

# Application**brief**

*Eclipse Product:* FlueFire Burners  
*Submitted by:* Leen Riedijk  
*Application* Supplementary Firing  
*Site Location:* British American Tobacco - Bayreuth Germany

## System Description

The burner supplies heat to the exhaust gas flow of a gas turbine upstream of a Waste Heat Recovery Boiler. When the turbine operates as peak load shaver, steam is added to the turbine as an additional power source (Cheng-Cycle), to increase the electrical output.

In this cycle the oxygen level decreased from 13.7 down to 10 vol.% wet. To maintain flame stability and to accomplish complete combustion of the burner fuel gas, the burner was provided with a primary fresh air supply. This airflow is only 50% of the stoichiometric requirement and remains constant over the burner turn down. During normal operation the air flow was reduced to 20%.

### Technical Data

#### **Turbine**

Make Kawasaki  
 Type M1A13CC

#### **Turbine exhaust gas**

Mass flow 18 lb/s  
 Temperature 900° F

#### **Burner**

Type FlueFire-Low NOx  
 Duty 14 MMBtu/Hr  
 Primary air 70,000 scfh  
 Fuel Natural gas



2 of 3 burner rows visible through access port.



Primary air supply and gas manifold with pilot/cooling air blower and valve trains.