



SAACKE turbine exhaust gas burner (DDZG-GTM series)

Power production through CHP combined heat and power

Direct use of turbine exhaust gas for combustion – with high efficiency

The idea of using excess heat from generating electricity for process steam or hot water is not new. It could better be described as a logical step, because the hot exhaust gases of a gas engine or a gas turbine contain great quantities of valuable energy. In a traditional combined heat and power plant (CHP) the hot exhaust gas is directed immediately through a heat exchanger or waste heat boiler. In this solution just presented by SAACKE it supplies a DDZG-GTM series burner instead. That way SAACKE not only opens the path to new high-temperature process for CHP plants, but also makes production more flexible and profitable overall. Because CHP plants can achieve high efficiency, they are not only very economical, but also environmentally friendly.

In the low and medium load range these plants have most commonly been implemented with gas engines in cogeneration units, which are very maintenance-intensive. SAACKE is therefore offering an alternative: The extremely low-maintenance special burners of the DDZG-GTM series for the so-called "SAACKE Micro-CHP-System". The gas turbine generates a maximum electrical power between 50 to 1,000 kW, with its exhaust gas used to supply the SAACKE burner, which fires in the downstream heat generator. Depending on the design and configuration of the heat generator, a SAACKE Micro-CHP-System like that produces heat, steam or hot water with conventional heat generators – and also produces valuable electrical energy.

- Chemical industry**
- Food processing industry**
- Building materials industry**
- Wood processing**

Advantages at a glance

- Turbine electrical capacity range: 50-1,000 kW
Maximum burner output: 2-20 MW
- All standard fuels and numerous special fuels
- Applicable for steam boilers and hot water boilers as well as for combustion chambers and thermal oil heaters
- Long maintenance intervals of turbine and burner
- Short payback period
- Very low emission values, outstanding efficiency

The SAACKE solution in detail

With the "Micro-CHP-System", SAACKE offers a highly profitable instrument for generating electricity for conventional heat generators. The system uses a micro gas turbine. These proven units include a turbine, generator and network synchronization in a compact and sound-proofed housing. They are typically operated with natural gas, but are also able to use biogas, fuel oil or biogenic oils.

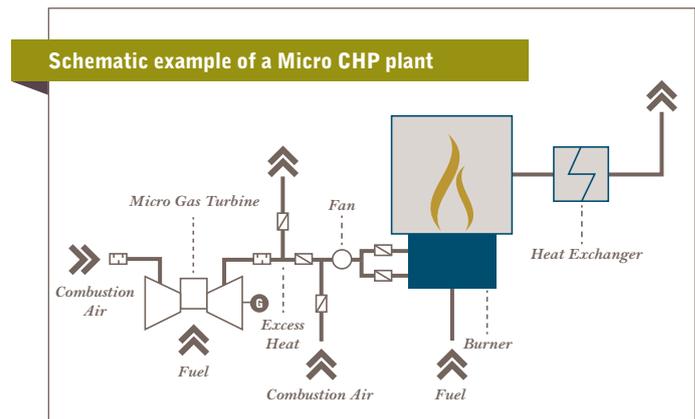
The maintenance intervals of the micro gas turbine are extremely long and make it possible to get a high life time of the turbine. With a startup of only a few seconds and, depending on the turbine size, between 50 till 1000 kW of line-synchronous electrical power is available. The turbine features infinitely variable operation over a very wide control range with both heat and current guided mode. The electrical power that is generated can be fed back into the electrical network or used strictly internally.

Firing systems featuring high operating hours and continuous heat consumption are naturally suited to CHP solutions. However, the turbine and burner can optionally be operated independently of each other. Burners from the proven SAACKE DDZG-GTM series, which are developed in five sizes with firing rates between 2 – 20 MW, are used for that.

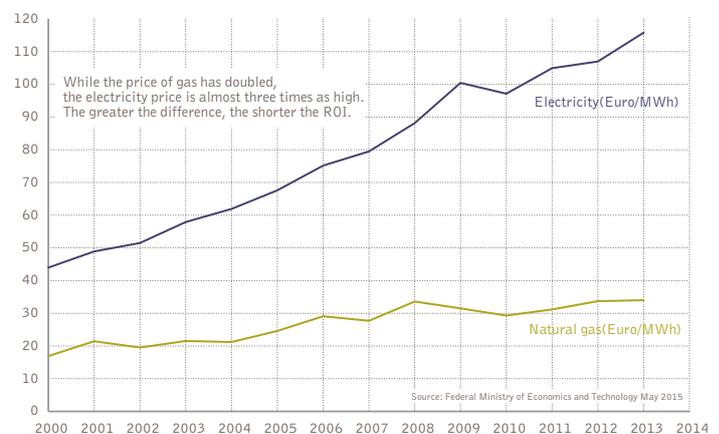
They fire directly into the downstreamed new or existing heat generator. In principle these robust burners work with all standardized liquid (without heavy fuel oil) and gaseous fuels. The proven combination of turbine and burner always guarantees the lowest emission values, and also reliably underruns even the strictest requirements over the entire control range.

Summary

Plants designed to generate only heat do not produce any electrical power, even if they are optimally configured. The combination of gas turbines and a SAACKE DDZG-GTM burner is fundamentally different: it produces electricity, significantly boosting efficiency and providing a profitable and especially energy-efficient solution. Your advantage: The amortization times of Micro CHP plants are often astonishingly short and also makes the heat production free from price fluctuations in the electricity market. SAACKE offers you decades of experience in plant engineering. Our engineers will develop the optimum CHP solution for you regardless of your application or load range. The same applies to consultancy services when it comes to retrofitting existing plants.



Electricity-/Gas consumption rates of European industry



Technical data turbine*

Electrical power	200 kW
Electric efficiency	33 % ± 2 %
Fuel demand	606 kW
Exhaust gas temperature	280 °C
Excess heat output	395 kW

Example Amortization for a flame tube boiler**

Steam output	5.0 t/h
Investment Turbine, Combustion system, Installation	600,000 €
Cost savings up to w/o subsidies	150,000 €/Year

* without compressor under ISO conditions ** Electricity price: 0.145 Euro/KWh, Natural gas price: 0.03 Euro/KWh, Running time: 8,000 h/Year

