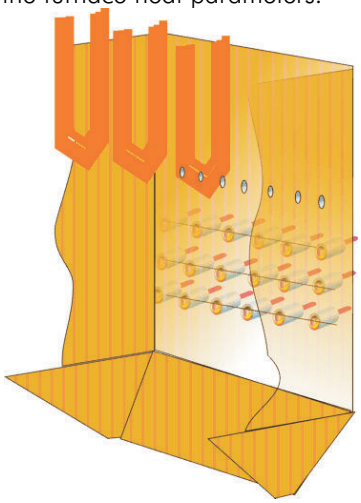
The WR Combustion Systems

The advanced WR combustion technologies
Installation at La Spezia Power Plant in Italy

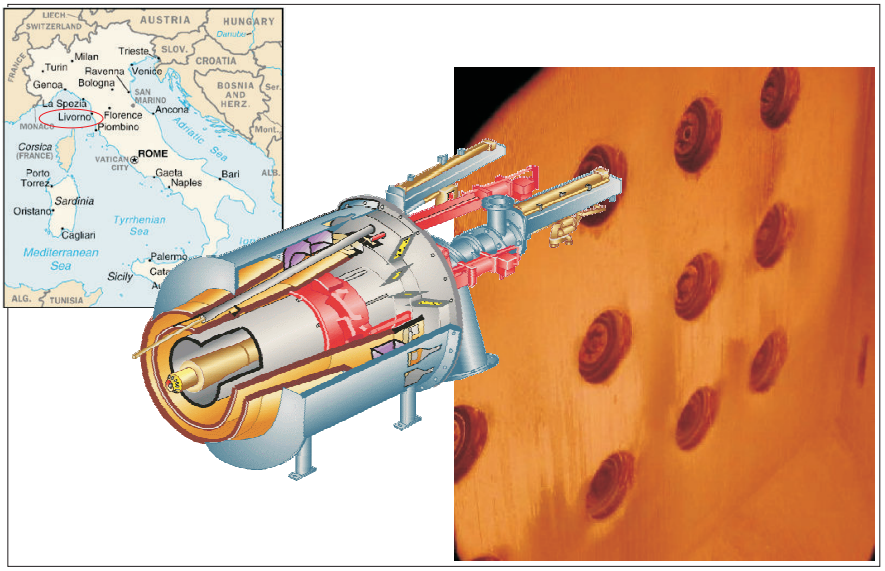
In 2000 BWSC (then:BWE) contracted an order to retrofit a 600 MWel unit at La Spezia power plant in Italy owned by Enel.

The main objective of the pro-ject was to implement primary Low NOx measures at the plant to make it compliant with cur-rent and future EU emission lim-its. Additionally the plant was optimised with respect to effi-ciency, aiming at improving the boiler parameter performance.

The plant was equipped with the advanced Wide Range (WR) combustion system from BWSC which enables firing of a wide range of coal fuels as well as natural gas. The system con-sists of WR burners, an OFA system, dynamic classifiers and an optimised fuel distribution system. The burner number and the horizontal and vertical arrangement pitch were changed in order to optimise the furnace heat parameters.



The installation at La Spezia con-sists of 36 burners arranged in boxer firing, with OFA nozzles above the upper burners on each side of the furnace.



The WR windbox burner units are provided with individual air flow controls and individual flow measurements for airflow balancing. It can be delivered as a coal/oil/orimulsion/gas or biomass burner.

Coal fuels range from very low reactive South African coals to subbituminous normal coals.

The advantages achieved by the retrofit were:

- NOx below 550 mg/Nm^3
- UBC levels of approx. 3%
- Improved fuel flexibility
- Improved unit efficiency

The boiler heat balances were modelled and optimised whereby the attemporator oper-ation was minimised, and hence the efficiency improved. Alterations on the reheater sur-faces being the major part of this modification were intro-duced during the combustion retrofit outage.

The WR burners supplied are dual fired; either as coal/natural gas or coal/oil.

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