



GasTech[®]
Engineering LLC
 PROCESS PLANTS AND EQUIPMENT

Innovative Market Leader in Process Engineering, Design, and Fabrication for Natural Gas, Oil Production, Refining, Petrochemical, and Industrial Gas.

Process Plants

At GasTech, we deliver exceptional process engineering solutions to our clients. Our Process Engineering group provides experienced, complete capabilities for projects within the energy, petrochemical, and industrial gas business sectors. Project specific designs are not only safe and reliable but also economically viable.

As a single point of responsibility supplier, GasTech manufactures and tests all process vessels and plant assemblies, ensuring seamless integration into the delivered plant.

We offer several options for total process plants:

- » Natural gas liquids (NGL) recovery (e.g. cryogenic, dew-point, adsorption)
- » Stabilization
- » Fractionation
- » Isomerization
- » Ethane removal from natural gas prior to liquefaction
- » Gas and liquid treating
- » Sulfur recovery
- » CO₂ purification and liquefaction
- » Hydrogen and synthesis gas
- » Fuel Gas Conditioning
- » Compressor stations
- » Water Treating



Dehydration

GasTech provides engineering, design, manufacturing, and commissioning of glycol and adsorption dehydration systems in standard or custom design. Our design capabilities range from reliable gas patch and oil field units to high performance and specification off-shore units. Dependable field-proven components are used to ensure maximum performance at minimum cost. Controls and automation design and execution are performed by our in-house team.

Dehydration capabilities include:

- » Gas & Liquid Dehydration
- » Glycol – Absorption: TEG
- » Dry Desiccant – Adsorption: Molecular sieve
- » Calcium Chloride Dryers
- » CO₂ Dryers
- » Associated Emission Abatement





Treating Equipment

With GasTech's comprehensive range of design options, we can provide an optimal solution that will meet your specifications regardless of the acid gas removal requirement. We offer units using MEA, DEA, MDEA, DGA, and aMDEA as well as other proprietary amine solutions. Modular and field-erected plants are also available.

Oil/Water separators are available with or without heating and/or electrostatic separation.

Treating capabilities include:

- » Gas & Liquid
- » CO₂ Removal
- » H₂S Removal
- » Mercaptan Removal
- » Amine Units (specialty, DEA, DGA, MDEA, and others)
- » Desalters
- » Treaters
- » Heated Separators



Separators

GasTech separators are designed and fabricated to guarantee separation of liquid and solid particulates per customer specifications.

Internals utilized for separation include cyclones, vane mist extractors, wire mesh mist extractors, and filtration elements. We offer separators in both vertical and horizontal formats. Instrumentation is provided with separator vessels to ensure proper operation and safety.

Separation capabilities include:

- » Gas – Liquid - Liquid (3-Phase)
- » Liquid - Gas (2-Phase)
- » Liquid - Liquid (2-Phase)
- » High Volume Gas Scrubbers
- » Knockouts
- » Slug Catchers
- » Cyclones, Vanes, Wire Mesh



Filters

Our filters eliminate mist, fog, scale, and dust particles. Available in vertical and horizontal configurations, GasTech filters provide easy access for servicing the filter elements.

GasTech's filter cartridges supply the specified degree of particulate removal. Forward flow (outside-to-inside) and reverse flow (inside-to-outside) elements generally provide 99.9% filtration of 0.1 micron and larger liquid droplets and solid particulates

Filtration options include:

- » Filter Separators
 - » Gas – Dust
 - » Gas – Liquid
 - » Liquid – Solids
 - » Liquid – Liquid
- » Activated Carbon Filters
- » Coalescers

