



## 3rd Award: Energy Efficiency Award 2009.

**Evonik Industries AG – Innovative efficiency measures within the scope of an company-wide energy management plan.**

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 3rd award goes to Evonik Industries AG.

### Project description.

As part of an enterprise-wide energy management plan, Evonik Industries AG has developed and implemented innovative energy efficiency measures, for example the stepwise optimization of a thermal post-combustion plant.

The so-called “Efficient Energy Management (EEM)” plan was established in the company with the aim of constantly improving the efficiency of energy usage. The experience gained in individual departments and locations is then utilized over the entire company. To provide cost and emission reductions, the aim is to ensure that every production site should use energy as efficiently as possible according to state-of-the-art energy efficiency measures. For initial determination of the potential savings, an internally developed “EEM Quick Check” questionnaire was used as a starting point to provide indications of possible optimization potentials based on previous experience. These results were then used to form interdisciplinary teams of experts who analyse all energy generation, distribution and usage processes and develop energy savings proposals. Up to the present day, 26 of the 109 chemistry production sites of Evonik have been examined and potential savings ranging from 4 to 25 percent of the annual energy costs have been discovered. About 250 optimization measures have been developed up to now and 90 of these have already been implemented.

### Main points of the energy management plan.

- Site-specific analysis of the generation, distribution and usage of the required primary and secondary energies.
- Joint development of projects by site employees and technical experts.
- Documentation of the developed optimization measures in the form of implementation plans.
- Company-wide exchange of the results achieved through the energy efficiency measures.

### Optimization of the post-combustion plant at the Münchsmünster production site.

One example of especially successful measures is the optimization of a post-combustion plant. This burns the waste air of a production plant using a natural gas flame. The hot flue gas is used in a boiler for generating steam. The steam drives two turbines providing process air compression and cooling. The depressurized steam is then used for production heating.

The plant was optimized in four steps, with corresponding reductions in energy consumption:

1. A reduction of the volume of natural gas needed for burning by optimizing the two turbines.
2. Installation of a tube bundle heat exchanger that uses excess steam to provide better preheating of the boiler feed water.
3. Optimization of the boiler feed water preheating through the installation of an economizer in the flue gas flow combined with a twin-walled flue gas chimney.
4. Optimization of the burning chamber operation with regard to the residual oxygen content.

### Figures that speak for themselves.

(Optimization of the post-combustion plant)

<b>Reduction of natural gas consumption</b>	31,291,000 kWh/year
<b>Percentage reduction of consumption</b>	72,5%
<b>Reduction in CO<sub>2</sub> emissions*</b>	9,293 t/year
<b>Investment</b>	€ 500,000
<b>Cost reduction</b>	€ 680,000/year
<b>Return on Investment</b>	136%



**Assessment.**

Evonik has developed a company-wide comprehensive energy management plan. It is used operationally at 26 sites, which has given the plan a great deal of leverage. Among other outstanding features, the use of cross-departmental teams of experts and the integration of the site employees, allowing them to make their own optimization suggestions, are exemplary aspects of the plan. The energy management plan developed by Evonik can be used as a model by other industrial concerns wishing to systematically implement energy efficiency improvements across all their production sites. The international presence of the company allows this expertise to be transferred to other countries to achieve similar improvements.

*“Energy management is an effective tool to achieve a sustained reduction of energy consumption, costs and environmental impact. My recommendation is to immediately start projects for increasing energy efficiency and to include all employees in this process.”*

*Michael Primke, “Efficient Energy Management” Project Manager, Evonik Degussa GmbH*

**Profile of the award winner.**

Evonik Industries AG is an international industrial concern active in the business areas of chemistry, energy and property.

With an annual turnover of €11.5 billion and over 31,000 employees, the chemicals business area is one of the world's largest manufacturers of special chemicals. The market position of the company is secured by high investment in research and development that has resulted in over 20,000 patents and patent applications. Among other consumers, the products are used by other companies in the plastics, paint, pharmaceutical and automobile industries.



*From left to right: Corporate Centre of Evonik Industries AG in Essen, implementation of agreed measures by the team, thermal post combustion flue gas chimney with upstream heat exchanger for boiler feed water preheating.*

**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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