

# Bosch and Kupfer: Energy transition in food processing

Hans Kupfer & Sohn GmbH & Co. KG had the goal of making their energy-intensive steam generation more efficient, more sustainable and more flexible. With electric boiler technology and the integration of renewable energies, the project is a prime example of how companies in the food industry can master the balancing act between economic efficiency and ecological responsibility.



For generations, the name Kupfer has been synonymous in Heilsbronn with meat and sausage specialities and, increasingly, also with plant-based alternatives. As a family-run company that is firmly rooted in the region, Kupfer attaches great value to craftsmanship, quality and taste. This philosophy also extends to the production processes that demand a reliable supply of steam. “In our production, we require over 30,000 tonnes of steam per year – it is indispensable for maintaining the right standards of quality and hygiene,” emphasises Christian Mahringer, Team Leader for Energy at Hans Kupfer & Sohn GmbH & Co. KG. In order to continue to meet these high standards and, at the same time, to address the growing environmental requirements,

Kupfer searched for future-proof energy solutions.

**Craftsmanship meets innovation**

In recent years, steam has been supplied by conventional gas boilers from Bosch Industriekessel (formerly Loos). However, the plan is to reduce fossil fuels, optimise rising costs and reduce CO<sub>2</sub> emissions. The first points of contact were Bosch Industriekessel and Schwender Energie- und Gebäudetechnik, long-standing partners of Kupfer in the field of energy supply. “Two years ago, Kupfer contacted us requesting a fourth steam boiler that was to be powered by electricity rather than gas,” explains Ralph Hoffmann, Construction Manager at Schwender. The vision of utilising the surplus electricity

of a newly leased PV field was decisive here: Kupfer leased the 7.4 hectare PV park for the next 20 years and can therefore cover 33% of their electricity needs in an environmentally friendly manner.

**Technology used: A hybrid solution for maximum flexibility**


For the boiler technology, Kupfer opted for a hybrid solution from Bosch: An ELSB electric steam boiler system with heating bundle, BCO boiler control and power cabinet now complements the existing gas boiler system. This combination allows the company to continue producing reliably while, at the same time, utilising the surplus electricity in an environmentally friendly and

economical manner: “On a sunny day, the electric steam boiler covers up to 50% of our steam requirements. This significantly reduces our gas consumption and cuts CO<sub>2</sub> emissions,” says Christian Mahringer. A major contribution to both the environment and the company’s own sustainability goals.



**PV park:  
10,000 kWp**

- ▶ Utilising surplus electricity for steam generation





**Operator:  
Hans Kupfer & Sohn  
GmbH & Co. KG**

- ▶ Manufacture: Meat and sausage products, plant-based alternatives
- ▶ Steam demand: >30,000 t per year




**Steam supply:  
Integration of ELSB  
electric boiler system  
with 3 t/h steam**

- ▶ PV-controlled power adaptation
- ▶ CO<sub>2</sub>-neutral steam generation with green electricity



The Bosch Industrial Boilers team designed the ELSB for a steam output of three tonnes per hour at a maximum pressure of 10 bar. The electrical connected power is 2.2 megawatts. Its start-up speed depends on the requirements of the local PV grid. From a technical point of view, the ELSB can go from 0 to 100% of its power within seconds. "As soon as surplus electricity is available, the boiler takes over the supply to the production facilities and the output of the gas boiler is automatically reduced," explains Ralph Hoffmann. The steam is equally variable for use in production processes. The ELSB can respond quickly and precisely to load changes, while maintaining consistently high energy efficiency of up to 99.6%. Such fast response times are important for Kupfer, as steam consumption can vary

considerably, for example when smoking and cooking, and precise temperature control is required.

**Reliable local partner**

After Schwender had completed the installation work, Bosch customer service engineer Dominik Kerber took over the commissioning of the electrically heated steam boiler, the control system and the power cabinet. The boiler house in Heilsbronn is familiar territory for him: "I have been visiting Kupfer regularly for almost 10 years to maintain the gas boiler system and carry out the mandatory pressure tests with the TÜV." In future, the new electric boiler system will also be integrated into these regular tests.

Bosch's full service contributes to the reliability and service life of the systems and allows for continuous energy optimisation. "We always collaborate closely with the people at Kupfer and work together to find solutions to exploit the full potential of the system. Often, even small changes can have a direct impact on efficiency and operations," says Dominik Kerber. Proper boiler operation and compliance with water quality standards are also factors that should not be underestimated. Most recently, Kupfer hosted an operator training course, during which the Bosch service team trained the boiler operators directly on the system.



**Electric steam boiler system**

Tailored system from a single source:  
Boiler with heating bundle, boiler control and power cabinet

**Seamless integration  
into the existing system**



**Existing system**

3 x UL-S Universal steam boilers with boiler controls, system control and thermal water treatment



## Summary

The electric boiler system has now been operating for around a year. “We are very satisfied with Bosch’s products and the service is also excellent,” summarises Christian Mahringer. Thanks to the hybrid solution and the integration of renewable electricity, Kupfer has made its energy supply future-oriented and sustainable.

Operational processes can be made more environmentally friendly, energy costs can be optimised, and the mix of different energy sources ensures reliable processes. With Bosch and Schwender at its side, Kupfer is also relying on long-standing local partners who will continue to help shape progress in the future.



**“We are very satisfied with Bosch’s products and the service is also excellent”**

The project team, from left to right: Markus Kilian (Sales, Bosch), Dominik Kerber (Customer Service, Bosch), Christian Mahringer (Team Leader for Energy, Kupfer) and Ralph Hoffmann (Construction Manager, Schwender)

## The project partners

Our customer:  
Hans Kupfer & Sohn  
GmbH & Co. KG, Heilsbronn  
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Our partner:  
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