



MAN Ferrostaal Power Industry GmbH—  
Wuppertal, Germany

# Wuppertaler Stadtwerke AG, Wuppertal-Barmen Heating Power Station

### Project Description

The Wuppertal Combined Cycle Power Plant was constructed in 2005 to provide electrical power and district heating for the town of Wuppertal, Germany. The 65 MW combined cycle plant is optimized to achieve low cost operation, flexible steam production and reliable power delivery for the German market.



IST was contracted to supply two (2) OTSGs for the Wuppertal Combined Cycle Plant. The OTSGs were built with HP and LP steam circuits. The plant also features two (2) x 25 MW H25 gas turbines and one (1) steam turbine.

The customer selected OTSGs because they are ideally suited for a combined cycle application due to their efficient steam production and flexible operation. OTSGs are capable of extremely fast start-ups and are typically able to supply full steam loads within 60 minutes. Since OTSGs start from a dry condition, there is no requirement to slowly heat the water contained within drums. The fast start-up of OTSGs allows the gas turbines to reach full load much quicker than traditional drum HRSGs.





## OTSG Common Benefits

IST's unique Once Through Steam Generators are designed to run dry, eliminating the need for bypass stacks, diverter valve systems and stack silencers. OTSGs have once through flow paths; therefore no steam drums or blowdown systems are required.

The absence of drums and the modular design and manufacture of OTSGs facilitate easy and rapid shipment and erection of the units. Both units at Wuppertal were mechanically installed on site within six weeks and required approximately 5000 installation man-hours.

Each unit consists of five modules: inlet duct, plenum, steam generator module, hood, and the stack, which reduce erection time and crane requirements. The use of small diameter tubes and modular construction allow for a lightweight and compact design that is suited for projects that have weight and size restrictions.

OTSGs demonstrate a significant improvement over natural circulation drum-type units. They offer high availability, high efficiency, simple operation, dry running, and the lowest installed and life cycle costs in the industry.

### CONTRACT SUMMARY

Gas Turbine	Turbine Output (MW)	Exhaust Weight (lbs/hr)	Fuel	Exhaust Temp. (°F)	Firing Temp. (°F)	Feedwater Temp. (°F)
H25	25	769,000	Natural Gas	1009	0	86
HP Steam Flow (lbs/hr)	HP System Pressure (psia)	HP Temp. (°F)	LP Steam Flow (lbs/hr)	LP Steam Pressure (psia)	LP Temp. (°F)	OTSG Total Heating Surface (sq ft)
101,747	815	878	15,875	130	423	210,426