



YOUR PARTNER FOR ENERGY AND
ENERGY TRANSITION



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INTRODUCTION BY NICHOLAS GRZEGORCZYN

CEO/MANAGING DIRECTOR

Nicholas Grzegorzczyn



Gasco is an established heat transfer, process engineering company who designs, manufactures, installs, commissions and services a diversified range of equipment over the life of the asset, locally and internationally.

Gasco is committed to the environment and energy transition following the world energy market and COP26 net zero emission target to be achieved by 2050.

Natural gas is the traditional fuel for Gasco gas fired equipment. This will also be the transitional fuel to hydrogen which will be required to meet 2050 zero emissions. We are focusing on hydrogen, electrification, energy efficiency, solar thermal, waste heat recovery and waste to energy into the future, supplying equipment that reduces greenhouse gas emissions, eliminates hazardous VOC pollutants and odours.

Due to the high caliber of our staff and alliance partners, such as Concord Blue Energy whose technology can convert waste directly to hydrogen, Gasco has become a go to company in Australia and is building on that reputation in NZ, SEA and UAE. The Gasco team is our biggest asset to our brand where our positive mindset, culture, resilience, teamwork and focus on quality, together with our technical capability, establishes a standard of excellence expected and welcomed by our customers at home and abroad.

We always do the right thing by our customers, providing them the support they require for the equipment we supply over the life of the assets. We look forward to working with you all during this energy transition era.



Gasco Directors

Left to right:

Ed Strauks

Engineering Director –
Combustion & Control.

Ian Matthews

Sales & Marketing Director.

Nicholas Grzegorzczyn

CEO/Managing Director.

Alan Hovorka

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Oil & Gas.

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Background: RTO for Woodside Pluto Project.

Front cover: Top Left: Concord Blue Reformer® for
Syngas and Hydrogen production.

Bottom Left: Industrial Solar Fresnel Collectors, Jordan.

2 Right: 43 MW API560 Fired Heater, Australia.



WASTE HEAT RECOVERY & ENERGY EFFICIENCY



Waste Heat Recovery Systems reduce energy costs which saves clients' money, provide carbon credits and help the environment by reducing emissions.

Gasco supplies a comprehensive range of waste heat recovery solutions for the following:

- Gas Turbines – Thermal Oil, Hot Water, Glycol
- Gas and Diesel Engines
- Thermal Oxidisers, VOC/Combustion, Air Preheating, Thermal/Hot Oil, Hot Water
- Air Preheaters for Fired Heaters
- Furnaces/Melters, Recuperators/Recuperative Burner and Heat Pipe HX
- Heat Recovery Steam Generators (HRSG)
- Direct Contact Waste Heat Recovery Systems

Gasco range of equipment includes:

- Waste Heat Recovery Units (WHRU)
- Heat Recovery Steam Generators (HRSG)
- Heat Pipe Heat Exchangers
- High Temperature Recuperators/Heat Exchangers
- Recuperative Burners

Energy Efficiency

Gasco has supplied energy efficient systems for greenfield projects and for existing brownfield sites. Examples include upgrading Fired Heaters, retrofitting dryers in the food industry, glass, textile, automotive and manufacturing industries.

Gasco can provide complete systems including bypass dampers, silencers, stacks, fresh air and supplementary burners, skid mounted combustion control skids, supervision of erection and provision of commissioning services.

Gasco is a licensee of Eck Rohr Kessel (ERK) for their patented Corner Tube Boiler technology for Steam Boilers.

To date over 6,000 ERK Boilers, HRSGs and high temperature recuperators have been supplied worldwide.

**Top: Thermal Oxidiser and Hot Oil Heat Recovery
OMV/Clough Sawan, Pakistan**

**Centre: HRSG with supplementary firing for Australian food
company.**

**Bottom: 3 x 3 MW WHRU on Solar Turbines, BHP Macedon,
Western Australia.**



THERMAL OXIDISERS

Thermal Oxidisers are a class of pollution control devices that use the combustion process to destroy Volatile Organic Compounds (VOC) and Hydrogen Sulphide, hence they are sometimes called afterburners, fume incinerators or tail gas incinerators.

Gasco Thermal Oxidisers include:

- Straight Thermal Oxidisers
- Thermal Oxidiser fitted with Heat Recovery equipment
- Preheat VOC/Combustion Air, WHRU, WHB for steam production
- Recuperative
- Catalytic
- Regenerative (RTO)
- Nitrogen Bearing Waste Staged Thermal Oxidiser

Gasco Thermal Oxidisers can handle a wide range of process parameters including variable waste flow rates, calorific values, temperature and oxygen content.

Features of our Thermal Oxidisers are their robust performance, ability to operate at high thermal efficiency and achieve >99.99 per cent destruction efficiency.

Gasco Thermal Oxidisers scope may include turnkey projects, designed to comply with our clients specifications and environmental authority regulations.

We have supplied Thermal Oxidisers to the oil and gas, chemical, automotive, medical, food, mineral and metal industries as well as LNG Import Terminals and LNG Plants.

Heat from the exhaust of a Thermal Oxidiser can be recovered in a Waste Heat Recovery Unit, energy can be utilized in the form of heat transfer fluids – oil, water, air and to raise steam.

A Gasco RTO can provide average thermal efficiency of up to 95+% and use about 20 times less fuel than a TO with no heat recovery. In some applications the VOC present in the waste gas stream may enable the Gasco RTO to operate without any supplementary fuel gas (except at start up). Destruction efficiency of up to 99.5+% is achievable.

