



ProEcoPolyNet

ProEcoPolyNet Best practice Sheet

”The Gas-Fired Zeolite Heating Appliance”

- RTD Project Name : **The Gas-Fired Zeolite Heating Appliance**

Zeolite – Water Adsorption - Heatpump



The flow diagram shows (see second figure of next page) the hydraulic circuit of the zeolite heater in a simplified scheme. Two modules are parallel in operation. The left module is in the operating phase “desorption/condensation”, and the right module in the operating phase “evaporation/adsorption”. In the zeolite cycle the two modules are interconnected. An inlet temperature of 140 °C is produced by the gas burner for desorption of water steam out of the zeolite in the left module. Subsequently, energy is transferred to the heating system reducing its temperature at the level of 40 °C. This temperature reduction is necessary, in order to be able to adsorb heat from the right module with as low temperature as possible. The temperature of the heating

medium is increased to 90 °C. In the condenser cycle the condensation energy from the left module is transferred to the return flow of the heating circle.

In the environmental cycle the energy is supplied to the right module for evaporation. When the water is desorbed out of the zeolite, the desorption phase comes to a standstill, while at the same time the adsorption process in the right module is completed.

After approximately twenty minutes the process is switched. The needed components for that are not presented in the diagram. The process reversal takes place hydraulically and it continues with reversed role of the two modules.

- ▶ *Gas fired air- water adsorption-heatpump for heating and solar aided domestic hot water*
- ▶ *Thermal output 1,5 – 10KW*
- ▶ *Thermal input 3 – 10KW*
- ▶ *“Standard System Efficiency” 130%*
- ▶ *Weight 190kg*

- ▶ *One or two family houses*

- ▶ *Under Development*

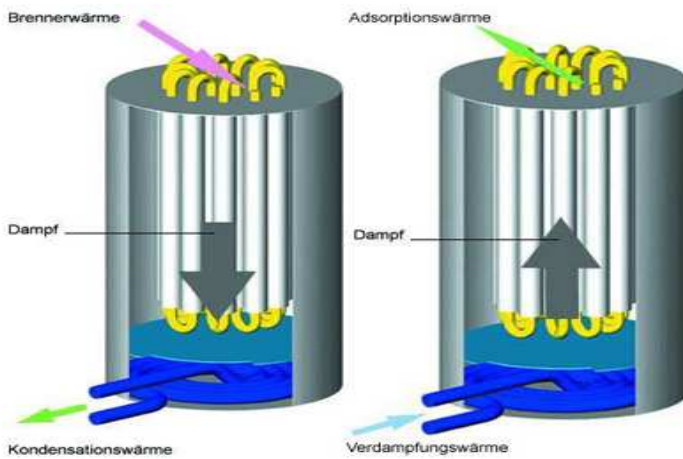
Dr. Rainer Lang
Development Heat pump Systems
Tel. +49 2191 18 3606
Fax +49 2191 18 73606
E-Mail: rainer.lang@vaillant.de
<http://www.vaillant.de>

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For the ProEcoPolyNet and translation in English by: Dr. Eleni Konstantinidou, VDI-GET, www.vdi.de



Zeolite



The two Zeolite Modules

VAILLANT GROUP

The Heat Pump Process

