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**EHPA response to Experts Meeting held December 16 December  
2009. 27.1.10**

Copy to: Mr. André Brisaer, Ms. Kerstin Lichtenvort, Mr. Wilhelmus de Wilt, Mr. Rene Kemna

Dear Mr Kolb,

As decided at the EuP Experts Meeting on 16.12.2009 the EHPA has compiled a condensed summary of results from ongoing field-measurements on brine-water heat pumps. The results support the proposal from EHPA to change the brine temperature level in the evaluation of brine-water heat pumps in lot 1.

Furthermore the EHPA would like to re-address the issue of the use of relevant primary energy factors for different energy sources.

**1. Relevant brine temperatures for the evaluation of brine-water heat pumps.**

The EHPA has argued that the use of a fixed brine temperature of 0°C for all climate zones does not reflect reality and results in underestimation of the annual performance of brine-water heat pumps. The EHPA has proposed that the temperatures to be used for the performance evaluation of brine water heat pumps should be changed to +2 °C (cold climate), +4°C (average climate) and +6°C (warm climate).

**Justification**

The proposal is based on experience from present practice and verified by two large ongoing field measurement projects run by independent Fraunhofer ISE institute, Freiburg, Germany. The projects, which were initiated in 2006, encompass a large number of heat pumps installed in Germany. The overall aim of the projects is to reveal the present status of the heat pump technology in the residential sector. Values of volume

flows, temperatures, heat quantity and electricity consumption are monitored in each installation at a high time resolution. The data are sent to Fraunhofer ISE headquarter on a daily basis via GSM and are automatically recorded.

Brine temperature is one of the parameters monitored. A summary of results is provided in Annex I. It clearly shows that the average brine temperature is well above 0 °C. A majority of the installations are found in areas representing the average climate. The results support the proposal to change the brine temperature for brine water heat pumps in the average climate to +4 °C. There are no similar studies currently available in cold or warm climates.

## 2. Primary energy factor

EHPA has recognized that a primary energy factor (PEF) is set at 2,5 for the conversion of electricity (final energy) to required primary energy input. In order to allow for a fair comparison between technologies using different energy sources EHPA strongly suggests

- a) the regular **recalculation** of the PEF for electricity (every three years),
- b) the **introduction of primary energy factors for fossil fuel sources** (oil, gas, biomass).

### Justification

One of the greatest advantages with the proposed energy assessment of energy using products will be the comparability in terms of their primary energy efficiency. Consequently we agree to setting a PEF for electricity. In consequence of the different measures of the EUs energy strategy, it must be expected that efficiency of electricity production will increase considerably in the future (see Eurelectrics "The role of electricity" study). **A regular re-assessment of the PEF for electricity would acknowledge this development.**

Part of the proposed implementing measure is the introduction of a label that encompasses a wide range of product groups based on different energy sources. However, as the energy losses related to different heating systems appear at different stages in the energy chain, an impartial comparison of heating systems needs to address the primary energy usage. In the present proposal this is only applied to heating systems using electricity, where a primary energy factor of 2,5 is used to reflect the use of primary energy. From our perspective, the value of 2,5 matches the inversion of the average efficiency of the European power mix (stated by Eurostat at 39,6%). It was claimed in a stakeholder meeting (June 2009) by R. Kemna, that this was not the appropriate interpretation. Instead he stated that the PEF for electricity including the full value chain (extraction, refinement, transportation) was higher and that

the value of 2,5 was merely the ratio between the true primary energy factor (PEF) for electricity and oil and gas;

$$\frac{PEF_{Elec}}{PEF_{Oil/Gas}} \approx 2,5 \quad (1)$$

Taking into consideration that the implementing measure for solid fuel burners (Lot 15) suggests to use a similar approach than that used in Lot 1, the foreseen calculation would also have to be applicable for solid fuels. This would imply that the PEFs for all types of fuel have to be identical in order for equation (1) to be true. However EHPA has severe doubts that this is the case, as the PEFs for different energy sources vary in reality.

In parallel of the development of the implementing measures of lot 1, a political agreement on the recast of the Energy Performance of Buildings Directive has been reached. One of the main outcomes of the recast is that the energy performance should be expressed in terms of primary energy efficiency. As the two Directives are closely linked it makes common sense to introduce a true value of the primary energy factor for all energy sources.

**For a transparent approach we believe that the introduction of individual PEF for each energy source is necessary.**

We trust that these comments are of value and would appreciate their consideration. EHPA is looking forward to further participate in the refining of the implementing measure.