Top: Thermal Oxidiser and Hot Oil Heat Recovery, Minerva Gas Plant, which includes Thermal Oxidiser, Heat Recovery, Circulation Pump and Air Cooler.

Centre: Thermal Oxidiser being assembled in our factory prior to FAT. The Thermal Oxidiser is for a Victorian Gas Plant. The TO is designed for VOC and waste liquid destruction.

Bottom: Two Thermal Oxidisers for a Terminal project in Victoria.



FIRED HEATERS



Gasco supplies Fired Heaters to API 560 and ISO 13705 and proprietary Gasco forced draft convective heaters.

A typical API 560 Fired Heater consists of a:

- Radiant Section
- Convective Section
- Stack
- Burners, Natural Gas, Oil, Hydrogen, Dual Fuel
- Fuel Skid
- Control Systems
- Combustion Air Preheaters

Gasco being both a combustion and heat transfer company is uniquely placed to achieve the best possible outcomes with respect to high thermal efficiencies, low emission, reliable operation and state-of-the-art Burner Management Systems (BMS) to NFPA, IEC and other codes.

Gasco can supply cylindrical or box cabin type direct fired heaters, equipped with low NO_x, natural draft or forced draft burners.

To increase efficiency, preheating of combustion air can be achieved by adding a variety of air preheater exchangers.

With the demand for ever increasing safety and reliability levels Gasco can design and supply BMS to IEC 61508 Programmable Electronic Safety Systems. We can also provide a basic hard wired system up to SIL 3.

Gasco convective heaters rely on forced convection heating only, are compact and can achieve thermal efficiency of 90 per cent using convective heat transfer.

Fired Heater Upgrades for Existing Units

Gasco has upgraded existing heaters to improve efficiency, safety and emissions using the latest PLC based BMS, and Low and Ultra Low NO_x Burners.

Gasco has upgraded heaters in many local and overseas locations, for both onshore and offshore applications.

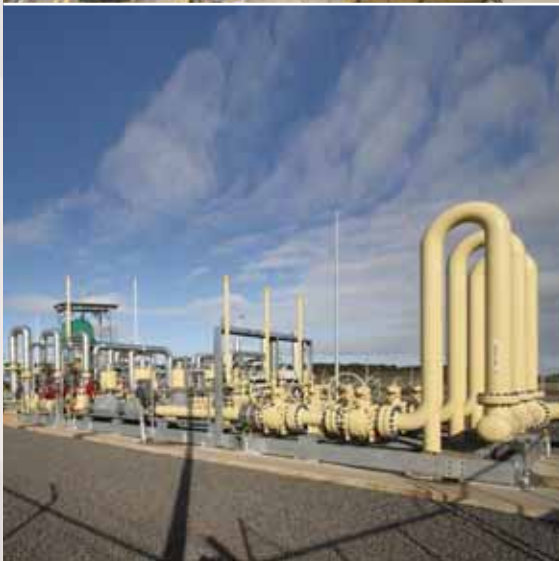
Top: Forced Convection Regeneration Gas Heater, APA Group.

Centre: AP1560 Reboiler with recirculated combustion gas to reduce NO_x at LNG Plant In Australia.

Bottom: Fired Heaters – Turkmenistan Gas Plant 18.8 MW each. Each Heater has dual combustion air fans, triple redundant BMS and sophisticated control systems.



GAS CONDITIONING & BURNER CONTROL SKIDS



Gasco is an Australian premium designer and supplier of Gas Conditioning & Burner Control Skids. Gasco has been building Skids for over 30 years.

Skids have been supplied for the following applications:

- Power generation for gas turbine & reciprocating engines
- Fired Heaters specialising in sophisticated mass/air fuel ratio control systems
- Gas conditioning of natural gas for power generation; normally includes removing dirt, oil, water, heating to compensate for the Joule-Thompson effect, pressure reduction, custody metering

Gasco has supplied Filter Coalescers, Heaters, Water Bath or Electric, Pressure Reduction and Metering Skids & Emergency Shutdown Systems.

A typical Gas Conditioning System for a gas turbine/engine consists of the following:

- Emergency Shutdown Systems
- Filter Coalescers
- Custody Transfer Metering with Analysers
- Water Bath Heaters API 12K
- Hot Water Heater/HX Gas Heating
- Pressure Reduction Stations
- Black Start Heaters (electric/steam/hot water)

Gasco designs and builds skid mounted equipment to meet client, Australian and International Standards including: AS1210, AS4140, ASME B31.3, API 12K etc.

Instrumentation and controls are normally part of scope and skids are prewired and functionally factory acceptance tested (FAT) before leaving our workshop, minimising erection and commissioning times.

Multiple skids may be trial interconnected and tested before disassembly for transport. Additional features may include hot or cold insulation and heat tracing.

Gasco has supplied Gas Conditioning Systems for GE, Rolls Royce, Pratt & Whitney and Siemens Gas Turbines and Wartsila, Jenbacher and other Gas Engines.

Top: Gasco Conditioning equipment being manufactured in Gasco's workshop.

Centre: Gas Conditioning Skid, part of 13 Skids provided to a Power Generation company for 2 x 350 MW Gas Turbines.

Bottom: Burner Control Skids for Furnace and Forehearth firing supplied to Victorian Glass Plant.



WATER BATH HEATERS



Water Bath Heaters are Indirect Fired Type usually designed to API 12K. These devices are traditionally used to heat natural gas and oil.

