



hrl:

expertise in action

hrl:

We're proud to have these leading organisations as long-term customers.



RioTinto

coles



Nestlé



ENGIE

MARS
petcare

bhpbilliton



stanwell



JAWA POWER



synergy

IXOM

PAITON
ENERGY



SEM-CALACA POWER CORPORATION

hrl.com.au

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 keep running. 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.

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.



Are you ready to transform your business performance?

Learn more at hrl.com.au

A purpose-driven organisation

It's an exciting time in the world with major advances being made at the intersection of multiple technical and commercial disciplines. In an intensely competitive market, there are huge opportunities for companies who can successfully innovate — and in doing so benefit society.



At hrl: our team comes to work every day **driven to solve our customers' most difficult and critical technical challenges, deliver innovation, and transform commercial performance**. Our experts take deep pride in shaking hands with a customer inviting them back to work on a new project because of the sustained value created last time. We are proud to have some of Australia and South-East Asia's largest energy, resources, manufacturing and industrial companies as regular customers.

Our heritage means we are deep experts in power generation plus laboratory analysis, specialised asset reliability and process engineering and applied R&D to commercialise products and processes. It inspires our vision to become famous for transforming our customers business performance across Australia and SE Asia.

Our purpose today is to dramatically improve the technical and commercial performance of our customers' business across a broader range of industries. This search for constant improvement is captured in our new brandmark, a colon which prompts the question, what next?

We are also **re-invigorating how we partner with customers** – we call this the hrl: blueprint. It's a tried and trusted yet differentiated approach, applying all our years of experience plus new thinking to tailor a relationship and outcome best-suited to each customer's situation.

As your business identifies the technical challenges it needs to solve to drive and sustain growth, the team at hrl: looks forward to partnering with you to **deliver the innovation you need to win in the market.**

Paul McPhee
CEO

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.

Increased revenues

Improved asset and process reliability means more revenue.

Reduced costs

Optimising the efficiency of your operations means lower costs.

Smarter use of capital investment

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

Build capability

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



What makes hrl: different is our heritage, our people, our high-tech testing and digital capability, and our methodology.

Our services

'Technically competent
and service orientated.'

ENGIE Australia

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



Laboratory testing

Our advanced and NATA approved laboratories provide the insights you need to run and improve your business, not just test results. We deliver on time with quality and precision.

Chemical testing

hrl: has extensive chemical analysis capability, covering the characterisation of a wide range of products including: biomass, chemicals, minerals, water, coal, dangerous goods, waste, particle size, foreign objects, pulp and fiber, mercury, and many more.

Mechanical and metallurgical testing

Our mechanical and metallurgical testing capability is comprehensive and unique in the industry where we can assess microstructures on ferrous materials, coatings, corrosion, accelerated fatigue, and many other materials properties.

Niche thermal testing

DSC/TGA and product and appliance testing facilities including wood heaters.

Laboratory outsourcing

We offer tailorable business models for some of the world's largest companies designed to deliver our customers' commercial drivers - lower cash costs, reduce depreciation or capital spend, succession planning, on-demand access to a broader capability.





Specialised engineering solutions

Asset integrity, reliability, and materials engineering

Keeping your assets up-and-running, optimising maintenance expense and capital spend, and investigating failures. **We specialise in high-temperature, high-pressure systems.** Our services include advanced on-site inspection and testing, design verification, asset life, condition and risk assessment, forensic failure investigation, materials selection, advanced materials, and 'owners engineers' partnerships.



Power and combustion performance engineering

hrl: is a global leader in testing and optimizing the end-to-end performance of power generation and steam raising combustion plant – lowering costs, improving output, optimising capital spend – for coal, gas, biomass, and waste-fired boilers.

Process and energy efficiency engineering

Our expert process engineers optimise your operations and improve sustainability. **Energy audits and efficiency programs are a specialism** along with waste reduction and re-cycling, eg. briquetting, agglomeration.

Specialist capital project implementation

hrl: has experienced project engineers to implement niche technically challenging retro-fit projects. Our capability covers management, specialist design, QA of manufacture, control systems, and commissioning.



