

## Natural refrigerant heat pump systems the emerging technology workshop

Tuesday 13 November 2007, 9h00-18h00

FPS Economie «Atrium », rue du Progrès, 50, 1210 Brussels, Belgium

### Practical information

#### **Agenda**

The workshop will start at 9h00 until 18h00.

Registration will be open at 8h30 in front of the meeting room.

A buffet lunch will be served free of charge for all the participants in the lobby in front of the meeting room.

#### **Venue**

The workshop will take place at FPS Economy, SME's, Self-employed and Energy, City Atrium, rue du Progrès 50, 1210 Brussels - conference room - 1st floor (see the map attached.)

#### **Acknowledgement**

GRETh and EHPA thank the European Commission DG-Research for its support to the Sherhpa project (COLL-CT2004-500229).

The Belgium Federal Public Service Economy, DG- Energy is greatly acknowledged for hosting us and for its support in organizing this workshop.

#### **Contact**

If you need more information on this workshop, please contact Bernard Thonon at Greth ([bernard.thonon@greth.fr](mailto:bernard.thonon@greth.fr))

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## **SHERHPA Final Workshop**

**Brussels 13 November 2007**

«Atrium », rue du Progrès, 50, 1210 Brussels, Belgium

09.00 -09.30

Welcome and introduction  
Applications of heat pump systems

09.30-11.00 *Natural refrigerants heat pumps background, theory and design*

Why natural refrigerants?  
Innovative heat exchangers  
Design of hydrocarbon heat pumps  
Design of ammonia heat pumps  
Discussion

11.30-13.00 *Theory and design*

Design of carbon dioxide heat pumps  
Selection of advanced control strategies  
Design of the ground loop  
System integration of heat pump systems  
Discussion

14.00 - 15.30 *Applications involving propane*

Ground coupled heating/cooling system for buildings  
Large reversible propane heat pump  
High efficiency heating system  
Development of practical domestic heat pumps  
Exhaust air recovery systems  
Discussion

16.00 -17.30 *Applications involving ammonia & carbon dioxide*

Heating system for a low energy house  
Process hot water for a cheese factory  
Heating and hot water for a low energy house  
Process hot water for a bottle factory  
Hot water using a carbon dioxide ground loop

17.30 -18.00

Design recommendations for natural refrigerant heat pumps  
Closing remarks





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