Water Bath Heaters can also be used for heating:

- Crude Oil
- Vaporizing and superheating LPG & LNG
- Regeneration Gas Heating
- Heat Transfer Fluids
- Heat sensitive gas and fluids
- Molten Salt Heaters Direct Fired Reboilers
- Amine Reboilers
- TEG Reboilers

The main application for Indirect Fired Water Bath Heaters is to heat high pressure gas prior to pressure reduction. This prevents hydrate formation that can occur because of the temperature drop due to the Joule-Thomson effect. The natural gas can also be post heated to suit the operation of gas turbines.

A typical Water Bath Heater consists of an insulated shell, removable process coil, removable fire tube, expansion tank with inspection lid, stack burner, gas train and control system.

Gasco options include:

- Natural Draft Burners
- Forced Draft Burners, Low NOx
- Pneumatic Gas Control
- Electric (Electronic) Control
- Remote Monitoring
- Hydrogen Firing

Gasco can supply complete Gas Conditioning Skids consisting of Water Bath Heater, Pressure Reduction, Filter Coalescer and Metering.

Gasco has supplied over 250 Water Bath Heaters in Australia and to a number of overseas companies. Industries serviced include LNG Import Terminals, Gas Transmission, Gas Turbine, Power Generation and Oil and Gas Processing.

Top: Water Bath Heater for Crude Oil Heating.

Centre: 6,300 kW Water Bath Heater for Gas Turbine Power Station, Australia.

Bottom: API 12K Well Head Heater, New Zealand.



ELECTRIC HEATERS - ELECTRIFICATION



Green Energy Heaters for the Future! As Electricity Generation moves to renewable energy sources in the future, Gasco Electric Heaters will enable the lowest cost, highest reliability and efficiency, to suit low emission energy targets of the 21st Century.

Hazardous Areas

In locations designated as hazardous areas where explosive atmospheres may exist, Gasco electric heating systems are IECEx certified, to meet the most stringent requirements.

Heating System Components

Electric Heating systems consist of three basic components for a complete heating system solution:

- Flanged Element bundle
- Vessel or tank
- Control panel

Electric Element Bundles

The element bundle comprises of a main element flange, fitted with electric heating elements designed to be fixed to a tank or pressure vessel.

Pressure Vessels/Tanks

Pressure Vessels manufactured to AS1210, ASME Section VIII Div 1; or static Tanks are used to house the element bundle.

Control Panels

Control Panels meet the specific requirements of each application, from simple on/off switching, through to complex control systems with multi-layered inputs into a PLC/HMI, with precise infinitely variable 0-100% Thyristor control.

Capital Costs

- Simple in design, compact; using few static components, and hence there are no wearing parts
- Surpass other heating systems, in controllability, efficiency, reliability and footprint
- Lower capital cost compared with other forms of heating

Running Costs

- Require little or no maintenance during their life, so maintenance costs are extremely low
- Directly heat the product with infinitely variable thyristor control, so they are extremely efficient
- Deliver heat instantaneously; so no energy is wasted
- Achieve the best value over the life of the product

Top: Electric Heaters supplied for Gas Conditioning in Tasmania, Australia.

Centre: Duty/Standby Electric Heaters supplied to APA Group, Australia.

Bottom: Electric Heaters supplied for Gas Conditioning in South Australia.



FLARES



Gasco has supplied flares to the oil and gas industry, flares for petrochemicals, flares for terminals, flares for landfill and flares for sewage (biogas) industries.

The majority of Gasco Flares are designed to meet the requirements of API 530, which calculates the height of the flare to achieve a predetermined radiation level.

Gasco can provide the following:

Flare type

- Utility (Pipe)
- Steam Assist
- Air Assist
- Gas Assist
- High Pressure Staged
- Enclosed Ground
- Pit/Ground

Flame support structures

- Self Supporting
- Guyed
- Derrick

Purge seals

- Dynamic
- Molecular
- Non Pulsating Liquid Vessel

Ancillaries

- Knock Out Drums
- Staging control
- Control systems: hazardous and non hazardous area rated
- Snuffing
- Remote Flame Monitoring
- Flame and Detonation Arrestors
- Radiation Shields for Offshore Platforms
- Consulting

Flare Alternatives

Environmental concerns with global warming are leading to increased attention being paid to Vapour Recovery and Zero Flaring.

Gasco, with our many years experience in the combustion and process field, can engineer a zero flaring system to suit your requirements.

Gasco Landfill flares (LFF) can reduce greenhouse gas emissions by 80 times over a 20 year period compared to continuing with untreated Landfill waste.

Top: Flare, Mole Seal, Dual Ignition Electronic & Flame Front Generator. Coal Seam Methane, Queensland, Australia.

Centre: Fully Enclosed Ground Flare, 4 stage firing with wind fence, 11 meters diameter & 23 meters high.

Bottom: Two Enclosed ground flares at a Waste Water Treatment Plant in Western Australia.



HOT OIL & THERMAL FLUID HEATERS



Gasco manufactures a range of Hot Oil Heaters, 100 kW–15,000 kW gas fired, 25 kW–1500 kW electric.

The Hot Oil Heaters consist of two concentric helical coils which has the advantage of compactness, high efficiency and low thermal mass.

The dual helical coil design allows maximized heat transfer, minimises thermal stresses and prevents overheating. The coil design has the advantage of high fluid velocities, low film temperatures and no accumulation of gases.