Innovation partnerships

Innovation partnerships are core to hrl:'s DNA. We specialize in feasibility studies, techno-economic analysis, scale-up and commercialization of processes using our adaptable facilities and depth of expertise to progress exciting new concepts.

Our specialisms include development of new analytical methods, R&D collaborations (with one customer or in multi-partner groups, eg. CRC-Ps) and the process development and scale-up of novel industrial processes, eg. gasification, encapsulation, pyrolysis, activation of carbon.



Expert technical advisory

Trusted, discrete, and industry-renowned expert technical advice and witness to Legal, Insurance, and Banking firms for failure investigations, warranty claims, and due-diligence.

hrl: is invited onto Government Expert panels to provide expert technical insight and advice.

Industry specialisms

Our capabilities apply across many industries.
Here are some we specialise in:



Case studies

Case studies are the way you can see who else we have worked with.

For more compelling case studies, such as below, visit hrl.com.au/case-studies.

- hrl: provides expert testimony resulting in largest-ever settlement for Black Saturday victims.
- hrl: provides analytical services enabling Rio Tinto to focus on its core capabilities.
- hrl: works with leading food organisation to mitigate autoclave cracking and improve production performance.
- hrl: provides life assessment services to PT Jawa Power resulting in increased plant reliability and revenues.
- hrl: saves major mine substantial material and labour costs using CrackSizer®.
- hrl: resolves potential catastrophic failure of wind turbine components.
- hrl: eliminates coal waste liabilities and creates new client revenue stream.
- hrl: ensures safety of water treatment chemicals for major supplier.
- hrl: provides in-depth insights on foreign material for major food manufacturer.
- hrl: achieves WorkSafe design registration and verification for new pressure vessel.



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Maurice Blackburn

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Rio Tinto

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Mars

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PT Jawa Power

hrl:

Maurice
Blackburn
Lawyers
Since 1919

hrl: provides testimony resulting in the largest ever settlement for Black Saturday victims

Challenge

The 2009 Black Saturday bushfires in Victoria resulted in much loss of life and property damage. As a result, some of the largest criminal and civil investigations were launched, with particular focus on causation and electrical distribution systems. Maurice Blackburn Lawyers in Victoria led a class action that proceeded to trial, *Matthews v SPI Electricity Pty Ltd & Ors*, and ran for 16 months with over 100 witnesses. To support the technical investigation and analysis, Maurice Blackburn Lawyers needed expert witnesses from various engineering fields, both locally and globally. Finding a coordinated, competent, and timely service was critical, with complex and challenging arguments to manage.



Solution

hrl: was engaged by Maurice Blackburn as an expert witness for mechanical and materials engineering and bushfire ignition subjects. This involved conducting a number of experimental and controlled laboratory tests, and then presenting the findings to the court as evidence in the case that the fire commenced due to a conductor failure at Kilmore East.

hrl: worked closely with many statutory bodies, various opposing partners, and experts to provide an agreed and definitive testing protocol, technically-respected investigation, detailed assessment, and appropriate expert's reports.

The multi-disciplinary team working on the matter was able to combine theoretical understanding and experience in electrical distribution systems and associated fields, in order to provide supporting testimony and evidence for the Plaintiff's complex case. Importantly, at short notice, hrl: was able to review complex technical evidence, devise and arrange practical experimental rigs, and provide critical technical data to Counsel.

Under intense focus and demands, hrl:'s experts and their technical teams were able to provide solid testimony and supporting technical information to Counsel

Results

Under intense focus and demands, hrl:'s experts and their technical teams were able to provide solid testimony and supporting technical information to Counsel. The matter, which at the time was Australia's largest ever civil action, was successfully settled. The settlement involved over \$494 million in payments to Class Action participants, the largest in Australian history.

hrl: provides analytical services enabling Rio Tinto to focus on its core capabilities

