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Invented for life

Power, heat and cooling for
spare parts specialist Winkler

Reference Report Bosch Industrial

Future-proof emissions using an SCR catalyst

The company

Reliable and fast provision of spare parts for commercial vehicles, buses and agricultural machinery is essential for the customers of Winkler Logistik GmbH. This is reflected in the new Austrian site in Himberg. One of Europe's largest central warehouses



The logistics center in Himberg, Austria.

for commercial vehicle spare parts, spanning an area of around 27,000 m², houses more than 100,000 parts which are available at all times thanks to an efficient storage and logistics concept. This logistics center near Vienna will supply spare parts to Austria and all of Eastern Europe from April 2019. When designing the new Himberg site, preventing CO₂ emissions was a critical aspect for Mr Andreas Mayer, Head of Logistics at Winkler in the headquarters in Ulm, Germany: "At Winkler, we focus on sustainability and climate friendly operations, with these principles being laid down in our company values. This is why, when designing and building our third central warehouse, we placed particular emphasis on high efficiency and climate neutrality. Shorter supply routes now allow us to deliver to our Eastern European sites much more quickly and flexibly."

The project

The new Himberg site has a continuous energy demand for heat for the warehouse and offices, for power for ventilating and lighting the halls and for the fully automated storage systems in particular. When analysing the estimated load profiles, it quickly became apparent that the site has a relatively high basic load for heat and power. Since heat and power are usually both required at the same time, the economic assessment advised combined heat and power generation using a CHP system. The system provider K & W Drive Systems – the official partner of Bosch KWK Systeme in Austria – was in charge of planning and implementation. They are, for example, also responsible for the energy supply to the Vienna General Hospital and the emergency power supply to the Vienna subway.

Mr Michael Harbich, the project leader for CHP systems and gas generators, became involved in the project back in 2017 and began planning and implementing the energy concept drawn up by the customer at an early stage: “We implemented the customer’s energy concept by supplying a natural gas CHP system, a diesel emergency power system and a cold water absorber with adiabatic recooling alongside the spray water treatment required for

this. The system supplied provides power, heating and cooling (trigeneration) and ensures an emergency power supply when needed. This allows the customer to be highly self-sufficient in terms of energy and ensures protection in the event of failures, while the system considerably increases the energy efficiency for the customer on the whole.”

The Bosch CE 400 NA CHP system used by K & W Drive Systems impresses with a high efficiency of 86.7% through utilising the waste heat generated by the gas-powered combustion engine and, in addition to 400 kW of electrical output, also provides 500 kW of thermal output. Since, however, there is virtually no heat demand in the summer months but the operating times of a CHP system should still be kept as high as possible, the heat generated is converted into cold in summer using an absorption cooling machine. The 415 kW of cold converted in this way is used to cool the site, especially the office area.

It is estimated that this will allow long operating times of up to 7,200 operating hours per year to be achieved. At a relation of gas to electricity price of 1:3 or higher, the unit’s amortisation time would be less than three years.



The Bosch CHP system supplies the site with 400 kW of electrical and 500 kW of thermal output for power, heating and cooling.

Whenever there is a reduced heat demand, the connected absorption cooling machine generates cold to cool the site.



Power supply available at all times

Winkler's modern logistics concept includes automated storage systems and requires them to function continuously. This is why, besides economical and environmental aspects, having a self-sufficient power supply was one of the basic conditions Winkler required for the site. The Bosch CHP system, in combination with a diesel emergency power generator, ensures the power supply is maintained in

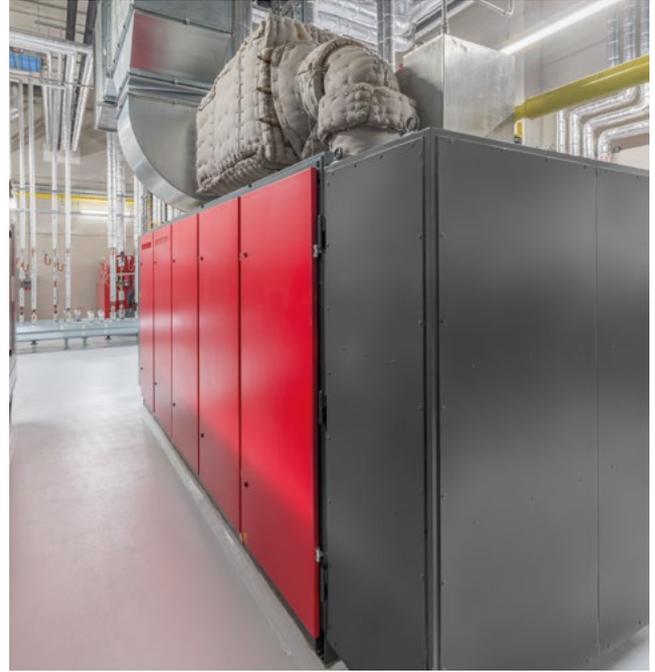
various emergency situations. The entire system, including control, was designed and implemented as a whole by the experts from K & W Drive Systems. This means that the individual system components could be ideally adapted to each other. The higher-level control enables the components to work together seamlessly as part of a system and provides the required protection against power supply failure.

The power supply to the logistics center is ensured at all times, even in various emergency power scenarios.



An environmentally conscious way into the future

Winkler also considered the issue of environmental protection when it came to flue gases. An innovative SCR catalyst has been implemented in the CHP system to reduce nitrogen oxides and, as a result, the system remains far below the legal limit values in Vienna of 250 mg/m³ NO_x. The system has a value of less than 100 mg/m³, which is extremely low for a CHP system and means that it will be ideally prepared for any situation in which limit values are made more stringent in the future. The design and development of the SCR catalyst is based on the expertise and quality of Bosch products. Jonas Moser, project leader at Bosch KWK, is proud of the new development: “Thanks to interdepartmental collaboration with the specialists from Bosch Mobility Solutions, we were able to develop our own Bosch SCR system specifically for CHP systems. In this system, the entire control and software, as well as the SCR dosing unit and NO_x monitoring, come from Bosch. This means that the SCR system is ideally tailored for minimum emissions with maximum catalyst service life.”



The SCR catalyst supports compliance with the latest emission limit values of 100 mg/m³ as stipulated by the future German BImSchV (44th Federal Emission Control Ordinance).

The companies involved

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