



## Process Systems

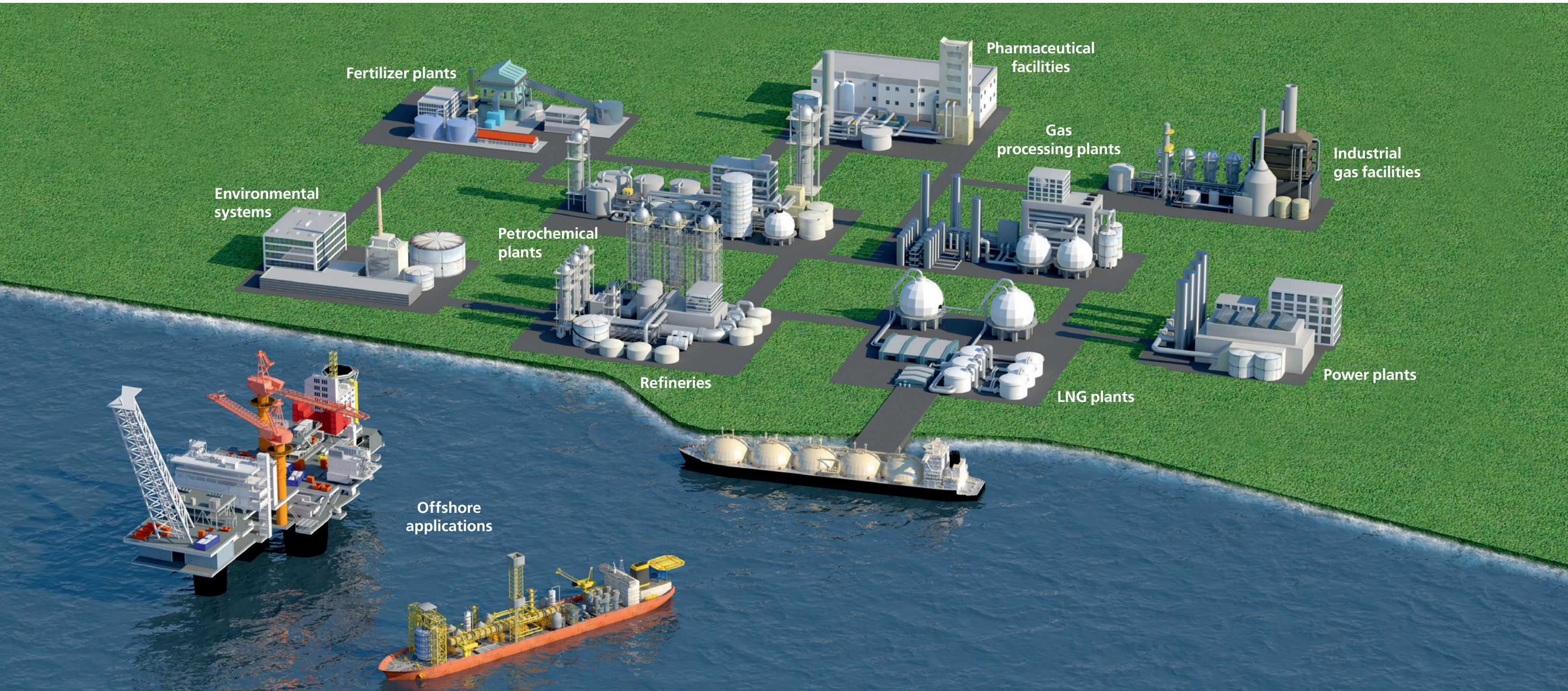
Global process refrigeration and  
gas compression solutions

engineering for a better world

## Innovative, proven solutions from a global technology leader

GEA applies decades of process refrigeration and gas compression experience in providing efficient and reliable custom-engineered systems for the oil & gas, power, petrochemical, chemical, pharmaceutical, and related industries. The company's comprehensive product offering includes screw compressor packages, chiller systems, condensing units, shell & tube heat exchangers,

pressure vessels, controls, and after-sales support. Dependable performance of our customers' systems is critically important, and we at GEA take very seriously the responsibility for providing high-quality, industry-leading equipment with demonstrated reliability. It is a privilege to be entrusted with our customers' capital investments and to play a role in contributing to their success.



