

2012 HIGHLIGHTS

SHC Task 49 Solar Process Heat for Production and Advanced Applications

THE ISSUE

The identification of the requirements of the so called “process heat collectors” that run at higher temperatures will lead to new collector and collector loop developments. To achieve this not only do solar collectors need to be improved, but also production processes need a thorough investigation in order to lower the process temperatures and increase the heat transfer. In several specific industry sectors, such as food, wine and beverages, transport equipment, machinery, textiles, pulp and paper, the share of heat demand at low and medium temperatures (below 250°C) is around 60%. Tapping into this potential would provide a significant solar contribution to industrial energy requirements.

OUR WORK

The work of Task 49/IV is dedicated to three main areas, process heat collectors, process integration and process intensification and design guidelines. Improved solar thermal collectors and solar thermal system integration for production processes will be reached by advanced heat integration and storage management, advanced methodology for decision on integration place and integration types.

Within the subtasks a worldwide overview of results and experiences from solar heat in industrial systems (including completed and ongoing demonstration system installations using monitoring data, as well as carrying out economic analyses) will be developed in order to lower the barriers for market deployment and to disseminate the knowledge to the main target groups involved.

SHC Task 49 is a four-year collaborative project with the IEA SolarPACES Programme.

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KEY RESULTS OF 2012

Guideline for the Utilization of Solar Process Heat in Breweries

Within the SOPREN project (solar process heat and energy efficiency), the University of Kassel systematically investigated the brewing sector to analyze the possibilities for the integration of solar heat in breweries and how they can easily be identified. The outcome of this investigation is a guideline for the utilization of solar process heat in breweries. The guideline contains all relevant information regarding applied processes and energy consumption in breweries. For all processes within a brewery that consume thermal energy, integration concepts are shown.

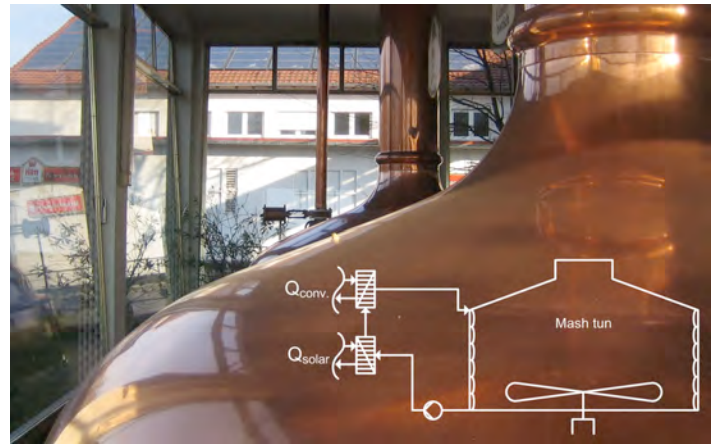


Photo: Bastian Schmitt

These concepts include a brief description of the processes regarding their purpose, equipment, and conventional way of heating. Based on this information, the integration of solar heat is described and illustrated using an integration scheme. The guideline is available on the University of Kassel's website www.solar.unikassel.de/downloads.

Parabolic Trough Collectors for the Swiss Dairy LESA.

NEP Solar installed in cooperation with ewz/LESA in Engadin, Switzerland 115m² PolyTrough 1200 collector field supplied to the Swiss utility ewz from Zürich. ewz owns and operates the installation and supplies solar steam to the LESA factory under a heat supply contract. The collector field heats thermal oil to 200°C, which then drives a tube and shell steam generator. The steam is injected into the existing steam network of the end client LESA, a milk processing factory. The site is located at 1700m above sea in harsh alpine conditions with ambient temperatures reaching -30°C in winter. The Swiss Institute for Solar Technology SPF is evaluating measurement data from the solar plant and its integration into dairy processing on behalf of the Swiss Federal Office of Energy.



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