Challenge

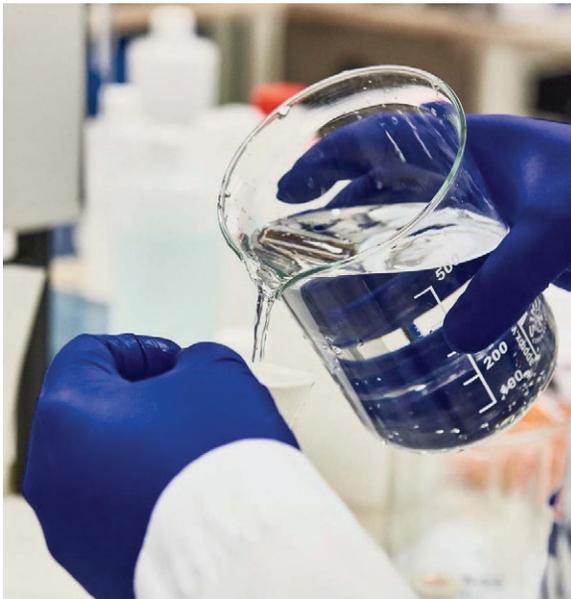
Rio Tinto needed a strategic network partner to develop a flexible relationship that provides expert technical advisory, analytical and field testing, and laboratory outsourcing services to high-quality companies across Australia and Asia.



Solution

In alignment with Rio Tinto's strategy to focus on core capability supplemented by trusted network partnerships, hrl: offered to provide analytical services to its T&I operation in Bundoora strengthening the existing relationship hrl: has with other Rio Tinto sites.

With a three-year partnership in place, hrl: now provides laboratory resources and quality analytical services with a focus on global minerals mining and ore refining and extraction projects. Laboratory management information systems were integrated between the businesses, enabling analytical data to be transferred accurately and promptly, and resulting in efficiency gains to the operations.



With a three-year partnership in place, hrl: now provides laboratory resources and quality analytical services with a focus on global minerals mining and ore refining and extraction projects.

Results

As a result of engaging hrl: Rio Tinto is able to still maintain full exclusive access to the laboratory facility in Bundoora. hrl: provides Rio Tinto with an exclusive arrangement that provides high-quality analytical results in support of major exploration, mining and refining activities, together with expert interpretation. The strategic network partnership also provides Rio Tinto access to other technical, process, chemical, and engineering resources and knowledge.

hrl:

hrl: works with a leading food organisation to mitigate autoclave cracking and improve production performance

Challenge

A leading food organisation found cracks in an autoclave (pressure vessel) following routine visual inspections. Understanding the severity and statutory requirements for pressure equipment, the client was determined to understand the cause of the cracking. This meant that the autoclave had to be removed from service, placing pressure on other parts of the plant to keep up with manufacturing and production requirements. A rapid investigation and solution was required in order to get the plant back to optimum performance.



To test is to know, and by engaging hrl: this food organisation gained the data needed to identify the cause of the problem.



Solution

hrl: was engaged to determine why this crack was occurring. Carrying a large stock of various transducers to measure strain, temperature, force, displacement, vibration, and much more, hrl: was able to install strain gauges and thermocouples on the autoclave to understand what was happening during its operation. The data obtained determined that high stresses occurred due to severe temperature differences, resulting in thermal fatigue cracking.

hrl: used this data in conjunction with plant system data to change the design and operation of the autoclave, and ultimately increase the fatigue life of the autoclave and therefore its availability.

hrl: also performed engineering assessments of the autoclave using the data obtained from testing to determine the critical crack size and failure mechanism. Should further cracking occur, this means the autoclave can remain in service if cracks are within the critical sizes. Repairs can then be scheduled with less impact on production.

Results

To test is to know, and by engaging hrl: this food organisation gained the data needed to identify the cause of the problem. Using the test data, they were then able to make informed decisions about operational and design changes to mitigate further cracking and increase the availability of the autoclave. This resulted in less lost production and increased savings.

Testing differentiates hrl: from other providers in that hrl: obtains actual data from equipment operation. hrl: then uses the data to determine actual boundary conditions for modelling and assessments, unlike other organisations which often assume boundary conditions that are incorrect and therefore fail to determine the real cause of the problem.