The burner can be selected to suit the application and type of fuel – gas, oil, heavy oil, dual fuel, hydrogen, timber. The flame shape is carefully matched to the coil configuration. Typical efficiency with air preheating can be up to 88 per cent depending on thermal fluid outlet temperature, fuel and atmospheric conditions.

Each heater has a prewired control panel thus ensuring safe and efficient operation.

We can also provide skid mounted units that incorporate primary and secondary pumps, expansion tanks, stack and drain/fill tanks, combustion air preheating.

Gasco designs and supplies complete Hot Oil/Thermal Fluid systems including the Hot Oil Heater, circulating pumps, deaerators, expansion tank, interconnecting pipework, manual and control valves, dump coolers, skid mounted, pre-piped and wired, FAT tested to minimise site installation costs and reduce commissioning time.

There are many applications suitable for hot oil heating:

- Tank Heating – Bitumen, Wax, Emulsions
- Reactor Heating – Chemical Industry, BioTech
- Platen Presses – Laminates, Moulding
- Hollow Flight Screws – Mineral Processing
- Pipe Tracing – Heavy Fuel Oil, Bitumen, Wax
- Ovens – Printing, Automotive
- Extruders – Plastic
- Fryers – Food
- Calendar Rolls – Plastic, Film
- Autoclaves – Aerospace, Rubber, Brick
- Dryers – Timber, Food
- Kilns – Timber
- Reactor Heating

Gasco can supply a stand-alone heater or a total engineered package to suit any or all of the above applications. Turnkey bitumen heating is a speciality.



Top: 700 kW Hot Oil Heater, circulation pump, expansion tank, heat exchanger, turnkey plant for gas regeneration Western Australia.

Centre: 13,000 kW Vertical Hot Oil Heater, circulation pumps and pipework, Thailand offshore.

Bottom: Dual Hot Oil Heaters, circulating pumps, deaerator and pressurised expansion tank, skid mounted, pre-piped and wired, New Zealand Gas Plant.

ENERGY TRANSITION



The world energy market is transitioning to net zero emissions by 2050. Gasco is a supplier of equipment and services to the energy market and has embraced net zero emissions. Gasco is unique in that we have the skills, knowledge and experience to make a positive contribution.

Gasco, for over 30 years, has provided combustion, high temperature, heat transfer, process and environmental products and services.

Gasco's 5 point plan is as follows:

- Waste Heat Recovery - Continue our range of waste heat recovery products
- Energy Efficiency - Provide energy efficient solutions to greenfield projects and to existing brownfield industries by retrofitting existing dryers, furnaces, thermal oxidisers and any process that has high heat loss
- Electrification - Gasco as a designer and supplier of process Electric Heaters can use our know how to provide electric heating for high temperature processes
- Solar Thermal - Gasco can provide turnkey solar thermal energy systems that convert solar energy directly into the generation of steam or hot water. Gasco can also supply molten salt systems
- Hydrogen - Gasco has had over 25 years' experience with hydrogen combustion systems, particularly firing high hydrogen content fuels for fired heaters and flaring. Gasco as a partner with BlueGas Technologies is able to provide green hydrogen from waste products

Energy Efficiency

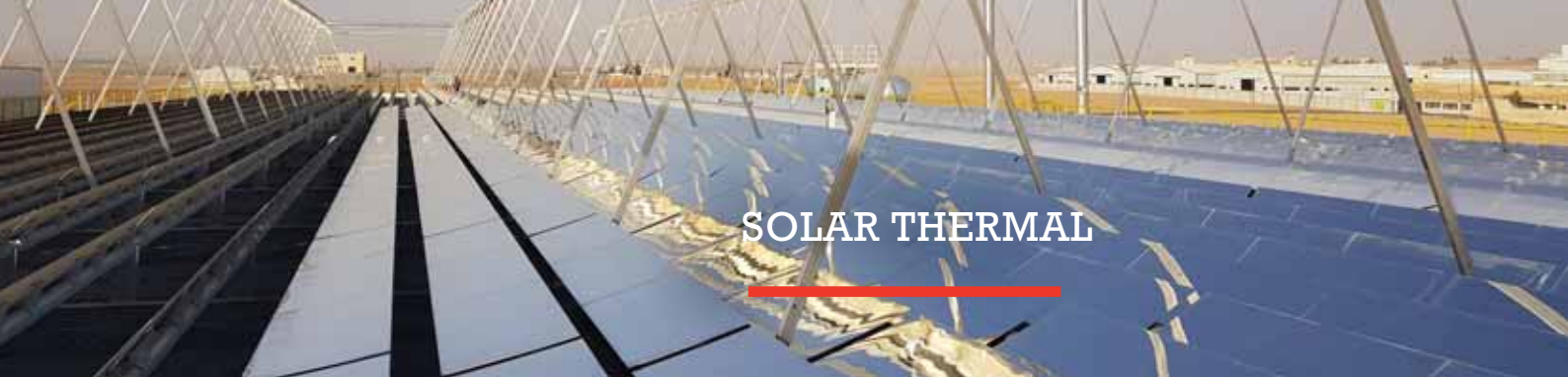
Gasco has supplied Waste Heat Recovery systems to recover heat and reduce energy cost from a number of high temperature streams in various industries. Gasco has provided Waste Heat Recovery Units and Heat Recovery Steam Generators fitted for the exhaust of Gas Turbines, as an example. Gasco has also retrofitted Waste Heat Recovery Systems to existing Thermal Oxidisers, Ovens and Furnaces.

