

GASCO



ASME



INTRODUCTION

Gasco – Combustion, Process and Thermal Engineering



Gasco Pty Ltd has established a reputation as Australia's leading combustion and process engineering company.

Gasco was formed in 1991 and is an independent, 100 per cent Australian owned company. Its board and management are acknowledged for their experience and expertise in the industry.

Gasco, with its highly skilled, multicultural staff and its modern office and manufacturing facility is able to offer a comprehensive range of equipment and services including design, engineering, project management, fabrication, installation, commissioning and service.

The equipment and complete systems provided by Gasco include water bath heaters, thermal oxidizers, fired heaters, thermal oil heaters, flares, heat recovery systems, HRSG boilers, burner management systems and gas conditioning including: metering skids, pressure control skids and filter coalescers.

Gasco has a wide range of clients across various industries including oil and gas both onshore and offshore power generation, environmental, mining, mineral, chemical processing, refining and petrochemical, food, automotive, waste water treatment and biogas.

Gasco clients include Shell, Petronas, Exxon Mobil, BP, Chevron, Conoco Phillips, Toyota, Boeing, Total, Dolphin Energy, Jemena, AGL Energy Australia, Origin Energy, APA Group, Orica, BHP Billiton, Bechtel, KBR, Worley Parsons, Clough, Uhde Shedden, Technip, Santos, Wood Group PSN, Oil Search, Power & Water, Pertamina, Foster Wheeler, Zadco and many others.

Gasco has supplied Fired Heaters to Pakistan, Turkmenistan and UAE, Smelter Burners to China and India, Crude Oil & Gas Heaters to Russia, Thermal Oxidizers to Pakistan, Hot Oil Heaters to Indonesia, South Africa, Tanzania, Malaysia and the Philippines, Convective Condensate Heaters to

Thailand, Flares to Vietnam, Gas Skids to Bahrain, Burner Management System to UAE and Fuel Gas Skid package to Oman.

Gasco holds ASME "U", "U2" and "S" stamps for the design and manufacture of Pressure Vessels and power to Power Boilers and an ASME "R" stamp to repair Pressure Vessels and Boilers to NBIC Codes..

Gasco has been presented with Industry Achievement Awards from ICN and Innovation Australia and Directors Award from Santos for EHS performance. Gasco was also featured in Business Review Australia and Resource in Focus magazines in 2013.

Quality Assurance and Health & Safety are key aspects to all our projects. Gasco is certified by DNV to the requirements of ISO 9001:2008.



(Left to right): Ed Strauks Engineering Director, John Peruzzo Director/Chairman, Nicholas Grzegorzyn Managing Director/CEO, Ian Matthews Sales & Marketing Director, Alan Hovorka Engineering Director.

THERMAL OXIDIZERS

Thermal Oxidizers are a class of pollution control devices that use the combustion process to destroy HCs, volatile organic compounds (VOC) and Hydrogen Sulphide, hence they are sometimes called afterburners, fume incinerators or tail gas incinerators.

Gasco Thermal Oxidizers include:

- Straight Thermal Oxidizers with or without heat recovery
- Recuperative
- Catalytic
- Regenerative (RTO)

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

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

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

We have supplied Thermal Oxidizers to the oil and gas, chemical, automotive, medical, food, minerals and metals industries.

Heat from the exhaust of a Thermal Oxidizer 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: RTO for Woodside Pluto LNG, Acid Gas project loaded on ship at BAE Systems Melbourne, Australia.

Centre: Recuperative Thermal Oxidizer for Conoco Phillips Darwin LNG plant.

Bottom: Bottom: Thermal Oxidizer and Hot Oil Heat Recovery OMV/Clough Sawan, Pakistan.



FIRED HEATERS

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



A typical API 560 Fired Heater would consist of a:

- Radiant Section
- Convective Section
- Stack
- Burners
- Fuel Skid
- Control System

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 NOx 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 old existing heaters to improve efficiency, safety and emissions using the latest PLC based BMS and NOx reduction technology.



Top: Forced Convection Regeneration Gas Heater, APA Group.

Centre: Origin Energy's Bassgas 43MW Fired Heater project, South Gippsland, Victoria, Australia.

Bottom: Fired Heaters – Turkmenistan gas plant 18.8MW each.

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:

- High pressure gas
- 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, stack burner, gas train and control system.