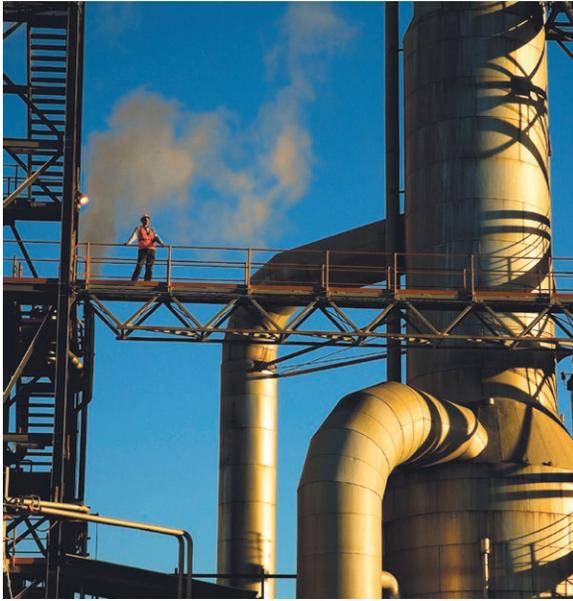
Throughout the project, hrl: stress analysts worked closely with the client to understand the operational product process of the autoclave. hrl: also helped the client to understand the stress and life impact that occurs due to thermal restraints within the autoclave. The autoclave remains in service today, performing its required production process. The client was very pleased with the outcome.

hrl: provides life assessment services to PT Jawa Power resulting in increased plant reliability and revenues

Challenge

Owners and operators of pressurised, rotating, or other plant, pressure, and piping are required to meet legislated compliance standards including those addressing risk management and safety.

PT Jawa Power in Indonesia operates a number of coal fired power stations in Paiton, providing electricity to a developing Indonesia. In response to compliance requirements, they needed to assess the performance and service life of the power station at various stages of service cycles. This included assessments of plant components such as processing lines, pipes, and vessels, in order to make informed decisions around planned outages and maintenance cycles to minimise plant downtime and maximise availability for reliable electrical output to clients.



The inspection provided data which enabled PT Jawa Power to develop strategic plans for life extension of equipment

Solution

hrl: has worked with PT Jawa Power for over ten years, providing metallurgical and materials services relating to the ongoing risk management of the power station assets in Paiton. PT Jawa Power engaged hrl: to apply a state-of-the-art methodology in order to assess the current condition, fitness-for-service, and remaining life of all aspects of the power station, equipment, and assets.

The inspection provided data which enabled PT Jawa Power to develop strategic plans for life extension of equipment, including services such as: equipment integrity analysis, corrosion monitoring of structures and equipment, corrosion damage evaluation, and fatigue and creep damage to predict the parts of the plant most at risk of a failure.

Results

The Plant Life Assessment service provided by hrl: allowed PT Jawa Power to make informed decisions to maintain high plant availability, which resulted in optimal electrical output, increased productivity, and improved reliability of electrical supply to clients. These services also enabled PT Jawa Power to make informed decisions around managing resources and risk, without additional costs or drops in revenue as a result of unexpected plant or asset failures resulting in unplanned outages.

For more compelling case studies,
visit hrl.com.au/case-studies

We have worked with most sectors so please visit our website
for more case studies in the following industries: Coal and Gas
Power Stations, Manufacturing Food and Water, Renewables,
Product and Retail, Legal, Government and Trade



Our values

'Very technical, smart, friendly, and good service. Happy to help.'

Sanport AM Holdings

These fundamental values encompass both our proud history and our future, informing our people, processes, and engineering solutions.

Expertise

With diverse knowledge generated globally over decades, we offer a vibrant, collective brainpower and capability which is unmatched in the industry. This specialist technical knowledge forms the cornerstone of our business, so we hire our people with excellence, curiosity, and continual growth in mind.