# Custom-designed systems to support your processes the roles we play



## Gas Processing Plants

- Dew point control
- Cryo plant refrigeration
- Deethanizer plant refrigeration

## Chemical & Petrochemical Plants and Refineries

- Water/glycol chilling
- Heat transfer fluid (HTF) chilling
- Chlorine liquefaction
- Hydrocarbon refining

## Fertilizer Plants

- Ammonia storage
- Loading & unloading refrigeration
- Boil-off gas (BOG) compression

## Hydrocarbon Storage Facilities

- Propane & butane storage
- Loading & unloading refrigeration
- BOG compression

## Liquefied Natural Gas (LNG) Plants

- BOG condensing units
- Gas turbine inlet air chilling
- Turbine fuel gas compression

## Power Generation Plants

- Gas turbine inlet air chilling
- Turbine fuel gas compression

## Pharmaceutical Facilities

- Water/glycol chilling
- HTF chilling
- Low-temperature refrigeration

## Environmental Systems

- Environmental test chambers
- Flare gas recovery
- CO2 compression & liquefaction
- Carbon sequestration & EOR
- Vapor recovery units

## Offshore Production, Storage, and Offloading Facilities

- Mixed hydrocarbon compression
- Process gas chilling
- BOG compression

## Biogas and Landfill Gas Applications

- Process gas compression
- Mixed hydrocarbon compression
- Hydrogen and sour gas

## Industrial Gas Applications

- Process gas chilling & condensing
- Nitrogen chilling
- Air chilling

## Gas Processing Plants

GEA provides refrigeration equipment for dew point control and for separation of gas constituents, such as ethane, propane, butane, and light gasoline. From screw compressor packages to full-scope refrigeration systems, and everything in between, GEA fulfills your unique requirements.

