Casing Repair

Including repairs to bearings and pedestals

Reliability, Availability
Ensuring smooth and efficient operation

Turbine casings operate for long periods at high temperatures and pressures. This can lead to damage and distortion.

As an original equipment manufacturer with many years experience, GE offers proven repair solutions for any steam turbine. Many of these repairs can be done on site, and some with the parts in-situ.

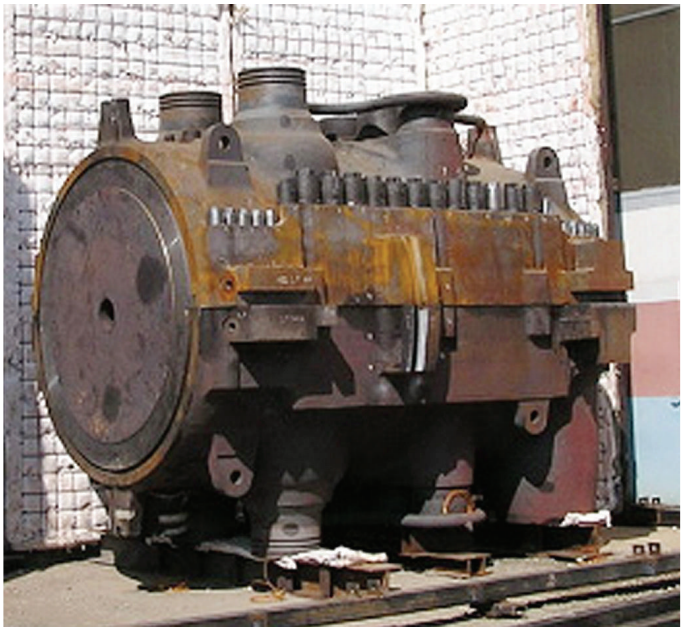
Background

For High Pressure (HP) and Intermediate Pressure (IP) cylinders, long periods at high temperature can lead to creep deformation. Thermal cycling adds further stresses and is increasingly prevalent with today's demand for flexibility by the grid.

Casing deformation can lead to rubbing at the labyrinth seals and leakage at the bolted joints, resulting in degraded efficiency and a concern for safety. Partial repair solutions are often ineffective and can actually be detrimental to component lifetime.

For bearings, any damage to the contact faces, or problems with oil supply, can quickly result in rubs, heating and vibration. Consequent rough running of the turbine would only serve to worsen these effects.

As well as supporting the turbine, the pedestals must resist its net thrust and allow for thermal expansion. Any wear or damage must be addressed, as well as any sticking of the sliding supports.



HP casing after heat treatment

Solution

With a whealth of experience working on wide variety of turbines, GE is able to specify and execute effective casing repairs at all levels.

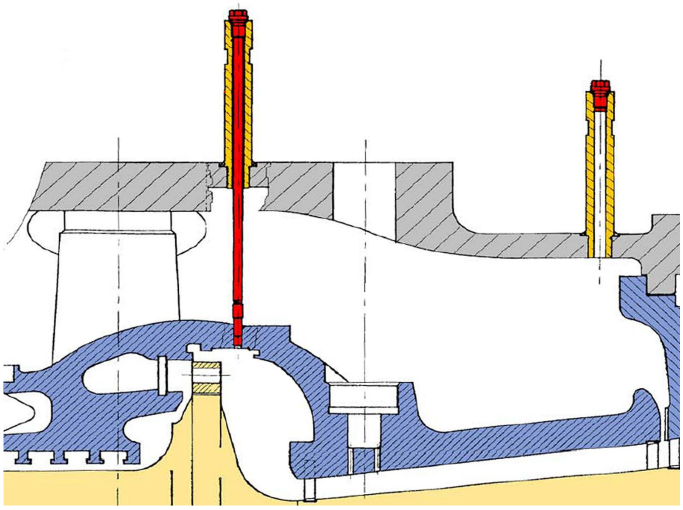
Minor defects to joint flange and sealing faces may be weld-repaired, machined and polished to achieve a surface finish to mitigate leakage. For more serious cases of casing cracking, GE provides full weld repairs and stress-relief treatments.

For casings experiencing material creep, GE offers a proven heat treatment process for re-rounding the casing and relieving its internal stresses. Unlike machining, this process restores the casing to its original shape with no consequences for reassembly or leakage at the sealing faces. In some situations heat treatment process could be performed for lifetime extension of repaired casings.

Bearing components can be replaced like-for-like and alignment reinstated. Checks can be made to the bearing housing and the oil flow.

Pedestals and other supporting structure can be assessed, repaired and strengthened. To allow freedom of movement under thermal expansion, GE can upgrade pedestal greasing systems, or provide sliding plates, if required.

To allow internal inspection without the need for disassembly, borescope ports on existing HP, IP or LP casings can be exploited. Many of our reconditioning and repair tasks can be done on site relying on GE's global network and mobile workshops. If needed, GE provides and implements additional support elements.

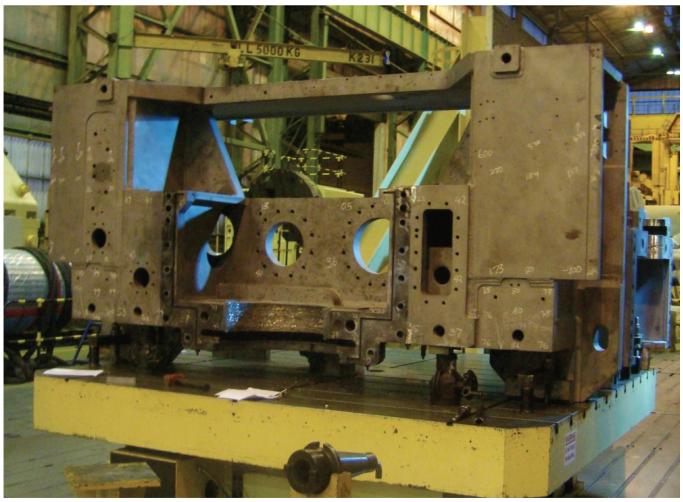


Borescope ports

Benefits

The main benefits of these repair solutions come with the improvements in reliability and availability.

Repair is usually more cost-effective than replacement. It not only reduces the cost of a new component, but also removes potential delays in the core path of an outage. On-site repair adds to this advantage, removing further delays to the unit's return to operation.



Pedestal in refurbishment

Applicability

GE's repair solutions can be applied to all types of steam turbine, whether of GE or non-GE manufacture. GE will advise the customer on the best course of action according to the specific machine and needs.

References

GE has successfully repaired several steam turbine casings from a wide range of manufacturers around the world.

To learn more about this offering, contact your GE sales representative or visit **powergen.gepower.com**.

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