

GASCO

engineering with flare



INTRODUCTION

Gasco – Combustion, Process and Thermal Engineering



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

Gasco clients include Shell, Mobil, Exxon Mobil, BP, Chevron, Conoco Phillips, Toyota, Ford, Boeing, Australian Defence Department, ORICA, ICI, Dulux, PPG, BHP Billiton, Bechtel, Fluor Daniel, Toyo Engineering, KBR, Worley Parsons, Clough, Shedden Udhe, Aker Kvaerner and many others.

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

Gasco was formed in 1991 and is an independent, 100 per cent Australian owned company. Its board and management is mainly comprised of professional engineers acknowledged for their experience and expertise.

Gasco offers a comprehensive range of engineering, consulting and design, fabrication, installation, commissioning, project management, audit, maintenance and service.

The purpose built equipment and systems provided by Gasco include thermal oxidizer, fired heaters, thermal oil heaters, flares, water bath heaters, burners, ovens and heat treatment furnaces, heat recovery systems, heat exchangers and burner management systems.

Gasco, with its staff of over 45 personnel, including professional design engineers, its manufacturing facility together with on-site installation and commissioning, is able to offer a comprehensive range of equipment and services.

Gasco has supplied Fired Heaters and Thermal Oxidizers to Pakistan, Smelter Burners to China and India, Crude Oil Heaters to Russia, Hot Oil Heaters to Indonesia, South Africa, Tanzania and the Philippines, Convective Condensate Heaters to Thailand, Flares to Vietnam, Gas Skid to Bahrain, and Flare Heat Shield to Malaysia.

Quality Assurance is a key aspect to all our projects with the majority being managed to meet requirements of ISO 9001.



Left to right: Alan Hovorka Project Director, Ian Matthews Sales & Marketing Director, John Peruzzo Director/Chairman, Nick Grzegorzczyn Managing Director/CEO, Ed Strauks Director/Chief Combustion Engineer.

Cover –
Left to right:

Top:
Coal Seam
Methane Flare.
Burner,
Recuperative
Thermal Oxidizer.
4MW Hot Oil
Heater, Indonesia.

Centre:
Water Bath
Heaters, Power
Station.
Vertical Upfired
Fired Heater.
Convective Fired
Heater, Thailand.

Bottom:
Paint Curing Oven.
Fired Heaters and
Thermal Oxidizers,
Pakistan.
Gas Conditioning
Skid.

THERMAL OXIDIZERS

Thermal Oxidizers 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 Oxidizers include:

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

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.



Top: Thermal Oxidizer and Hot Oil Heat Recovery, BHP Billiton/KBR Minerva Gas Plant.

Centre: Recuperative Thermal Oxidizer at an Australian LNG plant .

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 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 90per cent using convective heat transfer.



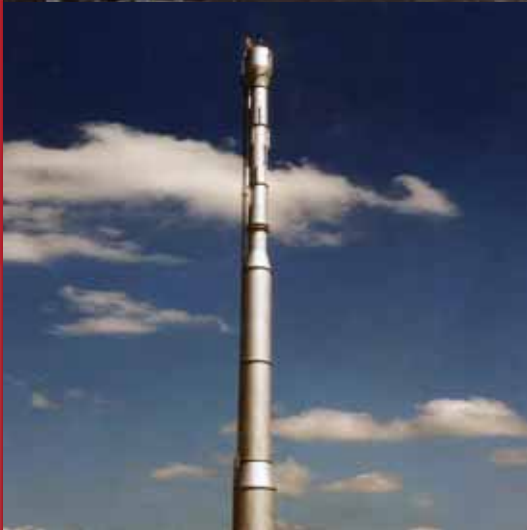
Top: Convective off-shore Condensate Heater – Chevron, Thailand.

Centre: Thermal Fluid and Regenerative Gas Fired Heaters, OMV/Clough – Sawan, Pakistan.

Bottom: Erection of a 43MW Pre-Insulated and Tubed Radiant Section, Thermal Fluid Heater – Origin Energy, Australia.

FLARES

Gasco together with our technology partner has supplied flares to the oil and gas, petrochemicals, terminals, landfill and 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
 - 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.

