

Press Information

METALOCK GIVES ESB TURBINE NEW LEASE OF LIFE

By replacing internal corroded areas of a Parsons steam turbine with improved materials the unit has been given a new lease of life at modest cost compared with the possible alternatives for the ESB, the leading electricity company in the Republic of Ireland. The Coventry firm Metallock Engineering UK was appointed by Turbine Blading, who had the main contract for design and project management, to carry out the in-situ machining work on the turbine.

During a scheduled overhaul that involved opening up the main load turbine at Shannonbridge, Co Offaly, an unacceptable degree of pitting and erosion was evident on the casing and cover between blade rows 32 to 35, the condensation area of the unit. In addition, 4 rows of fixed blading were also affected. ESB management decided to repair the lower casing and cover by reblading the affected area, but at the same time upgrade the casing surfaces to better resist corrosion and to maintain original blade radial clearances.

Metallock and Turbine Blading Ltd evaluated the possibilities of repair and Metallock was subsequently appointed to do the work. This involved removing the affected fixed blades, machining the areas between them to accept semi-circular inserts, and recutting one side of the serrations in line to accept new caulking pieces.

Work to the lower half casing was carried out in-situ in its operating position whilst that on the cover was performed in an adjacent loading bay. To remove the four rows of blades, Metallock engineers devised a tooling system to cut away the centre of the existing caulking pieces without cutting into the serrations of either the blading or the casing. Once a row was completed, the blades in packets of six, were easily removed.

Machining between the blade rows to remove corrosion and prepare for inserts meant that one side of the caulking piece casing serrations would be cut away. Once each semi-circular stainless steel insert was put in place in its machined groove and secured with two rows of M6 stainless steel cap head screws, the serrations were recut one side in line with those facing to a tolerance of $\pm 0.025\text{mm}$.

Following installation of replacement blades, the turbine was reassembled and put on test which it passed without problem.



Machining to remove the four rows of blades on the turbine casing cover was done in an adjacent bay by using a cooling system to cut away the centre of the existing caulking pieces without cutting into the serrations.

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