accredited by the Ministry of Education.

Also the County Practical Training Centre in Bielawa (Powiatowe Centrum Kształcenia Praktycznego w Bielawie) has a very good experience in conducting practical training for RES systems installers,

among which training for solar collectors installers. The centre works in close cooperation with Wroclaw University of Technology. Training of the centre belong to the European Network of Training so called „SOLARTEUR". The centre expressed its interest in the implementation of a certification scheme for installer of RES systems and signed the declaration of interest to QualiCert project.

ROMANIA

There is no accreditation and certification scheme for installers in Romania and no authority to certify the installers.
However, there are training centres that provide trainings on the proper use of RE. The trainees receive a graduation certificate at the end of training although it is not an official accreditation.
Some stakeholders have expressed their interest in the implementation of a certification scheme for installers of RE systems.

SPAIN

There is no certification and accreditation scheme for installers of small-scale RES in Spain.
There is a vocational education scheme managed by the National Ministry of Industry and Energy and/or Regional Ministry of Industry and Energy. The trainings cover the different RE technologies: solar thermal, photovoltaic, biomass, heat pumps and ground source installations.

The training standards are developed by national and regional governments and are accredited by the Regional governments. The training institutes in each region should have technical equipment adapted. The trainers should have basic knowledge in the related field and relevant experience. The duration of the training is about 200 hours. The trainees have to pass a final examination.

The Regulations of Thermal Building Installations (RITE for Reglamento de Instalaciones Témicas en los Edificios) set up the necessary requirements for installers to be able to perform their profession (and obtain the RITE card). The installer:

- Should be older than 18 years old
- Should have the necessary practical and theoretical knowledge in the area of building thermal installations. The former installers have only to show their former title related to these skills.
- OR the applicant may prove that he has attended and passed theoretical and practical training about basic and specific knowledge in thermal building installations.
- OR accredit at least 3 years of experience in an installation or maintenance company
- And should have successfully passed the exam (about RITE) before the Relevant Agency of the Region Government.

SLOVAKIA

There is no certification and accreditation scheme for RES installers implemented in Slovakia.

Some manufacturers, like Termosolar, provide one-day seminar to individuals or companies which are interested in installing or designing solar thermal systems sold by the manufacturer. It is usually a short-term training (one day) composed of theoretical lectures about design and installation of solar thermal systems.

SLOVENIA (in 2006)

1. Framework

The certification scheme is managed by the Slovenian association Refrigeration and Air Conditioning (SDHK), a private association dealing with refrigeration and heat pumps and the University of Ljubljana, Faculty of Mechanical Engineering (FS), a public organism.

The voluntary certification scheme is aimed at heat pumps installers and was developed within the frame of the EU-CERT.HP project. The education took place in 2006 only and the project is now on hold.

2. Quality scheme

The installer has to provide proof of relevant education (installer of mechanical installations) and to attend a five-day professional training composed of theoretical and practical test. The practical test consists of reports about already performed installations.

3. Requirements for renewal

The certification has to be renewed every three years. The installer has to attend courses/seminars about heat pumps (at least three-day training in the previous 3 years). It is also required to enclose data about 3 installations the installer has realized.

The costs were partially (50%) funded by the European Commission, as the certification scheme was developed under the EuCert project, and partially paid by the applicants (around 500 €).

SWEDEN

1. Solar Energy Association of Sweden

1.1. Framework

The certification scheme is managed by the Solar Energy Association of Sweden (SEAS), a private association and is currently being developed and will be implemented before end of 2009. The certification scheme covers solar thermal installations and will be extended to biomass systems and probably photovoltaic installations at a later stage. The certification is delivered to the installer and its company. However, in the case the installer leaves the company, the label is not valid anymore.

1.2. Quality scheme

The installer has to fulfil the following requirements in case of application for the installer's certification:

- Provide proof of vocational training or previous experience
- Provide proof of successful training examination
- Provide data on at least three installations recently carried out

The company has to fulfil the following requirements in case of application for the company's certification:

- Provide document attesting the company's existence
- Description of company's activities
- Fulfilment of tax obligations

The certification is valid for 5 years and costs 300€ per certificate and 300€ per one day preparative course (compulsory).

1.3. Training

The installer has to attend one-day-training. It is required that the installer has prerequisites in the related area: either professional installer education or at least 5 years of practical experience (proved by providing installation references). The training is only theoretical and the installer should pass a final examination.
The training standards have been elaborated through a national initiative and will be updated soon.

