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## Tailored boiler technology for Haribo

Reference Report Bosch Industrial

High level of efficiency and automation

### The operator

With its gold bears and other fruit gum, marshmallow and liquorice products, Haribo is one of the world's best-known confectionery manufacturers. In 2000 the company founded the Haribo Hungária Kft factory in Nemesvámos in Hungary as part of the expansion of its markets in Eastern Europe. There the popular sweets are manufactured in a factory with some 200 employees. The production volume is approx. 18 000 tonnes per year.

### The project

In 2011, as part of a factory extension, Haribo Hungária Kft in Nemesvámos has expanded the supply of process steam. A complete system from Bosch Industriekessel was used, which, thanks to the numerous components available, could be matched exactly to the customer's requirements and which ensures energy-efficient operation. Bosch's partner of many years in Hungary, Kazantrade, was on hand for the entire project management and support on site. For over a decade, an U-HD steam generator from Bosch Industriekessel was providing process heat around the clock for production, as well as heating for office buildings and production halls. 2 000 kg/h of



steam were available for this purpose. Haribo had a modern, large-scale boiler house built for the new energy system consisting of a UL-S type steam boiler with comprehensive system technology and an output of 4 000 kg/h. A potential second expansion of the process heat supply was taken into consideration during the overall design and dimensioning of the boiler house. Due to the integration of the existing system into the new steam network, there are currently 6 000 kg/h of steam available for production. The heating supply was decoupled and this is now provided by a separate heating boiler.



*Economizer and condensing heat exchanger for waste gas heat recovery.*

### Maximum efficiency, lowest emissions

The steam boiler UL-S is equipped with an integrated economizer, so that the hot boiler flue gases can be used. Feed water is fed through the heat exchanger pipes and this heats up to approx. 140 °C due to the flue gas flow, while the flue gas temperature reduces as a consequence by some 100 Kelvin. This reduces fuel consumption and helps to keep emissions low. A condensing heat exchanger made of stainless steel was installed downstream from the economizer for maximum energy utilisation. The water vapour in the flue gas condenses due to a further fall in

temperature. The released condensation heat is used to support the supply of heating. The two heat recovery units increase the efficiency of the system by around 9 %. The perfectly matched natural gas firing system provides for particularly low-emission combustion.

### Thermal deaeration for problem-free boiler operation

The water service module WSM-V carries out the thermal deaeration of the make-up water in order to prevent any tendency to corrosion in the boilers. The water is heated in the feed water tank by means of steam feed, and this releases gases contained in the water, such as carbon dioxide and oxygen. An appropriate chemical dosing takes place after the deaeration process in order to bind residual hardness and oxygen as well as for alkalisation. Then the thermally treated water is fed by feed pumps to the two steam boilers, or it is stored in the feed water tank, which has a capacity of 5 000 l. The integrated blow-down, expansion and cooling module BEM takes up the resulting lye and blow-down from the steam boiler system. The hot blow-down is collected and depressurised in the module, and it is then cooled down to the permitted mains discharge temperature by adding cold make-up water.



*Optimum water quality for a long system service life.*

### Condensate recovery saves costs

The condensate service module CSM is part of the additional system equipment. The module recovers condensate from the process and channels it to the feed water deaeration system. The higher the condensate yield, the less fresh water has to be treated and therefore the less energy use. This saves water and fuel costs.

### Intelligent control units

All measuring and control functions are optimised as required via the boiler controls BCO with intuitive touchscreen. The transparent display of all operating data in the form of visually informative curve diagrams and total figures helps to keep energy costs low. Integrated monitoring and protective functions help to prevent incorrect operation, so that the reliability of supply is safeguarded. The system control SCO combines the boiler and module controls into one universal management system. Information exchange is performed via efficient bus system technology. The latest operating messages and process data of the boiler system are transmitted via the link to the company's process control centre. A remote service connection is also available. If required, a Bosch service expert can gain access to the boiler controls and then optimise control parameters or eliminate sources of faults simply and quickly.

### Further products from the Bosch Thermotechnology range

A new heating boiler from Bosch Thermotechnology is used for the heating of the building. The Logano SK755 boiler, which has an output of 800 kW and is equipped with an efficient natural gas burner, is controlled via the Logamatic control unit. The condensing heat exchanger of the steam boiler system supports the heating.

### Implementation phases of the project

- ▶ Building of a modern, large-scale boiler house
- ▶ Integration of the existing system into the new steam network
- ▶ Use of a new steam boiler with gas firing and integrated economizer
- ▶ Installation of a downstream condensing heat exchanger for maximum energy utilisation
- ▶ Integration of modular components for thermal water treatment, disposal of blow-down and recovery of condensate



Heating boiler from the Bosch brand „Buderus“.

