



1th Prize: Energy Efficiency Award 2010.

SMA Solar Technology AG – New build CO₂-neutral inverter plant.

As part of the Initiative EnergieEffizienz, the Deutsche Energie-Agentur GmbH (dena) – the German Energy Agency – in cooperation with Deutsche Messe AG and DZ Bank AG, presents the international “Energy Efficiency Award”. It is funded by the German Federal Ministry of Economics and Technology (BMWi). The 1th prize goes to SMA Solar Technology AG.

Project description.

SMA Solar Technology AG has implemented an energy plan for its new production site which minimises manufacturing energy consumption and obtains or provides any energy which is still required from renewable energy sources, so enabling CO₂ neutral inverter production.

The basis for this plan is the use of energy-efficient technologies and rigorous use of the generated waste heat. The lighting system for SMA is one of the biggest energy consumers, since a high illuminance of 1,000 Lux is necessary in electronics manufacture. SMA uses high efficiency lights, which are controlled as a function of available daylight. SMA is also focussing on an intelligent ventilation system. SMA generates its own electricity with one biogas-operated combined heat and power (CHP) station and covers its remaining needs with green hydroelectric power. The heat from the CHP is also used for cooling by means of an absorption-type refrigerating system. The electricity

from the 1.1 megawatt photovoltaic installation incorporated into the building is fed into the public grid.

Energy efficiency measures.

- Optimised daylight use and use of highly energy-efficient lights.
- Design of the ventilation system to below calculated peak loads by means of intelligent ventilation system.
- Connection of all heat sources and refrigeration devices to water tanks, which permit satisfactory use of the heat for building heating and the supply of cold for building cooling.
- Utilisation of the heat from indoor waste air and the waste heat produced by compressed air generation and test system for inverters to heat the building.
- Production of the base load heat and power fraction in the biogas-operated combined heat and power plant with interconnected refrigeration.

Figures that speak for themselves.

| | New building with innovative technologies ¹ | Comparison: New building with conventional technologies | Savings by using innovative technologies |
|---|--|---|--|
| Energy costs | € 536,100/year | 805,800 €/year | € 269,700/year |
| Electricity consumption | 5,200,000 kWh/year | 6,333,000 kWh/year | 1,133,000 kWh/year |
| Fuel consumption | 1,700,000 kWh/year ² | 4,000,000 kWh/year ³ | 2,300,000 kWh/year |
| CO₂-reduction⁴ | 1,700 tonnes/year | – | 1,700 tonnes/year |
| Investment | € 10,240,000 | € 8,970,000 | € -1,270,000 |

| | |
|---------------------------------|------|
| Percentage energy saving | 33 % |
| Return on additional investment | 21 % |

¹ Savings achieved with energy efficiency measures without taking account of the use of renewable energy sources. The values relate to the data which were gathered for the conceptual study carried out by the expertise network Dezentrale Energietechnologien e.V. (decentralised energy technologies, deENet), since no monitoring values are as yet available.

deENet’s conceptual study was funded by the State of Hessen’s Ministry for the Environment, Energy, Agriculture and Consumer Protection.

² Biogas, converted into power and heat in a combined heat and power plant

³ Natural gas

⁴ GEMIS 4.5 values are used in calculations: electricity 633 g CO₂/kWh, natural gas 244 g CO₂/kWh. No CO₂ production is taken into account for heat generation, due to the use of biogas in a CHP.



Assessment.

SMA has been awarded the 1th “Energy Efficiency Award” prize, for building a new forward-looking facility, which sets the standard for future projects.

To achieve CO₂-neutral production, SMA has worked with experts to develop and implement an own energy plan which intelligently combines different energy sources to generate heat, cold, compressed air and electricity as required. It uses existing synergies, controls energy flows as required and matches them optimally to one another. In addition, ultramodern technology is used, together with the utilization of renewable sources to produce energy, such as the sun and biogas.

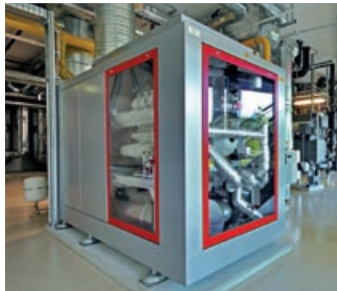
Profile of the award winner.

SMA Solar Technology AG develops, produces and sells solar inverters and monitoring systems for photovoltaic systems. SMA is in pole sales

position in this segment worldwide. SMA’s head office is in Niestetal near Kassel. The group employs more than 4,000 staff and has in previous years been repeatedly commended for its excellent record as an employer.

“With the new inverter plant SMA Solar Technology AG has taken the lead in climate protection. SMA shows that a state-of-the-art CO₂ neutral production is possible at this stage.”

*Günther Cramer, Chief Executive,
SMA Solar Technology AG*



*Figs. (from left to right):
Daylight use in manufacture, CHP station,
Absorption-type refrigerating system*

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 the economic viability of energy efficiency measures in industry and production.

Why not emulate them? Details of all previous winners of the “Energy Efficiency Award” and further information about efficient energy use, in your company too, can be found at www.industrie-energieeffizienz.de.

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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

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