



# 1st Award: Energy Efficiency Award 2009.

**ebm-papst Mulfingen GmbH & Co. KG – construction of new energy-efficient production plant in Hollenbach.**

The Deutsche Energie-Agentur GmbH (dena) – the German Energy Agency – is presenting the international Energy Efficiency Award under the scope of its Initiative EnergieEffizienz together with Deutsche Messe. The 1st award goes to ebm-papst Mulfingen GmbH & Co. KG.

## Project description.

At the end of 2007, ebm-papst Mulfingen GmbH & Co. KG completed construction of a new production plant in Hollenbach. The plant is 13,600 m<sup>2</sup> and consists of five separate building units: Production, turnery, administration with canteen and goods in and out. During construction of the new plant, the concept was to cover the industrial building's entire heat requirement of around 750,000 kWh per year by optimally using waste heat generated in the production process. A large proportion of the heat is generated from lathes, robots and compressors.

Due to the regulated displacement ventilation, the air under the roof of the hall is kept at a temperature that can be used to heat adjoining building parts. Excess heat is stored in an 11,000 hl sprinkler container. This also serves as a heat sink for the heat pump. The stored heat is used efficiently to heat the remainder of the building. If the external air temperature rises above 24°C, the building can be cooled using

the heat pump. Electricity consumption for the cooling system, compared to a conventional system, has been reduced by 19 percent from 83,300 kWh to 67,750 kWh thanks to the use of energy-saving technology.

## Energy efficiency measures.

- Waste heat recovery from work machines.
- Optimised heat distribution.
- Use of a heat pump with a coefficient of performance greater than 4.
- Displacement ventilation via source air outlets.
- Optimal dimensioning of the piping.
- Use of heating and cooling water pumps with energy efficiency class A.
- Use of energy-saving EC fans.
- Use of a 153-kWp photovoltaic system.

## Figures that speak for themselves. (heating, cooling and ventilating system)

	New constructions with waste heat recovery	New constructions without waste heat recovery <sup>2</sup>	Savings through waste heat recovery
<b>Energy costs<sup>1</sup></b>	€ 7,728	€ 95,213	€ 87,485
<b>Power consumption</b>	67,750 kWh/year	83,300 kWh/year	15,550 kWh/year
<b>Thermal energy consumption</b>	2,400 kWh/year	750,000 kWh/year	747,600 kWh/year
<b>CO<sub>2</sub> emissions<sup>3</sup></b>	43 t/year	340 t/year	297 t/year
<b>Investment</b>	€ 1,000,000	€ 940,000	Additional costs from waste heat recovery € 60,000

<b>Annual energy cost savings<sup>1</sup></b>	<b>€ 87,485</b>
Energy savings (total)	91%
Electricity savings	19%
Savings on thermal energy	99%
Return on investment <sup>4</sup>	146%

<sup>1</sup> Fuel oil price of €84.40 per 100 l and electricity price of €0.11/kWh

<sup>2</sup> Estimate based on a simulation, calculated according to the heat energy requirement of the building

<sup>3</sup> Factors were determined according to GEMIS: Electricity: 621.6g CO<sub>2</sub> per kWh; fuel oil: 385.1g CO<sub>2</sub> per kWh

<sup>4</sup> Return on investment of additional investment in energy efficient measures



**Assessment.**

ebm-papst Mulfingen GmbH & Co. KG, has always been committed to energy efficiency, both in production and administration, and consistently allows for such measures when implementing new projects. This holistic approach is worth particular mention, as is the fact that the system layouts are oriented towards actual energy demand, for example with the ventilation and air conditioning systems. Its intended use was already taken into account as the building was being designed, meaning that a solution was found in which available thermal load could be used to cover the heat requirement for the entire building. The building is now heated entirely from the waste heat generated during production. The most up-to-date and energy-efficient technologies were taken into account when selecting components. The project can be transferred easily to other manufacturing companies with large internal thermal loads inside production halls.

**Profile of the award winner.**

The ebm-papst group from Mulfingen manufactures highly efficient motors and fans. Its products can be found in numerous applications, e.g. in ventilation, air-conditioning and cooling systems, in household appliances, in heating technology, in IT/telecommunications applications and automotive applications, and in commercial vehicle technology. Approximately 10,000 employees work at various production and distribution locations all over the world.

*“It is very important to take a holistic view of energy efficiency. We are constantly busy developing new energy savings potential, not only in production and infrastructure but also in our products.”*

*Markus Mettler, Head of Operations, Maintenance and Construction ebm-papst Mulfingen GmbH & Co. KG*



*From left to right: Heating room with heat pump, compressor unit with heat recovery system, photovoltaic system and heat exchanger for discharging excess heat.*

**The international “Energy Efficiency Award”.**

Since 2007, dena has presented the international “Energy Efficiency Award” to companies for outstanding projects that help to increase energy efficiency. The award-winning projects demonstrate just how cost effective energy efficiency measures can be in industry and production.

See if you can follow in the footsteps of previous award-winners. You will find further information about former winners of the “Energy Efficiency Award” and possibilities for efficient energy use in your company on the website:

[www.industrie-energieeffizienz.de](http://www.industrie-energieeffizienz.de).

**The Award winner.**

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**Energy efficiency pays off.**

The *Initiative EnergieEffizienz* stands for the efficient use of electricity in all consumer sectors: Campaigns aimed at specific target groups provide consumers in private households, industry and production and the services sector with information on ways of using electricity efficiently and encourage them to act accordingly:  
[www.initiative-energieeffizienz.de](http://www.initiative-energieeffizienz.de).

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