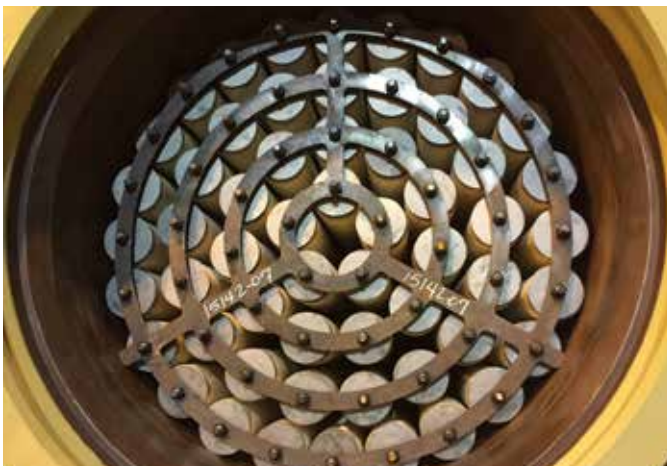


Spare Parts & Services

In addition to manufactured process plants and equipment, GasTech also offer spare parts and services for the following:

- » Filters
- » Heaters
- » Separators
- » Dehydrators
- » Oil Process Equipment
- » Maloney-Crawford Units

GasTech Engineering LLC is focused on delivering individualized design and engineering solutions for our clients. If you do not see the specific equipment you are looking for, please contact us and we can create the solution together.



Thermal Control Solutions

Indirect Heaters

GasTech's indirect heaters immerse the firebox and process coil in various intermediate media (e.g. water, molten salt, glycol, heat transfer oil). This prevents the contact between the flame or combustion product and the process coil that is normally associated with direct-fired heaters and, instead, relies on convection as its primary heat transfer mechanism. Thus, the process fluid is heated without any concern of scaling or thermal degradation.

GasTech indirect heaters are available from 0.1 to 50 MM Btu/Hr.

Direct Heaters

GasTech convective direct-fired heaters achieve up to 95% thermal efficiency with safe and reliable operation. We complement our heaters with instrumentation, piping, and wiring: all pre-tested at our manufacturing facility.



Available as Natural Draft or Force Draft Heaters

	Natural Draft	Forced Draft
Electrical Power Consumption	None	As Required For Blower
NOx Levels	Typically 90-100 ppmv	As Low As 10 ppmv
Noise Level	85 to 100 dBA at 3 ft.	85 dBA at 3 ft.
Efficiency	70 to 80%	80 to 85%

Thermal Control Equipment Includes:

- » Glycol/Water Bath Heaters (Includes EG, PG, TEG)
- » Reboilers
- » Natural Gas Heaters
- » Regeneration Gas Heaters
- » Thermal Fluid Heaters (e.g. Hot oil, Therminol, Chemtherm etc.)
- » Crude Oil Heaters
- » Thermal Oxidizers
- » Salt Bath Heaters
- » Propane Vaporizers
- » LNG Vaporizers





Produced Water Treatment

With some of the most experienced personnel in the industry, GasTech has the perfect solution to meet virtually any customer's needs.

We supply the following types of equipment:

- » Deoiling Hydrocyclone
- » Induced Gas Flotation
- » Walnut Shell Filtration
- » CPI Separator
- » Desanding Cyclone
- » Compact Flotation Unit
- » Adsorption Media
- » Multiphase Separator

The horizontal Deoiling Hydrocyclone vessel is designed with liners that reduce the oil content of the incoming produced water before it enters an optional degasser vessel. The horizontal arrangement allows easy access to the liners for inspection, installation, and replacement.

Product Benefits

Deoiler Hydrocyclones offer the following benefits:

- Compact design replaces substantially larger equipment
- Fixed parts allow minimal maintenance
- Ideal for use where space is limited
- Operates at efficiencies down to 5mg/l (5ppm) in one pass



