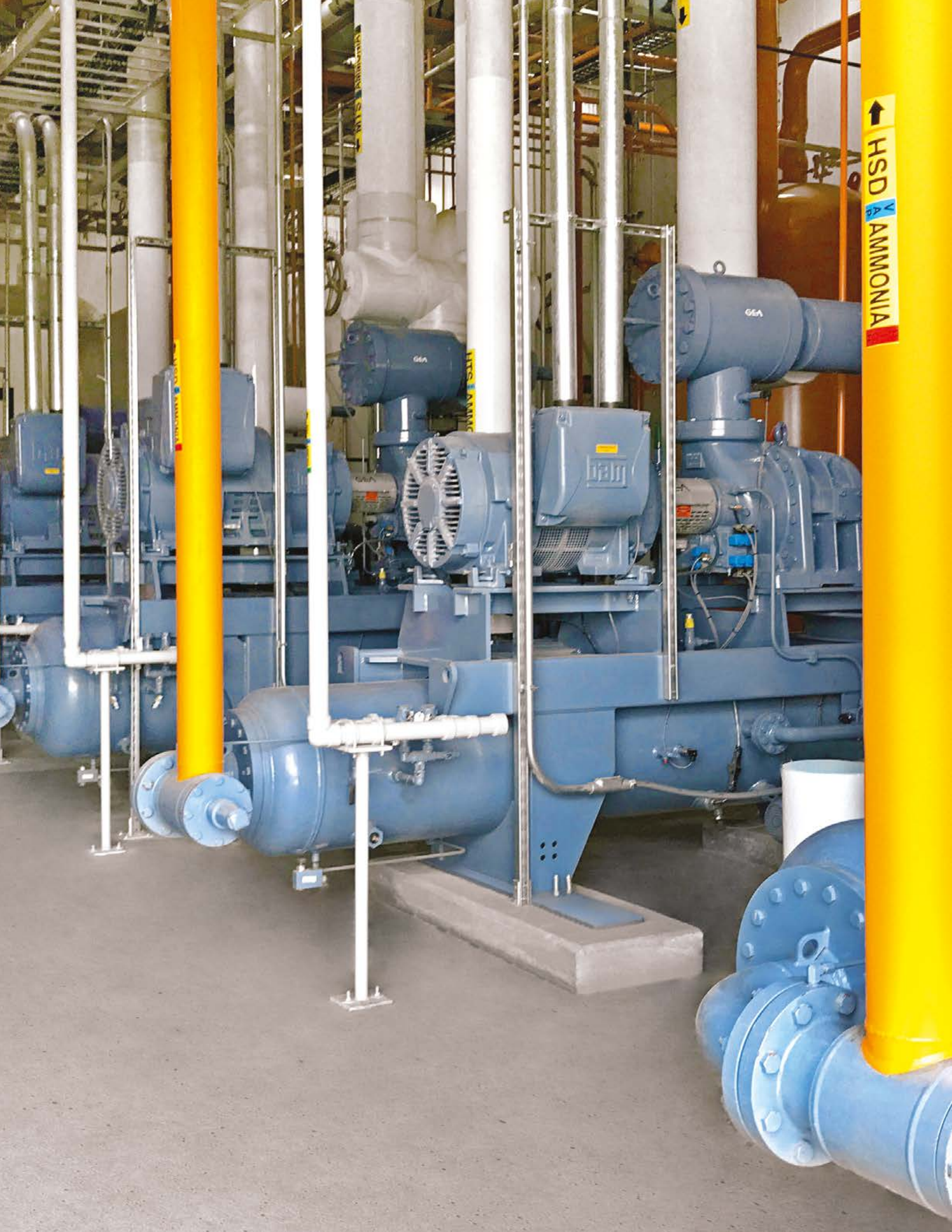


GEA – YOUR STRATEGIC PARTNER

Maintain, optimize and modernize
with GEA Service



↑ HSD AMMONIA

HSD AMMONIA



GEA SERVICE – FOR YOUR CONTINUED SUCCESS



To ensure highly responsive and professional service, our team of GEA technicians and service support staff team up with experienced and qualified refrigeration contractors throughout North America to support customers over their equipment's full life cycle.

Getting you started

As a supportive and committed partner for life, we plan and build around individual needs, sharing process knowledge, training employees and supporting operators to get our customers up and running and ensure smooth, seamless ongoing service.

Keeping it running

To ensure our customers benefit from continuous production processes for minimal unexpected downtime, we provide fast support, efficient maintenance and top-quality spare parts, whenever and wherever needed.