Agility

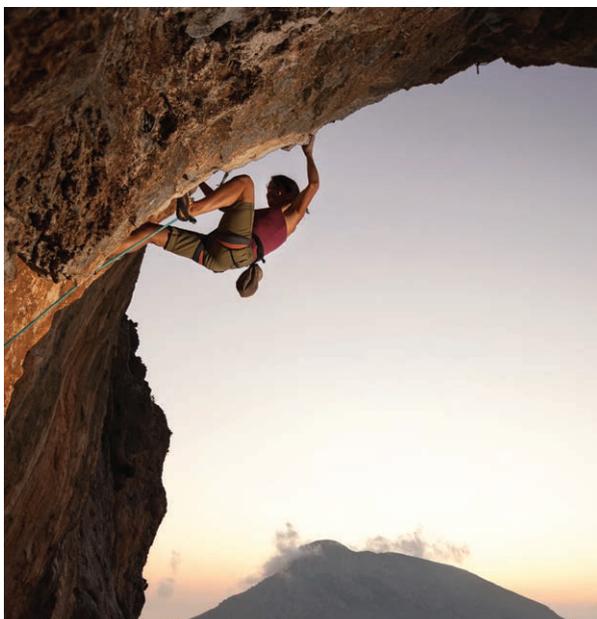
We believe the future belongs to those who not only respond to change, but lead the way. With this in mind, we pride ourselves on being nimble, efficient, adaptable, and innovative.

Care

The wellbeing of our people, your people, our collective businesses, and the planet is paramount. We really listen and we care, encouraging a collaborative, proactive approach to business, safety, and environment for the benefit of all.

Value creation

We're in business to create value. We love collaborating with likeminded people to make this happen, and deliver commercial results.



Why us?

- A professional, customer-focused attitude, ensuring a collaborative experience.
- Bespoke services and cost-effective delivery options, giving you timely results and the best value for money.
- A values-based, trusted partner who cares about your business and its assets.

Want to know more? Visit hrl.com.au

What makes hrl: different

'Specialised skills and industry knowledge. Excellent services available at your doorstep.'

ENGIE Australia

No two companies are alike, so we deliver a range of comprehensive, bespoke services aligned to your unique objectives and targeting commercial outcomes.

A wide network of technical and commercial collaboration partners, able to supplement our capability.

The highest-quality outcomes, transforming your business performance, saving you money with operational and financial efficiencies, and growing your top-line. **With hrl: you get 'expertise in action.'**

Our People

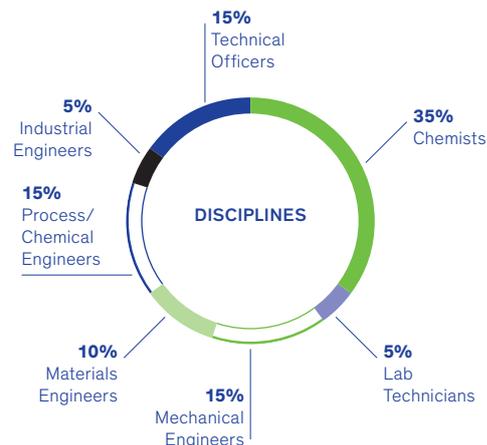
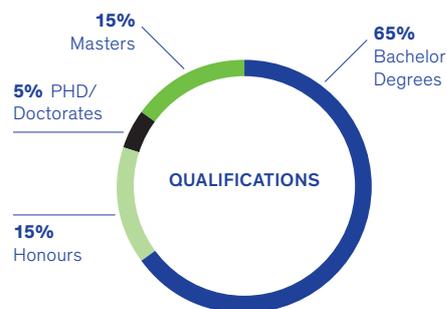
We harness an unmatched, collective brainpower and practical testing capability to service many of the most reputable organisations across Australia and South-East Asia. You can trust us to solve your most technical challenges, significantly improving your operational and financial performance to give you a competitive advantage.

Our mindset

By leveraging our experts, our methodology, and our equipment. Whilst many organisations offer these capabilities in isolation, it's our ability to offer all three in combination that makes us different and enables us to deliver truly transformative business value.