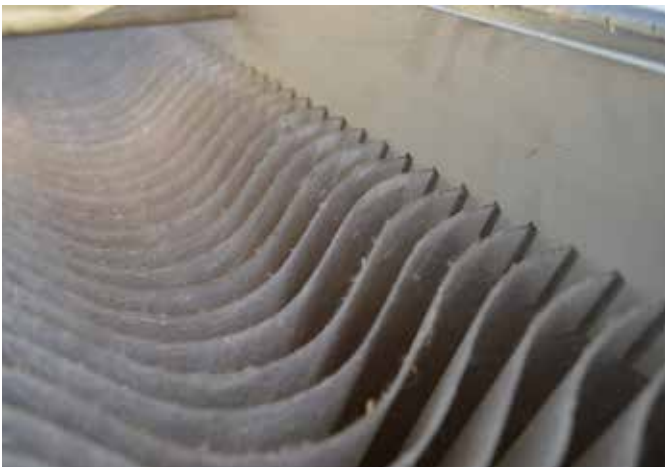
The Gr-Nut filter is a high-rate, multi-media down flow filter designed specifically for the unique challenges posed by oil and solids removal. The G-N filter is the only oilfield media filter capable of achieving solids removal to 2 microns and below simultaneously with oil removal to less than 5ppm.

Our filters use a simple and proven method for backwashing, eliminating the need for mechanical scrubbers or complex machinery. The detailed design of the filter-fixed internals allows for the successful long term operation of the filter, and both top and bottom distributors have triple functions.

With the massive numbers of variables in produced water systems there is no single perfect solution for polishing of produced water.

To accommodate this, we offer a range of flotation systems for the treatment of produced water, including:

- » Four Cell IGF—Mechanical and recycle type
- » Two cell IGF
- » Two cell Flotation
- » Compact Flotation
- » Dissolved Gas Flotation
- » Vortex CFU





Manufacturing Profile

Certifications & Qualifications

- » ISO 9001:2015 Certified
- » ASME Section VIII, U Stamp
- » ASME Section I, S Stamp
- » National Board, NB & R Stamps
- » In-house NDE UT/MT/PT, Level II
- » CWI and CAWI on Staff
- » 5 Sigma Weld Quality
- » Exemplary Safety Record
- » OSHA Compliant
- » Weekly Company Safety Training Program

Facility Specifications

- » 150,000 sq. ft./21-acre facility
- » Manufacturing Yard - 21.5 acres (87,000m²)
- » 16 different bridge cranes ranging from 10 to 150-ton capacity
- » 3 of 4 bays 500 ft. L x 70 ft. W (Support end-to-end fabrication)
- » All bays support min. 30 ft. hook height.



Manufacturing Profile

Product Size and Weight Capacity

- » Maximum length: 330 ft. (100m)
- » Maximum weight: 805,000 lbs. (365,000 kg) (400-ton)
- » Maximum diameter: 23 ft. (7m)
- » Maximum thickness: Unlimited

Heat Treating

- » 14 ft Wide x 16 ft. High x 100 ft. Long Gas Fired, Dual Zone, Car-Bottom
- » Maximum product net weight in oven: 400,000 lbs. (182,000 kg) (200-ton)

Coating, Blasting, and Painting

- » 16 ft. Wide x 20 ft. High x 80 ft. Long Hoffman Blast and Paint Facility
- » Self-contained bead blast with automatic recovery, clean and recycle
- » Meets ASHRAE and OSHA Filtration and Air Handling Requirements
- » Maximum product net weight in booth: 400,000 lbs. (182,000 kg) (200-ton)

