

Services to the Cement Industry

Background

Applying the knowledge and expertise of our staff in all aspects of fuel utilisation, HRL provides a wide range of technical services to the cement industry:

- Analytical services (chemical, thermal, physical, mechanical);
- Problem solving, debottlenecking, efficiency improvement, greenhouse gas abatement, heat recovery and co-generation options
- Metallurgical services, failure analysis, corrosion and erosion investigations, noise and vibration
- Computer modelling – finite element analysis (FEA), computational fluid dynamics (CFD), process simulation, plume dispersion
- GES and NPI reporting, energy audits, policy review, carbon trading (NGAC and REC)
- Plant and environmental sampling (temperature, flow, pressure, particulate and gas sampling)
- Explosion risk assessments

Our experience includes combustion and heat recovery boilers, rotary kilns, calciners, fluid-beds, fans, drying and milling circuits, co-generation plant, cooling towers, cyclones, EDP, bag filters.

Fuel Assessment and Characterisation

HRL's expertise in coal and fuel utilisation encompasses the characterisation and behaviour of coals, waste oils and carbons, biomass and other materials under pyrolysis, gasification and combustion conditions. With this background, we have assisted our clients evaluate alternative fuels for use in cement kilns.

- Routine analysis of coal and coal derived products, carbons, biomass, oils, wastes, etc.
- Proximate and ultimate analysis, calorific value
- Elemental composition (C, H, N, S, Cl, F, major and trace metals)
- Thermal behaviour of materials to 1500°C
- Physical properties (size, density, porosity, rheology of oils and slurry fuels)
- Fuel reactivity and ash behaviour.



HRL provides a wide range of services to the cement industry

Materials Performance

Our materials group provides plant condition and life assessments, identification of root causes of plant failure, inspection programs, weld repair and metallurgical services. Strain gauging and Finite Element Analysis modelling is used to address problems of thermal and mechanical stress.

HRL Technology Group Pty Ltd
ABN 89 609 887 327
info@hrl.com.au
hrl.com.au

Melbourne
Level One Unit 4
677 Springvale Road
Mulgrave VIC 3170
Phone +613 9565 9888
Fax +613 9565 9879

Victorian Regional Office
Gippsland Enterprise Centre
50 Northways Road
Churchill VIC 3842
Phone +61 3 5132 1500
Fax +61 3 5132 1580

Queensland
Unit 2
33-37 Rosedale Street
Coopers Plains QLD 4108
Phone +61 7 3423 4300
Fax +61 7 3345 5937

Process Design and Modelling

Our process design and modelling teams undertake process simulation, feasibility and costing studies including flowsheet development (mass and energy balances). We are also able to evaluate options for heat recovery and power generation including co-generation cycles integrated into your process plant. Advanced combustion and flow modelling techniques are used to optimise the design of burners, improve combustion and heat transfer, and reduce emissions. Plant erosion or deposition, high pressure drops, poor quench gas mixing or other problems caused by mal-distribution of flows can be addressed.

Plant and Environmental Sampling

HRL performs measurements and sampling of stack discharges to the environment. We also have the unique capability of performing measurements within demanding process conditions including high temperature (combustion) and particulate laden streams. Using purpose-built probes, we can profile temperature, pressure drop, gas velocity and flow behaviour, and measure particulate loading and gas composition.

Contact

Alex Blatchford

Telephone +61 3 9565 9873

Mobile +61 408 319 842

Email ablatchford@hrl.com.au

Need more information? Go to hrl.com.au

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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