



Fraser Uniquip

The Process Plant Specialists



Excellence in Design & Supply



Process Plant Specialists



- > Simulation
- > Design
- > Fabrication
- > Assembly
- > Testing
- > Installation
- > Commissioning

Fraser Uniquip Group specialises in the design and supply of high technology, packaged chemical process plant, equipment and turnkey process systems to serve the requirements of the oil, gas, refining, petrochemical, mining, power, water and general process industries.

With offices in Australia and Malaysia operated by a team of experienced and dedicated Chemical Engineers, our clients benefit from the extensive expertise and knowledge acquired over a 50-year period in the design and supply of packaged process plant systems. This experience is available to competently guide you through the complex decisions involved in selecting the best and most competitive process solution for your application.

With an uncompromising commitment to excellence in all facets of the design and fabrication process, Fraser Uniquip Group has established an enviable record of providing innovative, efficient and economic process plant solutions of the highest quality.

Fraser Uniquip Group offers its expertise across all aspects of project execution, including conceptual design, detailed process design, detail engineering, procurement, expediting, fabrication, Quality Assurance and Quality Control, factory testing, certification, delivery, installation and commissioning.



Leading-Edge Technologies

Fraser Uniquip Group utilises the latest versions of simulation and 3D drafting software complemented by associations with the world's leading process technology providers through licensing and technical support agreements.

Key process technologies offered include:

Fired Heaters & Heat Exchangers

- Brown Fintube® Exchangers
- Hot Oil Heaters
- Incinerators
- FCC Fired Heaters
- Steam Superheaters
- Water Bath Heaters
- Direct Fired Reboilers

Gas Dehydration Systems

- Glycol (MEG/TEG)
- Molecular Sieve
- Silica Gel
- Activated Alumina

Gas Sweetening & CO₂ Recovery Systems

- Amine (MEA/DEA/MDEA)
- Inorganic Solvent
- Molecular Sieve

Gas Liquid Separation Systems

- 2-Phase
- 3-Phase
- Low Temperature JT
- Filter Separators

Chemical Injection & Regeneration Systems

- Glycol
- Methanol



Fuel Gas Treatment

- Fuel Gas Conditioning (Natural Gas/Biogas)

Crude Oil Treatment Systems

- Fuel Oil Heating and Pumping
- Electrostatic Dehydration
- Electrostatic Desalting

Mass Transfer Equipment & Columns

- Vessel Internals (Vane Packs/ Demisters)
- LPG Recovery
- Product Fractionation
- Vacuum Distillation
- Solvent Recovery

Gas Generation, Purification & Compression

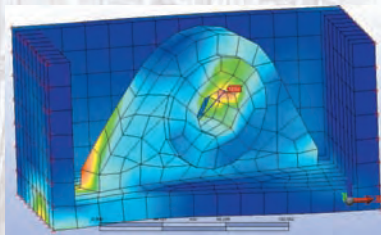
- Hydrogen
- Nitrogen
- Ammonia
- Hydrogen Sulphide

Oily Water Treatment

Fraser Uniquip provides innovative and practical process solutions to meet specific customer requirements with the aim of developing long-term strategic partnerships with our clients.



Engineering Services

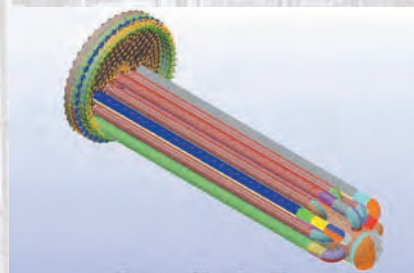


By applying our expertise to the front-end phase of a project, we are able to maximise customer investment return by providing custom-engineered solutions to the most technically challenging process designs.

