



Multi-storey boiler house in the pharmaceutical industry **New Bosch boiler system for herbal medicines from Bionorica**

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A new Bosch steam boiler system has gone into operation at Bionorica SE in Neumarkt in Bavaria (Germany). With a total output of ten tons of steam per hour, the two single-flame tube boilers are supremely able to meet the increased requirement for process heat for manufacturing the company's herbal medicines. The process heat in the form of steam is used for example to extract the herbal raw materials and to concentrate and dry them, as well as for preparing cleaning agents. The modular constructed system extends over two levels in the new boiler house and, thanks to the maximum recovery of process-related waste heat, it achieves an overall efficiency rate of over 100 percent based on the calorific value.

The engineering consultants, Farmbauer, planned the new steam supply system with due consideration for the company's environmental philosophy. A major challenge was how to build the new boiler house: due to the building situation at the Neumarkt site, the amount of floor space available for construction was limited. But there was plenty of vertical space available, and so Petry AG, the plant construction company, installed the modules for water treatment and the downstream flue gas heat exchangers on a second level, directly below the boiler house roof. The two natural gas-fired UL-S steam boilers were sited on the ground floor.

In order to get the most out of the flue gas heat produced during steam generation, and hence keep fuel consumption as low as possible, it was decided that two flue gas heat exchangers per boiler would be used. These components alone save over 800,000 euros in natural gas costs over the course of 10 years. Additionally, the environment is spared through a saving of 4,800 tons of CO₂ emissions, which equates to the emissions of more than 2,400 passenger cars. The boilers are equipped with combustion controls to further enhance their

efficiency and reduce flue gas losses. These work in a similar way to the Lambda control in a passenger car.

The system's own consumption is also reduced thanks to complementary modular technology. An installed vapour heat exchanger uses the energy from the exhaust vapour to preheat make-up water for the thermal deaeration unit. For the deaeration process the WSM water service module is used. The module heats the make-up water up to 103 °C in order to eliminate corrosive substances like carbon monoxide and oxygen. The water vapour (exhaust vapour) mentioned above also escapes during the process. A further significant saving is achieved by condensate recovery. If the process steam has released a large part of its energy in production, it accumulates as condensate. This still contains however considerable residual heat and can be used instead of cold fresh water. This reduces fuel and water requirements significantly.

Other equipment, such as Bosch control systems, completes the overall system. They automatically control all the processes from desalting through to condensate technology and right up to the adaptive change of master and slave boilers. Bionorica benefits from an improved operating mode thanks to the high degree of automation and the optimum coordination of all the components. In addition to this, the company also saves large quantities of fuel and emissions thanks to the intensive measures for heat recovery.

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Contact person for press inquiries:

Annemarie Wittmann

+49 9831 56-218

annemarie.wittmann@de.bosch.com

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