

TRAINING AND CERTIFICATION OF HEAT PUMP INSTALLERS IN EUROPE

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Abstract: During the 1990's, in Austria, the idea of quality management of heat pump systems arose.

Not only should the Heat Pumps fulfil certain quality criteria, but a system to produce qualified personnel should also be established. Austria agreed, together with Germany and Switzerland, on the criteria for the DACH label.

Together with 9 other European partners, the "EU-CERT" training and certification education system was developed. The project was finished by the end of 2006. The partners agreed on an education system and developed a course manual. Courses are now held with the aim of attaining a uniform quality level in all partner countries. The success of the program caused other European countries to join.

The management of the program now lies in the hands of European Heat Pump Association EHPA. One of the EHPA technical committees, the Education Committee, handles the ongoing training and certification program and the addition of new members.

In Austria, meanwhile, about 300 installers have attended the courses with almost 100 of them applying for the certification.

Key Words: *heat pump installers, training, certification*

1 INTRODUCTION

The application of renewable energy is, due to political aspirations particularly in the field of CO₂ reduction, an increasingly important topic. Heat pumps can thus significantly contribute to a sustainable energy supply. It is therefore important to ensure that heat pump systems are designed for highly efficient energy use.

However, as a vast number of different factors influence the efficiency of a heat pump system, it is important to optimize all of them. Additionally to the installation of high efficient heat pumps, it is necessary to have the installations accomplished by competent personnel.

2 IMPROVING THE QUALITY OF HEAT PUMP SYSTEMS

During the 1990's, in Austria, the idea of quality management of heat pump systems arose. It became rapidly clear that improving the efficiency of Heat Pump Systems could be done mainly in three ways:

First, Germany (D), Austria (A) and Switzerland (CH) agreed on measurement procedures and criteria for the then-called DACH label which was established in 1998. In 2007, Sweden joined this consortium, and it was transformed into the EHPA/DACH label. The rules are handled by the "International quality label committee", one of the technical committees of EHPA.

Also, standardised monitoring methods were conceived to verify the quality of installed heat pump systems. Details can be found in (Huber et al. 2008).

Finally, it also became clear that a system for qualified personnel had to be established. Together with 9 other European partners, the “EU-CERT.HP” training and education system was developed. The project was finished by the end of 2006.

Figure 1 shows these main elements contributing to the high efficiency of heat pump systems:

- training and certification of competent personnel
- evaluation and improvement through monitoring
- installation of high quality labelled heat pumps



Figure 1: Quality improvement

3 THE EU-CERT.HP PROJECT

The complete project title was “European Certified Heat-Pump Installer”. Its aim was to develop a common European Training & Certification program for Heat Pump Installers which provides a high level further education at European scale. The outcome of this project was an education system that was established in the 10 participating countries. Course material, like a training manual, trainer guidelines, laboratory specifications, examination rules including questions, time-tables etc., were developed for a course duration of one week. The success of the program incited other European countries to join.

The main topics are marketing, environmental relevance, operating principle, energy efficient buildings, technical details of the refrigeration cycle, system layout, heat sources, mounting, servicing, fault diagnostics, costs, geology and climate, basics of electrical engineering, reference systems and innovative solutions, warranty and delivery terms.

The management of the program now lies in the hands of one of the Technical Committees of EHPA, the Education Committee. It is handling the ongoing training program and the addition of new members. The committee agreed on its “rules and regulations” in February 2008.

Figure 2 shows the countries of the EU-CERT consortium:

- Austria
- Czech Republic
- France
- Germany
- Ireland
- Italy
- Slovakia
- Slovenia
- Sweden
- United Kingdom

In 2008, Hungary and Finland are on the way of joining the program.

