Application report
DDZG-GTM turbine exhaust gas burner

SAACKE

Effective power, heat or steam from a single source

SAACKE delivers highly efficient combined heat and power (CHP) systems including turbine exhaust gas burner and control technology

The company Interquell GmbH, located in the south of Germany, requires process steam to produce food, such as baby food and cereals. To increase efficiency and save costs, the food producer decided to install a SAACKE Micro-CHP-System mounted by the plant engineering company Lausser. The combination of micro gas turbine, turbine exhaust gas burner and steam boiler was selected, because CHP systems with a gas engine cannot guarantee the requirements.

Higher efficiency by using waste heat from power generation

A micro gas turbine is installed upstream from the SAACKE DDZG-GTM turbine exhaust gas burner, which produces 1,460 MWh of electrical energy at the location per year. The use of the hot exhaust gas of the turbine as combustion air in the turbine exhaust gas burner increases overall efficiency up to 97%. The additional use of a flue gas calorific value exchanger significantly increases the overall energy efficiency. The challenges of this highly efficient solution included effective time management and comprehensive service. Downtimes had to be kept to a minimum to ensure that continuous operation was not interrupted.

"The innovative SAACKE solution not only proved itself in active operation – the plant also received the LEW Innovation Prize 2013."

Georg Müller, CEO, Interquell GmbH

Lausser GmbH / Interquell GmbH

Plant Engineering / Micro CHP

DDZG-GTM

Task

Efficient utilization of turbine exhaust gas to produce steam for the food industry with minimal downtime.

Solution

Implementation of a SAACKE Micro-CHP-System with the DDZG-GTM turbine exhaust gas burner.

The SAACKE solution in detail

The delivered DDZG-GTM can be supplied as a dual fuel burner for natural gas and light fuel oil (LFO). No additional atomizing medium is required for LFO. Fresh air operation, a turbine exhaust gas (TEG) operation and waste heat operation (holding operation) is available on the burner side – always in combination with the lowest emission values. The burner can be safely and reliably operated with a high or a low amount of excess air (lambda 2.1 to 1.1). The micro gas turbine can either be provided by the customer or delivered by SAACKE. The comprehensive scope of supply included the delivery of the burner, the fuel supply for natural gas and LFO, the fan for fresh and secondary air, the installation of measuring and monitoring equipment and the electric control unit. The SAACKE service included installation, commissioning and trial operation as well as a 24-hour on-call service.

Conclusion

The combination of the micro gas turbine and the SAACKE DDZG-GTM turbine exhaust gas burner is the key to success of the SAACKE Micro-CHP-System. A high overall efficiency, the generation of electrical energy and the efficient and low-emission combustion of turbine exhaust gases help save costs and efficiently generate process steam. This has also been tested and certified by external experts.

All benefits at a glance

- Long maintenance intervals for turbine and burner
- Low emission values well below the legal emission regulations
- Able to be used in existing and new plants
- High energy efficiency by combining micro gas turbines and turbine exhaust gas burners
- Efficient turbine utilization by variable excess air on the DDZG-GTM
- High availability due to uninterrupted mode change

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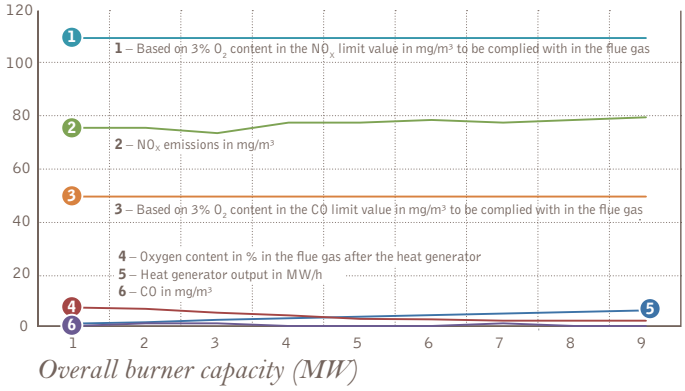
0-0750-0113-02

Technical data: process steam plant Interquell Großaitingen

Heat generator	Shell boiler
Burner capacity (max.)	7 MW
Combustion air temperature	5-300 °C
NO_x emissions	NG TEG: approx. 80 mg/m³ LFO, fresh air: approx. 150 mg/m³
Micro gas turbine	Capstone C200
Electrical power	Micro gas turbine 200 kW
Thermal output	Micro gas turbine 395 kW
Overall efficiency	Up to 97%
Primary energy saving	approx. 2,800 MWh/a
Steam generation	10 t/h at 12 bar (a)

Emissions in the turbine exhaust gas operation



SAACKE Micro-CHP-System with DDZG-GTM

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