



Renovation
Modernisation
Engineering Improvements
Repairs
Spares
& Services
- Division



ARANI POWER SYSTEMS LTD.

Renovation, Modernisation, Engineering Improvements, Repairs, Spares & Services Division

A well planned Refurbishment and Modernization activity enhances efficiency, increases capacity and improves reliability of a power plant. Through Refurbishment and Modernization, a plant can boost its efficiency, reliability and extension of service life.

Arani Power Systems is an original equipment manufacturer of Steam Turbines and supplies Systems, Components and Services in the field of steam based, medium capacity power generation equipments. The systems cover widely TG Island that includes Steam Turbines, Alternators, Gearboxes and Heat Exchanger, with the state of art controls and all electricals that cover up to switchyards.

The extensive knowledge and experience of our team of visionary leaders and strategic thinkers drive us to many new and exciting developments. Our distinctive blend of academic and technical knowledge allows us to provide a wide range of solutions and services to power industry. Headquartered in Hyderabad, Arani Power provides cutting edge technology turbines and power solutions. Our sophisticated, high performance solutions together with our unparalleled expertise, drives our clients to become value-based, performance-focused organizations. We have a good R&D team (who have patents in turbo machinery area) working on the present range of products, as well as, on the new products and striving to bring out as many new features as possible to enhance the product efficiency and operational performance.

Apart from delivering Steam Turbine Generator (STG) from 2.5 to 60MW as OEM of Steam Turbines, Arani also undertakes the following value added upgradations for all the makes of STGs.

- Renovation and Modernisation
- Power enhancement / up-rating
- Efficiency improvements in STGs
- Performance enhancements
- Conversion of condensing turbines to back pressure turbines
- Relocation of STG packages & life enhancement
- Governing system mechanical/hydraulic to electrical
- Technical Advisory services
- Steam path upgrades

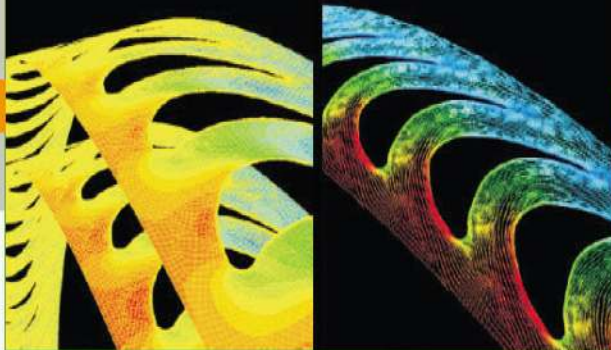
On site and shop repair services

- (i) Diaphragm Weld repairs
- (ii) Rotor blade repairs.
- STG Island and BOP Engineering services
- Spares / Renovation and reverse engineering of STs and GTs Spares
- Generator Rotor repair & rewinds
- Generator Stator repair & rewinds



- Retrofit & installation of vibration monitoring systems
- Pumps & Compressors Spares and services
- Overhaul & troubleshooting services

Engineering Improvements



- a) Renovation
 - Performance measurement & evaluation of efficiencies of the cycle as a whole or Turbine alone
 - Improvements in efficiency at component level or at complete cycle level that includes steam flow path (Blading), heat exchangers and pumps by providing complete engineering and design solutions - Better flow path can be developed by CFD analysis
- b) Life time extension:
 - RLA studies of rotors, casings and other critical components
 - Metallurgical and design improvements
 - Replacement of critical components

Modernization



- Change of governing systems. Ex: mechanical / hydraulic to electronic systems
- Change of electricals
- Change of condensing system
- Up-rating power capacity
- Replacements of high capacity turbines on the existing foundation
- Installation of Turbovisory Equipments
- Installation of Monitoring Solutions

Repair & Replacement

a) Blades replacement:

- Analysis of Chronic failures of blades by experts through state of the art well established FEA analysis and the design improvement of blades either in shape or size to mitigate stress related problems. Metallurgical improvements also implemented
- Eroded, corroded and pitted blades will be replaced by reverse engineering by bringing in appropriate improvements in metallurgy based on merits of the case



Rotor grooves and Blade roots are evaluated for structural integrity and improved by FEA analysis

b) Repair and replacement of bladed rotors:

- Rotor bends related repairs and balancing solutions
- Chronic problems with respect to rotor bearing system dynamics are analyzed and appropriate enhancements in the rotors and bearings offered
- Repair of rotor journals by study of complete rotor-bearing interactions
- Supply of New rotors with improved or identical blading with better metallurgy.

c) Repair & supply of bearings

- d) Analysing of Solving vibration problem and chronic problems by providing expert services for diagnostics and analysis
- e) Solutions for hunting problems
- f) Replacement of existing sealing systems and providing better engineering solution
- g) Poor vacuum problems resolution

Servicing & Spares



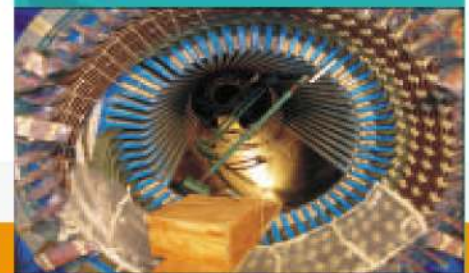
- Over hauling
- Trouble shooting of chronic problems and resolution
- Supply of spares for any make STG by reverse engineering
- Major spares covered are blades, diaphragms, bearings, valve cones, valve spindle, labyrinth seals, governing components, couplings etc.