Greenfield Facilities

With our in-house equipment design expertise, we offer a one-stop capability from process simulation to delivered equipment as stand-alone units or as skid packaged or integrated modular assemblies. This enables external interfaces to be minimised and provides cost-effective fast-track solutions in the areas of :

- Separation
- Oil & Condensate Stabilisation
- Gas Conditioning and Treatment
- Produced Water Treatment
- Seawater Treatment
- Heating & Cooling Medium Systems
- Steam Generation Plant
- Chemical Injection



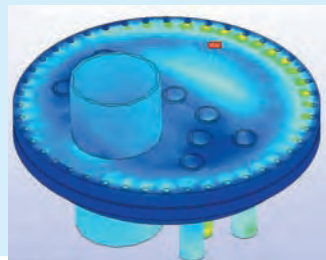


Utilising the latest industry standard and in-house software developed over many years of field and Computational Fluid Dynamics (CFD) validation, Fraser Uniquip is able to provide engineering expertise in all areas of design including:

- Process Simulation
- Computational Fluid Dynamics Analysis
- Material Selection & Corrosion Studies
- Hydraulic Analyses
- Pressure Vessel Design
- Heat Exchanger Thermal & Mechanical Design
- Fired Heater Design
- Pipe Stress Analysis
- Structural and Mechanical Finite Element Analysis
- Control Systems
- 3D Modelling

Brownfield Facilities

Where equipment is already in service, Fraser Uniquip can offer a range of services including debottlenecking and upgrade studies as well as process audits for possible efficiency and OPEX improvements. Our successful policy of supporting and improving customer assets during their life-cycle is part of our business strategy.



Gas Dehydration

Water is required to be removed from gas streams for a variety of reasons:

- to prevent hydrate formation in downstream process equipment and/or transmission pipelines
- to prevent corrosion in downstream process equipment and/or pipelines in acid gas streams
- to meet sales gas water dewpoint specifications

The most popular gas treatment technologies utilise aqueous solutions and dehydration therefore typically follows gas treating and/or gas compression.

Techniques for dehydrating natural gas include:

- Absorption using liquid glycol desiccants (MEG/TEG)
- Adsorption using solid desiccants (Mol Sieve/Silica Gel/Activated Alumina)
- Inhibition by injection of hydrate point depressants (Glycol/Methanol Injection)
- Dehydration by expansion refrigeration (Low Temperature Separation)

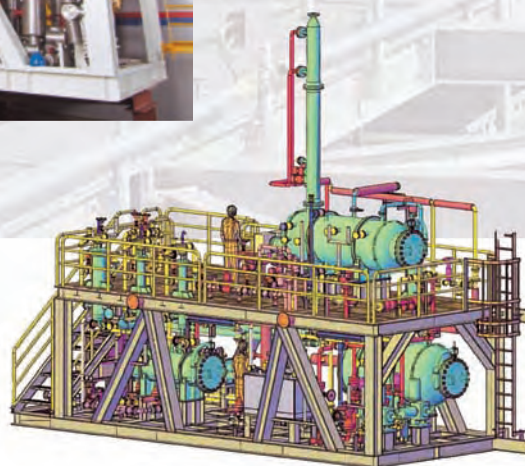


Capital and Operating cost economics usually favour glycol dehydration over other processes where this process will meet the dehydration specifications. TEG is the most widely used glycol because of lower vapour losses combined with a greater dewpoint suppression.

Solid desiccant processes such as molecular sieves can produce outlet water content as low as 1ppm. As a result they are widely used for feed streams to cryogenic processing systems.

Fraser Uniquip offers all these key dehydration technologies in association with the world's leading process technology providers through licensing and technical support agreements.

Fraser Uniquip therefore has the experience and expertise to offer specialised advice on which technology best suits your application and budget.



Gas Sweetening & CO₂ Recovery

There are a number of technologies available for the removal of acid gases (primarily H₂S and CO₂) from natural gas streams. Some of these can also be used for the recovery of H₂S and CO₂ from natural gas and flue gas streams.

These technologies can be broadly categorised into the following:

- Reversible Chemical Reaction (Benfield/MEA/DEA/MDEA)
- Physical Solvent Process (Selexol® Sufinol®/Fluoramine®)
- Dry Bed Adsorption Processes (Iron Sponge/Activated Carbon/Molecular Sieve)

There are many variables involved in specifying and selecting gas treatment technologies. Some of the factors to be considered include:

- Type/quantity of impurity in the sour gas
- Outlet specification for the residue gas
- Outlet specification for the acid gas
- Inlet conditions (Temperature/Pressure) of sour gas
- Volume of gas to be processed
- Hydrocarbon composition of the gas
- Required selectivity of acid gas removal
- Waste disposal



All gas treatment processes have advantages for specific applications but also have disadvantages and potentially serious operational issues for the inexperienced.

