Thermal Power – Life Management

- Life Management of Critical Assets
- Inspection Planning and Outage Support
- Comprehensive Root Cause Failure Analysis, Expert Witness and Insurance Loss Adjusting Support
- Independent Expert Advice and Support to Power Operations
Our Expertise
We specialize in life management, life assessment and life extension of all types of thermal power plants:
- Open cycle gas turbine
- Combined cycle
- Co-generation
- Coal-fired

We conduct extensive in-house research into inspection techniques, high temperature materials, life assessment methods and life prediction and we have been active in materials research since 1926.

Our senior and principal engineers all have over 20 years of practical power generation sector experience in the life management of:
- Gas turbines
- Steam turbines
- Heat recovery steam generators (LifeQuest™ HRSG)
- High energy steam piping (LifeQuest™ HEP)
- Boilers

Inspection Solutions
- Phased array ultrasonic testing (UT)
- Time of flight diffraction (ToFD)
- Hot UT Life assessment to API 579-1/ASME FFS-1 and API 530
- Boresonics
- Eddy current

Proprietary Software Tools
- Signal™ FFS for fitness-for-service assessment compliant with API 579-1/ASME FFS-1 and BS 7910
- FEACrack™ and FEAFlaw™ for advanced assessment of cracks and flaws
- Reliability Management System (RMS™) for risk-based inspection and assessment management

Our Solutions
- Gas and steam turbine rotor life management and inspection
- Steam side plant life management, life assessment and life extension
- HRSG and boiler life management using risk-based methods
- NDT, inspection management and outage support
- Gas turbine hot gas path life management, repair & refurbishment, including specifications, tendering and procurement support
- Corrosion life prediction modeling and water chemistry analysis
- Life management of boilers, pressure vessels, HRSGs, superheater headers and steam drums
- Root cause failure analysis, including insurance and litigation support
- High temperature materials research and testing including Omega, creep rupture and fracture mechanics
- LifeQuest HEP advanced analysis for remaining life predictions and lifetime management of high temperature, high pressure steam piping

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**Project Experience**

- Life management of hot gas path components including parts tracking and use of third party spares market, enabling savings of AU$13M over 10 years
- Competent person, boiler life extension study increased period between regulatory required inspections
- Development and implementation of risk-based assessment program for HRSGs involving in-depth review of plant data and development of plant-wide risk profiles which resulted in the establishment of a detailed inspection program
- Life management of high energy piping, inspection management including work planning, validation of NDE inspectors, oxide thickness surveys and on-site management of personnel
- Assessment of cracking in boiler feed water header
- Twenty-year life extension of steam turbine and associated components
- Complete condition and life assessment of boiler at a thermal power plant
- Assessment of general and metallurgical condition and remaining life of the superheater tubes, piping and pressure vessels of boiler
- Engineering critical assessment of de-superheater findings of crack growth analysis and NDT allowed unit to be confidently returned to service without delay, preventing extended shut down
- Fitness-for-service assessment of steam turbines when defect was discovered in turbine disk in which stress analysis and fracture mechanics assessment showed turbines were fit for service; prescribed required inspection frequency
- Rotor life management of MS6001B turbine fleet including condition assessment, NDT inspection and computational analysis of turbine rotor and casings
- Baseline inspection to assess the degradation and damage of HRSG, leading to development and implementation of inspection program for HRSG intervals in combined cycle power station

**Facilities and Equipment**

- Technology-enabled diagnostic and NDT tools
- Research and testing facilities for simulating aggressive environments over a wide range of temperatures and conditions
- Comprehensive metallurgy and test laboratories
- On-site inspection and condition assessment

**Our Clients**

We have been hired by major power companies worldwide to undertake life management, remaining life assessments and life extension studies of critical assets to enhance business continuity.

- Effective life assessment and planning have enabled power companies to defer capital purchases and utilize the third party spares market, thereby achieving multi-million dollar savings.
- Our holistic approach to life management of critical assets has enabled power companies to achieve reliability and availability targets.
- Life management services have enabled power companies to maintain both safety and environmental regulatory requirements in a more cost-effective manner.
- Our asset integrity experience and expertise has resulted in several long-term service agreements with clients in the power industry.

**Training Courses**

We provide the following training courses:

- Gas turbine life management
- Power plant components
- Failure investigation
- Metallurgy for engineers
- Fitness-for-service
We are a global leader in the development and delivery of asset integrity and reliability management services and solutions for our clients. Our solutions consist of technology-enabled, advanced inspection and engineering assessment services and products that help companies in the refining and chemical, pipeline, syngas and power industries reduce operational and safety risks, improve operational planning and increase profitability. Quest Integrity Group, a Team Industrial Services company, is built on a foundation of leading edge science and technology that has innovated and shaped industries for over forty years.

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