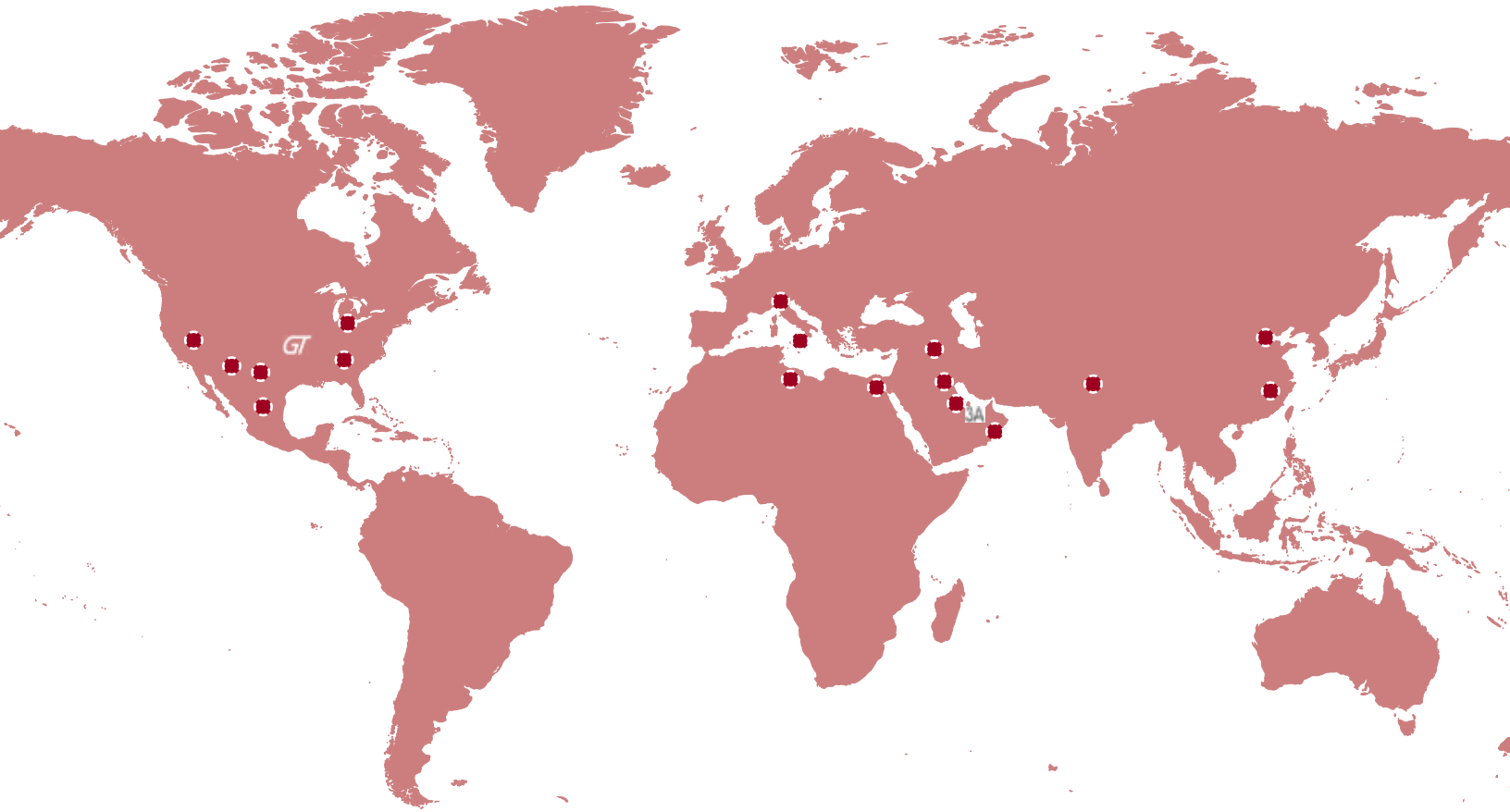
Transportation and Logistics

- » Truck: GasTech Tractor Trailers and all commercial major heavy haulers
- » Rail: 5 Rail Spurs into the Facility, serviced by BSNF
- » Ocean: Port of Catoosa, Direct Barge to Ports of New Orleans and Houston
- » Air: Tulsa International Airport, servicing Antonov 124 air cargo





GasTech Worldwide



GasTech Business Development

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Western Gas	Western U.S.	www.westerngastech.com

About Us

For more than 30 years, GasTech has dedicated our resources to helping our clients achieve their goals: for every client, on every project, every time.

Engineering is in our name because it's at the heart of all we do. As an Engineer-To-Order company, both standard engineering practices and custom design scenarios play a role in every project. We utilize our extensive engineering and design knowledge to provide expert solutions for global clients.

GasTech is a certified ISO 9001:2015 company with robust quality and safety standards and procedures. We uphold these standards throughout the execution of the project through multiple checks and inspections.

We are also a registered professional engineering company and maintain our status so we can continue to provide unparalleled value to each client we serve.

For more information please visit www.gastecheng.com



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CERTIFIED





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