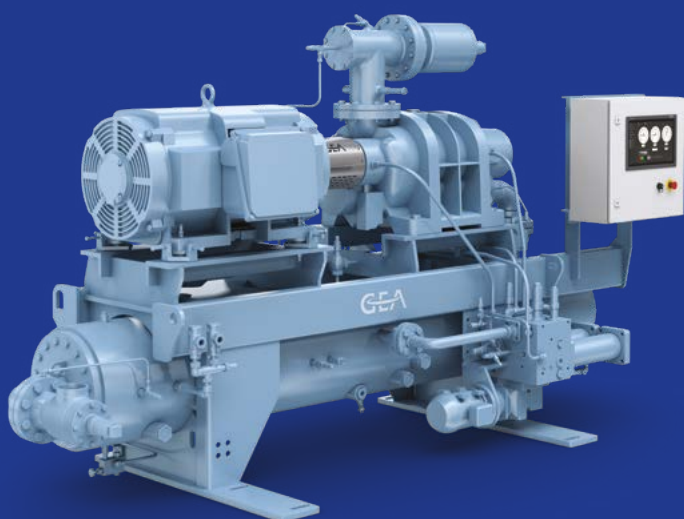
Constantly improving

We safeguard our customers' investments by constantly looking ahead through modernizing or upgrading of equipment and optimizing of processes to meet changing needs and new market demands. We are always working to increase production efficiency and ensure peak performance.

Together with you

Commitment to our customers and their business means investing in their objectives, their risks and their future success. We work in ever-closer collaboration, providing ongoing system audits and on-site support through innovative new service models in order to generate improved performance.

GEA – YOUR STRATEGIC PARTNER



GEA's robust and comprehensive service program is designed to address our customers' most important challenges — optimizing the reliability and efficiency of their process refrigeration and gas compression systems to avoid system downtime. Equipment downtime means disruption of production and lost revenue. GEA's proactive, preventative approach to system maintenance is designed to maximize run time and keep your systems operating in a highly efficient manner.

By deploying our experienced GEA field service team, as well as teaming with highly qualified refrigeration contractors throughout North America, you can count on responsive, reliable experts to help establish and maintain proactive and preventative initiatives as well as respond promptly to inevitable, unforeseen emergency situations. Original spare parts, compressor rebuilds, ready-to-ship bare compressors, service-level agreements, extended warranty programs, and training round out GEA Systems North America's value-added service offerings.

Food, beverage and dairy processes & cold storage: Support Services

- 24-hour service support
- Compressor package start-up
- Contractor start-up training
- Troubleshooting
- Modernization
- Field services
- Inspections
- Maintenance & service agreements
- Customized in-plant training
- Refrigeration oil analysis
- Supervisory systems
- Vibration analysis

Post-installation Products & Services

- Bare compressors & retrofits
- Engineering studies
- GEA Omni control panel - retrofit program
- GEA Omni control panel - system panels
- Original GEA spare parts
- Remanufactured compressors and rebuilds

Applied expertise to maintain, optimize and modernize your operational efficiency and performance

In addition to GEA FES GMX and GLX standard screw compressor packages, GEA's field service team also covers sophisticated engineered systems, such as the unit pictured — a GEA turbine-inlet-air-cooling system used for liquefaction of natural gas.



Oil, gas and chemical processes:

Support Services

- Bare compressors & retrofits
- 24-hour service support
- Engineered-system start-up & commissioning
- Base-frame balancing
- Troubleshooting
- Modernization
- Field services
- Inspections
- Maintenance & service agreements
- Customized in-plant training
- Refrigeration oil analysis
- Vibration analysis

Post-installation Products & Services

- Compressor rebuilds
- Engineering studies
- GEA Omni control panel retrofit program
- GEA Omni control panel - system panels
- Remanufactured compressors
- Original GEA spare parts

System modernization – control and monitoring

Applying technology to your advantage

As the industry leader in control panel technology for industrial refrigeration systems, GEA's panel retrofit capability enables operators to powerfully upgrade their existing control panel — whether it be a legacy GEA product or that of another manufacturer — for a modest investment.