*Pictured: propane refrigeration units*



*Model 1210GL; 1,600 HP*



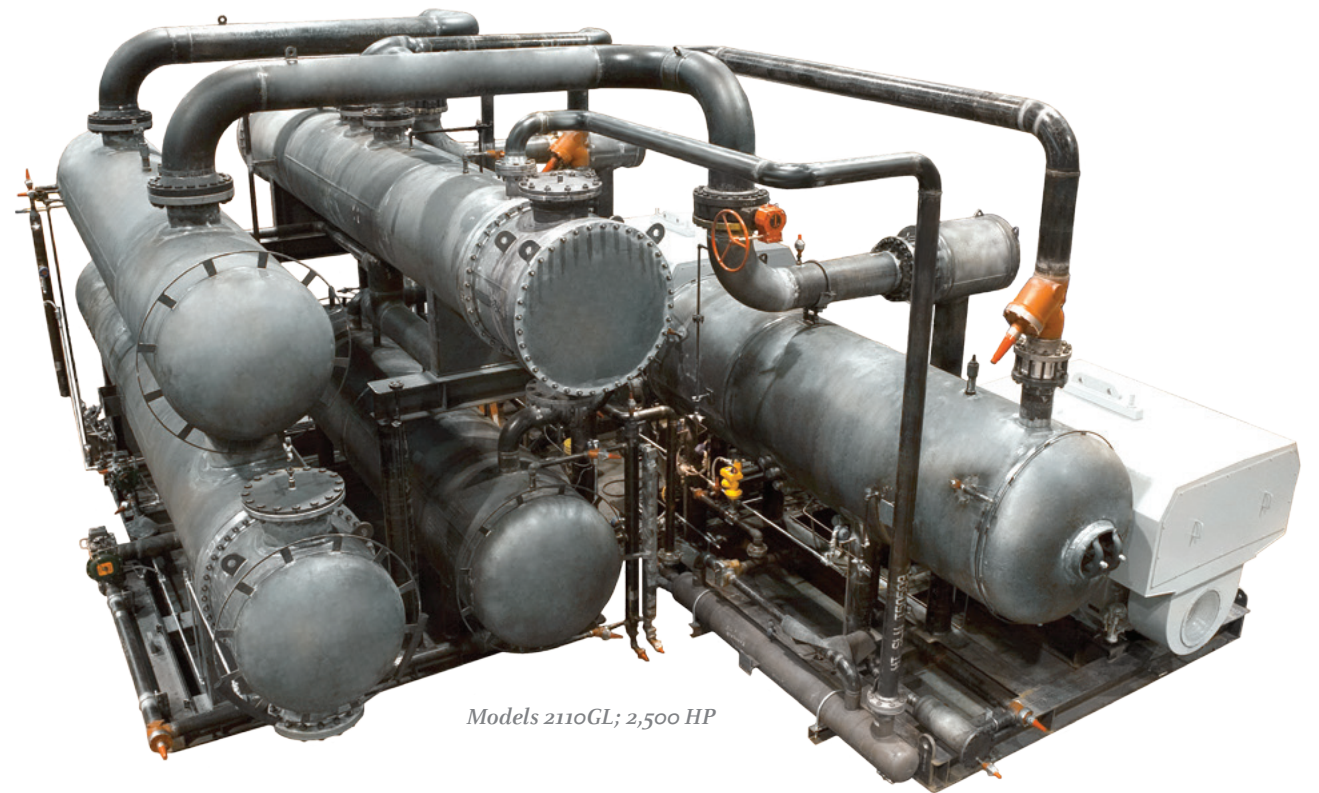
*Models 565GL; 1,000 HP*



*Model 2110GL; 3,000 HP*



Models 55GS; 75 HP



Models 2110GL; 2,500 HP

**Chemical & Petrochemical Plants and Refineries**

GEA offers refrigeration systems for both direct and indirect process cooling. These systems are used for overhead condensers in oil & gas separation facilities. These systems are also used for various HTF chilling applications typically utilized in chemical processes. Common chemical facility applications are toluene diisocyanate (TDI), linear low-density polyethylene (LLDPE), low-density polyethylene (LDPE), and high-density polyethylene (HDPE). And, GEA excels at providing refineries with the equipment and systems that meet stringent specifications and industry codes.



Glycol chiller

*Pictured: various HTF chilling systems*



Models 60GS; 125 HP



Model 1160S; 2,500 HP



HTF chilling system



*Ammonia refrigeration system  
Model 575S; 750 HP*

### Hydrocarbon Storage Facilities

GEA also designs and manufactures screw compressor packages and condensing systems for hydrocarbon storage boil-off systems, as well as tank loading & unloading facilities. GEA's line of API-619 compliant compressors are uniquely suited for these applications.

*Pictured: mixed-gas compressor packages*



*BOG compressor unit  
Model 1210GL; 1,800 HP*

### Fertilizer Plants

GEA produces screw compressor packages and condensing systems for ammonia boil-off systems. In addition, GEA can provide industrial refrigeration systems for tank loading & unloading, and for other plant utilities.



*Ammonia condensing unit  
Model 1435GL; 1,750 HP*



*Ammonia compressor package  
Model 235S; 450 HP*



*Ammonia BOG compressor package  
Model 565GL; 872 HP*



*Model 1640S; 2,670 HP*



*Model 675GL; 900 HP*

### Liquefied Natural Gas (LNG) Plants

GEA provides refrigeration solutions applied to gas liquefaction and gas separation in LNG facilities. These plants typically utilize gas turbines in the liquefaction process. GEA specializes in supplying equipment to chill inlet air to enhance the performance of gas turbines.



*Propane refrigeration compressor package  
Model 1920S; 2,700 HP*

### Power Generation Plants

In addition to gas turbine inlet air cooling systems and carbon capture & storage, our solutions for power generation also include fuel gas boosting. GEA's 28- and 52-bar screw compressor packages efficiently deliver natural gas in a wide range of required pressures for injection into gas turbines.

### Pharmaceutical Facilities

GEA's refrigeration systems are used for various HTF and low-temperature chilling applications.

### Environmental Systems

GEA's process chillers are used for vent gas condensing and separation. In addition, our oil-flooded screw compressors are used for the recovery of flare gas. And for carbon capture & storage (CCS) and CO<sub>2</sub> recovery, our customers benefit from our extensive experience with these applications.



*Process gas condensing system*



*Glycol chilling system  
Model 180GL; 200 HP*

### Offshore Production, Storage, and Offloading Facilities

Space is at a premium at offshore facilities, and GEA's equipment and systems are designed with this in mind. GEA screw compressors deliver valuable advantages compared to those of other manufacturers — they are more compact, lighter in weight, and easier to maintain. GEA compressor packages for use in these applications are designed and manufactured not only according to customer specifications, but also to API standards and relevant industry design codes. In addition, GEA offshore equipment is optimized in size and weight, permitting our systems to occupy a smaller footprint.



### Biogas and Landfill Gas Applications

Biogas and landfill gas is generated by decomposition of organic waste. The processed gas is collected at storage facilities and compressed for use in heating, the production of electricity, and direct feed into natural gas pipelines. GEA's screw compressor packages are utilized to efficiently compress these gases.

### Industrial Gas Applications

GEA provides chiller systems for various gas-chilling applications, such as air and nitrogen.