1.4. Audit

The certification is granted upon conditional judgment of description of already made installations. The certification may be withdrawn if repeated complaints or no rectifying actions were carried out. The audit standards have been elaborated by a regional working group.

2. EUCERT training program

Sweden operates the EUCERT training program. It is executed by the Swedish Heat Pump Association and Midsweden University as well as by the major manufacturers (see EUCERT project below).

UNITED KINGDOM - England

1. Microgeneration Certification Scheme

1.1. Framework

The Microgeneration Certification Scheme was launched by the Department of Energy and Climate Change (DECC) in 2006. The MCS is a third-party certification covering all microgeneration technologies, and more specifically solar thermal, solar photovoltaic, biomass and heat pumps installations. The Scheme is led by a stakeholder Panel, comprised of representatives from the industry including certification bodies, government departments, trade associations and other interested parties. The role of Licensee is undertaken by Gemserv, an industry-independent organisation appointed by DECC to manage and coordinate the MCS. The certification is delivered by certification bodies which are private companies accredited by the United Kingdom Accreditation Scheme (UKAS). The certification scheme created an incentive by linking the scheme to England's renewable energy grant scheme called the Low Carbon Building Program (LCBP).

1.2. Quality scheme

Applications to obtain the certification can be made to any accredited certification body operating the scheme. The label is delivered to installation companies. The assessment is concluded in two parts. First, an office assessment is performed to control the policies and procedures that the company has in place. All systems must be designed in accordance with the requirements set out in the appropriate Microgeneration Standards. Secondly, the certification body performs an onsite

assessment of an installation. Certification is then maintained through at least one annual visit. Additional surveillance visits may be required if substantiated complaints against the Company are received or as a result of a significant number of non-conformities. The company is therefore suspended or withdrawn from the list of certified installation companies.

1.3. Assessment requirements

During an office assessment, onsite inspection or surveillance visits, the assessor controls that the company fulfil the following requirements:

- Review of company details and responsibility of the designated "Nominee" responsible of all activities which fall within the scope of the scheme
- Review of quality management system or quality plan of the company
- Review actions taken to resolve previous non-conformities
- Internal review: the Nominee shall hold regular meetings with the staff about installation quality procedures
- Document control
- Review customer requirements and contracts
- Purchasing: the company shall identify his suppliers of designs, products and material
- Action on non-conforming material
- Inspection and in process testing to ensure that the correct product/material has been supplied and that the requirements of the standards of the installations are met
- Records related to installations
- Management of complaints
- Training and competence: all staff employed in installation activities must have received adequate training (the company must have a training record for each employee
- Audit testing: the company shall provide details of recent or current installations and arrange access to installations selected by the assessor.

2. Competent Person Schemes

Competent person schemes were introduced by the Government to allow individuals and enterprises to self-certify that their work complies with the Building Regulations as an alternative to submitting a building notice or using an approved inspector.

Membership of these schemes is not compulsory. If a company or individual chooses to join a competent person scheme, they are first vetted to ensure they meet the conditions of membership, including appropriate and relevant levels of competence. If they meet these conditions, they are classified as 'competent persons'. The work of organizations or individuals accepted as members of a scheme is not subject to Building Control inspection. Instead, the competent person self-certifies that the work is in compliance with the Building Regulations. They issue a certificate to the consumer to this effect. A Competent Person must be registered with a scheme that has been approved by The Department for Communities and Local Government (DCLG).

EUROPEAN PROJECTS

1. SUNTRAIN PROJECT:

The SUNTRAIN Project aimed at defining the general key competencies an installer must have to install solar thermal systems safely and effectively. Training institutes and courses providing solar thermal courses should then be accredited/certified by an independent body. The objective of the project is to develop training programme accreditation standards and certification requirements which can be implemented using existing training infrastructures. The following countries were involved in the project: Germany, Greece, Spain, United Kingdom.

2. EU-CERT.HP Certification

2.1. Aim of the project

The projects name was EU-Cert.HP. It was executed by all the countries mentioned below and finished in 2006. As most of the project participants were also members of the European Heat Pump Association (EHPA) they agreed to transfer the program management to the EHPA and operate it as "EUCERT training program for heat pump installers".

The project developed a common training framework and a certification scheme for heat pumps installers. The vision of the project is that the training and certification programme should be recognized all over Europe and presents a common standard for voluntary further education in the field of heat pumps technology in all participating countries. The certificate is delivered to the installer.

