

hri:

expertise in action

Towards

Decarbonisation

# Succeeding through Transition

With global environmental, social and good governance (ESG) foci all clearly on sustainability and decarbonisation, it will be increasingly necessary to position your offering favourably in evolving and more discerning markets.



All energy-intensive companies have the responsibility, impetus and opportunity to positively differentiate their products and services. Product quality assurance, emission abatement, energy-efficiency, waste reduction, enhanced operational performance and clean technology selection will all play prominent roles in the successful transition to net zero.

HRL's purpose is to aid companies in technology optimisation and utilisation, enabling a smooth, sustainable and commercially viable transition. We provide solutions that assess and mitigate the **environmental impact of industrial plant selection and operation** while dramatically improving performance, availability and output across a range of industries.

HRL has a heritage and knowledge base dating back more than 60 years. Our specialised team of experts are driven to embrace the **energy transition** and help our clients solve their most difficult challenges by delivering innovation while improving commercial performance in service fields such as:

- **Power generation**
- **Laboratory analysis**
- **Specialised asset reliability**
- **Process engineering**
- **Plant performance and optimisation**
- **Applied R&D to commercialise products and processes.**

The team at HRL is ready and able to help. We welcome the opportunity to partner with your organisation to quantify your technical challenges, identify practical and commercial solutions, to enhance your future relevance and ensure your success **during and beyond the transition.**

Paul McPhee

Managing Director/CEO



NATA accredited  
AS/NZS ISO 17025,  
AS/NZS ISO 17020  
NATA Accredited  
Laboratories  
number 561.



ISO 9001 Quality  
Management certified  
by BSI under certificate  
number F5605116.

# A leading specialist testing, engineering, and innovation services company.

## We solve your most difficult technical problems.

We helped a leading, blue-chip national power station significantly improve its output by enabling it to run at full power even in high temperatures. A \$15 million project which paid for itself in just 3 days.

## We are your trusted expert partners in high-risk situations

A leading mineral processing company had a big decision to make - shut the plant for 30 days for repairs or try to keep it running safely. With expert advice from our engineers, acting as 'owners engineers', we kept the plant operational creating \$30 million of value.

## We analyse, test, and provide insights to help your business succeed.

We operate one of the world's leading mining company's global research laboratory on an ongoing basis. Explore the cost benefits of outsourcing your quality assurance work to HRL.

## We deliver applied R&D to turn your concepts into reality.

We developed a new modified testing methodology, which eliminates the risk of explosions and ensures dangerous goods are safely transported by sea all around the world.



**hrl:**



Are you ready to transform your business performance?

**Learn more at [hrl.com.au](http://hrl.com.au)**

# The hrl: difference

Our overriding purpose is to dramatically improve the reliability, efficiency, and sustainability of your assets, products, and processes. By focusing on these cornerstones individually and in combination, we deliver unmatched business value. We are your trusted expert partner.

## Towards Decarbonisation

Aid in technology optimisation to support your sustainability goals for a less carbon intensive and a commercially viable transition.

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## Increased Revenues

Improved asset and process performance and reliability means more revenue.

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## Smarter use of Capital Investment

Life and risk-based assessments to optimise capital spend improves returns and profitability.

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## Build Capability

Smart partnering with specialist experts improves your capability and allows you to focus on your core business.

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## Reduced Costs

Optimising the efficiency of your operations means lower costs.

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● **What makes HRL different** is our heritage, our people, our high-tech testing and digital capability, and our methodology.

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# Our Services

HRL's team of experts are skilled in a broad range of disciplines. By leveraging our knowledge through cross-disciplinary collaborations, we develop practical and innovative solutions to client-specific and industry-wide challenges.