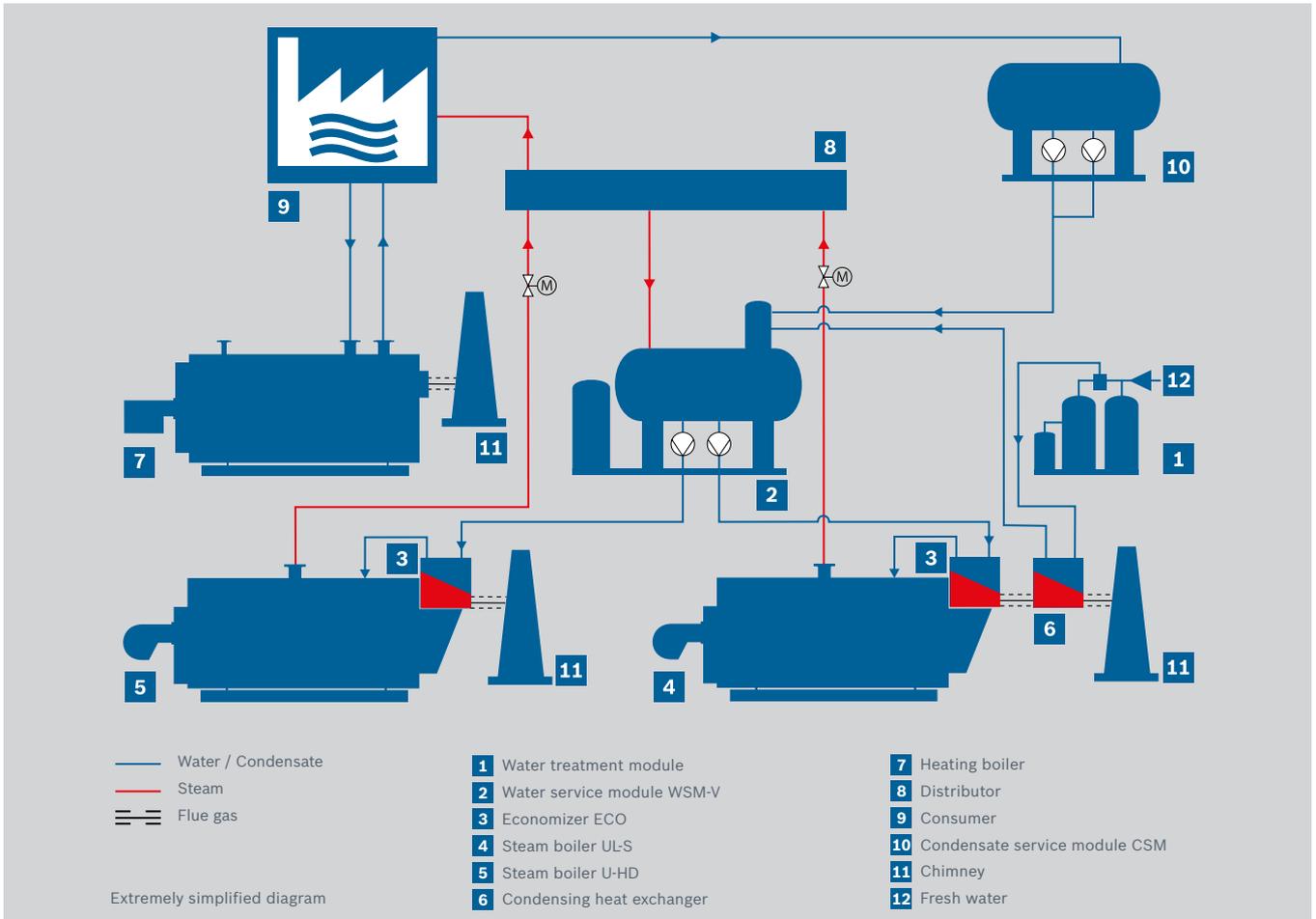
- ▶ Integration of programmable management systems for the simple control of the boiler and overall system
- ▶ Installation of a new heating boiler for heating the building

### The result

Thanks to Bosch's modern boiler technology, the customer's specific requirements for the new steam boiler system could be met in full. The system is intelligently controlled and is highly impressive with its reliable and energy-efficient operation. The availability of the system is increased by the regular maintenance and other services provided by Bosch's partner, Kazantrade, and this also optimises the fuel consumption. Thanks to its modular design, the energy system can be expanded at any time to meet required increases in capacity.



System control with connection to the central control system.



Simplified piping diagram of the system.

## The companies involved

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