



IDEAS ENGINEERED

JORD GROUP

POWER INDUSTRY

CELEBRATING FOUR DECADES OF SERVICE

Jord supplied the closed circuit cooling water system, NOx control modules and turbine wash skids to this 2,100 MW gas fired power plant in Saudi Arabia.

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JORD FOUNDATION

Jord has served the power generation industry for over 45 years, with innovation, value and reliability. We are a privately owned firm that has grown steadily and organically, by solving unique problems with speed and personal service.

Think hard about Jord. We'll be thinking hard for you.

Main page : Modular delivery of economiser components for brownfield retrofit, Australia.
Opposite page : Lube oil recirculation module for offshore gas turbines, Brazil.



Ideas Engineered

Jord custom-designs, manufactures, commissions and services process plant for the power generation industry. We supply individual capital equipment, or integrate various technologies into bespoke modular systems or complete turnkey plant. We collaborate with clients for both greenfield and existing sites, to meet the efficiency and environmental challenges of our times, while delivering innovation, value and reliability.

For example, Jord overcame severe plotspace restrictions on a Petrobras Brazil offshore gas platform to design and construct lube oil recirculation modules for four gas turbines.

Recently, Jord overcame a number of hurdles to successfully retrofit a 36 MW boiler into an existing power plant. Factors to consider were poor site access, a maximum lift restriction, minimising plant downtime, the structural integrity of the unit due to limited anchor points and easy replacement of the cold end tubes in the event of dew point corrosion.

“A pile of rocks ceases to be a pile when somebody contemplates it with a cathedral in mind.”

- Antoine St. Exupery



One of four iso-pentane vapourisation modules for a LNG associated gas fired power plant.



Innovation

Jord's motto of Ideas Engineered reflects our pursuit of creative technical solutions that are cost-effective and dependable.

As every project is different, we collaborate with our client's experts to devise, consider and rank options : methodical approaches harnessing open minds and lateral thinking. Each approach is driven by a desire to reduce cost, time and risk – both for plant installation and for ongoing service and refurbishment.

One of our more unusual projects was a brief to custom design and construct an iso-pentane revapourisation system for a Combined Cycle Power Plant, such that all iso-pentane produced in an adjacent LNG facility could be fully consumed without any venting or flaring. Jord's system comprises five modules that convert liquid iso-pentane into superheated pentane vapour for delivery to the power station's HRSGs.

“Ideas are like rabbits. You get a couple and learn how to handle them, and pretty soon you have a dozen.” – John Steinbeck

Clockwise from main page : Absolute gas separator modules, Kuwait. Gas turbine wash module, Sweden. Containerised NOx control modules, Algeria.



Value

In all our projects, we will look to add value, be it to increase capacity or efficiency, reduce cost or operating risk, decrease cycle time or reduce environmental impact.

Jord's turbine auxiliary systems are a good example of this. Over a 20 year period, Jord has provided good value to its repeat order customers by a relentless drive to reduce both module cost and cycle time.

Since Jord's first cooling water recirculation module was designed, manufactured and delivered to a 120 MW Malaysian power plant in 1994, Jord has supplied over 1,000 gas turbine accessory modules, to all points of the globe. In addition to cooling water, applications include NOx emission control, fuel and lube oil conditioning and turbine washing systems.

References include a number of world scale installations, for 1,000 MW+ gas fired power plants involving large banks of turbine accessory modules. Short cycle time delivery has been a key consideration for these projects, requiring strict adherence to rigorous project execution processes.



Jord ACC references range from winterised conditions in northern Russia (main page) to the desert environment of Saudi Arabia (opposite).



Reliability

Just as many of our earliest plants will soon reach 50 years of active service, we expect our latest plant to do the same, even in the most challenging of operating environments.

There are many reasons for this. First, we have the technical skills and take the time to understand the full plant in which our system will operate. This allows us to appreciate the risks ; ensuring our part of the plant is well designed and manufactured. Second, we nurture exclusive, stable fabrication partnerships that over decades provide consistent quality of manufacture and service. Finally, as a private firm that's here for the long term, we bend over backwards to make sure our systems operate as designed for our clients. We systematically troubleshoot operational issues and work with our customers to optimise performance as process conditions change throughout the life of a plant.

Jord's reliability can be demonstrated through its steam cycle heat exchanger systems. Our robust Air Cooled Condenser (ACC) designs were forged from a joint venture with German based Balcke Duerr in the 1990s. The units we have supplied since then span the harshest of operating environments; from the hot sandy desert environment of Saudi Arabia to the freezing conditions of northern Russia, where design temperatures drop to – 45 deg C.



CASE STUDY - FLUE GAS DESULPHURISATION

Flue gas desulphuriser (FGD) on a 55MW Indonesian power plant (main page). Wet electrostatic precipitator and detarrer for a 2 x 120MW power plant in a China steel works (opposite page).

QUALITY DELIVERED

Case Study – Fuel Gas Conditioning

Jord's Wet Electro-Static Precipitators (WESP's), Detarrers, and Flue Gas Desulphurisation (FGD) units offer superior technology to tackle difficult and complex plant emission applications within the Power industry.

