

## 2013 HIGHLIGHTS

### SHC Task 39 Polymeric Materials for Solar Thermal Applications

#### THE ISSUE

One of the greatest challenges of the 21<sup>st</sup> century is to secure sustainable and save energy supply and to considerably reduce CO<sub>2</sub> emissions and the potential serious consequences of climate change. The challenging goals with regard to the contributions of renewable energies cannot be obtained without a considerable growth of the solar thermal markets worldwide. Therefore, reliable, efficient and cost-competitive system components are required in large quantities. Today solar thermal collectors mainly consist of glass and metals whereas especially market prices for metals are subject to big fluctuations.

These issues demand the introduction of new materials, of which polymers seem to have a strong preference with regard to mass-production techniques, new design freedom, cost- and weight reduction.

#### OUR WORK

The objective of SHC Task 39 is the assessment of the applicability and the cost reduction potential by using polymeric materials and polymer-based, novel designs of suitable solar thermal systems and to promote increased confidence in the use of these products by developing and applying appropriate methods for assessment of durability and reliability.

These goals will be achieved through either less expensive materials or less expensive manufacturing processes.

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#### PARTICIPATING COUNTRIES

Germany  
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Netherlands  
Canada  
USA  
Brazil

## KEY RESULTS OF 2013

### On the Road to a New Generation of Solar Thermal Energy Systems

Task 39 Exhibition at SHC 2013 in Freiburg, Germany, September 23-25, 2013

In September, SHC Task 39 showcased innovative polymeric products and research projects at the SHC 2013 conference in Freiburg, Germany. While the conference was taking place inside the halls of Freiburg's concert hall, participants and passers-by had the opportunity to look at novel polymeric solutions for solar thermal applications that were showcased on a 14-meter long truck in front of the conference venue. Next to polymeric collectors and thermosiphon systems from Magen Eco Energy, the companies Aventa AS, Roth, Enerconcept, Consolar and Kompetenzzentrum Holz GmbH showcased pioneering solar thermal collectors for building integration, polymer based air collectors, collector storage tanks and innovate wood plastic composites (WPC). Additional information on current research activities was provided by associated Task 39 research institutes and partners like Fraunhofer ISE, SWT Stuttgart, PCCL and the University of Leoben as well as Sunlumo. The Task 39 exhibition was the first of its kind to put selected polymeric components on stage and was well received by the international conference audience. The success of the event shows the great interest of the community in novel solutions for cost-reduction and design and is to be seen as an important step in the promotion of polymeric products with the potential to shape the future of solar thermal energy systems. In order to maintain the good publicity, the concept will be continued in 2014, when the latest developments and prototypes are shown at the Gleisdorf Solar 2014 Conference in Gleisdorf, Austria.



More information: <http://task39.iea-shc.org/task-39-exhibition>.



### Workshop on Innovative System Configurations

Task 39 experts discuss components for all-polymeric solar thermal systems

With the aim to demonstrate that polymeric materials for solar thermal applications are not only wishful thinking but already reality, Task 39 organized a workshop on the topic in March 2013. In the frame of the 15th expert's meeting, four expert groups discussed different system configurations with commercially available polymeric components, also taking into account suitable dissemination and PR strategies. Discussed was the efficient assembly of an all-polymeric standard DHW system, a thermosiphon system for sunny regions and a scalable solar thermal system. Concrete proposals for the realization were worked out. The results will be published in Task 39 Information Sheets at the end of the project in autumn 2014.



## Opening of a New Automated Production Line for Welding of Polymeric Collectors Milestone reached in jointing absorber components of high-temperature polymers

In February 2013, Aventa AS opened its new IR welding line. The event was linked to a factory visit and seminar with Task 39 partners from Fraunhofer ISE and Chevron Phillips Chemicals, and more than 50 invited guests. The production system was produced by a leading Austrian plant manufacturer. The new system automatizes essential parts of the production process for Aventa. The reproducibility secures a high part quality level, as well as an annual capacity for 40,000 solar collectors per shift.



## Polymeric Materials - New Potential for Solar Heating Technology Austrian Task 39 dissemination workshop, October 11, 2013

In the frame of an Austrian Dissemination Workshop, Task 39's know-how in the area of polymeric solar thermal collectors and an outlook with regard to present and future projects were presented to more than 70 participants from research and industry. Special focus was placed on major results of the Austrian research projects *SolPol-1/2*, where novel collector types (e.g., with full overheating protection based on triggered back cooling) and polymeric materials with enhanced long-term performance (e.g., for solar absorbers or liners of seasonal heat stores) were successfully developed.

