

## WORKSHOP INVITATION

# IEA HPP Annex 28 – Test Procedures and Seasonal Performance Calculation Methods

Las Vegas 2005-05-30

Which heating system is performing best for my application? This question is still not easy to answer, since standardised calculation methods for the comparison of different heating systems in terms of primary energy consumption or CO<sub>2</sub>-emissions hardly exist.

Annex 28 of the Heat Pump Programme (HPP) of the International Energy Agency (IEA) has been initiated to deliver calculation methods for the Seasonal Performance Factor (SPF) and the necessary comprehensive test procedures of combined operating heat pump systems for space heating and domestic hot water production.

New system developments using improved internal cycle layout for combined production of different building energy needs (heating, ventilation, domestic hot water, cooling) are often not covered by existing standard testing or calculation methods. Thus, the application of the test procedures and the calculation methods developed in the framework of IEA HPP Annex 28 is manifold:

- Manufacturers have regulations for providing precise and uniform technical data.
- System layouts can be compared in the planning process.
- Energy labels or building standards can be based upon the SPF calculation.

Hence, a uniform testing and calculation is necessary to overcome trade barriers and enhance consumer confidence.

### Participating countries and focus

Nine countries are participating: Austria, Canada, Switzerland, Germany, France, Japan, Norway, Sweden and the United States of America.

The range of the national projects covers innovative systems using heat decoupling on different temperature levels by desuperheating and condensate subcooling, highly-integrated compact units for low energy houses and systems with CO<sub>2</sub>-refrigerant.

The result comprise an evaluation of existing standards and proposed updates as well as proposals for the extension to integrate and promote the above system improvements.

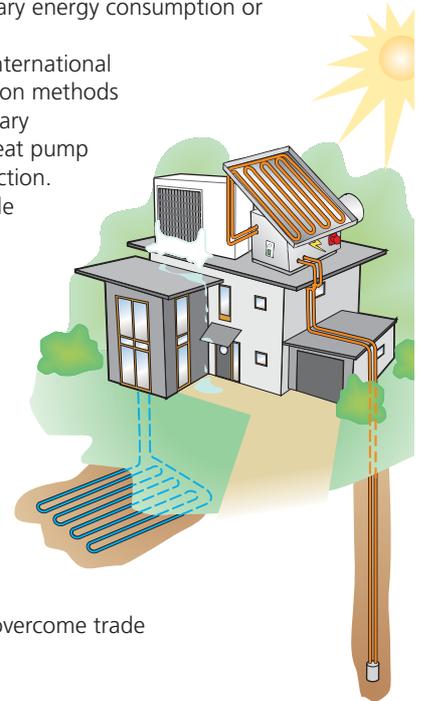
### Implementation of results in European standardisation

The results of the research accomplished under the IEA HPP Annex 28 are intended as recommendations for respective international standardisation committee to be implemented in standards.

In Europe calculation and testing standards for heating and domestic hot water systems are currently revised for Energy Performance Building Directive (EPBD) and energy efficiency labelling. The calculation method worked out in IEA HPP Annex 28 has been implemented in an European draft standard (prEN 14335) and is going to a six-month enquiry soon. Members of the IEA HPP Annex 28 are nominated for the respective working group so the transfer of results is secured.

### Operation agent

Carsten Wemhöner  
Institute of Energy University of Applied Sciences Basel, Switzerland  
E-mail: c.wemhoener@fhbb.ch  
Internet: www.annex28.net



Workshop Program →

## Workshop program Las Vegas 2005-05-30

8.30 – 8.45	<b>Welcoming</b> <ul style="list-style-type: none"><li>• Introduction to the IEA HPP Annex 28</li><li>• Background, Motivation</li><li>• Overview national projects</li></ul>	(Wemhöner)
8.45 – 9.30	<b>Results for the calculation method</b>  <b>Europe</b> <ul style="list-style-type: none"><li>• Presentation of calculation approach for combined systems</li><li>• Special requirements for compacts units</li></ul> <b>North America</b> <ul style="list-style-type: none"><li>• Experiences with ASHRAE standards in the U.S.</li></ul>	(Wemhöner) (Hafner, Afjei)  (Tomlinson)
9.30 – 10.15	<b>Evaluation of the system performance by field test results</b> <ul style="list-style-type: none"><li>• High temperature A/W-heat pumps in France</li><li>• Compacts units in Germany and Switzerland</li><li>• Ground-coupled systems in Austria</li></ul>	(Hantz) (Hafner, Afjei) (Presetschnik)
10.15 – 10.45	<b>Coffee break</b>	
10.45 – 12.00	<b>Results for the test procedure</b>  <b>North America</b> <ul style="list-style-type: none"><li>• Extension of ASHRAE standard for testing B/W heat pumps</li></ul> <b>Europe</b> <ul style="list-style-type: none"><li>• Presentation of testing procedure<ul style="list-style-type: none"><li>– Experiences with existing standards</li><li>– Evaluation and proposed procedures</li></ul></li><li>• Testing of compact units</li><li>• Special testing requirements for CO<sub>2</sub> heat pumps</li></ul> <b>Japan</b> <ul style="list-style-type: none"><li>• Japanese testing and calculation for CO<sub>2</sub> heat pumps</li></ul>	(Minea)  (Axell, Haglund-Stignor)  (Hafner, Helfenfinger) (Stene)  (Hihara, Ida)
12.00 – 12.30	<b>Discussion and Conclusion</b> <ul style="list-style-type: none"><li>• Synthesis of the results</li><li>• Implications for the standardisation</li><li>• Implementation of the results</li><li>• Further research topics not covered in IEA HPP Annex 28</li></ul>	(Wemhöner)

**The workshop takes place in connection with the 8th IEA Heat Pump Conference in Las Vegas.  
For registration and more information, see [www.ornl.gov/hp2005](http://www.ornl.gov/hp2005)**