Annex 34 - thermally driven heat pumps

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9. IEA HPC 2008
Workshop “thermally driven heat pumps”
Zuerich, Switzerland
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Fraunhofer ISE Institut Solare Energiesysteme

ZÜRI 2008 9th IEA Heat Pump Conference HPC

Program :

- 18:00 - 18:20 Technical background of thermally driven heat pumps

  Dr. Tomas Núñez, Fraunhofer ISE
- 18:20 – 18:40 State of the art of gas driven heat pumps – a report from the Initiative Gas Heat Pump in germany

  Dr. Rolf Albus, E.ON Ruhrgas AG
- 18:40 – 19:00 State of the art of thermally driven cooling

  Dr. Uli Jakob, SolarNext AG
- 19:00 – 19:15 Aims and structure of the annex 34

  Dr.-Ing. Peter Schossig, Fraunhofer ISE
- 19:15 – 19:30 Discussion

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Aims of the annex :

- Reduce the environmental impact of heating and cooling by the use of thermally driven heat pumps and chillers
- Widen the use of thermally driven heat pumps, enhance their performance
- Techniques in focus:

  absorption, adsorption and ejectors, but no gas driven motors
- Different approach for small (<100kW) and big systems

- ➢ Collect state of the art: technical, market and politics; try outlook
- ➢ recommend standards and references
- ➢ Information exchange about development on component and system level
- ➢ Demonstration and dissemination

outcome:

- Country reports compiled to overall state of the art report
- Recommendation for standards, test procedures, labeling
- Database of materials, properties, tools
- Documentation of demonstration projects/case studies
- Reference guide / handbook

structure:

Task A: Market overview/state of the art

WP 1 – state of the art/ country reports
WP 2 – Outlook
WP 3 – politics/ labeling

Task B: Performance evaluation

WP 1 – existing standards
WP 2 – Performance definition
WP 3 – Test procedures
WP 4 – Comparisions
WP 5 – Labeling

Task C: Apparatus technology

WP 1 – Methodology Characterization
WP 2 – Database
WP 3 – Stability
WP 4 – developement of components

Task D: System technology

WP 1 – System design
WP 2 – Integration
WP 3 – Simulation
WP 4 - Demonstration

Task E: Implemetation/ marked transfer activities

WP 1 – Best case examples
WP 2 – Guidelines
WP 3 – Dissemination

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task A: Overview/state of the art

- WP 1 state of the art
  - Collect national situation of technical state of the art
  - Market situation
  - Split into industrial applications and buildings
- WP 2 outlook
  - Try to get an outlook of the possibilities of thermally driven heat pumps in the future
- WP 3 politics/labeling
  - Look at different national political situations
  - Funding/ incentives/ building codes
  - Identify opportunities/ barriers

task B: Performance evaluation

- **WP 1 Existing standards**
  - Collect existing standards, e.g. EN14511, EN12309-2 and DACH
  - Look at standards for energy efficiency
  - Split into industrial applications and buildings
- **WP 2 Performance definition**
  - Define performance definition for apparatus and system
  - Energy and CO_2, Exergy
  - COP and SPF
- **WP 3 Test procedures**
  - Develop recommendations for test procedures
- **WP 4 Comparisons**
  - Parameter study with different energy supply systems, define reference system
- **WP 5 Labeling**
  - Develop Methodology for labeling

task C: Apparatus technology

- WP 1 Methodology Characterization
  - Themophysical properties,
  - Sorption properties (equilibrium, kinetics)
  - Data presentation
  - Cross comparison test
- WP 2 Database
  - Materials (available and upcoming)
  - Working pairs
  - Compatibility
  - Sources for materials
- WP 3 stability
  - Materials/compounds
  - Apparatus (corrosion, inert gases, tightness, fatigue)
- WP 4 development of components
  - Thermal components
  - Auxiliary components

task D: System technology

- **WP 1 System design**
  - Typical system layouts (matrix)
  - Dimensioning (different for small and big systems) (product versus project)
  - Evaluation of auxiliary power requirements
- **WP 2 Integration**
  - Building/process integration
  - Control strategies (dos and donts) (user interface?)
  - Retrofit versus grass root
- **WP 3 Simulation**
  - Make a list of available tools (engineering tools versus sientific)
  - Simulation study
- **WP 4 Demonstration**
  - Monitor demonstration projects

task E: Implementation

- WP 1 Best case Examples
  - Do short reports of very good examples
- WP 2 Guidelines
  - Labeling
  - Feed in standardisation body
  - Lobbying (research agenda, input for politics, building codes etc.)
- WP 3 Dissemination
  - Web page
  - handbook
  - Workshops/trainings?/Conference participation
  - Universities? Education?

Participants so far:

- Austria
- Canada
- Germany
- Italy
- Netherlands
- USA

More Participants are more than welcome!

Task sharing annex

Cooperation with IEA-SHC Task 38 Solar cooling and refrigeration

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Timeline:

- Start 10/2007
- Aims and structure defined
- Still waiting for more national projects being approved
- Working group meetings will start this summer
- Expert meeting 22. - 24. october 2008 in Vienna, Austria
- Expert meeting 27.- 30. april 2009 in Freiburg, Germany as back-to-back meeting with SHC Task 38

Web-page:

www.annex34.org