



INITIATIVE
EnergieEffizienz+
Industry & Production

2nd Award: Energy Efficiency Award 2009.

Brauerei BOSCH GmbH & Co. KG – using a new and energy-efficient boiling procedure for brewing beer.

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 2nd award goes to Brauerei BOSCH GmbH & Co. KG for a project carried out in cooperation with HERTEL GmbH.

Project description.

The BOSCH brewery has successfully designed a more efficient brewing process using innovative technology. The core component of this process is wort boiling in a wort copper. Hops are added as the beer wort is being boiled. This gives the beer its characteristic hop taste. Unwanted aromas are removed with the steam.

In order to achieve rapid heating and evaporating rates and to prevent overfoaming, wort coppers with internal and external boilers (closed evaporation) are now used in many breweries. This requires the wort to undergo a strong, general evaporating process which consumes a lot of energy – but this is the only way to get rid of the required amounts of unwanted aromas.

Figures that speak for themselves.

Reduction of natural gas consumption	300,370 kWh/year
Percentage reduction in consumption	80%
Reduction in CO₂ emissions*	89t/year
Investment	€ 55,000
Cost reduction	€ 21,025/year
Return on Investment	38%

* The following factor has been determined for natural gas according to GEMIS: 297g CO₂ per kWh

Taking the basic research carried out on the process at the Technical University of Munich one stage further, a procedure has been developed by HERTEL GmbH which dramatically reduces the energy requirement for evaporation during the wort boiling process: rectification wort boiling. This procedure is based on the principle of multiple distillation and was implemented for the first time on an industrial scale at the BOSCH brewery. During the rectification wort boiling procedure, the wort is added to a rectification column containing steam. It is then passed through the steam according to the counterflow principle, and in this way additional aromas are removed. As a result the total evaporation required to achieve the desired amount of aroma removal is significantly reduced, as is the amount of energy used. Since the evaporation is responsible for most of the energy consumption in the brewing process, this produces a huge savings potential.

Furthermore, all heat recovery methods can continue to be used unhindered. By using this system, the brewery saves an additional 3,145 hl of drinking water per year. The results mean that the rectification wort boiling procedure is now being introduced throughout the brewing sector.



Assessment.

This project shows just how beneficial increases in energy efficiency are not just for large companies, but also for small and medium-sized ones. It is remarkable that the BOSCH brewery in cooperation with HERTEL GmbH has contributed to the development of an innovative and energy-efficient technology which is now ready to be marketed. Basic research carried out by the university was directly incorporated into the implementation of the procedure. This project can certainly serve as an example to other companies.

“As a brewery, we are dependent on high quality raw materials. Ecological aspects are already accounted for in our work. Consequently, we believe that environmental protection is part of our business culture. It is a task for both management and employees alike. Energy-cutting measures are also cost-cutting measures.”

*Hans-Eberhard Bosch, Managing Director,
Brauerei BOSCH GmbH & Co. KG*



From left to right: Rectification column used for wort boiling, fermentation cellar for main fermentation, bottles being filled.

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.

Profile of the award winner.

Brauerei BOSCH GmbH & Co. KG is a traditional, medium-sized brewery based in Bad Laasphe, North-Rhine Westphalia, Germany. The brewery currently offers a range of 11 different types of beer. Individual beers have already been given many international awards for their high quality. The brewery currently has 30 employees.

HERTEL GmbH, based in Salzburg, Austria, focuses on the design of new and optimisation of existing brewing plants. Its aim is to achieve high savings on raw materials and energy.

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.

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