

# Nordjyllandsværket unit 3



## Ultra Super Critical (USC) Boiler



Nordjylland power plant near Aalborg (Denmark) is owned by Vattenfall. The plant represents the latest technological development with respect to coal fired units and consists of an Ultra Super Critical (USC) boiler with full flue gas cleaning, i.e. NO<sub>x</sub>, dust and SO<sub>2</sub> removal. In addition to producing electricity to the public grid, the plant also supplies heat to local district heating companies. The plant was put into commercial operation in 1998.

### Low-NO<sub>x</sub> Firing System

The USC boiler of Unit 3 was designed with special attention to minimizing the emission of nitrogen oxides (NO<sub>x</sub>). The tangentially fired boiler with four levels of burners includes Over Burner

Air (OBA) nozzles above each burner and Over Fire Air (OFA) nozzles above the upper level of burners. This concept of air staging brings the NO<sub>x</sub> level below 475 mg/Nm<sup>3</sup>.

### Boiler

The boiler is a supercritical, once through tower boiler of the Benson type with double reheat. The furnace walls are designed as membrane walls with helical tubing. By using special materials, it has been possible to design the plant to very advanced steam data.

A flue gas recirculation system (FGR), including reheat of the flue gas in a special sector in the quad sector air heater, is installed as part of the control of the IP outlet temperature.

### BWE Scope of Supply

In addition to the USC boiler itself, BWE also supplied the following major auxiliary equipment of own design:

- 16 BWE type 4A Low-NO<sub>x</sub> gas/oil burners.
- A rotating regenerative BWE air preheater type VIQR 34.5/2800 including a sector for flue gas reheating.
- An SCR plant for secondary NO<sub>x</sub> reduction.

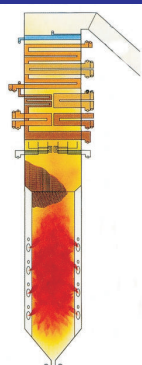
### World leader in steam power technology

Burmeister & Wain Energy A/S has specialized in the development and design of advanced steam boiler plants for utility and biomass fired power stations.

Furthermore, BWE designs a wide range of auxiliary power station equipment such as the BWE Low-NO<sub>x</sub> coal/oil/N-gas/biomass burners, Air Preheaters and Gas-Gas Heaters.

BWE is part of the Italian STF S.p.A. Group.

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### Boiler Specification:

Fuel consumption:	Coal .....	100 t/h
Steam Capacity:	HP-part .....	972 t/h
	IP1-part .....	886 t/h
	IP2-part .....	766 t/h
Steam Pressure:	HP-part .....	290 bar
	IP1-part .....	80 bar
	IP2-part .....	23 bar
Steam Temperature:	HP-part .....	582 °C
	IP1-part .....	580 °C
	IP2-part .....	580 °C
Efficiency .....		94.8 %