Biomass-fired Power Plant (14 MW) Wicker – Germany

METZ Group

Description of order:

General contractor for the entire plant (EPC contract)

Client:
Biomasse Rhein-Main GmbH

Contract value:
24.6 million Euro

Contract period:
2002 – 2005

Technical Data:

Fuel
- Type of fuel: Biomass (waste wood)
- Heating value range: 9 – 18 MJ/kg
- Design value: 15.4 MJ/k
- Particle size: 150 x 15 x 15 mm
- Fuel flow rate: 11.25 t/h; 90,000 t/a

Boiler
- Boiler heat capacity: 48 MW_{th}
- Steam parameters: 67 bar(a), 450 °C
- Steam flow: 55 t/h
- Type of firing system: Suspension firing with fuel charging by compressed air and air cooled travelling grate
- Type of boiler: Four pass vertical boiler with natural circulation

Fuel gas cleaning plant
- Design according to the 17th BImSchV
- The plant consists of cyclone separator, reactor with lime hydrate dosing (hearth furnace coke and lime hydrate dosing in case of high concentration of pollution), fabric bag filter, induced draft fan.
- NO_X reduction with spraying of urea solution into the furnace chamber (SNCR)
- Flue gas flow rate: 92,400 Nm^3/h

Steam turbine
- Condensation steam turbine
- Electrical power: 14.0 MW_{el}
- Live steam parameters: 67 bar(a), 450 °C
- Exhaust steam pressure: 0,09 bar(a)
- Rotation speed: 6,800 rpm

Cooling plant
- Air cooled condenser with ventilator
- 4 ventilators
- Cooling medium: Air
- Design temperature: 15 °C

Electrical part
- 20 kV switch gear: 630 A
- Captive transformer: 2.5 / 1.6 / 0.9 MVA; 20.0 / 0.7 / 0.4 kV
- Grid transformer: 18 MVA – 20 / 10.5 kV

I&C part
- Control system PCS7

Civil Part
- Steel construction with C-cassettes
- Foundation: approx. 100 piles, ø 88 cm, max. length = 35 m
- Girder grid on concrete slab 60 m x 70 m

Plant availability:
- 8,000 h/a