Gasco options include:

- Natural Draft Burners
- Forced Draft Burners
- Pneumatic Gas Control
- Electric (Electronic) Control
- Remote Monitoring

Gasco can also supply complete gas conditioning skids consisting of Water Bath Heater, Pressure Reduction, Filter Coalescer and Metering.

Top: 3,500KW Crude Oil Heating – Sakhalin, Russian Federation – Exxon.

Centre: 6,300KW Gas Turbine Water Bath Heater, NSW Australia – Jemena.

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

FLARES

Gasco together with our technology partner has supplied flares to the oil and gas, flares for petrochemicals, flares for terminals, flares for landfill and flares for sewage (biogas) industries.



Flares type

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

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
- Radiation Shields
- Seal Drums
- Flame and Detonation Arrestors

Platforms

- Consulting
- Radiation shields for offshore

Applications

- Gas treatment plants
- Gas well testing
- LNG plants
- Oil refining
- Landfill gas (LFG)
- Sewage lagoons
- Digester gas
- Coal seam methane (CSM)
- Coal mine drainage
- Metal smelting
- Biofuels

Codes

- To Australian and Regional codes and standards
- Type B Systems

Monitoring

- Thermocouple
- Remote IR

Installations

- Commissioning
- Gasco own crew
- Supervision of third parties
- Commissioning is routine

Service

- By Gasco TypeB technicians
- 24 hour on call service
- Engineering support

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

Centre: Five Coal Seam Methane Enclosed Flares, Anglo Coal.

Bottom: Self supporting Flare for Nickel Smelter, BHP Billiton.

HOT OIL HEATERS

**Gasco supplies a range of Hot Oil Heaters:
100KW to 15,000KW gas fired, 25KW to
1,500KW electric.**



The gas fired heaters consist of two concentric helical coils which has the advantage of:

- Compactness
- High Efficiency
- Low Thermal Mass
- Low weight (ideal for offshore applications)

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

The burner can be selected to suit the application, type of fuel – gas, oil, heavy oil, timber and turndown. The flame shape is carefully matched to the coil configuration. Typical efficiency with air preheating can range up to 90+ per cent depending on thermal fluid outlet temperature, fuel, and atmospheric conditions.

Each heater has a pre wired control panel that ensures safe and efficient operation of the heater.

As well as supplying heaters, we can provide skid mounted units that incorporate primary and secondary pumps, expansion tanks, stack and drain/fill tanks.

There are a myriad of applications that are suitable for hot oil heating.

- Gas Plant – Regeneration
- Tank Heating – Bitumen, Wax, Emulsions
- Reactor Heating – Chemical Industry, BioTech
- Platen Presses – Timber Industry, 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

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: 2,500KW Thermal Oil Heater & Pump Skid – Santos Gas Plant, Victoria, Australia.

Centre: 11,000KW Hot Oil Heater for Chevron offshore platform, South East Asia.

Bottom: Hot Oil Heater Package, New Zealand.

GAS CONDITIONING AND CONTROL SKIDS

Gasco designs, fabricates, commissions and services an extensive range of Process Skids for Gas Conditioning and Oil Treatment including:

- Emergency Shut Down Systems
- Filter Coalescers
- Custody Transfer Metering with Analysers
- Hot Water Heater/HX gas heating
- Water Bath Heaters API 12K
- Pressure Reduction Stations
- Black Start Heaters (Electric/steam/hot water)
- Waste heat recovery for gas heating
- Total gas conditioning systems for Power
- Stations a speciality

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

Gasco utilizes 3-D CAD systems to model layouts and enhance layout detail design. Equipment and piping are sized utilizing in-house computer programming and well known proprietary software. Piping and flange loads are computer calculated.

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

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.

Top: Origin Energy Pressure Reduction Skid – Mortlake Power Station, Victoria.

Middle: Pressure reduction and associated skids for Gas Fired Power Station in Northern Territory.

Bottom: Filter Coalescer, Mortlake Power Station



WASTE HEAT RECOVERY

Waste Heat Recovery systems reduce energy costs, provide carbon credits for emission trading systems and help the environment by reducing emissions.