Such as the cleaning of synthesis gas, or Syngas, to fuel gas turbines. Syngas is typically created as a by-product from Blast Furnaces and Coke Ovens. It is heavily contaminated with small particles of dust and tar. Carefully designed Detarrers and WESP's condition the gas, making it suitable for Gas Turbine use.

FGD is a process for removing sulphur dioxide from the flue gas of boilers burning high sulphur fuels. Conventional FGD systems often require an expensive reagent, high grade lime or limestone, and generate solid wastes that must be transported to landfill. Jord's FGD systems utilize a range of less expensive reagents that produce a saleable product, gypsum, which has multiple uses including the manufacture of cement.

Modular delivery is undertaken wherever practical.
The below two ACC modules, each weighing 300
tons, were seafreighted from Asia to the Caribbean.



Jord International

Jord has been serving the global process industries since 1972. Established in Australia, 80% of our business is international. Power is one of three business divisions, the other two being Oil & Gas and Resources. We believe our engineering ideas work because, though they are innovative, they come from a very stable and effective base of people, partners, capital, performance and standards. Our principles of respect and fairness in all dealings have served us well.

JORD INTERNATIONAL



1970s

Australian Foundations

Jord formed in 1972 to support the Australian sugar, minerals, oil and gas industries. Core technology in heat transfer and separation.

1980s

Asian Manufacturing

Value added via pioneering a strategic manufacturing alliance in Singapore. This was soon followed with alliances in multiple Asian and Middle Eastern countries.

1990s

Technology Investment

Organic growth generated through the broadening of technology and know-how, the investment in ISO standards and the development of a proprietary project execution system.

2000s

Global Growth

The gradual opening of offices across most continents, to locate staff closer to customers and fabrication centres.

2010s

Strategic Alliances

A focus on exclusive alliances that leverage the complementary skills of Jord and its partners to offer better value to customers.

FUTURE

Organic Growth

From FEED studies through to EPC solutions for biomass, waste to energy and small scale power plants.



People

Jord was one of the first Australian engineering companies to support the country's resource boom from the 1970s. John Holden and Phil Blundell attracted and developed the expertise needed for their vision of serving the emerging petroleum, alumina, nickel and sugar industries, drawing in engineers with ability, humility, curiosity and dedication.

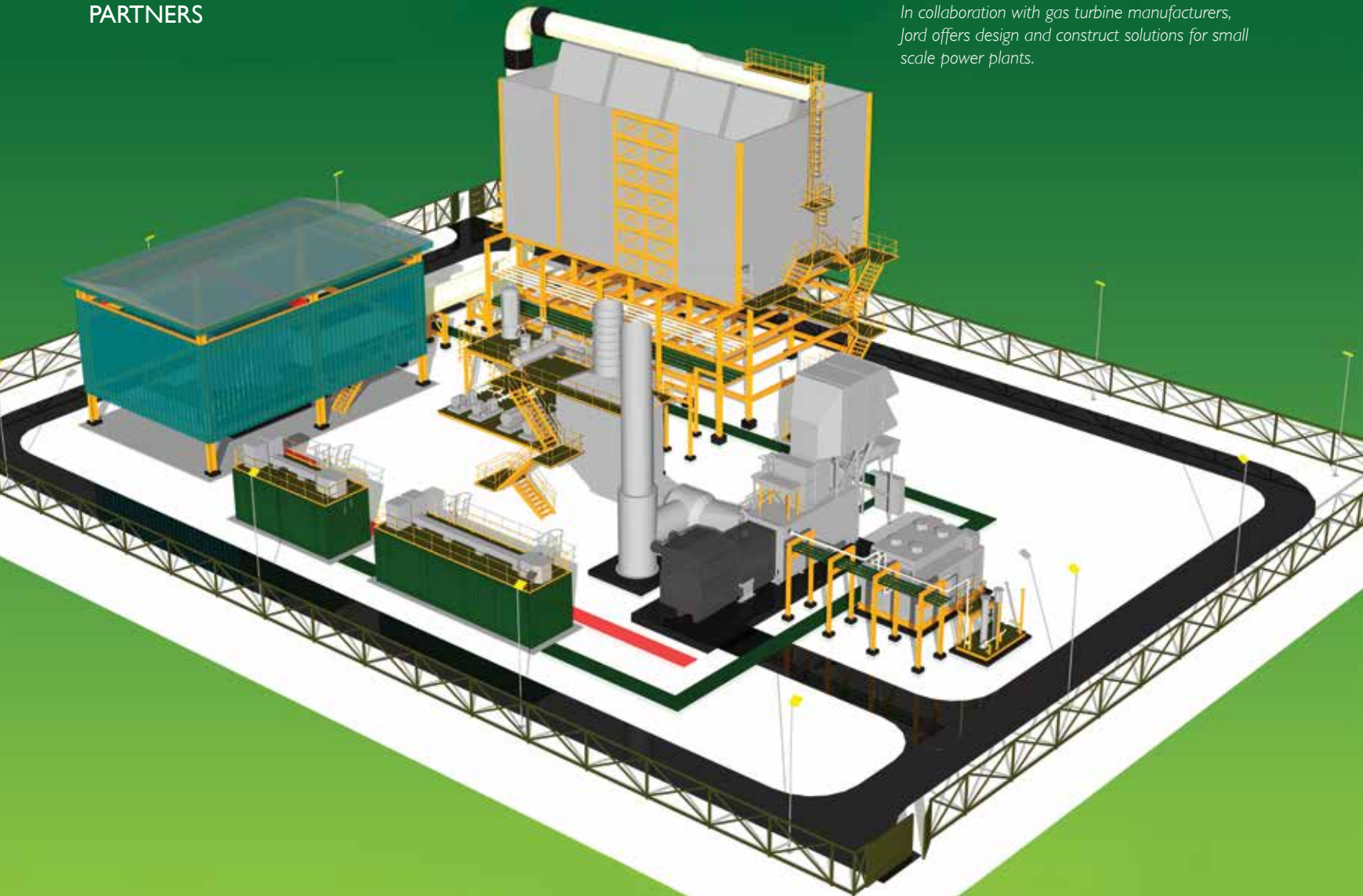
Now, the staff who share those same qualities span 10 countries, 25 nationalities and 40 languages. Our average length of service is 10 years, well ahead of the industry average.

