



# QAiST

Quality Assurance in Solar Heating  
and Cooling Technology

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# Project summary

Good, operational and generally accepted European Standards are an essential part of the market conditions and the basis for a large and open European market.

Standards and pre-Standards were established but work was still needed in order to keep track with recent technological developments in the direct use of solar thermal energy (i.e. new materials, concentrating devices, etc.) and in combination with other technologies (cooling, heat pumps, etc.).

New Member States also provided new opportunities to market development. It is essential that the quality requirements, as well as the public incentives and regulations for solar thermal technologies that rely on them, integrate the current best practices.

To open the world market for European producers, coordination with activities in the international standardization was required. The timing was the right one to promote the European experience and quality standards outside our region.

QAiST has helped to shape the future of the industry in Europe, with standards updated to reflect developments and market requirements, looking into new areas, improving test laboratories' performance and actively promoting quality assurance in Europe and beyond.

# Main Achievements

- Solar thermal collectors
  - New version of the EN 12975 (EN 12975-1 and EN ISO 9896) expected in 2013.
  - Tracking concentrating collectors within the scope of EN 12975
  - Introduction of “class definitions” for mechanical load tests, impact resistance and exposure tests
  - Description of test procedures improved
  - Evacuated Tube Collectors: input to a revision of EN 12975 agreed
  - Improved durability test procedures and new test methods.
  - Procedure for calculating annual collector performance develop and soon included in the standard

# Main Achievements

- Solar thermal systems
  - Revision of EN 12976 for Factory-made systems put forward
  - Procedures developed for certification of complete systems' family, now included in the Solar Keymark certification scheme rules
  - Procedures adapting the results of system testing to the upcoming Energy Labelling were developed
  - ENV 12977 series revised (and restructured) and published as CEN/TS
  - Decision to extrapolate CEN/TS documents to European Standards (EN'S)
  - Solar Keymark available for custom-built systems (including space heating)

# Main Achievements

- Quality assurance in testing
  - Largest ever inter-laboratory comparison in the field of solar thermal
  - Results considered excellent by independent institute
  - Confirmation that level of testing in Europe is high
  - Identification of areas offering possibilities for improvement

# Main Achievements

- New areas for quality assurance
  - Common approach for combined heat pump and solar thermal systems developed in cooperation with IEA implementing agreements
  - Assessment of state of the art of function and yield control of large solar thermal systems
  - Establishment of basis for technology roadmap for function and yield control of large solar thermal systems
  - Preparation of technical reports on requirements for durability and performance; durability issues; maintenance and costs of solar cooling systems
  - Review on testing procedures and quality standards for thermally driven chillers
  - Assessment of the possibility of incorporating solar thermal cooling into EN 12977 series

# Main Achievements

- Promotion of quality assurance in solar thermal
  - Consolidation of the Solar Keymark Network (SKN)
  - Test labs from member states and candidate countries involved in SKN
  - Workshops on quality assurance in South-East Europe and Northern Europe
  - New materials produced to promote quality assurance and Solar Keymark
  - Strong European contribution to international harmonization
  - Draft EN 12975-1 and a draft International standard (DIS) 9806 developed based on the revised EN 12975 series
  - Decisive developments on global certification prospects

# Long term objective and ultimate goals

- The long term objective of the QAIiST project is to prepare the quality assurance framework so that the European solar thermal heating and cooling industry can sustainably contribute to the targets agreed by the Member states (20% of renewable energy by 2020) and become a technological world leader.
- The ultimate goals for longer term are:
  - Speeding-up of broad market penetration of solar thermal products through the removal of trade barriers and the general acceptance of the Solar Keymark
  - Increasing the share of quality products in the solar thermal market
  - Increasing the uptake of new technologies and encourage new collector and system designs and materials



# Available documents

Before QAISt very limited resources were available about quality assurance for solar thermal. The project has produced many outputs freely available for experts, industry, public authorities, students or other interested persons. We believe this information is of great value and are glad to have it available on

[www.qaist.eu](http://www.qaist.eu)

A description of the documents facilitates finding them under the following categories:

- [Solar Thermal Collectors](#)
- [Solar Thermal Systems](#)
- [Quality Assurance in testing](#)
- [New areas for Quality Assurance](#)
- [Communication and Dissemination](#)

## SOLAR THERMAL COLLECTORS

QAISt project results: documents available to download

Document	Content	Target group(s)
Proposals for revision of the present EN 12975 with respect to tracking/concentrating and mid temperature collectors including ETC		
Topic report: <a href="#">Performance testing of evacuated tubular collectors (R2.1)</a>	Summary of work carried out, main results and proposals for standard revision	Industry, test laboratories
Topic report: <a href="#">Experience from tests on concentrating and tracking collectors (R2.2)</a>	Summary of work carried out, main results and proposals for standard revision	Industry, test laboratories
Topic report: <a href="#">Concentrating / tracking collector component characterization (R2.4)</a>	Summary of work carried out, main results and recommendations for standard revision	Industry, test laboratories
A guideline to the EN 12975 allowing uniform interpretation of requirements, harmonized application of the standard and presentation of results		
<a href="#">A guideline to the standard EN 12975</a>	A guide directed to established and new test laboratories for collector testing. The main purpose is to give a quick introduction to the standard for new laboratories and in general to contribute to a uniform interpretation of the standard and presentation of results.	Test laboratories
<a href="#">Understanding and using collector test standard EN 12975</a>	A guide directed to manufacturers and importers of collectors. The purpose is to give a very light introduction to the standard and to explain how it is used for type testing as well as for innovation and development support.	Industry, public authorities, system designers, building contractors

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REPORT OF  
PROJECT  
ACHIEVEMENTS



INTELLIGENT ENERGY  
EUROPE

QAISt  
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# Project consortium

- Coordinator: ESTIF, Belgium



- Partners:

CENER, Spain

CSTB, France

DEMOKRITOS, Greece

AIT, Austria

LNEG Portugal

PIMOT, Poland

ISE, Germany

ISFH, Germany

ITC, Spain

IZES, Germany

PlanEnergi, Denmark

SP, Sweden

TEU Germany

USTUTT-ITW, Germany

# Any questions?

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