# Rotary twin-screw compressors the heart of the system

GEA satisfies the pulse of the market by offering a wide range of oil-flooded, twin-screw compressors for a variety of applications in the process gas compression and industrial refrigeration markets. GEA's robust screw compressors are compact and designed for ease of maintenance. Compatible for use with synthetic refrigerants, such as R-134a & R-507, and natural refrigerants like ammonia, CO<sub>2</sub>, and hydrocarbons, GEA compressors are also suitable for use in mixed-gas applications including mixed hydrocarbons, nitrogen, hydrogen, carbon dioxide, and hydrogen sulfide. A broad choice of driver options — electric motors, steam turbines, natural gas, and diesel engines — are available.

Twin-screw compressors operate by drawing gas into the spaces between the lobes of two rotors. As the rotors turn, the gas is forced by the rotor profile into continuously decreasing space until it reaches the discharge port of the compressor. Since screw compressors are positive-displacement machines, they can cope with the wide range of molecular-weight gases found in many process gas compression applications. Positive-displacement screw compressors do not generate out-of-balance forces; therefore, they require significantly less foundation strength than other compressor types.

With tens of thousands of compressor installations worldwide, leading companies around the globe rely on GEA's engineering expertise and reliable products for use in their critical applications.

## GEA Model XH Compressor



Swept volume: 8,150 CFM

### High-efficiency rotors

- GEA-specified 5/6 rotor profile
- Compact and rigid design

### Capacity- and Vi-control

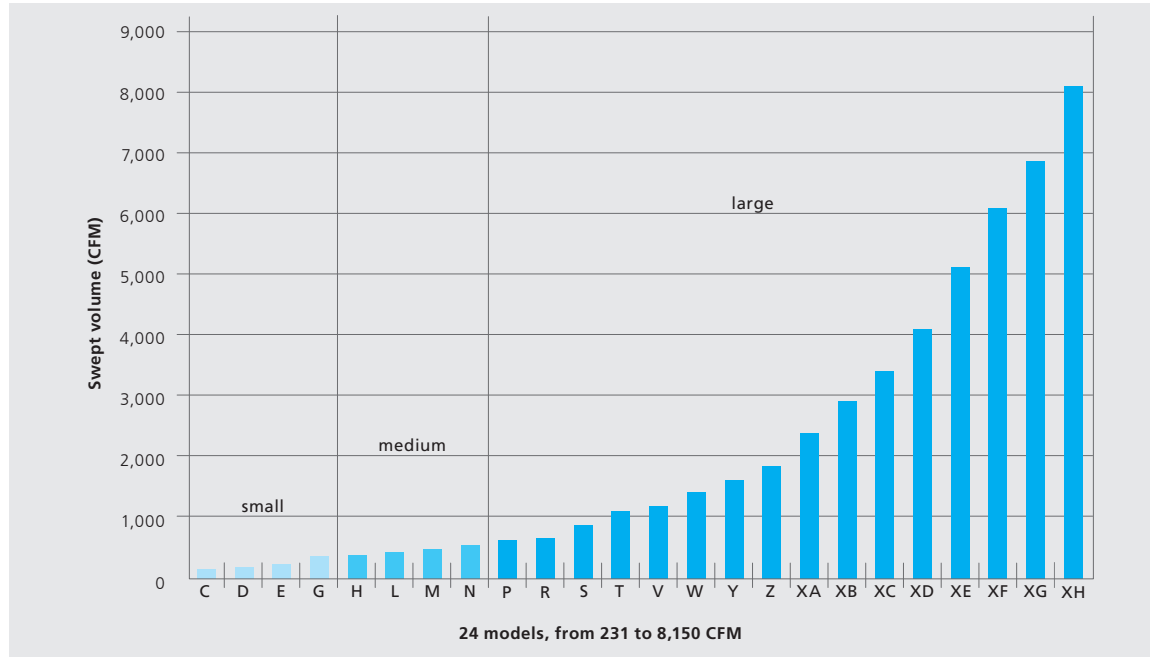
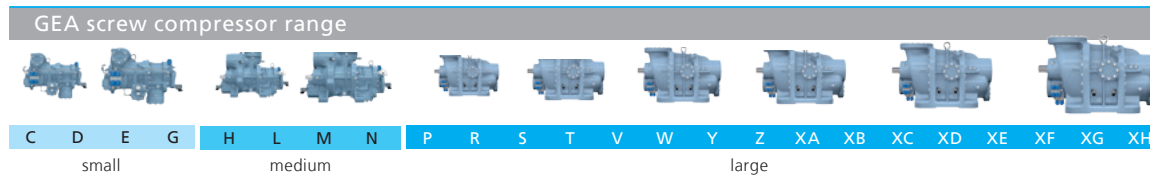
- Compact and integrated system
- Infinite capacity control (10% - 100%)
- Best COP at full and part load

