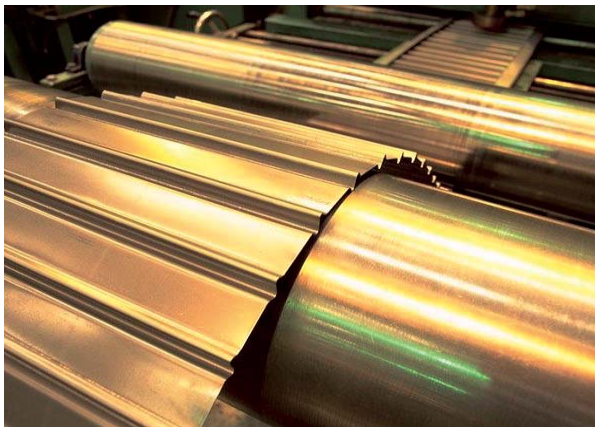


Fans and Heat Exchangers

MODIFICATIONS TO THE AIR PREHEATERS AT MATRA POWER STATION IN HUNGARY INCREASE THE BOILER EFFICIENCY BY OVER 1.9%



Elements in production in the Howden Renfrew factory.

Deterioration of the air preheater sealing system was limiting unit electrical output in certain circumstances. Modifications reduced leakage from 14% to 7% and after 2 years leakage has remained stable. Changes to the elements, carried out at the same time, increased the boiler efficiency by 0.3%. Maintenance requirements for the air preheaters have been significantly reduced.

Kingsnorth is a 4x500MW dual fired station in South-east England. At certain times, for example when operating with high turbine backpressure, the capacity of the induced draught fan was limiting station MW output. The root cause was determined to be high air leakage in the air preheater, caused by gradual deterioration of the sealing system. Howden proposed that the sealing system should be modified to the Howden VN design.

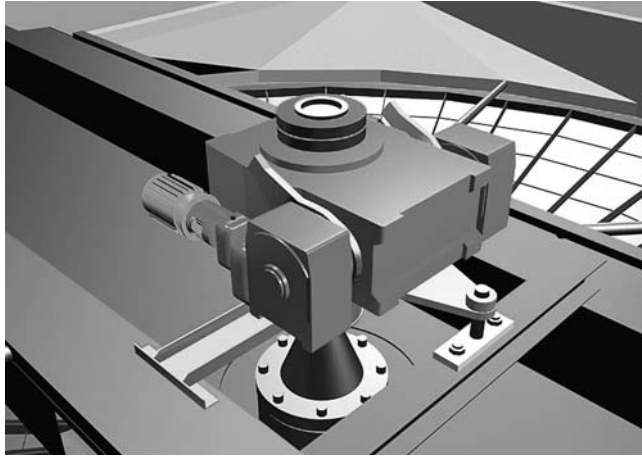
At the same time it was decided to take the opportunity to increase the depth and to change the profile of the elements in the rotor.

In the summer outage of 1990 the air preheaters on Units 1&2 were converted. A key feature of this was the elimination of the adjustable radial and axial sector plates, which were replaced by a fixed sector plate design. In addition, doubling the number of radial seals and improving their design completed the change to the advanced VN system. By carefully optimising the container supports it was possible to release space to permit an increase in the depth of elements from 1930mm to 2130mm.

Rotor segment being manufactured in Belfast.



Fans and Heat Exchangers Experience



Centre drive removes components from the gas stream and improves sealing.

The original 2.5DU elements were replaced by a configuration of 9.5/3CU and 11/3CHB, which was anticipated to reduce the gas exit temperature by 6°C.

When performance tests were carried out by the station after the boiler was recommissioned it was discovered that the air leakage had reduced from 14% to 7% and the gas exit temperature had dropped by the anticipated 6°C. The overall effect was an increase in boiler efficiency of 0.3%. When performance verification was carried out three years later, the sealing system was operating satisfactorily and there had only been a marginal increase in leakage.

A further benefit was obtained in the reduction in maintenance required due to the elimination of adjustable sector plates. It is a common occurrence with such systems that a malfunction of the sector plate actuating system can result in contact between the rotor seals and the sector plate, which leads to seal wear. By fixing the sector plates this cannot occur and seal life is significantly increased.

In addition, the elimination of actuators, sensors and secondary seals further reduces the maintenance requirements.

The satisfactory operation of the refurbished air preheater has led to the station carrying out this modification to the other three units on the site.

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