Munich Exhibition Grounds: New Cogeneration Power Plant Even More Efficient

Photo: Messe München GmbH

Every year, hundreds of thousands of visitors pass through the International Congress Center Munich (ICM) on the Munich exhibition grounds. The building, which is located right next to the main entrance of the exhibition grounds, hosts large international conventions as well as annual general meetings of large listed corporations. A detail that goes unnoticed by most, however, is that directly underneath, in the heating center a few levels below, a 14-ton cogeneration power plant generates heat and electricity for the ICM and the administration building. According to Kai Redlin of the Munich City Utilities, the reason why the operation of the heavy engine system goes unnoticed is that it has been extensively insulated to prevent noise and vibration emissions.

The cogeneration plant, which had gone live back in the 1990s, had grown old and was in need of modernization. Together with the operator Messe München GmbH, the Munich City Utilities developed a comprehensive modernization and engine replacement concept for the plant. The old engine was to be replaced with a new one of the same output category. The plant technology upgrade took place by means of a bid procedure. The Munich City Utilities opted for the MWM TCG 2020 V16 genset, an engine type that delivers more efficiency, reduced emissions, improved profitability, and longer maintenance intervals. The modernized cogeneration power plant yields 1.5 MW of electrical energy and more than 1.6 MW of heat energy and enables carbon savings of about 630 t/year thanks to the efficient engine technology.

New Fundament

The structural conversion measures focused on the noise and vibration insulation. The original noise protection cabin was stripped down to the steel frame and lined with new, more effective noise insulation panels. The fundament block, which weighs 26 t, was lifted and placed on new vibration and structure-borne noise-reducing, elastic KSD elements. The framework construction that bears the entire exhaust gas heat unit was also repositioned on KSD elements.

“Thanks to the entirely new structure, it was no longer necessary to suspend the exhaust gas components from the heating center’s ceiling. The high-quality noise protection cabin with appropriate inlet and outlet air noise insulation as well as the measures for decoupling structure-borne noise make sure that no prohibited noise emissions arise during operation”, explains project manager Redlin.

The room for the international reception of the ICM is located above the cogeneration power plant. Here, the maximum noise level of 35 dB(A) is never exceeded.

High Internal Demand

Apart from providing the base load of heat for the administration building and the ICM, the highly efficient MWM gas genset feeds in almost 100 percent of the power generated by the CHP plant into the power grid of the Munich exhibition grounds. When the need for heat is lower, the cogeneration power plant is able to run at partial load of 60 percent. A heat storage unit ensures needs-oriented supply.

Photo: Messe München GmbH

Special Challenges on the Exhibition Grounds

Photo: Stadtwerke München

Stadtwerke München Services GmbH

Address:	Emmy-Noether-Strasse 2 80992 Munich/Germany
Contact:	Kai Redlin, planning and project engineer
Location:	Munich, Bavaria/Germany
Operator:	Messe München GmbH
Technical operation:	SWM Services GmbH

Photo: Stadtwerke München

Technical data CHP

Go-live:	End of 2015
Engine type:	1 x TCG 2020 V16
Generator:	Marelli MJB 500 LA (U=690V)
Gastype:	Natural Gas
Control:	TEM
Thermal efficiency:	45.0 %
Electrical efficiency:	42.0 %
Thermal output:	1,515 kW
Electrical output:	1,624 kW
Total efficiency:	87.0 %

Photo: Messe München GmbH

Sustainable Energy Concept

Besides the natural gas-fired cogeneration power plant, the Munich exhibition grounds have implemented PV systems on the roofs of the exhibition halls and geothermal district heat. Additionally, the "green" exhibition grounds are equipped with a sophisticated rainwater percolation system and about 2,500 trees, 222,000 m² of green areas, and 35,000 m² of green roofs.

Caterpillar Energy Solutions GmbH
Carl-Benz-Straße 1
68167 Mannheim/Germany
T +49 621 384-0 | info@mwm.net
F +49 621 384-8800 | www.mwm.net

Version 12-18/EN