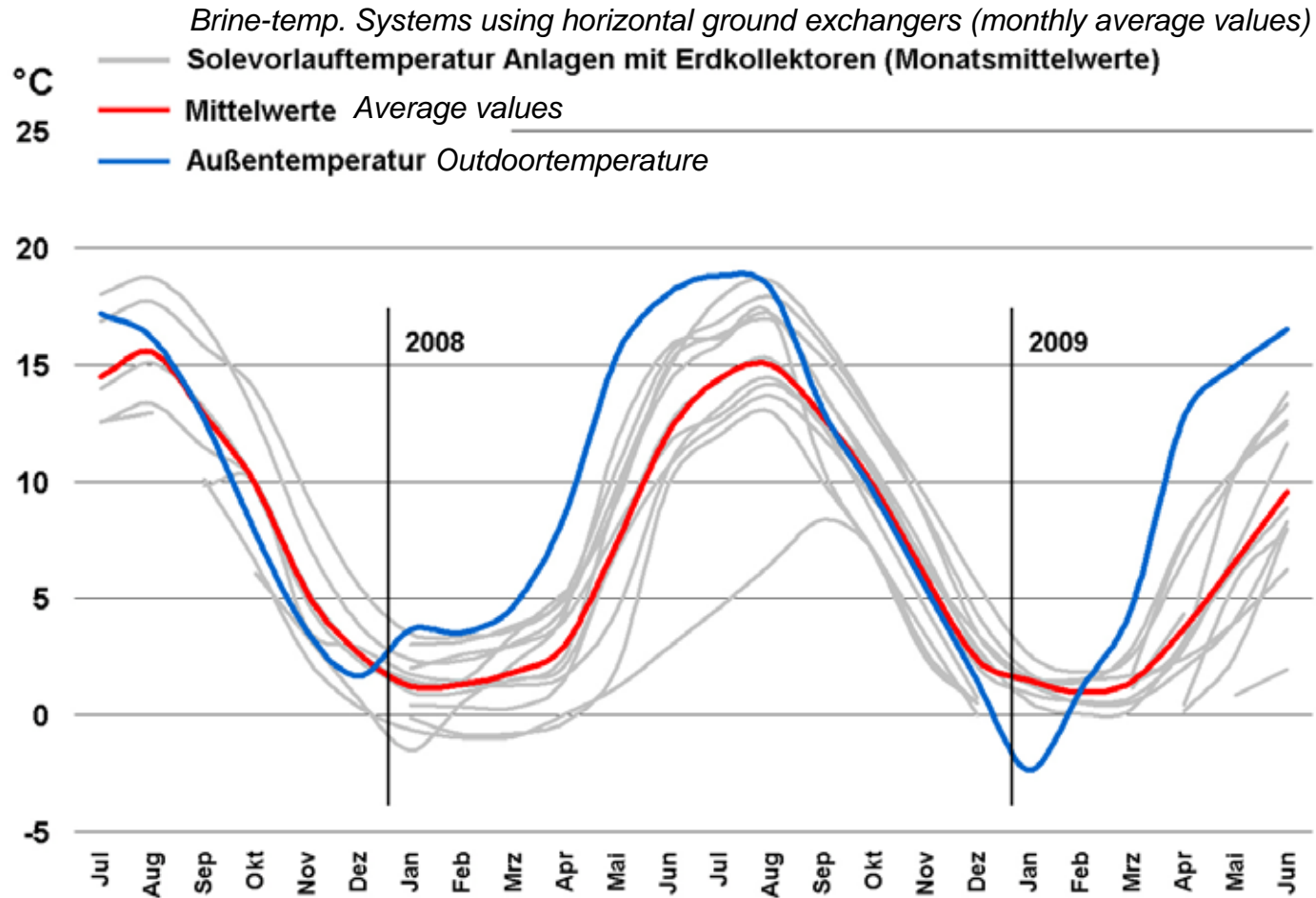
The European Heat Pump Association

The EHPA was established in the year 2000 to promote awareness and proper deployment of heat pump technology in the European market place for residential, commercial and industrial applications. The EHPA today has 84 members representing the majority of actors in the European Heat Pump Industry. The association aims to provide technical and economic input to European, national and local authorities in legislative, regulatory and energy efficiency matters. All activities are aimed at overcoming market barriers and dissemination of information in order to speed up market development of heat pumps for heating, cooling and hot water production.

