Turbine Services

Engineering services for the application, analysis, operation, maintenance, and testing of steam and gas turbines

Since its inception in 1964, MPR has actively participated in the evaluation and analysis of steam and gas turbines. As consultants, we have worked for utilities and Original Equipment Manufacturers (OEMs) on diverse technical problems associated with different OEM designs and in all varieties of power generation applications.

MPR’s experience and technical expertise in turbomachinery is met by a range of disciplines and capabilities:

**Specification and Design Review**
- Power uprate feasibility studies
- Preparation of technical specifications for turbine-generator modifications, rotor and blade path replacements
- Commercial and technical evaluation of vendor proposals, including conforming bid specification to purchase specification
- Review of First-of-a-Kind designs against common failure modes

**Rotordynamics**
- Lateral and torsional rotordynamic modeling and analysis using proprietary and commercial software packages
- Troubleshooting, root cause analysis and recommendations to address existing rotordynamic problems
- Torsional vibration testing and data analysis

**Bearing Analysis**
- Bearing selection, design review, evaluation of load carrying capability, thermal performance and stability
- Troubleshooting and root cause analysis of bearing damage, overheating and high vibrations

**Stress Analysis**
- Component evaluation including blades, disks, shafts, coupling, keys, casings and interconnecting piping
Thermal Performance
- Performance test setup and results analysis (ASME PTC 6) for both commercial guarantees and plant trending
- Assess adverse trends and recommend corrective actions to regain lost efficiency and output

OE for Major Overhauls and Turbine Installations
- Providing multi-disciplinary technical design reviews, project management, project cost and schedule control, interface management, manufacturing and shop test oversight, installation and testing oversight on behalf of the Utility or Supplier

Materials Expertise
- Material evaluation and selection
- Stress corrosion cracking susceptibility reviews
- Fatigue and creep inspections and analysis
- Crack propagation analysis and acceptability for continued operation
- Forensic investigation of failed components

Foundation Evaluation
- Analysis of turbine generator foundation designs for structural strength and natural frequencies
- Condition assessment for continued operation and repair option evaluation

Electrical and I&C
- Evaluation of generator capability for uprated performance
- Rotor and stator troubleshooting and root cause analysis
- Control system design and design review