Biomass-fired Power Plant (20 MW) Bischofferode – Germany

METZ Group

Description of order:

General contractor for the entire plant (EPC contract)

Client:
Stadtwerke Leipzig GmbH

Contract value:
46.5 million Euro

Contract period:
2004 – 2005

Technical Data:

Fuel
- Type of fuel: Biomass 100% fresh wood (forestal wood)
- Heating value range: 6.9 – 13.2 MJ/kg
- Design heating value: 10.1 MJ/kg
- Particle size: 100 x 50 x 50 mm
- Fuel flow rate: 17 t/h; 160,000 t/a

Boiler
- Boiler heat capacity: 52.6 MW_{th} at 100% load (max. 58.7 MW_{th})
- Superheated steam: 130 bar(a), 535 °C
- Reheated steam: 27 bar(a), 535 °C
- Load steam capacity: 57.8 t/h at 100% (max. 67.0 t/h)
- Feedwater temperature: 164 °C
- Circulating fluidised bed firing, no support firing during normal operation
- Fluidised bed boiler with combustion chamber, cyclone and 2 vertical passes, with natural circulation and single steam reheating, with preheating of condensate and feedwater

Fuel gas cleaning plant
- Design according to the 13th BImSchV
- The plant consists of cyclone separator, fabric bag filter and induced draft fan.
- Flue gas flow rate: 106,000 Nm^3/h

Steam turbine
- Two casing condensing turbine with single reheating
- Electrical power: 20.0 MW_{el}
- 130 bar(a), 532 °C before high pressure turbine
- 27 bar(a), 532 °C befor low pressure turbine
- Rotation speed: 8,955 min^{-1}

Cooling plant
- Air cooled condenser with 3 ventilators
- Cooling medium: Air
- Working pressure: 70 kPa(a) at 15 °C ambient temperature

Chemical water treatment plant
- Drinking water quality
- Two line demineralisation plant
- Capacity: 2.5 t/h

Electrical and I&C part
- Generator voltage 10 kV, auxiliary power voltage 6.0 kV, 0.7 kV and 0.4 kV switch gear
- Industrial control system PCS7

Civil part
- Concrete and steel construction for all main and auxiliary buildings

Plant availability:
- 8,000 h/a