Gasco has retrofitted API 560 to improve efficiency, reduce emissions and improve safety. Gasco has supplied refits in Thailand, UAE, Australia and Pakistan. Gasco can supply retrofits for onshore and offshore applications.

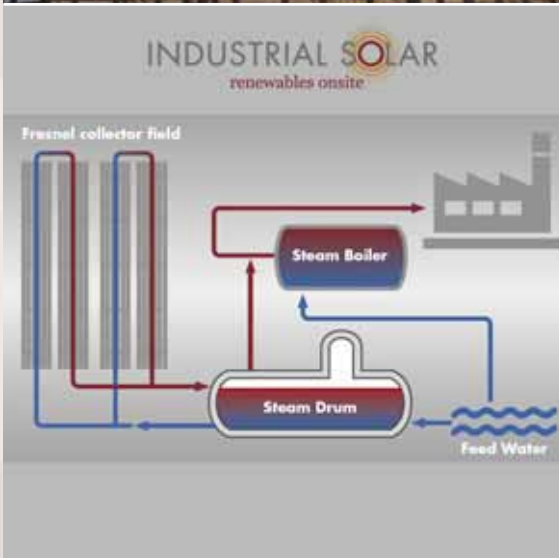
Top: Gasco designed Recuperator used on a Thermal Oxidiser to preheat waste gas (VOC) to 450°C using Thermal Oxidiser exhaust at 830°C, Automotive Industry, Australia.

Centre: Electric Heaters installed on a gas transmission line, Australian location.

Bottom: Combustion Air Preheater retrofitted to an existing 80 MW API 560 Fired Heater in Pakistan.



SOLAR THERMAL



Gasco has signed a Co-operation Agreement with Industrial Solar GmbH of Germany to promote Solar Thermal Systems for Process Heating in Australia and Oceania.

Our Solar Process Heat System generates clean energy for industrial heat grids. The system either generates steam directly or works with different heat transfer fluids such as pressurised water or thermal oil.

The LF-11 Fresnel collector uses high-quality components from the CSP industry and are designed to generate heat up to 400°C in the range of 500 kWth to 30 MWth at pressures up to 120 bar. Individually tracked primary mirror rows are used to concentrate direct solar irradiance onto a stationary absorber tube located in a linear receiver.

Advantages

- Low wind load – Lightweight and robust collector
- Good weight distribution
- High ground usage efficiency
- Remote control and monitoring via LAN
- Precise temperature and power control
- Very low water demand and electricity usage
- Easy cleaning
- Reliable components for long life (+25 years)

The system periphery consists of: hydraulic components, piping, sensors and indicators, electrical infrastructure, and system control software and hardware.

The lightweight structure makes the system optimal for rooftop installation for industrial and utility facilities.

The Solar Process Heat System can be integrated in various ways, for example:

- Direct integration into steam grids
- Direct or indirect integration into water or thermal oil heat grids
- Indirect integration with a heat exchanger to heat any type of process
- Solar cooling with absorption chillers
- Molten salt systems

Top: Fresnel Collector Field, Amman, Jordan.

Centre: Fresnel Functioning Principle.

Bottom: Steam Drum.



HYDROGEN

Concord Blue Reformer®



Gasco as a supplier to the Energy and Manufacturing Industries worldwide, has strived over the last 30 years to provide energy efficient, affordable and environmental compliant solutions to our clients.

The world is transitioning to a decarbonised future, Gasco and its international partners are committed to providing a range of products and services to meet the new paradigm. The Combustion of Hydrogen does not produce greenhouse gases.

Gasco is proud of the high quality equipment and services we have supplied and continue to supply.

Hydrogen

Gasco can provide a holistic approach from the production of Hydrogen, to the combustion of Hydrogen, to provide heat for industrial processes. Gasco has a proven track record over many years of using high content hydrogen waste gas to fuel Fired Heaters and Flaring. Gasco has also supplied equipment to companies supplying Hydrogen production facilities. Gasco can provide combustion solutions for companies transitioning from Natural Gas firing and design the equipment to be hydrogen ready. Gasco can also provide a consulting service, or a complete combustion solution.

Hydrogen Production

Gasco, in conjunction with BlueGas Technologies, can provide the technology and plant to produce Syngas or Hydrogen from solid waste using ceramic balls, a non-incineration process.

The high quality Syngas can be used to produce Green Hydrogen or be used in gas turbines/engines to produce Electric Power. Pictured above, the Concord Blue Reformer® is a revolutionary waste to energy thermolysis reformer which handles the disposal of multi-feedstocks such as municipal solid waste, industry toxic waste, sewage sludge and paper waste. Go to www.concordblueenergy.com for further information.

Gasco is involved with gas transmission companies to inject 10% Hydrogen into natural gas pipelines to reduce greenhouse gases. Gasco can supply Hydrogen compliant combustion skids and burners.

Top: Concord Blue Reformer® process diagram.

Centre: The heart of the Concord Blue technology are ceramic refractory balls that heat and convert the biomass, no combustion is used.

Bottom: Methane/Hydrogen fired Thermal Oxidiser for Queensland, Australia.

HEAT RECOVERY BOILERS & POWER TO HEAT (P2H)

Gasco is a licensee of Eck Rohr Kessel (ERK) Systems, Germany. ERK is a leading boiler design company and specialises in bespoke boilers including for:

- Waste to Energy, Municipal Solid Waste (MSW) and Refuse Derived Fuel (RDF)
- Heat Recovery Steam Generators (HRSG) for gas turbines and reciprocating engine exhaust
- Process Waste Heat Recovery Boilers (WHB) for Thermal Oxidisers
- Power to Heat (P2H)

With over 6,000 ERK® design Boiler systems and more than 80,000 MWth of installed capacity worldwide, ERK has a unique history of design expertise dating back to over 100 years.

