



STEAM TURBINE PLANETARY GEARBOX (IPP – SOUTH INDIA)

1 TECHNICAL DATA:

Power	8 MW
Type	Speed Reducer
Input/Output Speed	8000 / 1500 RPM
Driving Equipment	Steam Turbine
Driven Equipment	Alternator
Make	German
Year of Commissioning	2009

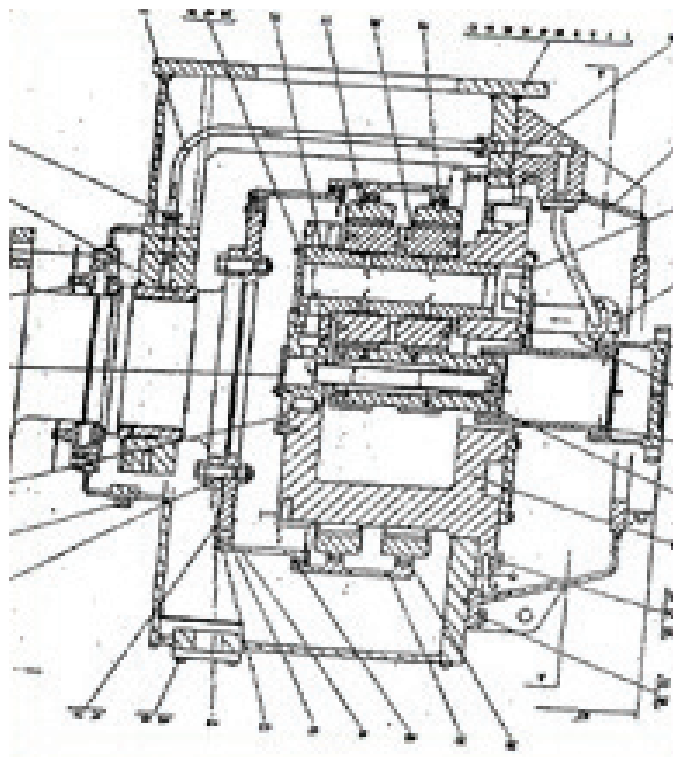
2 PREAMBLE / PROBLEM REPORTED

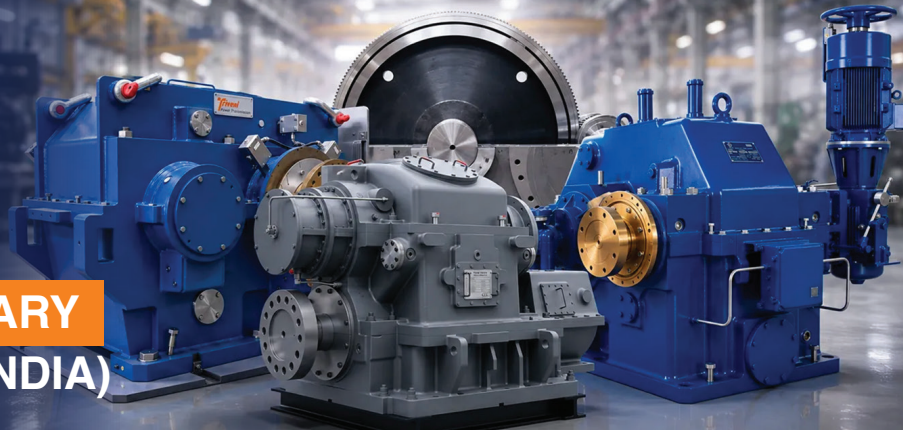
Gear failure was reported in the steam turbine generator (STG) planetary gearbox at an IPP unit in South India. The failure resulted in repeated shutdowns and reduced reliability of the generating unit.

3 DIAGNOSTICS STEPS UNDERTAKEN / OBSERVATIONS MADE

A detailed inspection and condition assessment revealed the following:

- Pitting observed on sun and planet gears, indicating progressive surface damage
- All bearings were found damaged, requiring replacement
- Maintenance history confirmed recurring gear failures despite prior corrective actions





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4 ANALYSIS:

- The root cause was identified as pin bearing failure due to oil flow blockage.
- Restricted lubrication led to inadequate oil supply, causing localized wear and pitting of gear teeth.
- Subsequent bearing degradation further aggravated gear damage, resulting in repeated failures.

5 SOLUTION OFFERED / ACTION TAKEN:

- Designed and manufactured new sun pinion and planet gears compatible with the existing ring gear, in line with Triveni design standards. The oil supply line size was increased to pin bearing to ensure required oil flow through bearing.
- Reassembled the gearbox using new bearings supplied by the customer
- Ensured proper blue contact across both helices of sun and planet gears to achieve uniform load distribution



6 CONCLUSION:

The gearbox was successfully refurbished and recommissioned, restoring reliable operation..

The implemented solution ensured:

- Elimination of recurring gear and bearing failures
- Restoration of proper lubrication and load-sharing conditions
- Stable gearbox operation with parameters within permissible limits

7 OUTCOME:

The gearbox has been running reliably since recommissioning, with improved performance and operational stability. The complete refurbishment was executed within 18 weeks, minimizing downtime.