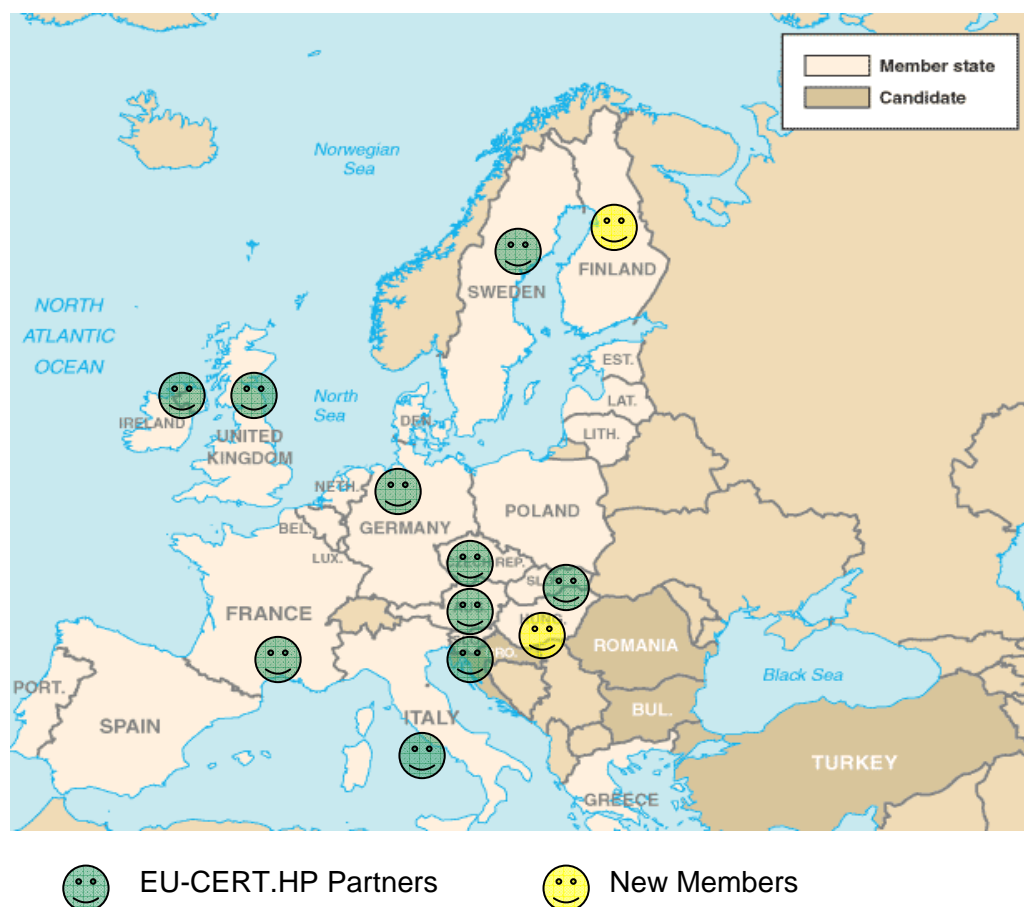


Figure 2: Map of project partners

4 CERTIFICATION OF HEAT PUMP INSTALLERS

Recommendations for a certification system were developed during the EU-CERT.HP project. To make sure that the given certificate is really high-levelled, the certification body should work according to EN ISO 17024. According to this standard, the certification body has to be accredited by the national authorities.

In Austria, the certification body is arsenal research, accredited by the Austrian Ministry of Economics, BMWA. There are almost 100 certified installers in Austria.

Figure 3 illustrates the certification procedure. After the first contact between certification recruit (CR) and certification institute (CI), the CI will check if all the requirements for a certification are met:

- participation to heat pump installers course, "EU-CERT" or equal
- successful completion of the examination
- evidence of professional background
- data from the employer
- details of one reference heat pump system, including layout chart with scaled representation of the heat source, calculation of the building heat load and completion of commissioning certificate