Jord offers our people the stability of private ownership, flexible work arrangements to balance long-term commercial, professional and personal ambitions, and a significant share in the annual profit of the business.

“An idea is salvation by imagination.”

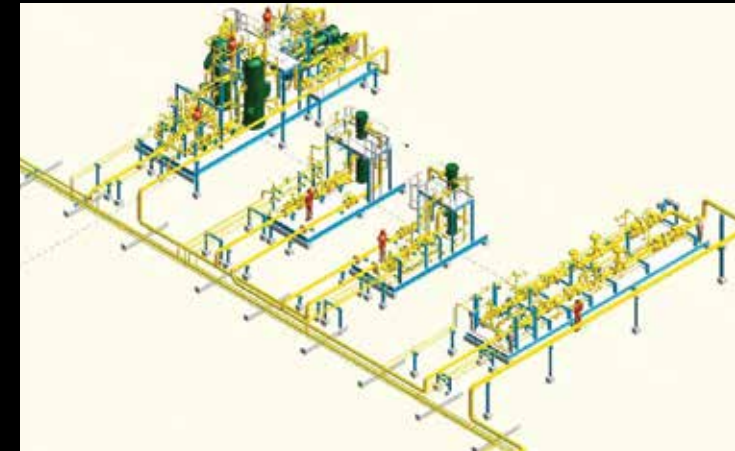
– Frank Lloyd Wright

PARTNERS



In collaboration with gas turbine manufacturers, Jord offers design and construct solutions for small scale power plants.

JORD INTERNATIONAL



Partners

Jord fosters and sustains long-term partnerships with international technology leaders, with fabricators and with our customers, to learn from each other, solve challenges and engineer ideas. Many of these partnerships have prospered for decades.

Together, we have custom-built and manufactured well over USD 2 billion of bespoke plant and systems. Each project, each technical challenge and each commercial setting is different.

In collaboration with turbine suppliers, Jord offers design and supply of major equipment through to complete EPC solutions for bio-mass, waste to energy and small scale simple cycle, combined cycle and cogeneration power plants. For example, Jord recently secured an order to supply fuel gas treatment, air cooled condensers and a cooling water circuit for a 90MW combined cycle power plant in the middle East.

“Eventually everything connects — people, ideas, objects. The quality of the connections is the key.”

— Charles Eames

Single row ACC Jord supplied to a 130MW power plant, Korea.

Capital

Jord remains debt-free, with both a strong balance sheet and available facilities to ensure the financial demands of large international projects are met. Our conservative fiscal approach has helped us meet these demands despite four major global economic disruptions over our 40 years.

Retaining stable, private ownership during this time has also allowed Jord to invest in its staff for the long term.

“The value of an idea lies in the using of it.” — Thomas Edison

Performance

Annual revenues of up to \$200 million has been generated through steady, organic growth rather than ‘bolt-on’ acquisitions — our customers trusting us with ever bigger and more complex projects. Our most satisfying projects are the ones where challenging circumstances are overcome and customer expectations are exceeded.

Jord's quality guarantee is backed by over 20 years of ISO accreditation; our systems are fully integrated to ISO9001, 14001 and 18001. We have developed our own custom-built, web-based “Horizons” project execution system and knowledge centre. Horizons gives our globally spread staff and customers real-time project information and performance data.



Jord Environmental Trust

The Jord Environment Trust ("JET") was established in 2007 with a charter to donate funds to international causes that help foster a biologically diverse and sustainable planet.

Over \$2 million of capital has been steadily accumulated out of Jord annual profits, the interest from which is donated to various not-for-profit causes.

Most recently, JET supplied pro-bono services and funding to deliver various clean water and clean (solar) energy projects to nature reserves being managed in outback Australia by the world renowned Bush Heritage Trust. Other projects include cyclone relief in the Philippines, earthquake relief in Nepal and sustainable development in Cambodia.



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