

STEAM TURBINE SERVICE SOLUTIONS

An overview on steam path and blading parts supply and capabilities

Background

The steam path of a turbine is an area of high mechanical and thermal stress, frequently exposed to corrosion and erosion and, under worse condition, it is exposed to foreign object damage. Any deterioration of the blading due to the above mentioned conditions (Fig. 1) will have a direct effect on reliability and performance. Furthermore, debris ejected by a damaged stage will certainly affect subsequent stages, often with severe consequences. The loss of generating time due to component shortages can have substantial implications on unit profitability. Specific attention is required by towards the supply chain of the steam path elements. Blades, and especially Last Stage Blades (LSBs) (Fig. 2), can experience long lead times that can affect significantly the unit profitability

Solution

GE Vernova can provide a large variety of blade types of both impulse and reaction technology. As an original equipment manufacturer, Our team can draw upon experience to provide substitutes of the original components, like stationary or rotating blades as well as many other required steam turbine parts. Additionally, to the replacement of parts, we can enhance the configuration and material upon requ est. For fleets from other manufacturers, GE Vernova can re-engineer the blade or parts to its exact specification and also improve upon it by modelling the expected operating conditions (Fig. 3).

We also have the capability to rapidly manufacture and deliver the parts. Investing in strategic spare parts, plant operator can mitigate long outage periods. This is especially applicable to blades such as the first stages of the HP and IP turbines and the LP LSBs.

To cover these, it is advisable to customers and operators of turbines to keep full row sets on stock. Other areas of the steam path may be covered by partial row quantities, only providing for localized repair.

Such "modular spare policy" can cover multiple units of the same technology. We've already performed contracts for clients with fleets manufactured by GE Vernova as well as by other manufacturers.

Benefits

The turbine operation can benefit from the ready availability of parts, in terms of:

- Reduced O&M costs Maintenance costs are reduced by having spare parts available in the shortest time
- Reliability and availability improvement
- The ability to readily replace parts increases the reliability and availability of the turbine
- Outage time reduction Availability of spare blades and parts may reduce significantly the length of unplanned outages
- Lifetime extension





Fig 2: Last Stage Blade (LSB) for LP cylinder

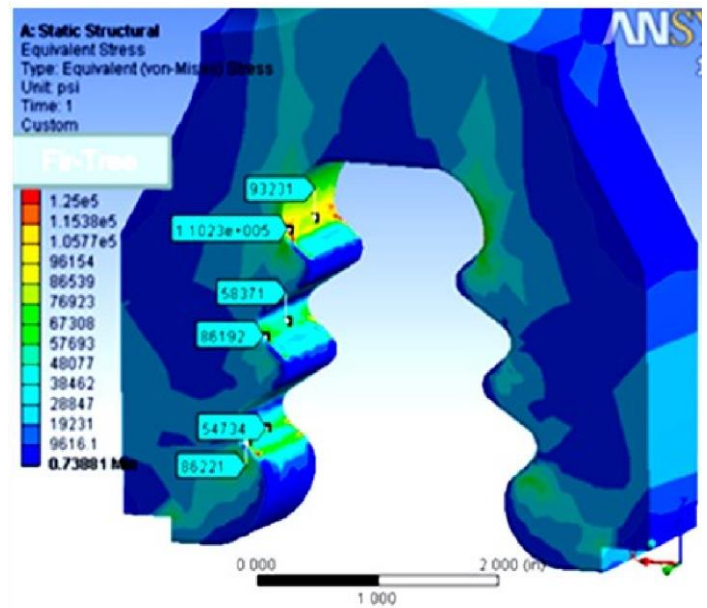


Fig 3: Typical blade root stress modeling

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