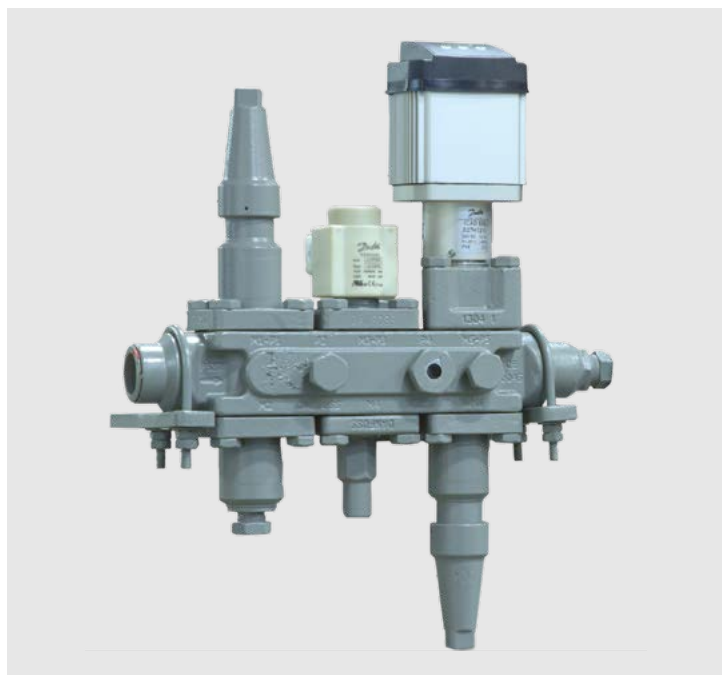
Ancillary GEA products, designed to monitor and track system performance, are integrated with the GEA Omni control panel and provide critical information to monitor and control key operating parameters.

GEA IntelliSOC

GEA's IntelliSOC is a space-saving valve system that maintains oil temperature and provides cost savings by eliminating the need for external heat exchangers, water supplies and associated piping.

GEA VTrac Vibration Monitoring System

Suitable for integration with any control panel, the GEA VTrac measures and records system vibration — a key marker for system operating condition and an early indicator of maintenance requirements and potential system trouble or failure. Armed with VTrac data, operators are able to proactively schedule system maintenance and avoid expensive potential downtime and catastrophic failures.





GEA Omni Control Panel Retrofit Program

GEA's control panel retrofit program upgrades legacy GEA control panels (Micro II, MicroMASTER, Micro III, GForce), as well as those of other manufacturers, to the powerful, intuitive, multi-touch, high-definition GEA Omni control panel.

Designed based on feedback from operators who envisioned their ideal control panel, GEA Omni is the choice of leading companies across the globe.

Key Advantages of the GEA Omni Control Panel

World-class HMI - Featuring a true high-definition (1366 x 768 pixels) color display, Omni's human-machine interface provides clear visualization of drawings, images and text.

One Solution - GEA Omni is designed as an open system. As a result, it can monitor and control not only the relevant components from GEA, but also those from other companies.

Integration - GEA Omni appeals to not only operators but system integrators as well. As it comes from the factory, Omni satisfies typical industrial communications standards for purposes of data exchange with auxiliary and supervisory control system components.

Digital Documentation - Quick access to drawings, manuals and videos available for GEA Omni control panel on-screen viewing can prove to be invaluable during new system commissioning and troubleshooting.

GEA OmniLink - A stand-alone Microsoft Windows® operating system application designed to automatically find GEA Omni panels on the same Ethernet network, read panel status and view the present panel screen as if viewing the panel on-site.

GEA OmniHistorian - A Microsoft Windows® operating system application used to view and analyze historical data. GEA Omni stores years of operating information at a user-defined sampling rate. This information consists of I/O data, event logs, parameters, revisions and annunciations which can be easily transferred over Ethernet using GEA OmniLink.

Security - Up to 25 unique users can be created, each with a customizable view of operating data, control parameters and panel screens. Omni provides three levels of security and each unique user's login history and actions are recorded in the panel for auditing purposes. Control parameters may be adjusted only within allowable limits and all changes are logged in the panel's history for security and administrative review. As a result, GEA Omni helps to minimize operator mistakes and system failure.





Rebuilt and remanufactured compressors & ready-to-ship new compressors

Extending equipment life and supplying what you need, when you need it

When our customers need a compressor, or need to have one rebuilt, they appreciate the options available to them from our bare compressor service program.

From compressor rebuilds that are returned to the customer for reinstallation; remanufactured compressors available for purchase by any operator; to brand new, never-installed bare compressors; GEA provides an array of choices to suit customers' budgets and timelines. Our compressor rebuild program covers both GEA-manufactured screw compressors as well as those of other manufacturers.

Our strategically located service facilities enable us to provide responsive compressor rebuild services. This reduces shipping cost and turnaround times.

As a value-added feature, GEA stands behind all remanufactured and rebuilt compressors by providing the same two-year parts warranty that applies to our new compressors.