Gasco provides a comprehensive range of Waste Heat Recovery systems for the following:

- Gas Turbines – Thermal Oil, Hot Water, Glycol
- Gas and Diesel Engines
- Thermal Oxidizers – Thermal Oil, Glycol
- Air Preheat/Recuperators
- Furnaces
- Heat Recovery Steam Generators (HRSGs)

For gas turbine heat recovery systems Gasco offers a complete turnkey plant comprising:

- Inlet duct
- Divertor valve
- Divertor stack
- Supplementary burner and controls
- Waste Heat Recovery Unit
- Exhaust Stack

Gasco can provide for either individual pieces of equipment or supply a complete turnkey operating system for either a new application or modifying an existing plant.

Our range of services includes:

- Survey/Analysis of existing systems
- Engineering
- Hardware
- Hot Oil, Hot Water or Steam distribution systems
- Erection
- Commissioning
- Turnkey Solution
- Heat Recovery Steam Generators HRSGs

Gasco is a licensee of ERK, Berlin, Germany for their world famous Corner Tube Heat Recovery and Steam Generators and Boilers.

To date over 6,000 ERK boilers, HRSGs and high temperature recuperators have been supplied world wide.



Top: Waste Heat Recovery – Energy, Australia.

Centre: BHP – Macedon. 3x3MW WHRU on Solar Turbines.

Bottom: HRSG for Australian food company.

GRIMWOOD ELECTRIC HEATING SYSTEMS



Element Bundle and pressure Vessel.

Gasco's Grimwood Heating Range now provides complete electric heating systems to complement its range of combustion products. Circulation Heaters and Tank Heaters are available to heat virtually any gas or liquid.

Gasco can supply non-hazardous or IECEx certified flameproof heaters suitable for hazardous areas.

Features include:

- Custom designs to specified process conditions.
- System includes Element Bundle, Pressure Vessel and Control Panel.
- Small footprint, low maintenance, low operating costs, accurate control.

Typical applications:

- J-T Effect Compensation Heaters
- Fuel Gas Heaters
- Thermal Oil Heaters
- Winter Diesel freeze protection
- Industrial Processing Tanks
- Water Heaters
- Steam Superheaters
- Re-Boilers and Vapourizers
- Process Fluid
- Corrosive Materials

BURNERS AND COMBUSTION



Low NOx Recirculated Combustion Gas Burner System.

Gasco prides itself as a combustion company on its ability to creatively solve your combustion problems.

Gasco can supply a solution to your combustion requirements. We design and manufacture specialized burners and systems such as 40GJ/h smelter start-up burners. We also incorporate other leading proprietary brands of burners in combustion packages to provide our clients with the most cost effective solution. Specifically, we can offer:

- Combustion System Design
- Burners
- Gas Trains
- Skid Mounting
- Burner Management Systems (BMS)
- Instrumentation and Control Systems
- Hardwired, PLC, PES to IEC 61508
- Safety PLC with SIL analysis
- Scada Systems

GASCO

DESIGN
FABRICATION
SERVICE



1



2



3



4

1. 3D in house design.
2. Purpose built facility, Melbourne, Australia.
3. 24-hour service.
4. Industry and Santos Directors awards.

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, 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 & RTOs for ethanol and biodeisel.

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

ENVIRONMENTAL Afterburners, Incinerators, Thermal Oxidisers, Flares, Scrubbers, Landfill Gas Flares, Odour Incineration, Biogas Flares and Burners, Heat Recovery, Soil Remediation Systems, Liquids Incineration.

FIRE TRAINING AND RESEARCH Thermal Oxidisers for Compartment Fire Behaviour Training & Research Centres.

FOOD Air heaters, Ovens, Burners and Combustion Systems, Thermal Oxidisers, Hot Oil Systems, Heat Exchangers, RTOs.

GENERAL INDUSTRIAL Driers, Ovens, Kilns, Furnaces, Hot Oil Systems, Heaters, Thermal Oxidisers, RTOs.

MINERALS & METALS Air Heaters, Driers, Kilns, Hot Oil Systems, Heaters for Launders, Ladles, Burners and Combustion Systems, Start Up Burners, Flares & Thermal Oxidisers, RTOs.

OIL, GAS Fired Heaters, Thermal Oxidisers, RTOs, Flares, Waste Heat Recovery.

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.

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.

POWER GENERATION Gas Conditioning Skids, Turbine Exhaust WHRU, Water Bath 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.

The logo for GASCO, featuring the word "GASCO" in a bold, blue, sans-serif font. The letter "A" is stylized with a red triangle pointing upwards, forming the top of the letter.

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