



CLIENTS | PEOPLE | PERFORMANCE

# ENERGY



GHD IS AN INTERNATIONAL PROFESSIONAL SERVICES COMPANY. OUR PEOPLE DELIVER INNOVATIVE SOLUTIONS BY COMBINING TECHNICAL SKILL AND EXPERIENCE WITH AN UNDERSTANDING OF OUR CLIENTS' OBJECTIVES AND ASPIRATIONS.

The Energy sector faces an exciting future in a carbon constrained world, as we meet the demands of sustainable stakeholder value. GHD provides solutions in the fields of power generation, power delivery, energy recovery and renewable energy, ranging from waste energy recovery to cogeneration facilities, cleaner application of conventional carbon-based fuels and renewable energy sources.

We take a whole-of-life focus on delivering integrated, practical and innovative solutions. Our team of specialists can assist you to enhance revenue, reduce costs, improve productivity, maintain continuous improvement in quality of supply, and meet community and environmental expectations. Working together, we can keep you at the forefront of your industry.

## OUR SERVICES

Services can be packaged from individual studies through to complete engineering, procurement and project management. GHD can design, co-ordinate, integrate and manage your entire project.

### PROJECT FEASIBILITY

- ▶ Engineering concept development
- ▶ Project capital cost development
- ▶ Thermodynamic cycle modelling
- ▶ Operations and maintenance cost databases
- ▶ System planning investigations
- ▶ Environmental issues
- ▶ Approvals support
- ▶ Due diligence

### DESIGN

- ▶ Full range of design services
- ▶ Documentation
- ▶ Quality Assurance

### PROJECT DELIVERY

- ▶ Owner's engineer
- ▶ Project manager
- ▶ Engineering, procurement and construction management



Rowville 500kV terminal station, Victoria.



BP Cogen (116MW) Kwinana, Western Australia.



### CONSTRUCTION

- ▶ Material and equipment procurement
- ▶ Scheduling
- ▶ Construction phase services
- ▶ On-site management
- ▶ Quality control
- ▶ Cost control and reporting
- ▶ Commissioning
- ▶ Procedures, manuals

### PLANT MODIFICATION

- ▶ Repowering
- ▶ Retrofit
- ▶ Cycle enhancements
- ▶ Control system upgrades

### PLANT SERVICES

- ▶ Plant life management
- ▶ Performance monitoring
- ▶ Licencing
- ▶ Air quality control
- ▶ Operation and maintenance consulting

### OUR CAPABILITIES

#### POWER GENERATION

- ▶ Fossil-fuelled thermal plants
- ▶ Simple cycle and combined cycle gas turbine plants
- ▶ Cogeneration
- ▶ Fluidised bed combustion
- ▶ Coal gasification, Integrated Gasification Combined Cycle
- ▶ Renewables
- ▶ Nuclear (B&V)

#### POWER DELIVERY

- ▶ Substations (transmission and distribution)
- ▶ Overhead and underground power transmission
- ▶ HVDC
- ▶ Energy management systems
- ▶ Utility communications
- ▶ SCADA

#### ENERGY RECOVERY

- ▶ Heat recovery from waste gas and liquid streams
- ▶ Combustion of selected waste gas
- ▶ Innovative solutions for higher thermal efficiencies and lower greenhouse gas emissions



132kV transmission Channel Island, Northern Territory.



Alinta's 2 x 140MW cogeneration at Alcoa's Pinjarra refinery, Western Australia

## RENEWABLE ENERGY

- ▶ Hydro
- ▶ Wind
- ▶ Solar
- ▶ Tidal, wave
- ▶ Biomass
- ▶ Green waste

## ELECTRIC POWER AND STEAM GENERATION PLANTS

GHD provides specialists to effectively use a range of energy sources, including natural gas, coal, oil and renewables. Our innovative and effective design techniques can achieve high thermal efficiencies, short construction time and outstanding plant performance, particularly from gas turbine and combined cycle plant.

Cogeneration has enabled major industrial clients to reduce overall energy costs and greenhouse gases by more than 30 percent by jointly producing electricity and steam from a common fuel source. We are skilled at understanding our host industrial plant's process steam and electricity demand profile to produce a conceptual design which allows optimum integration of the cogeneration plant with the process.

The basis of GHD's experience is plants actually built.

## POWER DELIVERY

The transmission and distribution experience of GHD includes system studies and engineering of most aspects of transmission and distribution, including overhead and underground high voltage systems and substations up to 500kV.

## GLOBAL EXPERIENCE THROUGH COLLABORATION

GHD has a long-standing alliance with United States-based Black & Veatch (B&V). Since the late 1970s, the GHD-B&V alliance has delivered a global capability to our clients, backed by the resources and experience of over 10,000 staff. B&V's track record includes over 48,000 megawatts of coal fired generating units, over 80,000 megawatts of gas turbine-based projects, over 10,000 kilometres of high-voltage transmission lines and 1,000 substations. In addition, the B&V capability in gas processing projects is available through the alliance, covering gas compression and re-injection, Natural Gas Liquid (NGL) recovery, and Natural Gas Liquefaction - PRICO® process.



## ABOUT GHD

GHD is an international professional services company. Our people deliver innovative solutions by combining technical skill and experience with an understanding of our clients' objectives and aspirations.

With more than 6000 people in a network of 100-plus offices throughout Australia, New Zealand, Asia, the Middle East, the Americas and Europe, we serve clients in the global market sectors of infrastructure, mining and industry, defence, property and buildings and the environment.

Central to our clients' prosperity and GHD's success are forward-thinking engineers, architects, planners, scientists, drafters, project managers, economists and supporting staff. Our people embrace the core values that have sustained the company since inception – **Teamwork, Respect and Integrity.**

Established in 1928, GHD is ranked as one of the world's leading engineering, architecture and consultancy firms. We are dedicated to our clients and their stakeholders, to being a responsible corporate citizen and to improving the quality of life around the world.

We contribute to the goals of sustainable development and are committed to managing the social, economic and environmental impacts of our operations and assisting our clients to manage theirs in the provision of our technical consulting services. We recognise innovation as the key to realising this objective.

As a member of the World Business Council for Sustainable Development (WBCSD), GHD actively participates in the public debate on the role business has to play in managing climate change, energy, development and ecosystems.

GHD operates under a Practice Quality Management System that is certified to AS/NZS ISO 9001:2000 and our Environmental Management System (EMS) is accredited to international standard ISO 14001 by NATA Certification Services International (NCSI).

For more information, visit [www.ghd.com.au](http://www.ghd.com.au)



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