The ERK® (Corner Tube) Boiler is a Single Drum Natural Circulation Water Tube Boiler. It has unique features and advantages compared to conventional bi-drum boilers:

- Rapid load change capability
- Self-supporting structure
- Light weight construction
- Smaller steam drum hence lower thermal stress and inertia
- Bottom drum eliminated reducing site construction time
- Downcomer tubes outside flue gas path hence lower stress and better natural circulation
- Quicker start up time

P2H Power to Heat is a growing trend with the increasing deployment of intermittent renewables which can give rise to new challenges for the electricity grid.

ERK has boiler designs that combine electrical heating and fossil fuel combustion. Some of the features are:

- Use of only one boiler instead of two separate units
- No thermal expansion constraints during rapid start up
- Parallel use of electric heating and conventional firing depending on electricity price

This concept not only enables operators of fossil fuel fired process heat units to lower carbon emission intensity, but also, create additional revenues by participating in the electricity balancing market.

Top: 3D view of P2H Integrated Fire Tube and Water Tube Boiler.

Centre: HRSG boiler for Gas Turbine 41 T/hr, 30 bar, 327 deg C with Supplementary and Fresh Air firing.

Bottom: Water Tube Heat Recovery Steam Boiler Single Drum Natural Circulation 4.5 T/hr, 10 barg downstream of SRU Thermal Oxidiser for Floating Production Unit.





EMISSION CONTROL + NON THERMAL PLASMA ODOUR ELIMINATION & SCRUBBERS

IonO2x® Odour Elimination

IonO2x® Odour Elimination System is a Non-Thermal Plasma Oxidation Technology that provides proven odour elimination of offensive organic odours.

Odourous gases include humid or dry process exhaust gases from animal and fish feed manufacturing, pet food production, human food preparation, sewage treatment plants and other nuisance organic odours in a variety of industries.

Features of the system include:

- No Green House Gas Emissions from fuel gas
- Odour Elimination of 90-95+%
- Only Consumable - Electrical Energy
- Single-unit capacity up to 100,000 m3/hr
- Any volume of air with multiple systems

IonO2x® NTO Technology passes the contaminated gas stream between a series of electrodes utilising a rapidly reversing, high intensity electrical flux density to fracture VOC molecules and strip and heat to extremely high temperatures. Reactive Oxygen Species (ROS) and Hydroxyl radicals (OH radicals) are formed.

The extremely reactive mixture of ionized gases and very high temperature electrons is described in scientific terms as 'Non-Thermal Oxidation' or 'NTO'.

Scrubbers

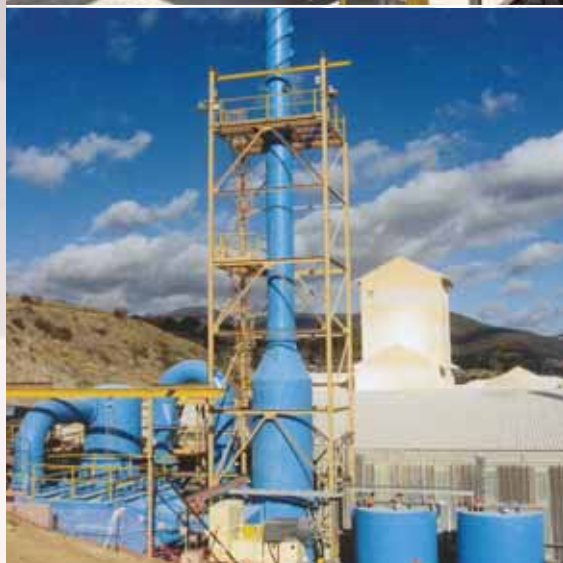
Gasco is the Australian agent for Bionomic Industries Inc, a world leader in clean air products and direct contact heat recovery. Bionomic Industries has an extensive range of Scrubbers, which include counter current packets tower, crossflow, tray, jet ejector venturi, gas atomising venturi, preformed spray, spray towers, RotaBed® Fluidized Bed .

Other products include Dri-Scrub™ Dry & Wet Systems, ECharge™ Electrostatic Precipitators, HEI™ Wet Electrostatic Precipitator, Hi-TScrub™ Quench/Scrubber System, BIONox Solver™ NOx Scrubbing Solution, QSense™ Direct Contact Waste Heat Recovery Systems.

Top: IonO2x® Non-Thermal Plasma Reactor installed at pet food manufacturer.

Centre: RotaBed® Fluidized Bed Scrubber for a Fertiliser Plant in Tasmania, Australia.

Bottom: Bionomics Series 7000 Venturi Scrubber.





BLOOM BURNERS



Gasco is the Bloom Engineering representative in Australia, New Zealand, Papua New Guinea and Indonesia. Bloom Engineering has developed a reputation for innovative and quality industrial burners and combustion systems.

Bloom Engineering was founded in 1934 and has become a world leader in burner and combustion systems, because of its core values of safety, integrity, accountability, innovation and respect. Bloom research and development strategy is one of continual product development and improvement. Bloom has a number of patents in advanced combustion and furnace technology.

Bloom Burners, either standard or bespoke, are also available for use with HYDROGEN concentrations varying from 8% to 100%.

