

Task Proposal

Increasing the Attractiveness of Solar Thermal Systems

SHC – Objective:

Increase the per capita penetration of solar heating systems for hot water preparation and space heating

Task xx:

Increasing the attractiveness of solar thermal systems



Task xx:

Increasing the attractiveness of solar thermal systems

Main topics:

- **Money:** Reducing system prices
- **Easy installation:** Simplifying installation & building integration
- **Beauty:** Improving aesthetical appearance

Price reduction of solar thermal systems (and components)

Reduction of heat price (price/kWh thermal) delivered by a solar thermal system for the end user

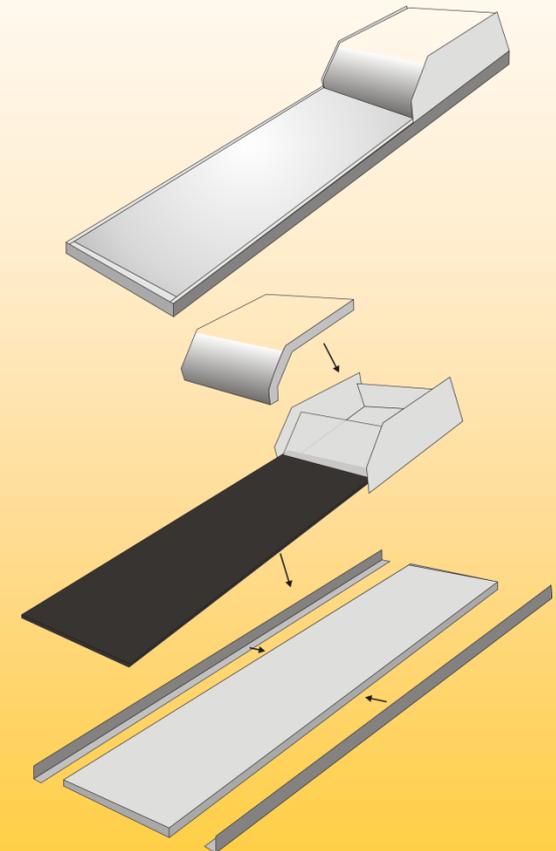
- Assessment and evaluation of system & component prices
- Assessment of reliability and durability
- Life cycle analysis (LCA)
- Standardized components & installation
- Optimization along the complete value chain
- Easy to install, easy to use



Source: Michael Köhl

Price reduction of solar thermal systems (and components)

- **Thermosiphons for sunny countries**
- **Thermosiphons for building integration**
- **Components for pumped systems:**
 - **Collectors**
 - **Piping**
 - **Storage**
- **Easy-to-install designs**



Source: Aventa

Price reduction of solar thermal systems (and components)

Historical background:

- Innovative Low-cost Solar Water Heating Systems (Concept Paper) Kate Hudon, US National Renewable Energy Laboratory
- Task 39 - Polymeric Materials for Solar Thermal Applications
- Task 27 - Performance of Solar Facade Components



Source: Michael Köhl

Optimized multi-functional building integration

- Market overview, state-of-the-art
- Barriers and opportunities for the integration innovative multi-functional facades
- Case studies of multi-functional building envelope elements
- Easy-to-use-simulation and visualization tools
- Intensive contact to end-users, stakeholders
- Portfolio of promising best practice examples



KOMBISOL house; Source: SIKO SOLAR GmbH, Task 39 Database

Multi-functional building facades

Case studies of multi-functional building envelope elements

4-5 projects are already ongoing

- Combinations of
 - Thermal insulation (e.g. VIPs)
 - Solar-thermal energy sources
 - HVAC
 - PV
 - Daylighting
- New buildings
- Prefabrication
- Modular systems for retrofitting
- Portfolio of evaluated examples



KOMBISOL house; Source: SIKO SOLAR GmbH, Task 39 Database

Multi-functional building facades

Historical background and potential for cooperation:

- Task 53 - New Generation Solar Cooling and Heating
- Task 50 - Advanced Lighting Solutions for Retrofitting Buildings
- Task 47 - Solar Renovation of Non-Residential Buildings
- Task 44 - Solar and Heat Pump Systems Task
- 41 - Solar Energy and Architecture
- Task 40 - Net Zero Energy Solar Buildings
- Task 37 - Advanced Housing Renovation with Solar & Conservation
- Task 28 - Solar Sustainable Housing



Picture source Passive house Caldonazzi:
AEE INTEC, Task 39 Database

Standardized controllers for heating and for solar systems

Facilitate installation and operation of novel components to existing heating systems

- Develop common control logic
- Standardized interfaces
- Simplification of installers for the end-user (smart controllers)
- Integration of different control applications
- Providing ease of use and functionality
- Increasing energy efficiency
- Predictive control strategies



First Task Definition Workshop:

- April 29, 2014, Freiburg, Germany
- Host: Fraunhofer ISE
- 18 participants (Task 39 partners, few new ones):
Germany, Austria, Switzerland, Norway

What about the Rest of the World??

- Working title: Increasing the attractiveness of st systems
- Topics: building integration, cost-reduction, controllers
=> to be narrowed down

Needed skills and expertise

- Solar thermal R&D
- Architects, façade manufacturers
- Experts in the development of routes to the market
- Expertise in regulation and legal aspects
- Material scientists & manufacturers
- Components and system manufacturers
- Test and research institutes
- Planners and installers, system designers
- Decision makers
- Building sector
- Controller manufacturers, applied IT
- Any other?

Matters for the ExCo

- Approve concept paper
- Identify lead country
- Define title(s)
- Next steps:
 - Send more interested partners to the 2nd Task definition workshop in September 15 in Freiburg
 - Task x1: Price reduction
 - Task x2: Multi-functional building integration