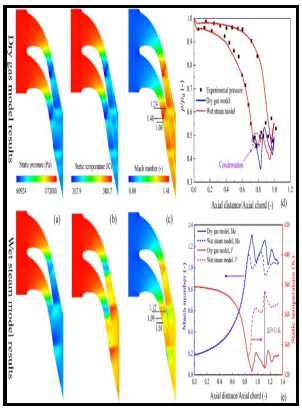
On the performance of rotor blades in wet steam

University of Birmingham - EROSION BEHAVIOUR OF STEAM TURBINE BLADES OF GLASS



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EROSION BEHAVIOUR OF STEAM TURBINE BLADES OF GLASS

As deposits accumulate on turbine blades, stage pressures increase.

On the Performance of a Cascade of Turbine Rotor Tip Section Blading in Nucleating Steam: Part 1: Surface Pressure Distributions

The reheat cycle has more benefit in the LP turbine due to the decrease in the wetness that causes reduction of last-stage blade erosion which occurs by high-speed water droplets in the saturated steam hitting on the blade. The intercooler exit temperature is thereby increased, with two main consequences for engine operation: 1. Not shown is the further resonance of engine order 4 excitation with the second axial mode at 175 Hz and for a rotational speed of 2640 rpm.

Water Handbook

Although not as common, copper-nickel alloys can also suffer from dealloying. The use of titanium alloys in many engineering applications is hindered because their tribological behavior is characterized by a high coefficient of friction and poor wear resistance. Using cyclic symmetry the modal analysis allows the blade row natural frequencies as function of the nodal diameters to be calculated.

Water Handbook

These higher crossover pressures require an additional inner casing in the LP cylinder to avoid excessive thermal gradients. To minimize this problem, the quantity of silica in the steam must be controlled.

Case Study

In addition, treatment of the blade itself may be carried out if evaluation deems it to be necessary. That means LSBs are used in a severe condition for blade vibration. After subtraction of heat loss and thermal inertia effects — when heating up or cooling down — the thermal energy, that the solar field can provide potential is calculated.

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