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Octapharma upgrades steam boiler system

Reference Report Bosch Industrial

Smart data analysis facilitates future optimisation

The project

Octapharma, a company specialising in high-quality human protein made from human plasma and human cell lines, has upgraded its energy supply area at the Vienna site. This upgrade was preceded by an Energy Quick Check, carried out by Bosch, to help identify potential for increased efficiency. The aim: Achieving maximum energy efficiency, continuous automation and the highest possible degree of reliability.

Octapharma develops and produces high-quality human protein at its Vienna site.

Octapharma is one the largest companies in the world developing and manufacturing compounds from human plasma and supplies patients in over 115 countries. At its Vienna site, 1,200 employees produce these live-saving pharmaceuticals. The sector is subject to very stringent regulations and controls, in particular with regard to the quality and safety of the sensitive products. A significant part of the production process relies on a supply of process heat in the form of steam. This is true for sterilisation in particular: The steam supports the generation of ultra-clean steam and WFI (water for injection). Other areas supplied with steam are the ethanol distillation column and the humidification of air-conditioning systems. “Our existing steam boiler system is still reliable, but, as times change, we saw

the potential to improve our energy situation even further," reports Orestis Almpanis-Lekkas, Head of Utilities at Octapharma. Markus Tuffner, Head of Modernisation at Bosch Industriekessel, evaluated the possible modernisation measures on the basis of the customer-specific initial situation. "Our Energy Quick Check made it possible for us to quickly and effectively highlight potential savings to Octapharma in the first step," emphasises Tuffner. Based on the meaningful results, Octapharma decided to implement all recommendations. Modern Bosch technologies now supplement the existing steam boiler system from 2007.

Controls of the new generation

First, Octapharma changed the boiler and system controls to the latest generation of Bosch controls. Procuring spare parts for the control system used originally, which was based on the Siemens C7, would have become increasingly difficult in the coming years as the manufacturer had discontinued that model. The new boiler control system, comprising BCO (boiler control) and SCO (system control), allows for convenient operation using an intuitive touch display while also increasing data transparency. At the same time, Bosch replaced the existing teleservice connection with the new MEC Remote technology. This remote access does not just allow Bosch service experts to access the steam boiler system and carry out remote analysis, parametrisation or programming. It also makes it possible for the operator to view the system status and receive important operating information via text message or e-mail.

Convenient operation and transparent display: The new BCO and SCO control systems from Bosch.

Smart data analysis, energy monitoring and operational safety

In future, Octapharma will particularly benefit from retrofitting MEC Optimize: The digital efficiency assistant analyses and interprets the boiler system data and informs the operating staff of possible risks

Orestis Almpanis-Lekkas from Octapharma and Karim Salem, Project Manager responsible for retrofittings at Bosch's Bischofshofen site, Austria, discuss the different menu levels of MEC Optimize.

Fully automatic and reliable: The space-saving module continually checks the relevant water parameters.

of failure before they occur and of possible ways of achieving efficiency gains. MEC Optimize also supports users with individual recommendations for action. This increases safety and optimises energy costs within the pharmaceutical production site. In addition, MEC Optimize determines the status of many important system components based on their operation and provides support for maintenance planning. The benefits are obvious for Octapharma: "We can monitor system values more easily, detect unfavourable operation conditions early on and have in-depth monitoring in place without having to be on site," reports Orestis Almpanis-Lekkas. By connecting to MEC Remote, the operator can also retrieve the data collected by MEC Optimize remotely and mirror its interface on a mobile device.

Bosch integrated the pre-programmed Optimize module into the existing control cabinet without having to carry out comprehensive conversion work. Thanks to the pre-configured process control protocol, integration into the Octapharma automation system was seamless. With MEC Optimize, the operating staff now also have access to a digital boiler log book. This does not just contain all relevant operating manuals, it also serves to record measured values from boiler inspections digitally and as a digital archive, for example for maintenance reports.

Fully automatic water analysis

The ideal water quality is one of the most important factors influencing the operation of boiler systems. The new Bosch water analysis unit does not just ensure reliable plant protection at Octapharma, but also saves the company time and money. The sophisticated sensors continually measure and check the water parameters (pH value, oxygen content and conductivity) and transmit the data to the control system or to MEC Optimize. An alarm signal is triggered if limit values are exceeded or there is a safety-critical situation. The measured values are also used to meter chemicals as needed and to achieve savings due to lower desalting losses, less fuel being used and less water being required. A fully automatic process with a positive affect on the service life of boilers and system components.

Heat recovery within the steam boiler system

Optimisation results were also achieved with regard to heat recovery within the plant. A retrofitted vapour cooler now recovers energy from exhaust vapours and uses it to pre-heat make-up water, thereby reducing the volume of steam required for heating. This waste steam is a product of the thermal deaeration process and is required to transport harmful gases out of the feed water. Exhaust vapour is produced continuously, making it possible to achieve savings of several thousand euros each year. Octapharma additionally reduces costs by recovering heat from desalting water. The module absorbs the desalting water from the boiler, expands it and uses the heat energy to heat up make-up water and the feed water tank. The Energy Quick Check put the possible savings from both components at over EUR 20,000 annually. There are environmental benefits as well, with around 150 tonnes fewer CO_2 emissions each year. That corresponds roughly to CO_2 emissions produced by 90 cars.

The last bit of improvement – firing-side optimisation

Even though the existing boilers were already fitted with heat recovery modules like the economizer, it was possible to further reduce the losses on the flue gas side with O_2/CO controls. Optimised combustion reduces fuel consumption by as much as an additional percent. Furthermore, new sound-insulating covers ensure that the burner sounds in the boiler house are very quiet.

Summary

“Flexible, focused on objectives and solutions” is how Orestis Almpanis-Lekkas from Octapharma describes the Bosch Industriekessel project team from Bischofshofen (Austria) and Gunzenhausen (Germany). The modernisation measures help the company from Vienna to improve its energy efficiency and sustainably protect the environment and resources. Thanks to their modular design, all system components from Bosch could be retrofitted in the existing system seamlessly and effectively – without having to interrupt the steam supply. In future, the digital MEC Optimize efficiency assistant will support Octapharma in operating the steam boiler system cost-effectively, safely and in an environmentally friendly manner in the long term. “The system makes it easier for us to detect fields of action and potential for improvement much faster and to implement them directly,” says Orestis Almpanis-Lekkas.

The vapour cooler and the heat recovery and expansion module for desalting water supplement the existing feed water deaeration system.

The companies involved

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