



EVENT DESCRIPTION

Project Partner: GERTEC Ingenieurgesellschaft GmbH

Title of the event: **Regional Round Table II “Solar Process Heat”**
Storage Technology & Process Integration

Date & location: 9th November 2010, Essen North Rhine-Westphalia

Organiser(s): GERTEC Ingenieurgesellschaft GmbH

Number of Participants: 31 (incl. 4 speaker)

Summary

The first part of the Regional Round Table was held with the focus on aspects of storage technologies and the process integration. On the part of the participants on the last Round Table held in Essen more information on this theme was requested.

Stakeholders of the different target groups like industrial companies, solar companies, planer, HVAC-companies, ESCOs and representatives of associations assists on the event.

The second part of the event was focused on an stakeholder enquiry how an useful network on Solar Process Heat should be designed and to which expectations on the network SoPro should come up.

The stakeholders have been informed on the status quo of the regional SoPro-activities, the elaborated tools up to now and the planed activities in 2011.

Introductory speeches on issues storage technologies and process integration were held. Further a report on the findings during the implementation of the monitoring of an existing solar process heat installation was given and the elaborated optimisation measures were discussed with the participants.

- Presentation of “Storage Technologies“ by Maximilian Forstner – Forstner Speichertechnik GmbH, Hard – Österreich
- Presentation of „Process Integration and System Aspects Solar Process Heat“ Dipl.-Ing. Klaus Hennecke - DLR- Institute of Technical Thermodynamics, Köln
- Presentation of „Monitoring Results of an existing SoPro-Installation“ based on the analyses realised at the company Steinbach & Vollmann GmbH in Heiligenhaus“ Dipl.-Ing. Marco Lanz – Solar-Institut Jülich (SIJ) Aachen University of Applied Sciences
Substitutes due to illness: Mr. Sebastian Schramm, E² - Düsseldorf University of Applied Sciences and Mr. Arno Kynast, SOTEC SOLAR (Solar Company)

Objective & main programme point

To put all participants in terms of content on a par with each other the SoPro-project, its aims and tools was briefly presented.

Mr. Forstner, managing director at Forstner Speichertechnik GmbH, a leading heat storage producer and designer in Austria, gave a presentation of effective heat storage technologies. Operation principals which reach particularly good results in an optimal stratification of the storage medium.

Mr. Hennecke from the DLR – Institute of Technical Thermodynamics in Köln gave a general overview of the particularities of the solar supported process heat. Beside the presentation of different collector technologies he introduced the Pitch Point Analysis, an approximation method by curve charts for the design of a solar system. He pointed out, how to proceed in the construction of the Composit Curves, which data input has to be made and which conclusions can be obtained. In conclusion, Mr. Hennecke presented some realised solar thermal projects by industry.

Mr. Schramm from the Düsseldorf University of Applied Sciences and by Mr Kynast, managing director at SOREC SOLAR, gave a presentation of the monitoring at an existing SoPro-installation and the identified ways for optimising the output of the plant. They showed possible problems arising during the design and the operational phase and how resolution methods have been developed. In this connection they applied in particular to the design and the interconnection of the collector field, to the system hydraulic and the measurement concept for the plant monitoring. The developed optimisation options were shown.

Each presentation was followed by a panel in which the stakeholders discussed the contents of the lectures and in which questions could be asked to the respective contents.

Finally the expectations of the stakeholders with regard to an *Network Solar Process Heat* was inquired:

- Which services should be offered by the Network?
- Which functions should the Network met?
- Which communication channels should be used and offered by the Network.

The DLR invited planers of large-scale installations to test a recently elaborated software tool for solar process heat. The DLR would be interested in a software application check in the everyday planning process an in getting a feedback from the users for optimising the tool. Some of the present solar industries have expressed great interest.

