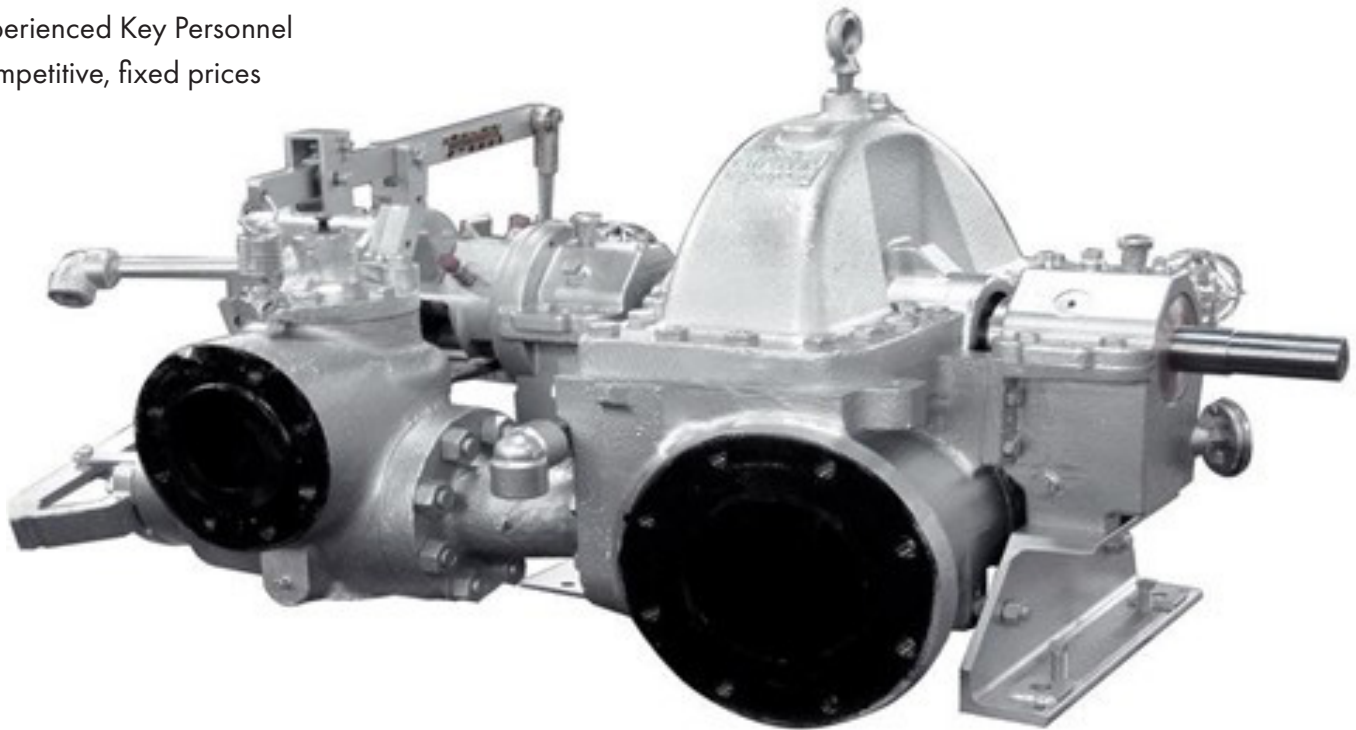


SINGLE STAGE TURBINE MAINTENANCE SERVICES

Power Services Group ("PSG") is pleased to provide you with a comprehensive set of maintenance solutions, including parts, repairs and upgrades, for your single stage steam turbines. The coverage presented provides you with a partner with proven capabilities, creative solutions, and experience on similar work and coverage to meet and exceed your requirements.

Highlights of our proposed solution:

- Clear understanding of Single Stage Turbine maintenance best practices
- Full "in house" reverse engineering and CNC manufacturing capabilities allow PSG to offer replacement and/or upgraded components that meet or exceed the quality offered by the OEM
- Ability to implement upgrades to improve reliability/availability (i.e. controls modernization, seal design improvements, etc)
- Communication – a dedicated Project Manager will provide you with regular updates during the repair process.
- Comprehensive Quality Assurance Plan to ensure proper documentation and reporting – our reports receive high marks from our clients
- Experienced Key Personnel
- Competitive, fixed prices



TECHNICAL SCOPE OF WORK

PSG proposes to complete the following scope of work:

1. Single Stage Turbine (SST) Overhaul

1.1. Receive, tag and photograph SST. Note any unusual damage or unusual conditions.

1.2. Disassembly

1.2.1. Document governor valve linkage settings and disconnect linkage.

1.2.2. Remove governor valve assembly from valve body and disassemble.

1.2.3. Remove hand valves, if applicable.

1.2.4. Remove trip valve from valve body and disassemble

1.2.5. Remove upper half turbine casing and bearing caps.

1.2.6. Measure and record "as found" clearances. Photograph "as found" condition.

1.2.7. Remove rotor assembly with oil rings and carbon ring seals

1.3. Cleaning and Inspection

1.3.1. Blast clean turbine casing, rotor and valve components

1.3.2. Rotor Inspection

1.3.2.1. Dimensionally inspect bearing journals and gland seal areas

1.3.2.2. Perform runout inspection of rotor wheel(s) and shaft.

1.3.2.3. Perform general visual inspection of rotor assembly.

1.3.2.4. Perform NDE of blading and shroud.

1.3.2.5. Low speed balance rotor assembly after all approved repairs have been completed.

1.3.3. Inspect casing sealing flanges for flatness and surface finish.

1.3.4. Clean and inspect casing assembly fasteners. Includes removal of broken studs/bolts, thread chasing and retapping of standard and pipe threading throughout casing assembly.

1.3.5. Perform visual inspection and NDE of nozzle block and reversing ring or steam jets/reversing chambers (Terry Z design). Note: nozzle block will not be removed unless required for repair.

1.3.6. Perform visual and dimensional inspection of journal bearings

1.3.7. Perform visual inspection of carbon rings, springs and spacers.

1.3.8. Perform visual and dimensional inspection of governor and trip valve components.

1.3.9. Perform visual and dimensional inspection of hand valve components, if applicable.

1.3.10. Prepare and submit Discover Report with recommendations for repair.

TECHNICAL SCOPE OF WORK - CONTINUED

1.4.Assembly

- 1.4.1.Install lower half bearings
- 1.4.2.Install rotor assembly with oil rings and carbon ring seals.
- 1.4.3.Set overspeed trip paddle clearance.
- 1.4.4.Measure and record "as left" clearances. Photograph "as left" condition.
- 1.4.5.Install upper half turbine casing and bearing case caps with joint sealing compound.
- 1.4.6.Assemble governor and trip valves.
- 1.4.7.Connect governor valve linkage and restore to "as found" settings.
- 1.4.8.Paint turbine and prepare for shipment.
- 1.4.9.Prepare and submit Final Report.



SINGLE STAGE TURBINE OVERHAUL FACILITIES



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Scan the QR Codes above with your mobile device camera to explore the capabilities and expertise of each of our facilities.