Bloom Industrial Burners include:

- Direct Fired Burners
- Regenerative Burners
- Radiant Tube Burners
- High Thermal Release (HTR) Burners
- Self-Recuperative Burners
- Baffle Burners
- Air Staged Burners
- Valves, Pilots, Spark Ignitors
- Ladle, Tundish, Nozzle Heating & Drying Stations
- Low Temperature Regenerative (LTR TM) Systems
- Hydrogen/Hydrogen blend fuel
- Biogas

Bloom Burners are used in a variety of applications and can be operated with a wide array of fuels, capacity ranges and include burners that operate with Low to Ultra Low NOx emissions.

Bloom Engineering has designed and manufactured high efficiency/Low NOx Regenerative Burners. Bloom Regenerative Burner technology results in the highest available combustion efficiencies for high temperature process furnaces. Also, CO2 emissions are minimised. This philosophy aligns with Gasco's culture of lower fuel usage, lower CO2 and lower NOx, higher efficiency and lower emissions and operating cost.

Top: Forge Furnace with Regenerative Burners.

Centre: Bloom Regenerative Burner firing into Aluminium Melter.

Bottom: Fabrication of a Large Capacity Bloom 1030 for a Process Heating Application.



GCD INTERNATIONAL PROCESS & COMBUSTION EQUIPMENT

GCD International

The GCD International business has been fully integrated into Gasco Pty. Ltd.

Although both businesses have traditionally offered Design, Engineering, Manufacturing and Service disciplines to a range of industries, the addition of GCD International has expanded the range of process equipment which Gasco Pty. Ltd. supplies.

This includes an expanded range of Industrial Curing Ovens, Industrial Air Heaters, Environmental Scrubbing systems and Process Equipment for Aluminium Smelters, Steel Mills, Building Products Organizations, the Mining Industry, Chemical Manufacturers, Fibreglass and Rockwool / Stonewool Manufacturers, Fibreglass Textile Manufacturers, etc.

Equipment is generally designed to meet clients' specific requirements and also to comply with the requirements of relevant regulatory authorities, etc.

A substantial portion of the process equipment supplied is of modular construction. This method of supply minimises total project time as the equipment manufacture can occur at the same time as building and services are being constructed.

Most of the equipment supplied is still in operation after many years of service. This extended production life has greatly assisted clients in achieving positive operating outcomes.

For over 50 years the GCD International business has undertaken projects in Asia, North and South America, Europe, New Zealand as well as in the Australian market. The business maintains strong, long term relationships with its clients, including assisting with plant expansions, upgrades, regular maintenance, rebuilds, etc.

Gasco's extensive Engineering, Design, Manufacturing and Services resources provide a Professional Team which can assist our clients with their requirements for an extensive range of Process Equipment.

Top: Process Air Heater for Phosphate Production.

Centre: Six Zone Kaolin Pellet Drying Oven and Cooling System.

Bottom: Retractable Firing System for rotary kiln – Alumina Refining.





FIBREGLASS & MINERAL WOOL MANUFACTURING MACHINERY



Gasco's GCD International Fibreglass / Mineral Wool Insulation Manufacturing Machinery Division has designed and supplied equipment which has been installed in many locations, globally. The machinery is used for the manufacture of world class insulation, board products and pipe insulation products.

Gasco's GCD International Division provides a range of machinery which is used in the manufacture of insulation, board and pipe insulation products.

The range includes:

- Forming of uncured blanket including forming mechanical services (gas trains, fibre cooling, lapping, forming hood, suction system, etc.)
- Binder manufacture and application
- Product curing
- Product cooling
- Product trim, slitting and length cutting
- Product facing
- Environmental equipment for the treatment of exhaust gases and waste water
- Electrical and control equipment
- Pipe insulation manufacturing

The machinery is generally supplied in modular components which allows for speedy installation or change out, thereby shortening the lead time for commencement of production at a new plant or minimizing the loss of production when upgrades are occurring.

Gasco can provide either individual machinery components or a complete turnkey solution to your manufacturing equipment needs.

Fibreglass and mineral wool manufacturing equipment (including chemical and binder production plants) have been supplied to clients in Australia, New Zealand, USA, China, Thailand, Malaysia, Taiwan, Belgium, Saudi Arabia, UAE, India and various other locations.

Top: Batch, Furnace, Fibre Manufacturing, Binder Application and Pack Forming Equipment.

Centre: Modular Services Platform, pre-tested and ready for transport to client together with the Multi Zone Curing Oven (refer banner above).

Bottom: Pipe Insulation Manufacturing Machinery installed ready for commencement of production.



CHOPPED STRAND MAT & CONTINUOUS FILAMENT MAT MANUFACTURING MACHINERY



Gasco's GCD International Fibreglass Textiles Manufacturing Machinery Division has designed and supplied Chopped Strand Mat and Continuous Filament Mat manufacturing machinery to several operating plants in Asia, North America, Europe and Australia. The machinery is used by clients to manufacture high quality products for both their local and for export markets.

The Gasco (GCD International Fibreglass Textiles Manufacturing Machinery Division) equipment can be supplied in a range of capacities and can manufacture Powder Mat, Emulsion Mat or both.