With a well-stocked inventory of core, remanufactured and new compressors, we stand ready to quickly respond to your specific needs.



Preventative Maintenance

GEA's refrigeration system and compression unit inspections and maintenance cover a wide scope of critical service tasks, and is performed per the following quarterly and annual recommended service intervals:

Class-A Inspection

(recommended service interval – quarterly)

- Log machine properly
- Check coalescing pressure drop
- Check motor current draw
- Check motor load control
- Calibrate pressure and temperature sensors
- Calibrate motor CT (where applicable)
- Calibrate load/unload solenoid valve and adjust speed
- Check axial float
- Align motor/compressor
- Check operation of all safeties

Class-B Inspection

(recommended service interval – annually)

- Perform Class-A inspection (see left)
- Inspect skid for rust and corrosion
- Clean suction strainer
- Clean liquid injection strainer (if applicable)
- Check operation of liquid injection valve (if applicable)
- Inspect all external refrigerant and oil lines
- Leak check compressor package
- Inspect motor terminals
- Grease motor bearings
- Check all connections in starter
- Inspect condition of contactors
- Inspect relays in starter and control panel
- Change oil as warranted by analysis
- Replace oil filters
- Inspect coalescing elements
- Clean oil pump suction strainer
- Check oil pump alignment
- Inspect oil pressure regulator
- Inspect oil heaters



By teaming with talented service contractors throughout North America or deploying our GEA experts to your site, we provide prompt responses for warranty issues, maintenance services and troubleshooting.

Whether routine maintenance or emergency situations, GEA draws from its vast pool of highly qualified professionals to provide on-site field service. With 24/7 availability, customers are assured that when they need a technician on site, they can count on GEA to get the job done.

Predictive Maintenance

Key to avoiding costly surprises and minimizing total cost of ownership

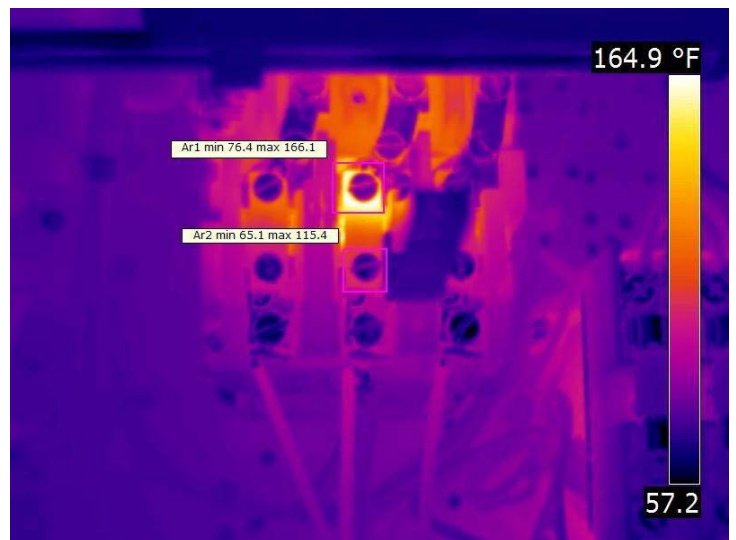
GEA's Predictive Maintenance Services include vibration analysis, field balancing, laser alignment and infrared thermography.

