WORKSHOP
SUCCESSFUL APPLICATIONS OF INDUSTRIAL HEAT PUMPS

Status presentation
of Annex 48
Industrial Heat Pumps
August 28, 2019    Montreal

www.heatpumpingtechnologies.org
IEA INTERNATIONAL ENERGY TCP TECHNOLOGY COLLABORATION PROGRAMME ON HTP HEAT PUMPING TECHNOLOGIES

• IEA - HPT TCP has been active since 1978, with a lot of collaborative research, development, demonstration and deployment projects. We call these projects "Annexes" and they are conducted on a combination of cost sharing and task-sharing basis by the participating countries. (They are the Annexes of an IEA PROGRAMME)
HISTORY ANNEXES IHP

• Annex 09

High Temperature Industrial Heat Pumps

Before 1990
Global Environmental Benefits of Industrial Heat Pumps

By upgrading heat at a lower temperature, industrial heat pumps use their high-energy efficiency to meet heating needs in industry, therefore helping to reduce the consum...
Application of Industrial Heat Pumps (IHP)

Objectives The objective of the Annex was to reduce the use of energy and emissions of greenhouse gas emissions by the increased application of heat pumps in industry,...
IEA HPP - IETS ANNEX 35/13: APPLICATION OF INDUSTRIAL HEAT PUMPS

- As a joint venture of the IEA Implementing Agreements Industrial Energy-related Technologies and Systems (IETS) and Heat Pump Programme (HPP)
- 9 IEA countries: A CDN D DK F JAP Korea NL S
- 15 participating organizations
- Operating agent: IZW e.V. Germany
- Start date: 01st May 2010    End date: 30th April 2014
- Report: 31st October 2014   689 pages
  39 R&D projects    115 applications
  85 publications of the participants
Industrial Heat Pumps, Second Phase

The official end date of Annex 48 is 31/03/2019. Compilation of the final report is ongoing. Industrial heat pumps (IHP) are active heat-recovery devices that incr...
HEAT SOURCE AND HEAT SINK IN INDUSTRIAL HEAT PUMPS

Heat Sink
- Condenser

Heat Source
- Evaporator
  - Ground-Air-Water
  - Cooling Tower
  - Excess Waste Exhaust
  - Others
  - Heat

Process Other Heat

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IEA HPT TCP ANNEX 48:
INDUSTRIAL HEAT PUMPS, SECOND PHASE

- 6 IEA countries: A, CH, DK, F, JAP, UK
- Operating agent: IZW e.V. Germany
- Start date: 01st April 2016
- End date: 31st March 2019
- Final report: October 2019
OUTLOOK

• Main Goal of the HPT TCP-Annex 48 is to **overcome difficulties and barriers** for the market introduction of industrial heat pumps.

• **Collected cases studies** of industrial branches with a large potential, should be analyzed

• **Development of a web based information platform** for heat pumps in industrial and commercial application

• **Creating information material for IHP (training) courses**

• **The IHP potential** for more efficient use of energy and reduction of greenhouse gas emission should be prepared for policy makers
PRESENTATIONS
INCREASING ENERGY EFFICIENCY IN INDUSTRY:
APPLICATION OF INDUSTRIAL HEAT PUMPS IN AUSTRIA

V. Wilk, T. Fleckl, A. Arnitz, R. Rieberer
Taking high temperature heat pumps to the next level –
Power to heat and heat to power

Professor Neil J Hewitt
Dr Mingjun Huang
Dr Nik Shah
Dr Chris Wilson
Dr Donal Cotter
Centre for Sustainable Technologies
Ulster University
Identifying optimal industrial heat pump placement

A. Sophia Wallerand, Ivan Kantor, François Maréchal
ICR 2019, Montreal, Canada
EPFL – IPESE

In cooperation with the CTI

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Swiss Competence Centers for Energy Research

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederazio svizra
Swiss Confederation
Commission for Technology and Innovation CTI
Heat pumps for district heating and industry in Denmark
Status, perspectives and ongoing developments
28.08.2019 – ICR Montreal – Workshop on industrial HPs
B. Zühlsdorf, F. Bühler, W. Meesenburg, P. H. Jørgensen, B. Elmegaard
bez@dti.dk, +45 7220 1258
Evaluation of Good Practices for Industrial Heat Pumps in Japan

Yohji UCHIYAMA
Japan Electro-Heat Center

Takenobu KAIDA, Katsumi HASHIMOTO
Central Research Institute of Electric Power Industry

Choyu WATANABE
Chubu Electric Power Co., Inc.

Montreal, August 28, 2019
INDUSTRIAL HEAT PUMP APPLICATIONS IN SWITZERLAND – HEAT PUMP INTEGRATION CASE STUDIES

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ICR 2019, The 25th IIR International Congress of Refrigeration
Montréal, Québec, Canada
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QUESTIONS & DISCUSSION & PANEL DEBATE
WITH THE AUTHORS OF THE PRESENTATIONS

Rainer M. Jakobs
Information Centre on Heat Pumps and Refrigeration   IZW e.V.
Many thanks for your kind attention