The equipment includes:

- Strand handling equipment
- Mat forming equipment including strand length chopping, strand distribution, forming air conditioning and suction, etc.
- Powder application
- Emulsion mixing and application
- Curing oven
- Product cooling
- Mat edge trim, slitting, length cutting and roll-up
- Integrated line conveying system including belt cleaning and control systems
- Electrical and control equipment
- Environmental equipment for treatment of exhaust gases, etc.
- Equipment for reclaim of binder from waste water system
- Cake/Doff curing ovens

The equipment is generally supplied in modular format which allows for factory testing prior to delivery. This format also minimizes the amount of site works which is required for installation and commissioning.

The equipment incorporates features which allow for various maintenance functions to occur while production continues. This enhances the production capacity of the equipment.

The robust design & construction of the machinery has allowed for extended production life. Equipment supplied more than 35 years ago is still operating to rated production capacity.

Top: Strand Chopping, Fibre Distribution and Mat Forming Equipment.

Centre: Continuous Filament Mat Curing Oven.

Bottom: Automatic Chopped Strand Mat Product Slitting, Edge Trim, Length Cutting & Roll-up Machine.

SERVICE



Gasco's dedicated Service Team ensures reliable support for all our customers, for all of their Combustion needs.

Our unparalleled service facilities come with 8 fully equipped service vehicles and a 24-hour breakdown service telephone number, which will be answered by an on call representative who will be ready to assist at any time.

This also includes commissioning / recommissioning of new or old gas fired equipment, general and preventative maintenance, overhauls, repairs and modifications including programmed servicing including Safety interlock testing and combustion analysis.

If you are requiring breakdown assistance our on call representative can be reached at Gasco's 24 Hour dedicated Breakdown number on +61 3 9237 7177. For all other Service and Spare Parts enquiries please call +61 3 9237 7125.

SITE WORKS

Gasco has a full mechanical site crew that is capable of installation and strip down of Gasco and non Gasco equipment throughout Australia and overseas.

Gasco site works team can perform mechanical alterations or modifications

to existing equipment requiring welding low or high pressure pipework, prepare and reinstate registered plant AS3688 for in-service inspections, process equipment set up and commissioning support.



Our pressure welding and welding procedures are overseen by Gasco's own expert welding inspectors.

Gasco's team regularly provide maintenance support to production companies equipment breakdown requirements.

GASCO PRODUCTS BY INDUSTRY

Aluminium Custom designed heaters or dryers for the following: ladles, crucibles, siphon tubes, cathode collector bars, aluminium scrap, moulds, launders, anode stubs, and anode blocks. Tar waste melt out and collection. Tar Hot Oil Heaters, Air Heaters, Thermal Oxidisers, Gas Conditioning Skids, Carbon Bake Furnace Conversions.

Automotive Paint and Curing Lines, Spray Booths, Ovens, Core Drying, Air Houses, Heat Recovery, Washing Systems, Thermal Oxidisers, RTOs.

Biofuels Flares and RTOs for ethanol and biodiesel. Thermal oil systems for process heating.

Chemical Combustion Systems, Air Heaters, Heat Exchangers, Thermal Oxidation, Heat Recovery, Hot Oil Systems, Resin Kettles, RTOs.

Coal Mining Drainage Gas Flares, Vents, Venturi Extraction and Metering Skids.

Environmental Afterburners, Incinerators, Thermal Oxidisers, Flares, Scrubbers, Landfill Gas Flares,

Odour Incineration, Biogas Flares and Burners, Heat Recovery, Soil Remediation Systems, Liquids Incineration, IonO2x® Non Thermal Plasma Odour Destruction and Waste to Energy/Hydrogen.

Fire Training and Research Thermal Oxidisers for Compartment Fire Behaviour Training and Research Centres.

Food Air Heaters, Ovens, Burners and Combustion Systems, Thermal Oxidisers, Hot Oil Systems, Heat Exchangers, RTOs, IonO2x® Non Thermal Plasma Odour Destruction.

General Industrial Driers, Ovens, Kilns, Furnaces, Hot Oil Systems, Heaters, Thermal Oxidisers, RTOs, WHRUs, IonO2x® Non Thermal Plasma Odour Destruction.

Minerals & Metals Air Heaters, Driers, Kilns, Hot Oil Systems, Heaters for Launders, Ladles, Burners and Combustion Systems, Start up Burners, Flares and Thermal Oxidisers, RTOs.

Oil, Gas Fired Heaters, Electric Heaters, Thermal Oxidisers, RTOs, Flares, Waste Heat Recovery, HRSGs, Thermal Oil Systems.

Petrochemical Hot Oil Heaters, Filter Coalescers, Acid Gas/Tail Gas Incineration, Water Bath Heaters, Crude Oil Preheaters, Condensate Heaters, Pressure Reduction Skids, Heater Treaters, Radiation Shields, Metering Skids, HRSGs, WHRUs.

Pharmaceutical Air Heaters, Driers, Thermal Oxidisers, Flares, Heating and Combustion, Hot Oil Systems, RTOs.

Pipeline & Terminal City Gate Heaters, Gas Conditioning, Water Bath Heaters, Pressure Control Skids, Filter/Coalescers, Metering Skids, Flares, Custody Transfer, Electric Heaters.

Power Generation Gas Conditioning Skids, Turbine Exhaust WHRU, Water Bath Heaters, Electric Heaters, Let Down and Filter/Coalescer Skids, Custody Transfer Metering, Heat Recovery Steam Generators (HRSGs).

Steel Heaters and Driers for Ladles, Tundish, Launders, Vessels, Start Up Burners, Combustion and Control Systems, Thermal Oxidisers, Refurbishment of Furnace Combustion Systems.

GASCO

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