We have a deeply expert team containing very experienced technicians, graduates, masters, PhDs and post-docs — many of whom also hold distinguished professional accreditations and command industry recognition in the fields of science, engineering, and digital.

Our team is responsive, hands-on, and able to apply both decades of experience and the latest R&D to create value in solving your technical challenges. We are trusted as part of your team, providing the specialist expertise you need when you need it. We are often referred to as 'owners engineers'.



Our experts are skilled in a broad range of disciplines, including laboratory testing, asset reliability, process efficiency, and operational sustainability.

Our high-tech testing, engineering and digital capability

We don't just have the best brains in the business, we also have high-end specialist facilities and equipment to back them up, some only available in Australia.

- Laboratories — Fully-equipped NATA and ISO accredited chemical, metallurgical, and mechanical testing laboratories containing highly advanced specialist equipment.
- Specialised on-site asset testing equipment, eg. advanced NDT, multi-channel flow detection, in-situ pulverised fuel particle sizing, strain gauging.
- Applied R&D pilot plant scale-up facilities.
- Advanced desk-top modelling, eg. piping flexibility, finite element analysis, computational fluid dynamics, combustion optimisation, process simulation.
- Digital platforms for big-data analysis and asset monitoring and optimisation, eg. remote combustion tuning.
- Proprietary algorithms and an extensive internal database containing hundreds of years of expertise.

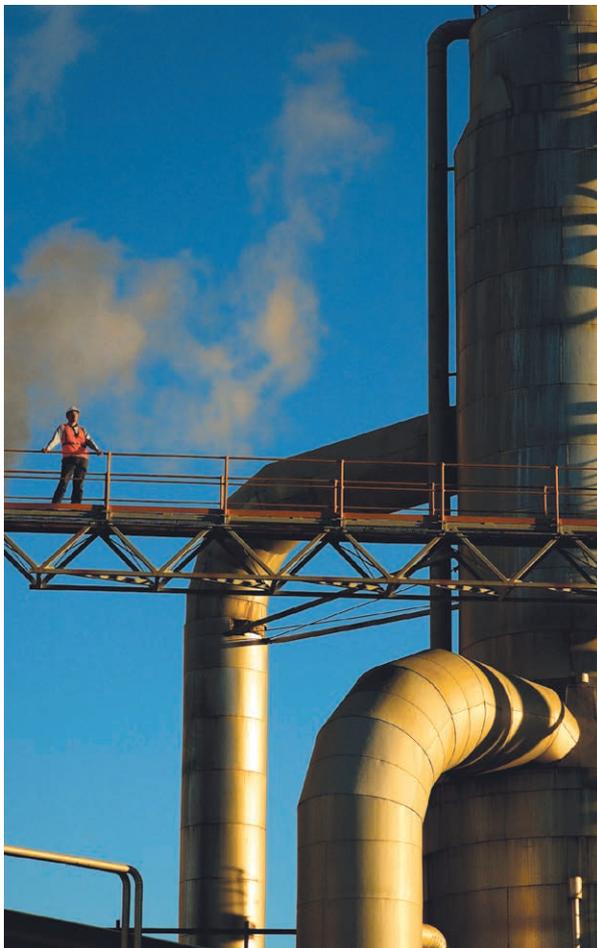


NATA accredited
AS/NZS ISO 17025,
AS/NZS ISO 17020

NATA Accredited
Laboratories
number 561.



ISO 9001 Quality
Management certified
by BSI under certificate
number FS605116.



Our heritage

Stemming from our roots as the R&D group within the State Electricity Commission of Victoria, we are proud of our deep expertise in power generation, high-tech laboratory testing, and applied R&D.

This capability will be vital as the world tackles the challenges of transitioning to a lower carbon future – including reliable and efficient coal and gas-fired power stations – and ever-advancing materials and manufacturing.

Where we've come from

Our rich history includes providing the science and engineering firepower to start Australia's brown coal power station industry in the 1950s, being a part of the State Electricity Commission of Victoria, and working with the Victorian State electricity sector privatization in the mid-90s.



hrl:

Our methodology

From the simplest test to the largest, multi-million-dollar program, everything we do is underpinned by our comprehensive and collaborative hrl: blueprint.