Technical advisory services



- Trouble shooting and resolution
- Energy auditing
- Improvements in operation & maintenance procedures
- Improvements in start up systems and procedures

Generator Services



- Repair / rewind of Generator rotor
- Partial / full rewinds of Generator stator
- Supply of bearing / all defectors seals etc.

In partnership with our customers, Arani Power System mission is to deliver optimum Steam turbine based power solutions and related Refurbishment and Modernization services with highest possible quality. Further, we are dedicated to being technically superior, responsive, agile and customer focused while providing reliable, cost-effective solutions and quality services.

We will remain as a driving force in the development of innovative solutions, services and technologies relating to all aspects of Refurbishment and Modernization of existing units of all the makes and decentralized power supply with Steam Turbines and related products.

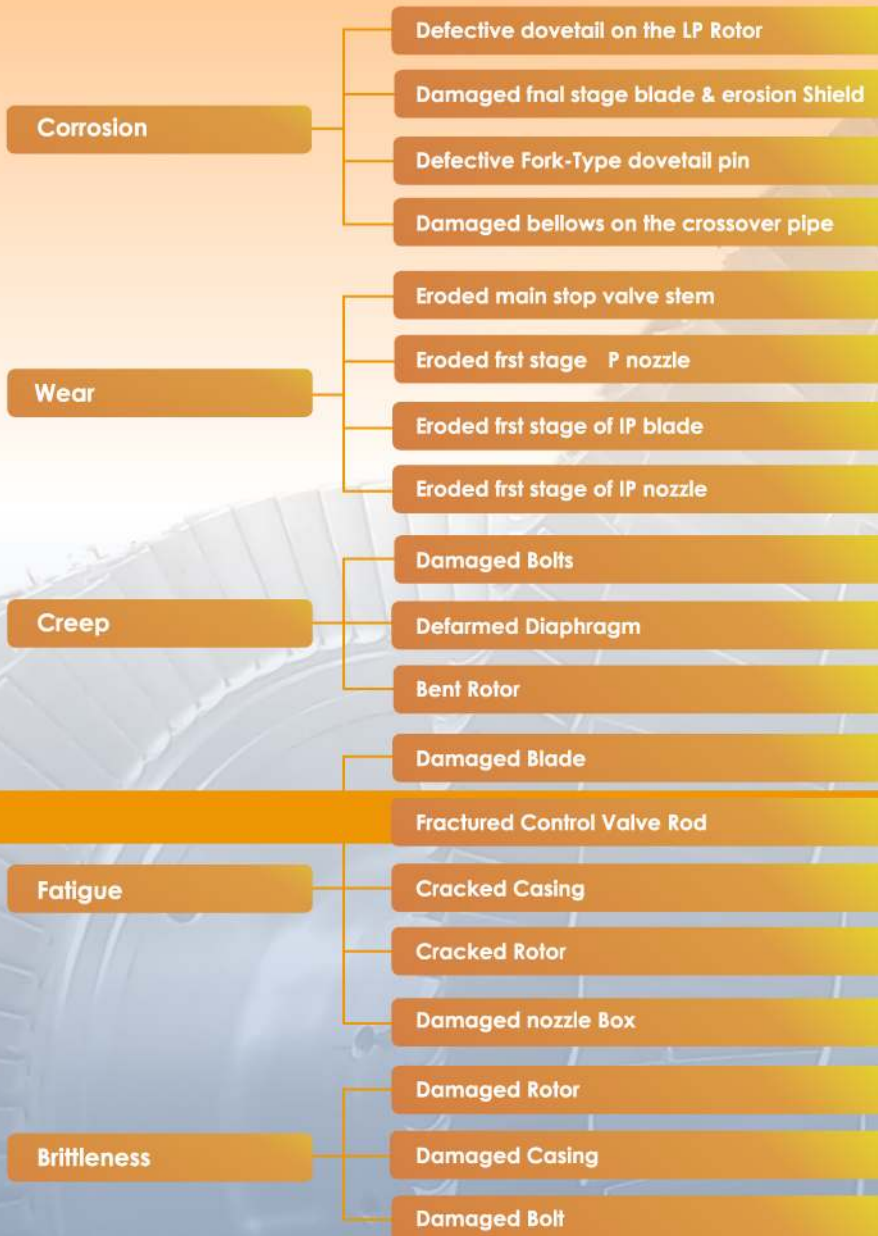
“We work with suppliers as partners and collaborate for better win-win situations”.

Quality Deteriorating due to Aging

Causes of efficiency deterioration that leads to increased fuel consumption



Causes of strength deterioration that lead to equipment failure



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