

## Gas turbine and combined-cycle power plant services

HRL provides a wide range of services from licence and agreement compliance to troubleshooting investigations, plant-life assessment and material inspections for operators of gas and steam turbines, heat-recovery steam generators (HRSG) and combined-cycle power plant.

### Challenges

The services to support such plant include design and modelling, developing of computer software for efficiency and optimisation, independently evaluating performance, analysing material integrity, inspection programs and life assessment to troubleshooting plant issues and environmental analysis, auditing and management.

### Solutions

HRL has practical day-to-day experience with turbines and plants fired with natural gas, fuel oil, coal gas or gasified coal, dual fuel and biogas. As a leading supplier of consulting, analysis and testing services to the power generation and minerals processing industries throughout Australasia – HRL holds National Association of Testing Authorities (NATA) accreditation for a comprehensive range of gaseous and particulate emission sampling and analysis services.

### Applications

Plant modelling services allow quick identification of problems and simulation of improvements – before implementation – to ensure optimum plant upgrade and process outcomes. Specific services include:



Gas turbine exhaust duct and HRSG at a combined-cycle power station

- computational fluid dynamic (CFD) modelling to provide outputs including combustion stability, temperature profiles, effects of fuel-to-air ratios and blade-design efficiency
- integrated gas turbine and steam cycle modelling to provide outputs on overall performance, impact of design and control modifications, impact of fuel selection on turbine and heat recovery areas, and the impact of ageing and degradation.

Plant performance services include measuring process steam flow, pressure and temperature, along with fuel flow to a high accuracy using intrinsically safe devices to determine:

- output and efficiency performance against design specifications or guarantees emissions for EPA compliance reporting.

Diagnostic testing services are also provided.

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Engineering and materials services are provided as part of a complete and integrated services range covering metallurgical, materials, mechanical and structural engineering areas to maximise plant efficiency, availability and life; and to ensure compliance with operational, safety and environmental requirements.

HRL supports clients by providing services that include:

- monitoring and assessing plant condition
- conducting and managing plant inspection programs and providing systems for recording and storing that information
- developing and implementing inspection and maintenance programs to:
  - minimise unscheduled outages and materials failures
  - determine the root cause of failures and help avoid their re-occurrence
  - formulate appropriate repair procedures.

Emission sampling and process monitoring services to assist clients in meeting environmental standards include:

- comprehensive environmental analysis, auditing and management
- point-source and ambient air monitoring
- National Pollution Inventory (NPI) reporting and air-quality modelling services.
- Emissions for EPA compliance reporting

## Greenhouse reporting/abatement

HRL has been involved in numerous projects to report on, and to help reduce, carbon emissions in response to state and federal government programs to improve energy efficiency and reduced greenhouse emissions. The services offered range from technical and economic reviews of abatement options through to project implementation.

## Benefits

HRL provides services that clients can rely on to improve the reliability, life, safety and the environment of their plant, structures, equipment and surrounds including:

- Providing plant modelling services that allow simulation of control and condition changes within a plant without affecting plant generation, performance and integrity. HRL skill in tailoring modelling packages to reflect plant specifics allows clients to gain real-time plant efficiencies, plant knowledge, and detect potential plant failure.
- Plant performance services provide clients with independent, confidential and specialist performance testing and analysis of plant output and efficiency, performance against specifications or guarantees and of emissions for EPA compliance reporting.
- Engineering and materials services help clients to understand the operational efficiency and condition of their plant. The services help to develop and implement inspection and maintenance programs to maximise plant safety, availability and life while minimising maintenance costs as well as scheduled and unscheduled outages.
- Emission sampling and process monitoring services assist clients to meet environmental standards through comprehensive monitoring, analysis, auditing and management.

- Greenhouse reporting/abatement services support clients in relation to federal and state government schemes and programs to encourage power generators using fossil fuels, to increase their energy efficiency and reduce their greenhouse emissions.

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The company's NATA Accredited Laboratories number is 561.

HRL Technology Group's ISO 9001 Quality Management is certified by BSI under certificate FS605116

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