

## Factsheet

# Heat Pumping and Reversible Air Conditioning

## ANNEX 48

Today heat pumping is probably one of the quickest and safest solutions to save energy and to reduce CO<sub>2</sub> emissions. Substituting a boiler with a heat pump may save more than 50% of primary energy, if electricity is produced by a modern gas-steam power plant, and even more if a part of that electricity is produced from a renewable source.

In many non-residential buildings, an attractive energy saving opportunity is to use the refrigeration machine for heat production. This can be done by condenser heat recovery whenever there is some simultaneity between heating and cooling demands. When there is no simultaneity, it is necessary to look for reversibility.

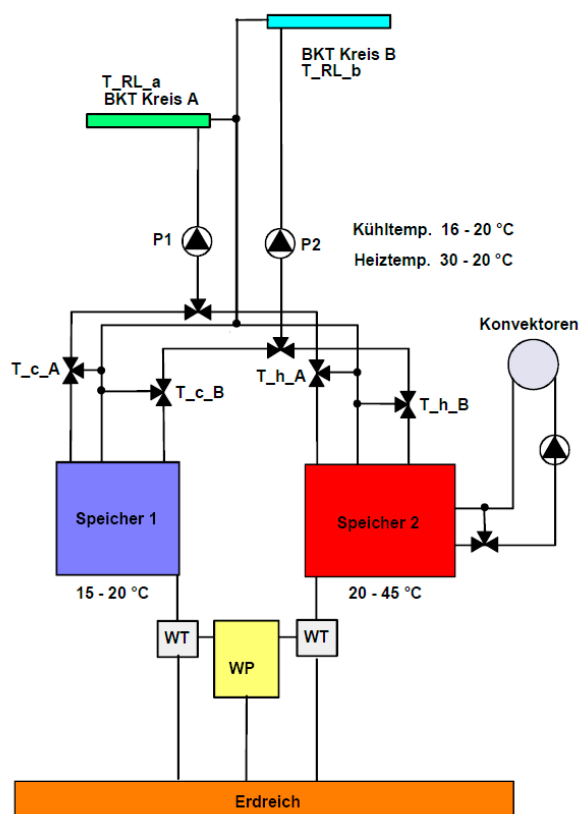
The aim of the EBC project "Heat Pumping and Reversible Air Conditioning" is to promote the most efficient combinations of heating and cooling techniques in air-conditioned buildings, due to the use of heat recovery and reversible systems.

The completed outcomes:

- allow quick identification of heat pumping potential in existing buildings
- help designers to consider "heat pumping" solutions and to allow for future possibilities
- document the technological possibilities and heat pumping solutions
- assist with commissioning and operation of buildings equipped with heat pump systems
- make available a set of reference case studies

### PRODUCTS

- An identification, typology and selection guide
- A Design Handbook
- A commissioning and optimal operation guide
- A set of documented case studies



Example system design.

## INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974, with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy in Buildings and Communities Programme has co-ordinated various research projects associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA co-ordinated research.

## EBC VISION

By 2030, near-zero primary energy use and carbon dioxide emissions solutions have been adopted in new buildings and communities, and a wide range of reliable technical solutions have been made available for the existing building stock.

## EBC MISSION

To accelerate the transformation of the built environment towards more energy efficient and sustainable buildings and communities, by the development and dissemination of knowledge and technologies through international collaborative research and innovation.



*Case study buildings.*

### Project duration

Completed (2005 - 2011)

### Operating Agent

Philippe André  
ULg / DSGE / BEMS  
Université de Liège  
Campus d'Arlon, 185  
Avenue de Longwy  
B-6700 Arlon  
Belgium  
+32 63 23 08 58  
p.andre@ulg.ac.be

### Participating countries

Belgium, France, Germany, Italy, Switzerland

### Further information

[www.iea-ebc.org](http://www.iea-ebc.org)