### Radial sleeve bearings

- Hydrodynamic operation for high loads
- No wear, unlimited lifetime
- Temperature monitoring available

### Axial thrust bearings

- Easy, quick access from non-drive end
- Designed for maximum service life
- Field replaceable
- Roller element design (standard)
- Tilting pad design (available)



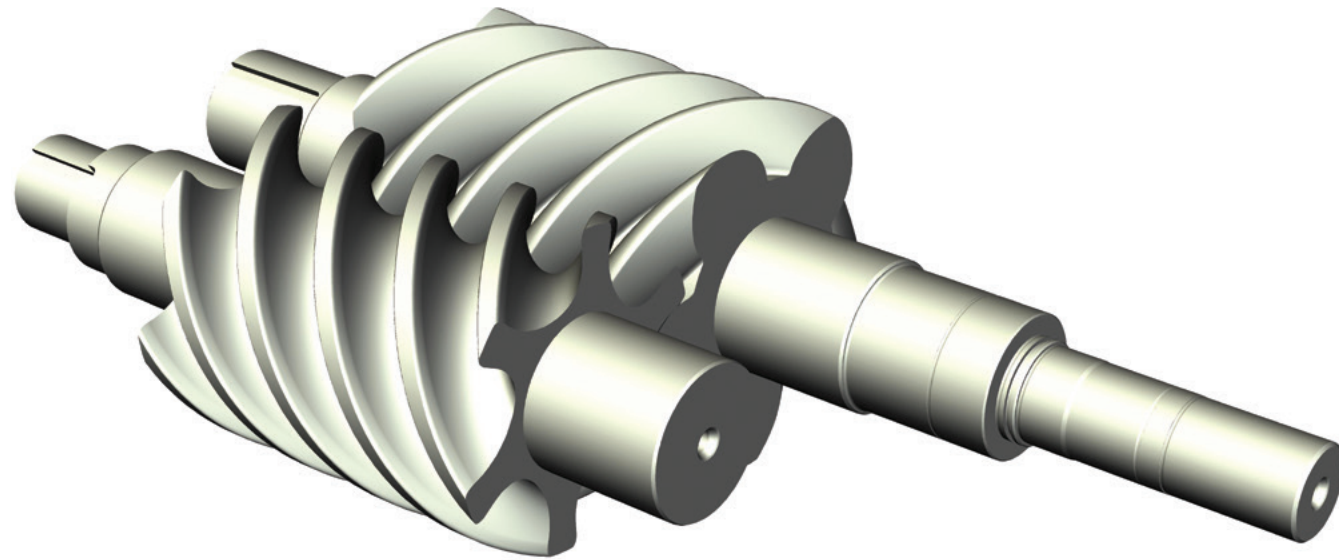
## Large series screw compressors

### Advantages

- Optimized main rotor dimensions
- Sleeve bearings for radial loads
- Roller element bearings for thrust loads
- Stepless adjustable capacity control
- Non-wearing, hermetically sealed position indicating system
- Power up to 5,623 HP (4,193 KW)
- Speed range up to 3,600 rpm

All compressors available in  
28- and 52-bar rating

Compressor Model	Package Model	Capacity Swept Volume (CFM)
P	180GL	572
R	230GL	739
S	290GL	917
T	340GL	1,030
V	400GL	1,237
W	475GL	1,415
Y	565GL	1,699
Z	675GL	1,953
XA	800GL	2,309
XB	1025GL	2,949
XC	1210GL	3,482
XD	1435GL	4,122
XE	1770GL	5,095
XF	2110GL	6,083
XG	2450GL	6,970
XH	2850GL	8,150



### Medium series screw compressors

#### Advantages

- Roller element bearings for thrust and radial loads
- Stepless adjustable capacity control
- Non-wearing, hermetically sealed position indicating system
- Speed range up to 4,500 rpm

Compressor Model	Package Model	Capacity Swept Volume (CFM)
H	110GM	335
L	125GM	387
M	160GM	490
N	195GM	611