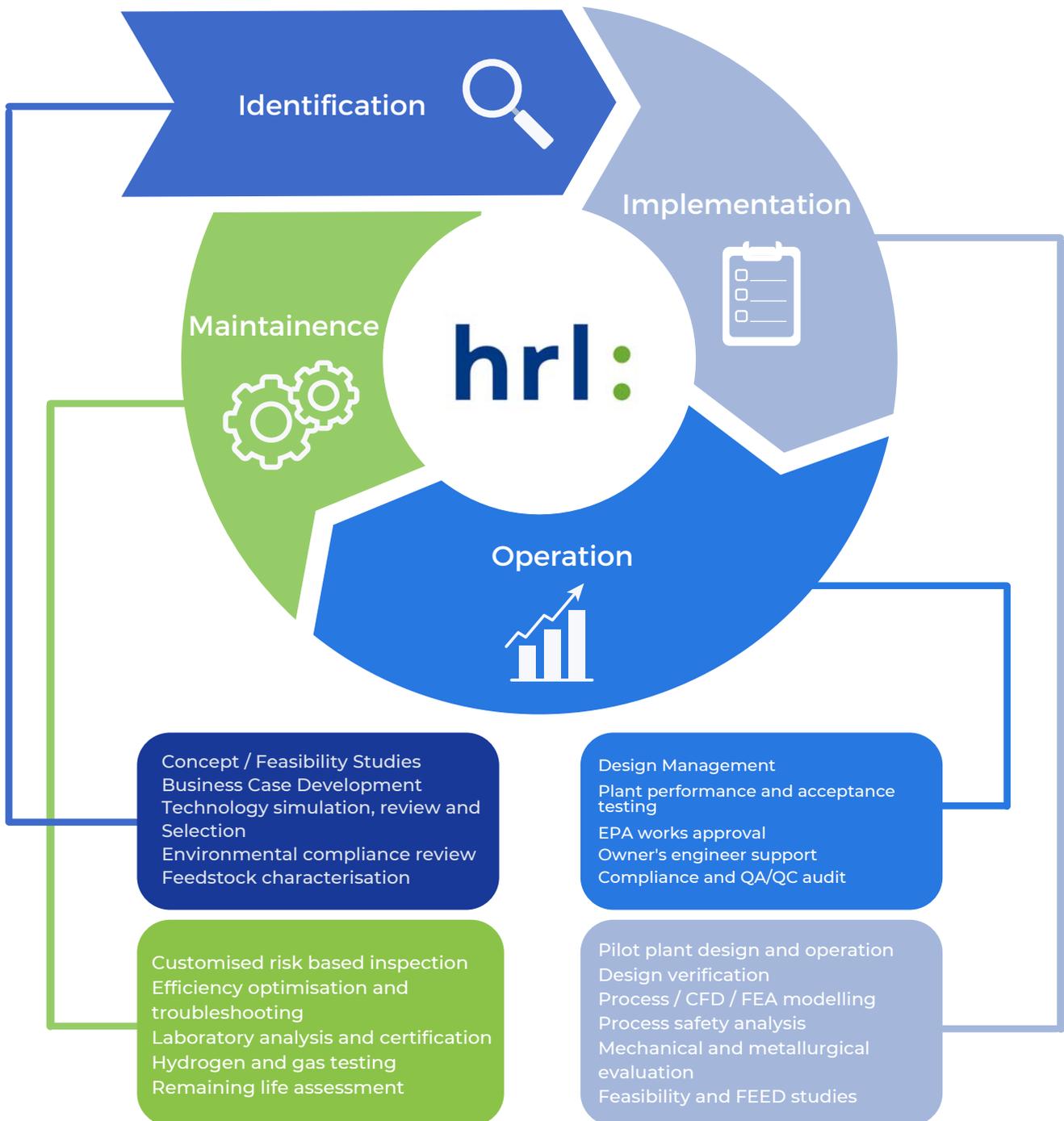
HRL offers distinctive expert services, providing insights and solutions from the simplest test to multi-million dollar programs.



# Unrivaled Breadth of Expertise - Hydrogen

HRL is one of the few companies in the world, and the only company in Australia, to actually operate a hydrogen production plant and provide the full suite of testing and support services.

