



Case Study
60 MW rotor repair

Status report

- Turbine over 25 years old
- Rotor damaged and corroded during operations and reached a stage of risk, hence a decision taken for re-blading



Further inputs

- The rotor was designated at risk and hence cleared for repair/re-blading .
- Received customer first report with a certain number of rows
- Reviewed the data and made an offer for correction.
- Customer visited our works to revalidate our capability



Blades damaged and corroded



Fins badly damaged

Challenges

- To establish quickly RLA of rotor
- The first re-blade in the life of the rotor hence estimated that the blades will be difficult to remove, time factored in
- Ship in 5 months from order to enable customer save huge Insurance costs.
- To organize the requisite raw materials based on our engineering strength

Confidence building

- Visit to Bangalore by customer ensured that he gained in confidence
- Our blade shop which has 4 and 5 axis machines including from LICHTIE manufacturing over 200,000 blades
- *Established QAP provided with traceability and used the current best practices in rotor manufacture.*
- Provided adequate confidence in the GANT chart to ensure on time completion with option to inspect process anytime

Solution

- Detailed engineering study carried out to establish the current best practises
- To carry out a complete reverse engineering to enable provide customer any parts of the rotor at short notice

Steps

- De-blading
- Alumina cleaning
- Surface inspection
- Reverse engineering
- Blading
- Blade locking
- High speed balancing



Damages to the rotor blades due to corrosion and age

Project completion process



De-blading in progress



Profile scanning of blade



Blade root matching



Final blades in place



Rotor riveting complete



HSB on Schenck pedestal

Customer speak

“I believe that this machine in particular is quite different from the generation of steam turbines in the way its steam path components are constructed, be it a robust and complex blade assembly design, the materials selected for the construction amongst other factors, **which is why I appreciate the Triveni team’s diligence in understanding this complex machine and come out with a repair solution.**”

The selection of materials for the manufacturing of new blades, shrouds, balancing weights, etc are at par with the best in the industry and I am sure this will add value when we take this turbine on line in the coming few months.

As I have mentioned earlier about the complexity of this project, I believe Triveni has also derived excellent learning from it which will help you and come out with quick repair solutions when our other HP and LP rotors come up for refurbishment in the near future.”

Current Status

- Operational for the past year.

A red oval containing the text "WE CARE" in a bold, black, sans-serif font.

WE CARE