The Certification scheme was implemented in 2006 and has been active in 10 countries from January 2007: Austria, Czech Republic, France, Ireland, Italy, Slovenia, Sweden, UK, Germany, Slovakia. Since the integration in the EHPA, Finland (2007) and Belgium (2010) joined the program.
Each EU-CERT installer is registered on the reference list of certified installers.

2.2. Quality scheme

EHPA and members associations are managing the EUCERT program which follows the ISO 17024 standard. The National Certification bodies in the different countries have been involved in the project.

The installer has to fulfil the following requirements to obtain the EUCERT label:

- Proof of vocational training
- Proof of participation certificate confirming completion of the EUCERT training or of an equally valid training course.
- Certificate of successfully passed EUCERT final examination
- The employer of the applicant must be operating as an electrician, installer or HVAC engineer and be providing heat pump system planning and/or installation services. Alternatively, the applicant must be the owner of his/her own business in one of these sectors providing heat pump system planning and/or installation services.
- Proof of relevant professional experience.
- Completion of a certification contract between the installer and the national certification body.

The persons within the certification body should be industry experts and have relevant experience in the field of Heat Pumps. The cost for certification is of 300 € for the three-year period.

The quality scheme does not contain an audit component at the moment but this aspect is under consideration.

2.3. Requirements for renewal

Once delivered, the certification is valid for 3 years and may be renewed. The certified installer has to prove he/she has been active in the field. Additionally, the installer has to undergo a further training of half a day within the three-year period. A three-full-day training within 3 years is recommended. However, every 6 years, the installer will have to undergo a written and oral presentation.
Moreover, the certified installer is obliged to record any written complaints in respect of quality relating to the installations planned or installed by the certificate holder.

2.4. Withdrawal of the Certificate

The certificate will be withdrawn in the case of:

- Non-fulfilment of conditions for certification
- Announcement of false statement at application
- Certified person has been sentenced in court for environmental crimes
- Certified person has not fulfilled the economical obligations towards the certification body / board

2.5. Requirements for training centres

The EUCERT training is provided by a training institute accredited by the national coordinators of the EUCERT program. The national coordinator and the training institute sign a legally binding agreement. The training centres should have adequate laboratory equipment following technical specifications. Trainers should have sufficient experience in the related field and have attended a train-of-the trainer seminar. Also, they must not be involved in the certification process. In order to control the quality of training delivered, members of the EHPA education Committee visit the training centres infrequently.

The training standards were developed as part of the EUCERT.HP project and are frequently updated by the EHPA education committee members.

The installer has to attend the EU-CERT training and pass a final examination. The training course is composed of 4 days of theory and one day of practical training.

3. EARTH project

The Extend Accredited Renewables Training for Heating (EARTH) project aimed at developing installer training courses for solar water heating systems, ground-source heat pumps, and biomass energy for heating. The objectives of the project are to extend or create definitions of key competencies required to install biomass, GSHP and SWH systems and develop appropriate training courses for installers and train-the-trainers training. The project was carried out in Austria, Bulgaria, Germany, Spain, Finland, Greece, Lithuania, Slovenia and the United Kingdom, with links to observer partners in Poland, Hungary and Romania.

4. GEOTRAINET project

4.1. Framework

The objective of the GEOTRAINET project is to develop a European Education program to go towards the certification of geothermal heating and cooling installations.
The aim is to launch a massive program of training and prepare a certification scheme specifically for designers (feasibility study) and drillers (boreholes and tubes insertion) of geothermal installations. The certification scheme is currently managed by the Austrian Institute of Technology. As part of the certification framework, the certification process is voluntary and the certificate is delivered to

drillers. The process is still under construction and should be operational in 2010. The certification will be issued on a voluntary basis by the national competent authorities in close consultation with the relevant stakeholders, allowing it to be recognized on an EU-level.

4.2. Quality scheme

In order to obtain the certificate, the installer has to abide by the following requirements:

- To be active in the field of drilling for geothermal purposes
- Proof of relevant professional experience (see below)
- Proof of relevant training (see below)
- Inform the certification board of any changes related to the company or the staff employed
- Undertake regular further trainings in order to be maintained in the scheme (three days within three years)
- Report all customers' complaints to the certification board

The certificate is valid for three years. After that period, the installer has to renew the certificate. The installer should submit a formal request with the required documents, attend further trainings.