- 1 Technology leaders at the cutting edge**  
 Australian Standards Committee member for Hydrogen Technologies  
 New Technology Development and Deployment  
 Support project funding (e.g. ARENA)
- 2 Experienced in a variety of H<sub>2</sub> Production and technology utilisation**  
 Electrochemical / Thermal Production  
 Liquefied / Compressed / Metal Hydride Storage  
 Value added E-Fuels (NH<sub>3</sub>, DME, Methanol, Jet fuel)
- 3 Experienced in operating hydrogen export production facility**  
 Reliability, integrity and plant performance management  
 Preventive maintenance  
 Process Safety
- 4 Ability to conduct the full suite of laboratory tests and certification**  
 Sampling of hydrogen  
 Gas purity analysis  
 Full suite of tests under AS ISO 1468 standard



# Case Studies

Our commitment to the **Energy Transition**

For more compelling case studies, visit [hrl.com.au/case-studies](http://hrl.com.au/case-studies)

## Case Study One

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# HESC J-Power Project

## Case Study Two

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# QAQC Owners

# HRL participates in the first ever Hydrogen Supply Energy Chain (HSEC) Project

## Challenge

In Victoria, the Hydrogen Energy Supply Chain (HESC) Project is currently up and running. The challenge has been to demonstrate the entire supply-chain from winning of raw feed, production of hydrogen gas (H<sub>2</sub>) by **gasification**, liquefying of **hydrogen** (LH<sub>2</sub>) and storage at the Port of Hastings, with the objective of shipping the liquefied product to Kobe, Japan.

Hydrogen provides a stored and transportable energy solution that promises to enable the transition to lower carbon technologies in the energy sector.

The project is an Australian first and is one of a handful of feasibility initiatives underway around the globe aimed at demonstrating the practicality of commercial hydrogen manufacture via gasification.



## Solution

J-Power Latrobe Valley contracted HRL to maintain and operate the **new gasification and hydrogen refining** Pilot Plant in the Latrobe Valley, Victoria.

The initial phase of their work involved preparation of operations documentation, policies and procedures, including safety. The second phase was to commission the pilot plant and train personnel. The final phase was to operate the plant as well as maintain it. The plant is complex and requires a deep understanding of the technologies involved, which the HRL team provides.

The HRL analytical team is providing all analysis services for the gasification and hydrogen refining Pilot Plant managed by J-Power Latrobe Valley. The energy feed, gaseous products and all the by-products are thoroughly sampled and analysed on a regular basis to ensure the optimal performance of the gasifier and the gas purification train.

## Results

HRL has safely and successfully managed the commissioning of the Hydrogen Energy Supply Chain (HESC) Pilot Plant with the first pure **hydrogen** being produced on 23 January 2021, a major milestone in the project. The project progressed with the pilot plant being officially opened on 12 March 2021.

HRL's extensive experience in the development of other gasification pilot and demonstration plants has given it a unique ability to solve the many technical and safety issues.

HRL's successful ongoing work on the project is contributing to the energy sector's ability to transition to lower carbon technologies.



# HRL provides Specialist QAQC and Third-Party Inspection Services

## Challenge

Our client was sourcing essential high-pressure, high-temperature equipment from overseas manufacturers.

There are numerous quality challenges involved when sourcing equipment from overseas manufacturers. Such challenges may include:

- Confidence in the manufacturer's Quality Management System, their capabilities and capacity
- Understanding of procurement requirements and design specifications to ensure compliance with the importing country's standards, and statutory and regulatory requirements
- Plant owner/operator's presence during design, manufacturing, packaging and shipping of plant.



## Solution

To address these challenges, the client engaged HRL to provide **specialist QA/QC (Quality Assurance/Quality Control) services, including third-party inspections**. The HRL team that provides these services includes professionals with comprehensive expertise in quality assurance and control, project management, mechanical engineering, metallurgy, materials and chemical engineering.

The specialist tasks included:

- Ensuring that the client's requirements were being carried out by the manufacturer
- Witnessing the critical testing on the client's behalf.
- Going beyond the Engineering, Procurement and Construction (EPC) contract's coverage to ensure quality control.
- Co-ordinating stake holders to ensure timely communications.

To address these tasks, HRL first reviewed the contract between the client and the manufacturers and then proceeded to conduct factory audits and site inspections to ensure that their obligations were being followed.

During this primary inspection, HRL made sure to provide direct communication of potential problems from the production line to the client as well as during the QA/QC process for the major components.

## Results

Due to the constant updates and information HRL provided to the client, any issues with the equipment and potential deviation from specifications was picked up early, avoiding costly rework and time overruns.

The client was happy with the **effective communication**, and the timely reporting after each inspection reassured our client and was essential to the project being **delivered on time**.

# Our Hydrogen Team

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