The EHPA coordinates the Quality label for heat pumps (EHPA-Q) and the European certified heat pump installer program (EUCERT). EHPA-Q and EUCERT are geared towards high product and high installation process quality. The EHPA does also compile the annual heat pump statistics for selected European countries.

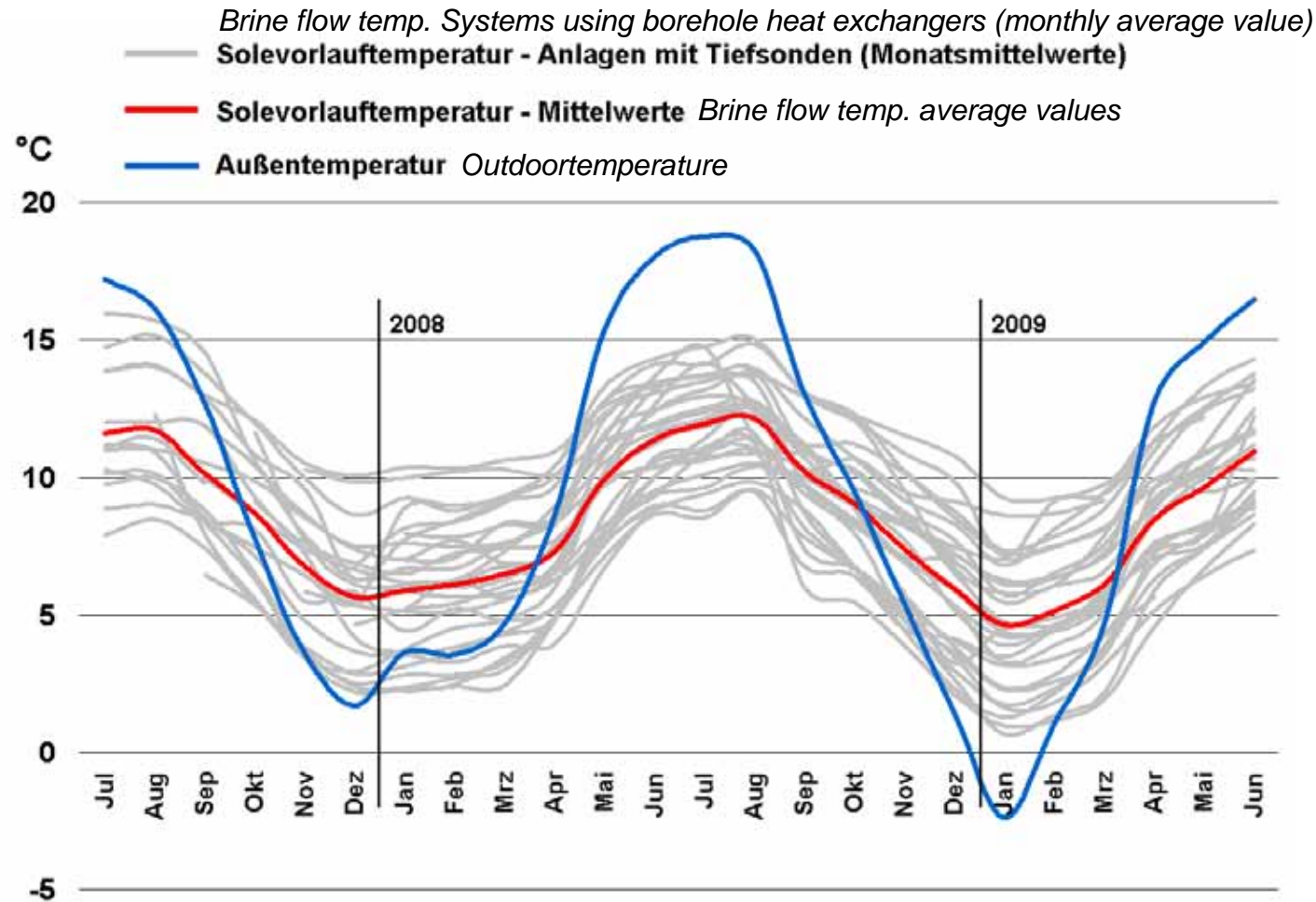
# Brine Temperature

## Systems using horizontal ground exchangers (horizontal loops)



# Brine Temperature

## Systems using borehole heat exchangers (vertical loops)



# Brine Temperature

## Systems using borehole heat exchangers (vertical loops)

