

EAST-GSR

Solar Thermal applications in EASTern Europe with Guaranteed Solar Results



Work package 3

"Recommendations for the successful GSR Charter Implementation"

Slovenia

September 2007

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RECOMMENDED ACTIONS FOR THE SUCCESSFULL IMPLEMENTATION OF GSR APPROACH

1. Correlate existing standards as a first step to harmonizing standards with the wider international market. *(Work should be undertaken in such way, that it contributes to the adaptation and adoption of international standards)*

Already done

2. Promote validated design and dimensioning methods for solar installations *(Transfer experience, information and training of designers, publications of handbooks etc)*

Dimensioning and calculation methods used in process of planning the solar heating systems can be divided into five levels:

- for small solar heating systems heat delivery per m² of solar collector area is often taken as fix value; such method is encouraged by the fact, that the National regulation of building thermal protection and energy efficiency prescribes two fixed amounts for heat delivery per m² of solar collectors - (250 kWh/m² for flat SC, 600 kWh/m² for vacuum SC) without any corrections regarding solar radiation and ambient temperatures.
- some (few) companies has long tradition and make planning by them selves; the methods they used are unknown; such an example is the successful company STROJ
- some (few as well) other companies (like HIDRIJA IMP Klimat) developed several program tools, mainly made on the base of f-chart method
- Foreign companies (importers), like Viessmann or Wieshaupt, use adapted commercial program tools like Get-SOL
- At University of Ljubljana, Faculty of Mechanical Engineering the TRNSYS code is used to simulate the performance of the solar heating systems.

Several training workshops for installers were organized in the past, but none focusing on quality insurance and system monitoring. Therefore national workshop which will be a part of EAST_GSR project can be very important for future solar thermal market, especially if printed manuals and publications about solar thermal system planning, maintenance and monitoring will be included.

3. Use of certified measurement instruments for solar radiation, weather conditions (temperature, etc) and flow rate *(Promotion in the market of certified measurement instruments, information campaigns to the technicians, installers, suppliers etc)*

Several institutions in Slovenia are recognized as certification bodies for the measurement instruments for solar radiation, temperatures and flow rate. All equipments serving to cost charges must be certificated before installing. According to the law, the measurement equipment should be certificated at **national institution** before installing and after certain time (five years). In frame of GSR method the problem will not be a lack of certification bodies, but first of all, additional costs for periodical certification.

4. Adapt and adopt international (European) standards. *(Transfer of expertise. Build local capacity, in terms of knowledge and experience)*

The EU standards in field of solar thermal technologies are adopted as national standards by "first page translation" methods. The important barrier for their implementation is that they are

published in English language and not well developed national industry. Translation of the standards required effort that exceeds the frame of EAST-GSR project, but recommendations elaborated and translations in WP3 of the project will be useful.

Following EN standards, concerning solar energy equipment, were adopted in Slovenia:

- SIST EN 12975-1:2006 - Thermal solar systems and components - Solar collectors - Part 1: General requirements,
- SIST EN 12975-2:2006 - Thermal solar systems and components - Solar collectors - Part 2: Test methods,
- SIST EN 12976-1:2006 - Thermal solar systems and components - Factory made systems - Part 1: General requirements,
- SIST EN 12976-2:2006 - Thermal solar systems and components - Factory made systems - Part 2: Test methods,
- SIST ENV 12977-1:2002 - Thermal solar systems and components - Custom built systems - Part 1: General requirements,
- SIST ENV 12977-2:2002 - Thermal solar systems and components - Custom built systems - Part 2: Test methods,
- SIST ENV 12977-3:2002 - Custom built systems - Part 3: Performance characterisation of stores for solar heating systems,
- SIST ISO 9806-1:1997 - Test methods for solar collectors - Part 1: Thermal performance of glazed liquid heating collectors including pressure drop,
- SIST ISO 9806-2:1997 - Test methods for solar collectors - Part 2: Qualification test procedures,
- SIST ISO 9806-3:1997 - Test methods for solar collectors - Part 3: Thermal performance of unglazed liquid heating collectors (sensible heat transfer only) including pressure drop,
- SIST prEN 15316-4-3:2006 - Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 4-3: Space heating generation systems, thermal solar systems.

5. Develop local testing facilities having the authority of certification. *(A long-term plan is essential. Consider: current facilities; size and growth of the solar thermal energy market by product sub-sector; likely demand and ability to pay for test services (including Testing Standards to be adopted)).*

There is only one laboratory in Slovenia equipped for testing solar collectors, solar heat storage as well as for testing solar systems in-situ is Laboratory for heating, sanitary and solar technology at Faculty of Mechanical Engineering, Ljubljana. It was established in 1984. The laboratory is not recognized as certification body, but their report is recognized as national authority.

6 Develop and implement general requirement standards *(Ensure that standards are appropriate for local markets. Stakeholder commitment must be obtained, particularly important for successful adoption of voluntary standards).*

The solar systems, as part of the buildings must pass according to the law the commissioning at the end of construction phase. The Installers must guarantee the operation of the solar thermal system (as for other building service systems) components for 5 year. In practice available short time for installation and commissioning, lack of knowledge of investor's technical staff and experiences of investors are reasons why commissioning as well as maintenance are in most cases not done in proper way. EAST-GSR will, after it's fully dissemination, improve or remove this barriers in great extend.

8. Promote general requirement standards (*Government to promote general requirement standards by using as basis for incentives, in government tenders, enforced regulations etc*)

At the moment no calls for subsidies in solar thermal technologies are open. But it seems so, that in the frame of the next European financial perspective (Slovenia is in the middle of the negotiations) the subsidies for the large solar thermal systems will be available as well. In this case, the GSR contract should be an important term for state subsidies. The EAST-GSR project has an important mission to introduce this idea to the decision makers and politicians in advance.

9. Adopt certification (*Transfer experience of the Keymark Scheme*)

There is no regulation about required thermal efficiency of solar thermal systems in Slovenia at the moment. Possessing of CE mark for solar system components is sufficient for granting the subsidies, after the system has been installed. As installers must guarantee the quality of the components according to the law (minimum 2 years after successful technical review), they install certificated components as rule and it is practice that producers (importers, agents) supply the installer of components with adequate certificates. But foundation of national certification body will have great impact on national solar thermal industry and this is very important for the future solar thermal market.

10. Create a GSR pool of experts (*Transfer experience, information and training on GSR issues*)

The idea about GSR should be presented to different target groups – investors, planers, installers, national energy experts organized in successfully operating national network. The leaflet, web site and national workshop are necessary tools for implementing GSR in Slovenia.

11. Legislation, incentives in order to adopt GSR approach (*Consider the use of GSR as appropriate, to guarantee and to monitor key projects. Incentives to solar thermal projects with GSR approach*)

The GSR method is, in principle, simple to implement and easy to understand. First testing of acceptance was already done (to investors) and reactions from planers and installers are at this time not known yet. In any case, implementation of GSR will be a slow process, important is to present idea of GSR permanently.