Top: Utility Flare and Ignition System – Melbourne Water/John Holland, Australia.

Centre: Air Assist, Self Supporting Flare – Petrochemical Industry.

Bottom: Enclosed Ground Flare complete with Flame Arrestor and Control System – Biogas Industry, Australia.

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, stack burner, gas train and control system.

Gasco options include:

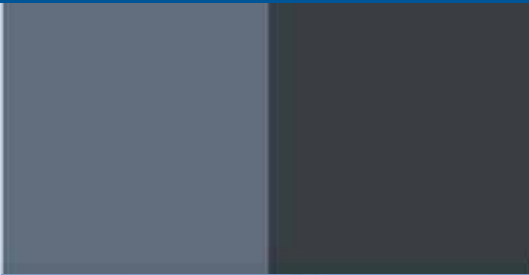
- Natural Draft Burners
- Forced Draft Burners
- Pneumatic Gas Control
- Electric (Electronic) Control
- Remote Monitoring

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

Top: Crude Oil Heating – Sakhalin, Russian Federation.

Centre: City Gate Water Bath Heater – GCI Kenny/Tru Energy, Brooklyn, Victoria, Australia.

Bottom: Gas Turbine Water Bath Heater and Gas Conditioning Skids – Loy Yang, Victoria, Australia.



HOT OIL HEATERS

Gasco manufactures a range of Hot Oil Heaters: 100KW to 7,500KW gas fired, 25KW to 1500KW electric.



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

- Compactness
- High Efficiency
- Low Thermal Mass

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 88 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.

- 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: 1,000KW Gas Fired Hot Oil Heater for a Grease Plant – Brisbane, Queensland, Australia.

Centre: 500KW Oil Fired Hot Oil Heater and Elutriation Heating Skid – Gold Industry, Tanzania, Africa.

Bottom: 400KW Gas Fired Hot Oil Heater and Primary Pumping Skid – Biotech Reactor Heating – Perth, Western Australia.

PROCESS SKIDS

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



Gasco supplies pressure reduction, metering, separators, filter coalescers, hot oil primary and secondary skids, burner skids and waterbath heaters.

Gasco skids are engineered to meet the client's specifications and International Piping Codes ANSI B 31.3 etc.

Equipment and pipes are sized using inhouse computer programs; pipe layouts are computer pipe stressed. Instrumentation and PLC controls, pre-piped and wired, are supplied as a complete unit saving valuable time and costs on site.

Gasco can supply a variety of Gas / Liquid Separators, Vertical or Horizontal.

WASTE HEAT RECOVERY

Gasco and our associated companies have supplied waste heat recovery systems for:



Top: Gas Conditioning Skid – ALBA/Bechtal, Bahrain.

Bottom: Thermal Oil Heat Recovery from a Thermal Oxidizer– BHP Billiton/KBR, Minerva, Victoria, Australia.

- Gas Turbines – Thermal Oil, Hot Water, Glycol
- Thermal Oxidizers – Thermal Oil, Glycol
- Air Preheat / Recuperators
- Furnaces

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

SITE WORKS



Gasco has a dedicated piping and site installation team.

As well as installing Gasco supplied equipment and installing new plants, our site crew has also relocated or demolished process plants and undertaken complete factory and equipment relocations.

We also contract for complete piping systems which includes installing pipe work, pumps, reactors, valves, instrumentation, pipe bridges, tanks and skids.

We have supplied services to the aerospace, chemical, petrochemical, gas, automotive, paper, paint, plastic, water and waste water treatment and manufacturing, food and laundry industries.

CONSULTING



Top: Installation of tanks, vessels, pumps, process equipment and piping – Orica, Yarraville, Victoria, Australia.

Bottom: Low NOx Recirculated Combustion Gas Burner System.

Gasco has supplied consulting and troubleshooting services to a number of major corporations. We have eight qualified combustion engineers on our staff. We have provided assistance to major Oil and Gas companies, EPC Contractors and mineral processing companies.