With a focus on dramatically improving the Reliability, Efficiency, and Sustainability of assets and processes to transform commercial performance, our blueprint ensures we not only achieve governance – but deliver transformative and ongoing business value. This is Expertise in Action.

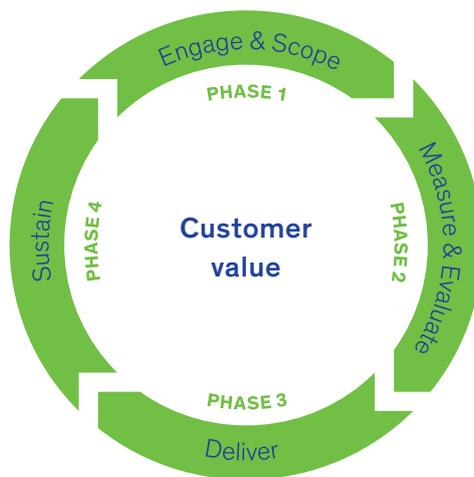
Engage & scope

The outcome

Project scope, nature of engagement, value, KPIs, resources, and costs agreed.

The hrl: difference

Expert clarity to precisely define the problem and value case.



Sustain

The outcome

Value delivered, assessment against KPIs, knowledge transferred.

The hrl: difference

Time taken to ensure benefits are sustained.

Measure & evaluate

The outcome

Data-based insights, options, and recommendations.

The hrl: difference

Trusted, innovative insight to make the right choices.

Deliver

The outcome

Commercial value delivered, report issued, technical and commercial KPIs achieved.

The hrl: difference

Top quality delivery.

How we engage

Whilst we follow the above process for every project we complete, the way you engage us is entirely up to you. Options include:

One off – fee for service

You engage hri: following submission of a proposal for a specific piece of work. Typically fixed price with variations as agreed, paid to schedule on invoice.

Tailored partnerships

We define a partnership to suit you. Examples you can choose include short-term assignments of our experts into your team, collaboration programs, profit-sharing type arrangements.

Outsource

Especially in the lab testing space. If you want to focus on your core business we are trusted outsourcing partners for global companies such as Rio Tinto and O-I, the world's largest glass container manufacturer.



Why us?

An established skillset fueled by the best brains in the business (including Principals with over 40 years' experience), proven to solve the most difficult, technical challenges.

International experience, including SE Asia, India, Middle East, and multiple global collaborators.

Your role

If you are in one of these roles and you have technical problems, visit hrl.com.au, email info@hrl.com.au or give us a call on +613 9565 9888.

Executives

Deliver strategy, reduce risk, build capability, and ensure financial goals are met.

Engineers

Solve technical problems, manage risk, improve performance, and obtain the insights you need to make the best decisions.

Asset Managers

Run assets reliably to a tight budget with a focus on long-term productivity.

R&D Managers

Innovate and add value with expert out-of-the-box thinking to drive growth.

Technical & QA Managers

Assuring the quality of your companies product.

Procurement Managers

Understand technical specifications, and pick the right supplier partnerships for value, quality, delivery time, and reliability.

Lawyers, Insurers, Investment Bankers

Obtain the outcome you need with expert advice, due-diligence, and witness services.

Government leaders

Ensure the right technical expertise is applied to successfully deliver policy and specific initiatives.



Visit hrl.com.au and find out how we can create value for you and your role.



Are you ready
to transform
your business
performance?

Ask our experts.
Visit hrl.com.au

Start by scoping your project with our no-obligation 'Engage' session, the first step in our collaborative hrl: blueprint.

Together, we will collaborate to understand your problem or opportunity, identify industry best practice, and break down the steps into a potential scope of work. It is then completely up to you whether you choose to proceed with us, someone else, or not at all.

Contact our technical consultants on —
+613 9565 9888 or **info@hrl.com.au**
to get started today.



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and the wider SE Asia.

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