Conclusions & lessons learnt (based on stakeholder input)

Out of the interchange among the round table participants the following conclusions can be done:

- The planning of a solar process heat plant requires an intensive and engineering analysis of the energy flows in the whole heating system of the company.
- The service of carrying out this intensive analyse normally can not be fulfilled within an acquisition.
- Generally an industrial company is only willed to pay additional costs for a profound energy analysis, especially focused on solar process heat, when information about solar thermal and the possibilities to implement it into a heat system for processes has already been obtained in advance and when the company is convinced of this concept in general.
- The method of the Pitch Point Analysis attracted great interest among the stakeholders of solar companies and planning offices. It is a very exact and effective method for designing solar plants in processes, however, this method requires also a detailed survey of every existing heat demand and heat excess in each sup-process in the whole process chain.

The effort to employ the Pitch Point Analysis must be considered as very high and so it can be used only in integrated energy analysis by engineers. The demands and excesses of heat detected by the Pitch Point Analysis can only be used in an heat system if the spatial conditions an the process structure permit the installation of the necessary heat exchanger network.

- A solar thermal concept requires a detailed planning of the heat storage. Of special interest in this matter is to reach an optimal store charging and discharging. Only by avoiding even a minimal mixing of the storage medium, even on a low temperature level a very high store efficiency can be achieved and consequently also an optimal cost-benefit-balance can be achieved.
- An innovation in heat store technology is the combination of solar thermal and existing waste heat with heat pump technology. At this store conception high efficient results can be obtained in connection with a low temperature heating system. A combination of heat supply in processes and space heating is conceivable in this concept.
- The presentation of the operational results of an existing solar process heat plant showed clearly the importance of publishing and discussing all operational experience on this kind of installations - good and bad ones -. Talks on realised concepts and their advantages and disadvantages in practical operation represents a additional value with a high learning effect for all stakeholders.

- On part of the round table participants a great interest on a “Network Solar Process Heat” was expressed. For building up this network an internet platform seem to be a suitable tool. The stakeholders gave the following input an minimal options a network platform should give:
 - Exchange of information about experiences in realised SO-PRO-plants
 - Exchange of ideas
 - Access to a national network partner list with contact details and field of activities
 - Information about software for the design of SO-PRO-plants and calculation methods
 - Information about standardisation in solar process heat
 - Information about special solar process heat events
 - Publications of examples of realised SO-PRO-installations

- Furthermore, the stakeholders expressed the wish to keep on organizing network meetings or round tables on specific issues to enable the stakeholders to have an personal exchange. All stakeholder group perceive the meetings as good opportunity for sharing experiences an to establish new contacts.

„Solar Process Heat – SO-PRO“ – Regional Round Table II: Storage Technology and Process Integration

Date: 9. November 2010

Place: Zukunftszentrum Zollverein in Essen, North Rine-Westphalia

Moderation: GERTEC GmbH Ingenieurgesellschaft, Essen

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Programm

8:45 h Eintreffen der Teilnehmer

9:00 h Welcome

Presentation of the SO-PRO project and the newest results

Presentation of the *Checklists* and the planning guide

Heli Kasa - Gertec GmbH Ingenieurgesellschaft, Essen

Klaus Kottsieper – Gertec GmbH Ingenieurgesellschaft, Essen

9:15 h Pioneering Storage Logic

Optimum use of Heat

Maximilian Forstner – Forstner Speichertechnik GmbH, Hard - Österreich

Discussion

10:00 h Coffee break

10:15 h System Aspects of Solar Process Heat Installations

Dipl.-Ing. Klaus Hennecke - DLR-Institut für Technische Thermodynamik, Köln

Discussion

11:00 h Process Optimisation of an existing Solar Process Heat Plant

Report of Results Using the Example of Steinbach & Vollmann GmbH in Heiligenhaus

Dipl.-Ing. Marco Lanz – Solar-Institut Jülich (SIJ) University of Applied Sciences Aachen

Discussion

11:45 h Closing Discussion

Outlook for future project activities, Inquiry of themes for the next Round Table

12:15 h End of the event, joint lunch

Attached:

- programme
- printed invitation folder (if available)
- all ppts
- pictures
- other documents/information

Fotos der Veranstaltung

