

## Explanation of the energy generating building

1999 the district started to save energy in their public own buildings.

In a first step we established an energy controlling system in our seven schools and our district administration building. As a result we saved 2 Million Euros and 9.500 tons of carbon dioxide in the first 15 years of controlling.

In conclusion of this experience we attach importance to energy efficient constructing. Since 2003 we reconstruct our buildings in 3-liter-standard (it means 3 liter heating oil per square meter in a year).

In the year 2009 we established this administration building for 25 employeers of our public own waste management company RHE.

Thanks the orientation to south we can yield the free of cost energy from the sun.

The exterior shell of the building is in passive house standard (it means 1.5 liter heating oil per square meter in a year).

The building has a ventilation system in connection with a ground heat collector. The collector simply consists of 270 meters sewer pipe with the diameter of 40 centimeter. The air out of this ground collector is anytime in the year 10 or 12 degree Celsius warm.

A brine heat pump with 400 meters brine line, diameter of 2.5 centimeter generates a 300 square meter great soil ground collector.

An innovative control technology optimizes the natural light and the artificial light.

It regulates the heating and cooling of the air by physical presence of the employeers, weather conditions and seasons.

The ceiling radiation boards have five functions:

In winter: transports hot water for heating, in summer: transports cold water for natural cooling, the fresh air blows in above them, the electric lighting is integrated and the boards improve the acoustics in the offices.

On the housetop a photovoltaic plant is installed with 20.7 kilowatt peak demand.

Thanks all this components the building generate more electricity than it is needed for heating and ventilation. Therefore it's a an "energy generating building".

Since 2009 the Rhein-Hunsrueck district is planning all new- and extension of buildings, in case it is technical and economy meaningful, in energy generation standard.

As of the year 2019 every new public building in the European Enion must be build as passive house. As of the year 2021 every new private building must also be constructed as passive house standard. Therefore the European Union will decrease the dependence from energy-exporting-states like Russia and Ssaudi Arabia and fossil energy.