*All compressors available in 28- and 52-bar rating (63 bar for some models)*

### Small series screw compressors

#### Advantages

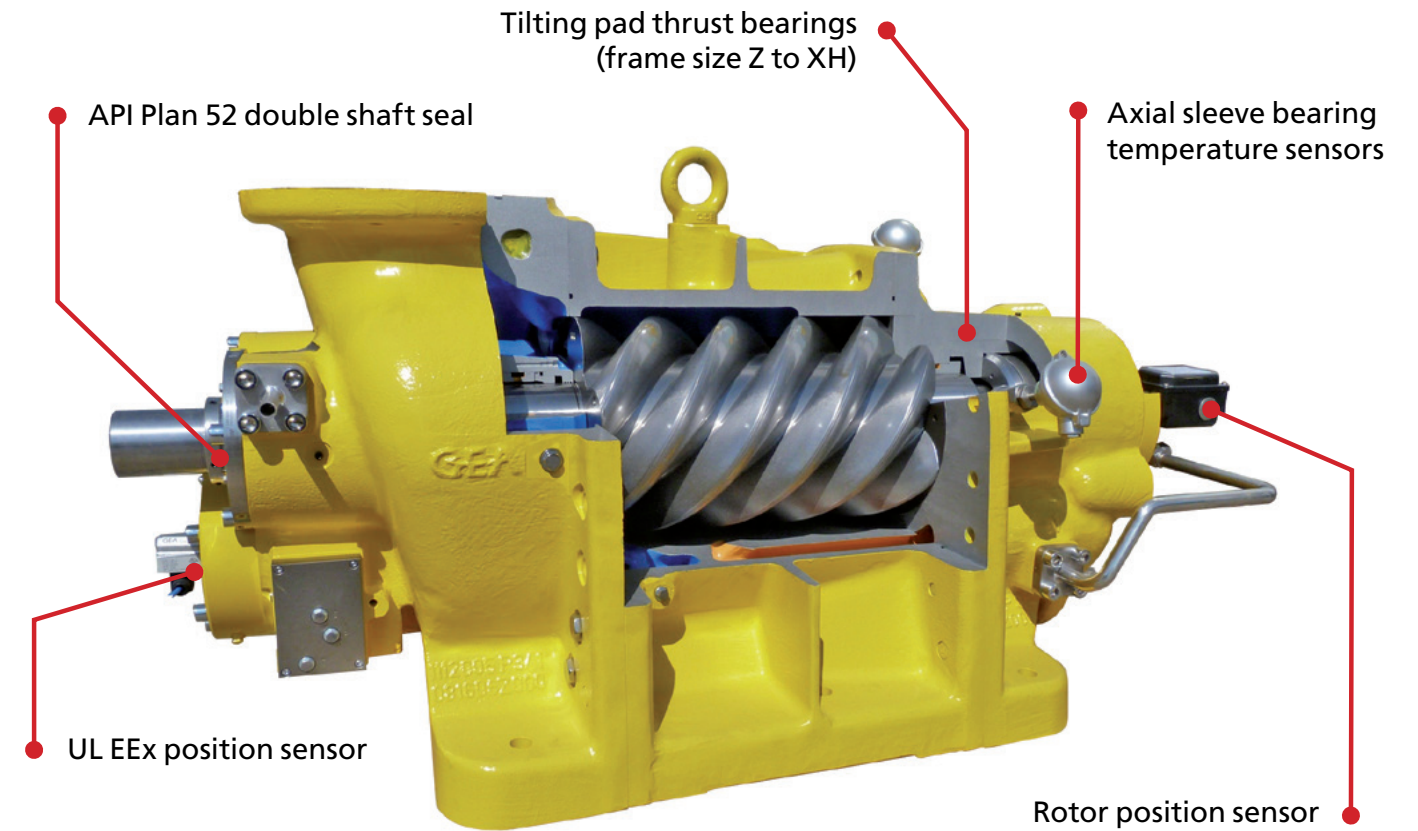
- Roller element bearings for thrust and radial loads
- Stepless adjustable capacity control
- Non-wearing, hermetically sealed position indicating system
- Speed range up to 6,000 rpm

Compressor Model	Package Model	Capacity Swept Volume (CFM)
C	55GS	164
D	60GS	188
E	75GS	228
G	85GS	264

*All compressors available in 28- and 52-bar rating (63 bar for some models)*

## GEA API 619 Compressors

GEA API 619 compressors have prepared connections for vibration sensor mounting. The cast steel casing is available as an option on most large series models.