Fraser Uniquip offers all these key gas treatment technologies in association with the world's leading process technology providers through licensing and technical support agreements.

Fraser Uniquip therefore has the experience and expertise to offer specialised unbiased advice on which technology best suits your particular application and budget.



Gas Liquid Separation



Technologies offered by Fraser Uniquip for the separation of 2-phase and 3-phase gas and liquid process streams include:

- Horizontal & Vertical Two and Three Phase Separators
- Low Temperature Horizontal Separators
- Cyclonic Separators
- Filter Separators

Fraser Uniquip offers a full range of engineering consulting and contracting services from feasibility studies and FEED through to packaged equipment supply and turnkey EPC contracts.

Fuel Gas Treatment

Fraser Uniquip offers Fuel Gas Conditioning Packages for treatment of fuel gas supplies to gas-fired turbines and compressors for both onshore and offshore applications, on both natural gas and biogas applications.

Systems offered include Coalescing Filters and/or Scrubbers to remove condensate, JT Low Temperature Systems to increase methane number and electric element heaters to add superheat to conditioned fuel gas.





Liquid Hydrocarbon Treatment

Fraser Uniquip offers a full range of liquid hydrocarbon treatment technologies, each tailored to suit your application. Key technology areas include:

- Fuel Oil Heating and Pumping Systems utilising Lummus Helixchanger® designs
- Crude Oil Fractionation and Condensate Recovery Systems
- Electrostatic Crude Oil Dehydration and Desalting
- LPG Fractionation
- Vacuum Distillation
- Solvent Recovery Systems
- Oily Water Treatment



Fraser Uniquip offers all these key liquid hydrocarbon treatment technologies in association with the world's leading process technology providers, for both onshore and offshore applications and specifically for operation on FPSOs.

Fraser Uniquip offers fabrication from established and ASME U Stamped fabrication facilities strategically located around the world to suit local requirements.



Fired Heaters



Uniquip Fired Heaters

Fraser Uniquip provides Fired Heaters for installations handling a range of feeds from natural gas to crude oil to bitumen, and from air to steam.

Uniquip Fired Heaters are designed to API 560 by Lummus Heat Transfer. A range of fired heater products is available including horizontal hot oil heaters and Incinerators, FCC Fired Heaters, Steam Superheaters, Water Bath Heaters, Direct Fired Reboilers and Brown Fintube® Exchangers.

The design of Uniquip Fired Heaters incorporates the following features:

- Burners selected for correct flame pattern, stable operation and maximum turndown
- Adequate clearance between flame and tube coil to avoid flame impingement
- Vertical cylindrical or horizontal box type designs
- Natural or forced draught burners for oil, gas or dual-fuel operation
- High quality refractory brick, castable or ceramic fibre
- Variety of design options to achieve the highest economic efficiency
- Extensive experience in single or multi-burner forced draught operation with full automatic or semi-automatic control



Heat Exchangers

- Shell & Tube
- Double Pipe
- Multi-Hairpin
- Aircooled
- Fin Fan



High Performance & Reliability

Fraser Uniquip heat exchanger designs are based on the most reliable and competitive design philosophies, from standard process heat exchangers to high technology feed-effluent exchangers for utility, petrochemical and refining plants.

Hairpin Heat Exchangers

Hairpin heat exchanger designs can increase heat transfer coefficients in single-pass process streams with high temperature differentials. This type of heat exchanger also offers a range of benefits to the mechanical and maintenance engineer, including:

- Independent tube sheets for high terminal temperature differences
- Thermal shock resistance
- Cycling
- Long radius U-bends for effective thermal expansion
- High temperature differences
- Ease of cleaning
- All-welded baffle cages for durability
- High pressure closures for pressures up to 10,000 psi
- No internal bolting

Air Cooled Heat Exchangers

Fraser Uniquip offers a range of different air-cooled heat exchanger configurations in order to meet the specific requirements of the process and the site location.



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