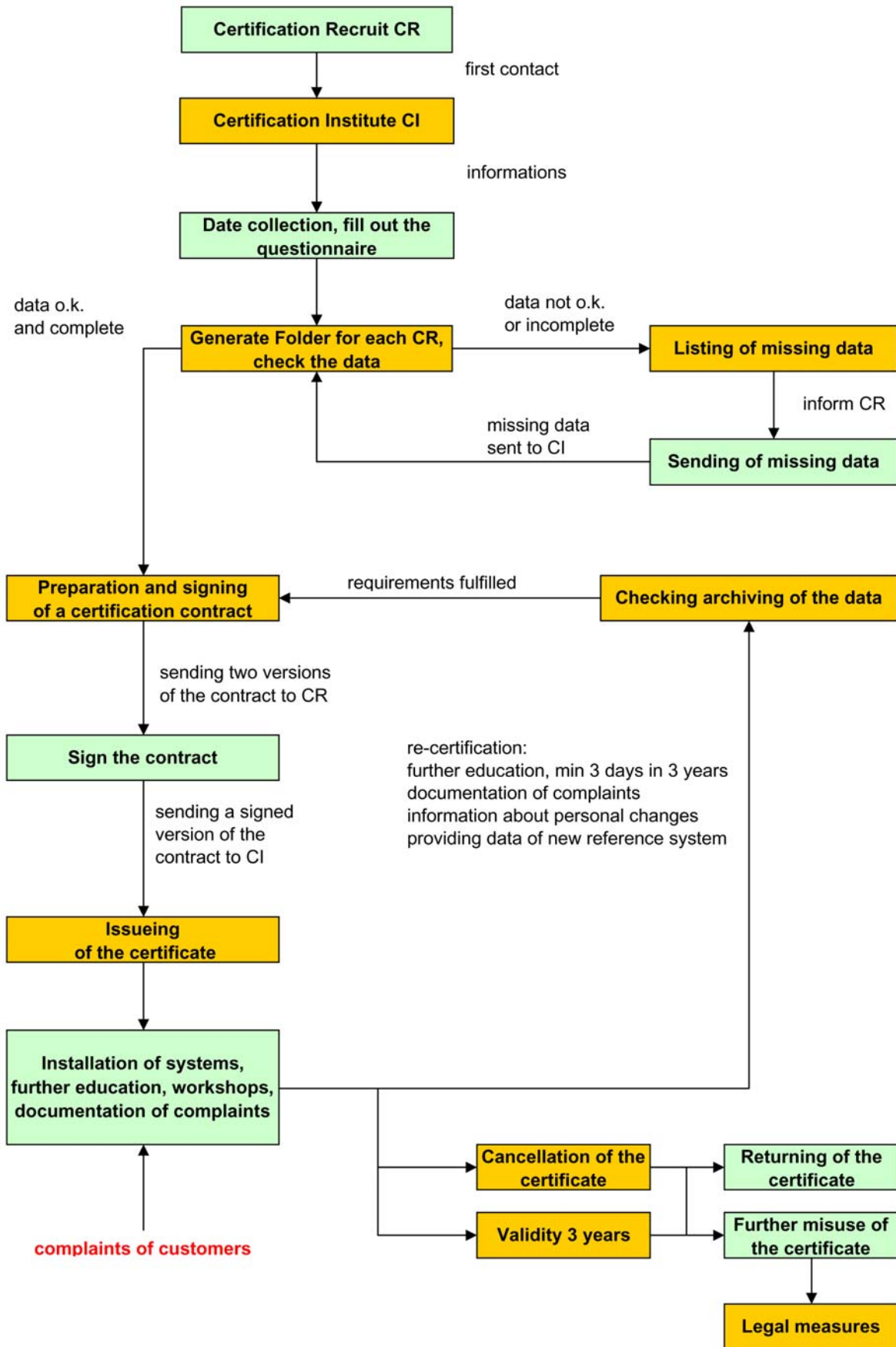


Figure 3: Certification Scheme

After ensuring that all the requirements are fulfilled, the CI generates a folder for each candidate where all their sent documents are kept safe and confidential.

The CI produces a certification contract where all the rights and duties of CI and CR are explained: for example, the Certified Installer is obliged to report all customers' complaints to the CI. Each party has to sign this contract and keep one copy.

After the signing of the contract, the certificate is issued and sent. The Installer's name and address are added to the list of Certified Installers which is available on the website of the Certification Institute (www.arsenal.ac.at). Twice a year, the certification body publishes a "heat pump bulletin", where, among other important information for the national stakeholders, the complete list is included.

The validity of the certificate is three years. If the installer applies for a re-certification, the CI verifies that the following requirements are fulfilled:

- attendance of at least three days of further education during the last three years
- details of a new reference heat pump system
- verification of personal data (address, employer)
- documentation of customer's complaints

If installers do not apply for re-certification, they are not allowed to use the certificate anymore and are obligated to return it to the CI.

In case of any violation of the certification contract or any misuse of the certificate, the CI has the right to withdraw the certificate and use of legal recourses.

5 THE CERTIFICATE

The Certificate proves that the installer is a qualified person according to EN 13313 category A and B and is capable of working on heat pump systems according to EN 378.

Figure 4 shows the original certificate given to the installer.

The following information is included:

- name of candidate
- kind of qualification
- competence categories
- issuing body
- place and date of issue
- accreditation body
- validity
- registration number



Figure 4: National Certificate

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