



British American Tobacco

Turbine Model	OP16-3B Low Emission
Application	Electricity and Steam
Location	Bayreuth, Germany.
Installation Date	December, 2012

The concept of combined heat and power application favored by majority of the industrial companies worldwide in which the heat produced by an electrical power source is used to generate steam, hot water, chilled water or for direct drying purposes. Capitalizing on the benefit of the combined heat and power system, on the other hand, the consumers will also benefit from the high efficiency system while contributing to greener energy system.

The British American Tobacco, or BAT, recognize this fact and taken this opportunity to renovate their existing facilities to provide a more reliable and efficient cogeneration system. BAT is the world's second largest quoted tobacco group by global market share, with brands sold in around 180 markets. Being associated with more than 200 brands, BAT produces the cigarette chosen by one in eight of the world's one billion adult smokers. Quality in both their products and working environment is uncompromising.

The BAT plant, located in Germany, producing more than 10 million cigarettes packs every day has an operation regime of 24 hour every day and would require approximately 1.7 MW of reliable electricity to sustain their production line. Furthermore,

BAT is utilizing a large amount of high temperature steam in the manufacturing process of cigarettes. Amongst other applications, this steam is used to dry high quality tobacco. Governed by one of the strictest emission regulations in the world (TA-Luft), the challenges it poses must also be fulfilled.

The all radial OP16-3B gas turbine rated at 1.85 MW in ISO conditions, designed by OPRA Turbines B.V., which equipped with a Dry Low Emission system becomes their ultimate solution delivering 6 tons of steam every hour with emission level lower than 25 ppmv of NO_x and CO. With the blending of simplicity in its sophisticated design which allows it to deliver high temperature exhaust gas at 575 °C with the flow rate of 8.7 kg every second, the OP16-3B Gas Turbine is the ideal equipment to produce high quality steam and produce electricity at the same time.

The OP16-3B will be connected to a parallel fired Waste Heat Recovery Steam Boiler (WHRSB) in order to generate up to 12 tons of high quality steam per hour. At the same time about 1.8 MWe will be generated at the average annual temperature of 9 °C. The surplus of electricity produced by the

Gas Turbine Generating Set will be supplied to the grid.

BAT has also agreed on a long term service agreement (LTSA) with OPRA Turbines B.V. in-house maintenance department. Due to the OP16-3B Gas Turbine robust and sophisticated design, it would only require inspection scheduled once every year and a major overhaul after 40,000 running hours.

OPRA Turbines is driven to provide our clients with the best services to all of our clients. In times of emergency, quick response and availability of service is critical. OPRA guarantees availability of service 24 hours per day, 365 days a year. A service agreement ensures that maintenance is executed in accordance with OPRA guidelines. This improves the safety, reliability and availability of the unit and reduces total cost of ownership.

For further information on this project and OPRA Turbines, please contact:

Mr. Ruud van Groenewoud
OPRA Turbines
Sales Engineer
Phone: +31 (0)74-7505737
Fax: +31 (0)74 245 21 20
Email: rvg@opra.nl
www.opraturbines.com