When the national coordinators/bodies commit on the certification standards and procedures, they are allowed to certify GEOTRAINET training and GEOTRAINET trainers on national level.

4.3. Training

The training institutes providing the GEOTRAINET training should provide evidence of prerequisite experience in the related area and proofs of a drilling site. The training's institute technical equipment will be evaluated by the certification body. The trainers will be the experts from the National Education Committee and professionals from the geothermal energy sector involved in the promotion of geothermal energy in national and European associations. A commitment is signed between the national coordinator and the training institutes related to the training standards.

The installer needs to provide evidence of prerequisites in the related area: education or professional experience. For designers/planners, the applicant should prove evidence of a post graduate in geology, hydrogeology (3 years education) or professional experience as an engineer, geologist, technician with 5 years of experience. For drillers, the applicants should have a study background in mechanics or 3 years of professional experience. The installer has to pass a final examination. The short term training is mandatory to obtain the certification.

5. SIRET project

The SIRET project (Further Training Model "Specialists in Renewable Energy – Technology in Sanitary, Heating and Air-Conditioning Crafts) is a EU-funded project aiming at developing a European further training model. The trained specialists will acquire basic and detailed knowledge in the following areas: solar thermal, photovoltaic, biomass and heat pump. The aim is to develop basic and structural modules. Each module is completed with a written test. When passing the examination, participants will receive the certificate "Specialist in renewable energies and technologies in the sanitary, heating and air conditioning crafts". Provided content and the level of training will be certified.

The project includes the quality assurance of education processes. The consortium aims at developing, taking into account the national and European conditions, the SIRETcert quality standards, a quality assurance model and a quality certification for the institutions that provide the SIRETcert modules. The curricula are to be oriented towards the specifications of the European

Qualification Framework (EQF) and the cross-border recognition of further training will be sought at European level.

6. European Qualifications Framework for Lifelong Learning (EQF)

The EQF project is a *"common European reference framework which links countries' qualifications systems together, acting as a translation device to make qualifications more readable and understandable across different countries and systems in Europe. It has two principal aims: to promote citizens' mobility between countries and to facilitate their lifelong learning."*[1]

[1] European Commission, Education and Culture DG, *EQF Brochure*, European Communities, 2008

ANNEXES

WEBSITES

AUSTRIA

- AIT (Austrian Institute of Technology): www.arcs.ac.at

BELGIUM

- Q-DIRECT: www.belspo.be/belspo/ssd/science/pr_energy_en.stm
- Quest (Quality Centre for Sustainable Energy Technologies): www.questforquality.be
- Soltherm Training: http://energie.wallonie.be
- PVQual: www.energyplatform.eu/fr/photovoltaique/pvqual.html

DENMARK

- KSO scheme: www.kso-ordning.dk

FRANCE

- Qualibat: www.qualibat.com
- Qualifelec: www.qualifelec.fr
- Qualit'EnR: www.qualit-enr.org
- AFPAC (Association Française des Pompes à Chaleur): www.afpac.fr
- BRGM/Qualiforage: http://www.geothermie-perspectives.fr

GERMANY

- DVGW CERT GmbH: http://www.dvgw-cert.com/de/unternehmen/verzeichnisse/bohr-und-brunnenbauunternehmen-nach-dvgw-arbeitsblatt-w-120.html

GREECE

- CRES: www.cres.gr

ITALY

- ENEA: www.enea.it

LUXEMBOURG

- "Energie für die Zukunft" label: www.cdm.lu

NETHERLANDS

- Kiwa Nederland BV: www.kbi.nl and www.sbk.nl
- KBI: www.kbi.nl

SLOVENIA

- Slovenian association Refrigeration and Air Conditioning: http://www.toplotne-crpalke.org/index.php?option=com_sobika&catid=17&Itemid=1

SWEDEN

- Solar Energy Association of Sweden: www.svensksolenergi.se
- Pellsam: www.pellsam.se

UNITED KINGDOM

- Microgeneration Certification Scheme: www.microgenerationcertification.org
- Competent Person Scheme: www.competentperson.co.uk

EUROPEAN PROJECTS

- EUCERT training and certification for HP installers (Program now operated by the European Heat Pump Association (EHPA): www.ehpa.org/eucertEU-Cert.HP
- GEOTRAINET project : www.geotrainet.eu
- EARTH project: www.earth-net.info
- SIRET project : www.shk-siret.eu
- EQF project : http://ec.europa.eu/education/lifelong-learning-policy/doc44_en.htm