- Compliance Audits
- Design of Bitumen and Bitumen Emulsion plants
- Thermal Oil (Hot Oil) Heating Systems
- Combustion & Burner Systems
- BMS Upgrades to IEC 61508 PES Systems
- Furnace Design and Efficiency Upgrades
- Oven Upgrades
- Flare System Troubleshooting
- Flare Radiation and Dispersion
- Thermal Oxidizer Applications
- Fired Heater and Waste Heat Recovery
- Upgrades and Commissioning
- Energy Audits

OVENS AND FURNACES

Gasco has supplied numerous custom designed ovens and furnaces for many applications.



Ovens

Gasco has supplied Toyota and Ford with major paint line ovens, air houses and material handling equipment.

As well as car companies, Gasco has designed, supplied and installed complete paint lines for automotive brake manufacturer, comprising cleaning, powdercoat application, curing and cooling.

Gasco has also supplied bogie hearth and continuous ovens for the glass, fibreglass curing, automotive components and paint and chemical drum heating applications.

Furnaces

Gasco has designed and supplied stress relieving furnaces, salt curing baths, heat treatment, and cremators.

BURNERS AND COMBUSTION



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 40 GJ/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

Top: Disc Brake Pad Paint Curing Oven – FMP, Ballarat, Victoria, Australia

Bottom: 40GJ/h Smelter Start-Up Burner supplied to India and China.

SERVICE

Gasco has four fully equipped service vans with qualified Type B technicians and an additional eight engineers with Type B qualifications.



We can offer 24 hour, 7 days-per-week coverage.

As well as covering Victoria, we can also supply Australia wide as well as international coverage.

We have commissioned and serviced combustion equipment in Papua New Guinea, Indonesia, Phillipines, China, India, Russia, Tanzania and Thailand.

We regularly service a range of combustion equipment not of Gasco's manufacture.

Service maintenance contracts with Gasco provides convenience and peace of mind for many of our clients.

CUSTOM SOLUTIONS — 'SPECIALS'



Top: Eight of Gasco's twelve Combustion Engineers and Service Personnel

Below: Ladle Pre-Heater – Hi Smelt, Perth Western Australia.

Over the years, Gasco has tackled many different and unique problems that are not easily categorised.

If you have a combustion or high temperature heat transfer problem or need an upgrade, Gasco has supplied:

- Ladle Pre-Heaters
- Stub Heater for Aluminium Smelters
- Propellant Destruction Furnaces
- Fired Heaters for Simulating Gas Turbine Operating Conditions
- Fired Heaters for R&D in the Mineral Industry

- Robots for Automotive Industry
- Conversion of Carbon Bake Burners from Oil to Gas
- Spray Booths R&D Paint Industry
- Hydrogen Fired Hot Oil Heaters
- Hot Oil Heaters for Casino/Hotel Laundries

This is only a partial list of special products. See *Gasco Products by Industry* listing – back page.

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 Oxidizers, Gas Conditioning Skids, Carbon Bake Furnace Conversions.

AUTOMOTIVE Paint and Curing Lines, Spray Booths, Ovens, Core Drying, Air Houses, Heat Recovery, Washing Systems, Thermal Oxidizers.

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

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

FOOD Air heaters, Ovens, Burners and Combustion Systems, Thermal Oxidizers, Hot Oil Systems, Heat Exchangers

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

MINERALS & METALS Air Heaters, Driers, Kilns, Hot Oil Systems, Heaters

for Launders, Ladles, Burners and Combustion Systems, Start Up Burners, Flares & Thermal Oxidizers.

OIL, GAS Fired Heaters, Thermal Oxidizers, 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 Oxidizers, Flares, Heating and Combustion, Hot Oil Systems.

PIPELINE & TERMINAL City Gate Heaters, Gas Conditioning, Water Bath Heaters, Let Down Skids, Filter/Coalescers, Metering Skids, Flares.

POWER GENERATION

Gas Conditioning Skids, Turbine Exhaust WHRU, Water Bath Heaters, Let Down and Filter/Coalescer Skids.

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



Represented by:

Gasco Pty Ltd ABN: 55 869 575 588 ACN: 051 824 741
Factory 8, 981 Mountain Highway Boronia
Victoria Australia 3155
Ph: +61 3 9720 8577
24 hr service +61 3 9738 1773
Fax: +61 3 9720 4240
Email: gasco@gasco.net.au
Internet: www.gasco.net.au