#### API 619 Options

- Nodular iron housings
- Cast steel housing material (select models: ASTM A352 Grade LCB)
- Tilt pad thrust bearings (select models)
- Double shaft seal (wet/wet API Plan 52)
- Sleeve bearing temperature monitoring (large series only)
- Rotor position monitoring
- Material certificates
- Four-hour run test
- Performance test (ammonia)
- Other test options



## Pressure vessels and shell & tube heat exchangers design and manufacture

GEA's capabilities extend to the design and manufacture of pressure vessels and shell & tube heat exchangers. These refrigeration and gas compression components are generally incorporated into the systems that GEA designs and builds, and are typically factory skid-mounted with piping and controls. GEA offers a comprehensive portfolio of vessels and exchangers, including condensers, evaporators, economizers, receivers/accumulators, suction traps/scrubbers, and oil separators.



### Pressure Vessel Material Types & Sizes

6" to 144" diameter; up to 40' length; up to 120,000 lbs.; carbon steel, 3.5 percent nickel steel, 304 & 316 stainless steel.

### Heat Exchanger Material Types & Sizes

3" to 70" diameter; up to 44' tube length; more than 120,000 lbs.; carbon steel, 3.5 percent nickel steel, 304, 316, 2205 & 2507 stainless steel, copper, 90/10 & 70/30 cupronickel, admiralty brass, titanium.

### Certifications & Standards

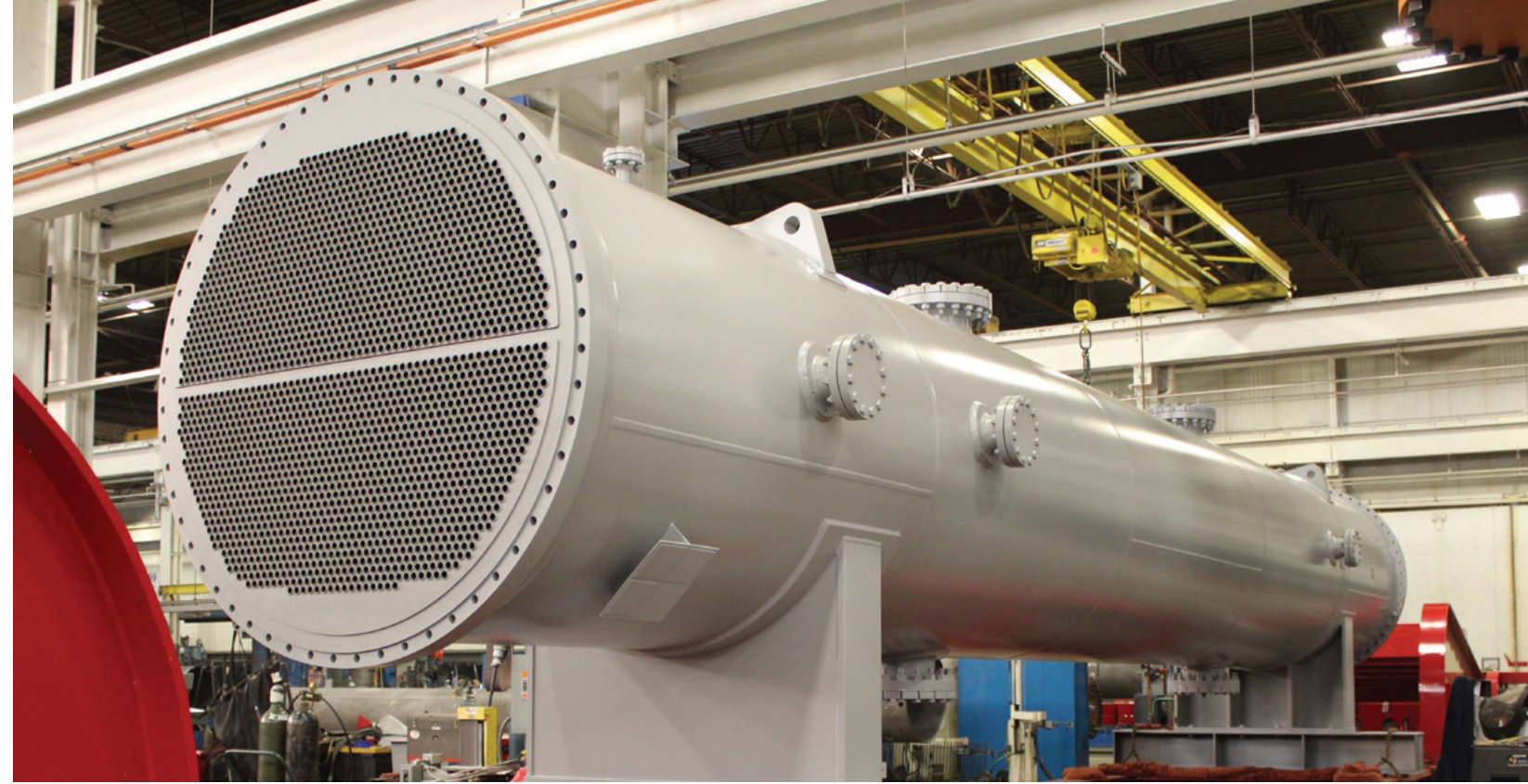
ISO 9001; ASME U & R and National Board NB Stamps; SNT-TC-1A Certification Program; Korean License; TEMA; API; Australian, Brazilian, Canadian (CRN), Malaysian & Singapore registrations.

### Pressure Design Ratings

2,000 psig to full vacuum and 650°F to -100°F designs.



*64" OD x 432" tube length flooded glycol chiller with 60" OD header*



*50" OD x 408" tube length propylene condenser*

## Manufacturing Competencies

### Plate Burning

CNC plasma cutting table 12'W x 25'L table with oxy-fuel option.

### Welding

Fully integrated GTAW, SMAW, GMAW-S, GMAW-Sp, GMAW-RMD, SAW-AC, SAW-DC; 3-ton positioners; 30-ton turning rolls.

### Plate Rolling

Up to 3/4" thick and 15'W carbon steel.

### Machining

Quickmill CNC gantry mill & drill, 96"W x 180"L bed; Bullard Cutmaster vertical turret lathe, 72" swing by 60" height.

### Blasting

22'W x 20'H x 40'L recirculated shot & grit blast room with crane & rail access and stainless steel silica aluminum media option; 20'W x 16'H x 20'L hot water phosphate wash bay.

### Painting

20'W x 20'H x 42'L environmentally controlled room with crane & rail access; 13'W x 13'H x 16'L environmentally controlled room with rail access.

### Engineering & Design

Aspen Shell & Tube Exchanger and Mechanical, finite element analysis (FEA), AutoCad, and Inventor.



*106" OD x 532" OAL propane receiver*

# The intuitive touch for process refrigeration and gas compression control technology



GEA is synonymous with precision-engineered solutions, and the GEA Omni™ control panel extends its history of leadership and innovation. Featuring a high-definition, multi-touch screen, GEA Omni delivers the ease of use and technical wow factor that industrial professionals have come to expect from GEA.

From dedicated compressor control to system control, GEA Omni is the control solution of choice for leading global companies. GEA Omni can also be easily retrofitted to existing equipment to enhance controllability and monitoring. In addition, Allen-Bradley PLCs are available as an alternative.

### Complete system control in one panel

- Control your entire refrigeration or gas compression system with one GEA Omni

### Hardware layout

- Standard industrial components with modular layout

### High-definition display

- 1366 x 768 resolution

### Unique user setup and auditing

- Create unique users and monitor usage/actions

### GEA OmniLink™

- Application to remotely view and manage your GEA Omni control panels with Ethernet file transfer

### Configurable Modbus TCP Ethernet communication

- Read/Write information from other controllers without additional wiring

### Multi-touch display

- Natural and intuitive input

### GEA peace of mind

- Invented, manufactured, and backed by the worldwide leader in refrigeration and gas compression control panel technology

### Drawings, manuals, and videos

- Documentation at your fingertips with helpful videos available on the panel display

### Field configurability

- Easy retrofit panel installation
- Predictive maintenance
- Notifications for recommended service

### Global product with local sales and support

- Single design
- Manufactured in North America, Europe, and Asia
- Preconfigured in more than 25 languages

### GEA OmniHistorian™

- Application to view historical data from GEA Omni control panels and perform detailed analysis

## Product support GEA peace of mind

### Service

GEA's worldwide service support includes trained technicians and product specialists ready to support your GEA equipment.

### Parts

Field experience has proven that the use of genuine GEA parts maximizes compressor performance and reliability, while minimizing the total cost of ownership. GEA's vast parts inventory allows for fast delivery to minimize downtime.

### Training

GEA recognizes the importance of customer support. This can only be achieved when the right training programs are available. Local representatives and contractors are able to attend these training courses. These trainings, geared for design and service engineers, as well as service technicians, are focused on the correct selection and application of GEA compressors as well as performing the correct service to maintain the highest level of reliability.





*We live our values.*

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

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