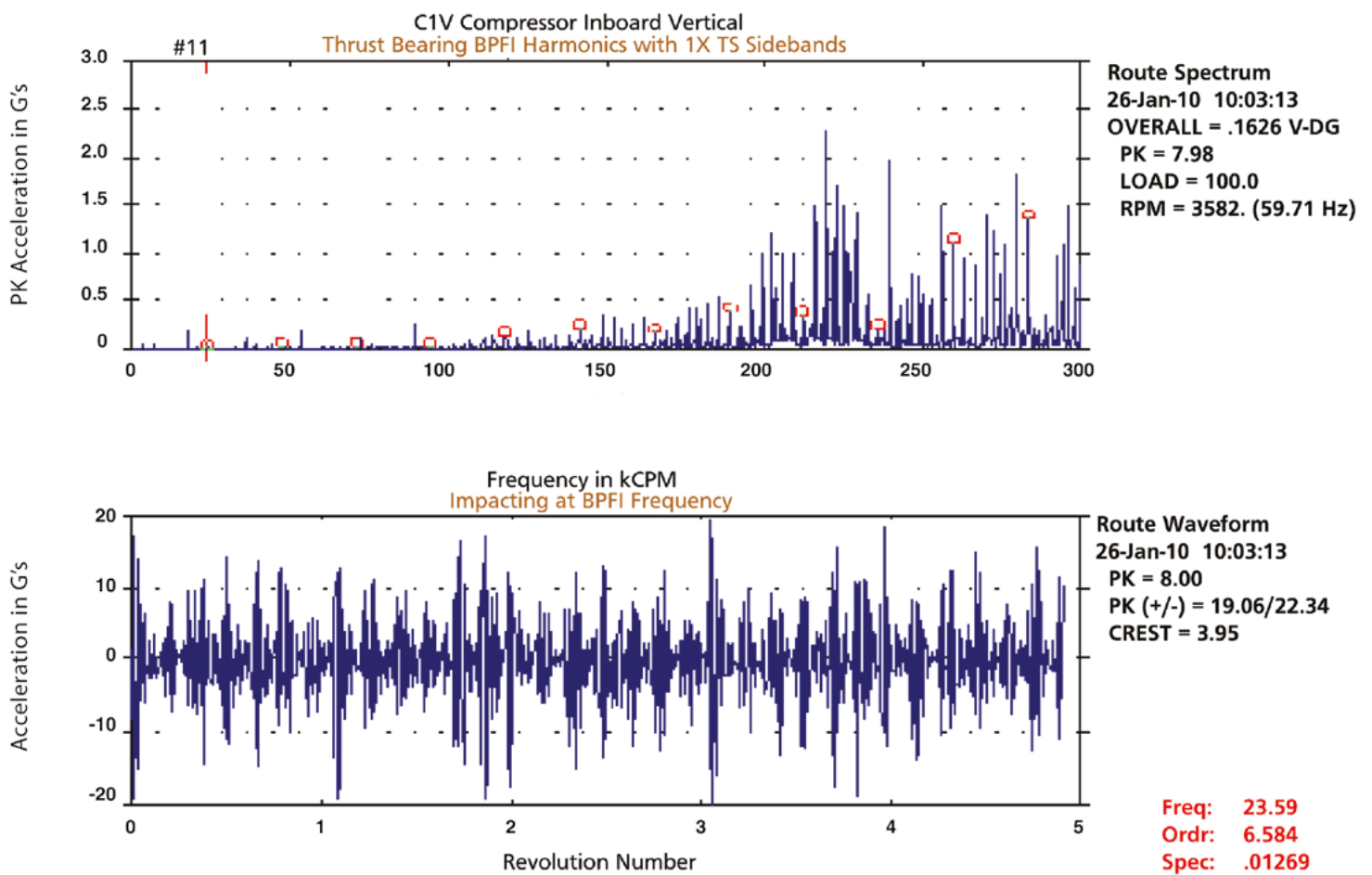
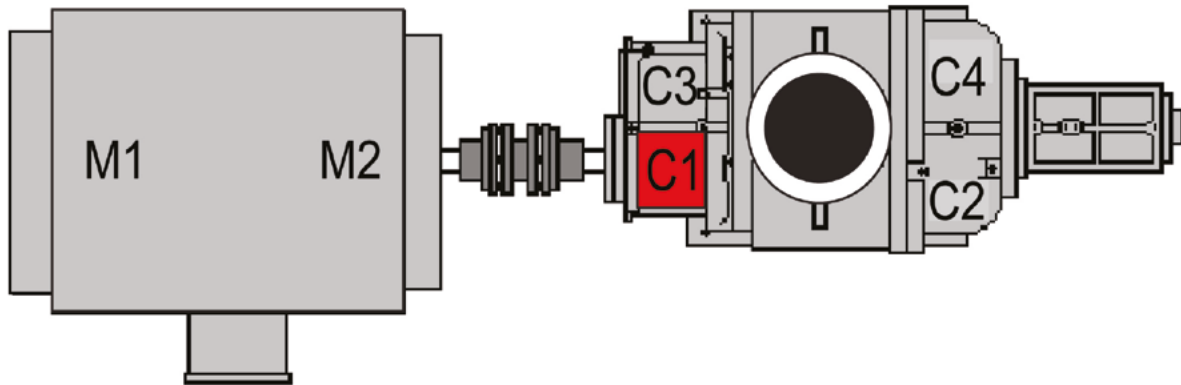
GEA's Vibration Analysis Service is used to provide early warnings of machine defects or component deterioration, allowing for condition-based maintenance rather than scheduled or interval-based maintenance. Vibration analysis is used to detect a variety of problems, including bearing failures, an unbalanced or misaligned coupling (which can easily be addressed with GEA's Field Balancing Service), or machine resonance, which

can cause fatigue failure. Utilizing this technology to diagnose potential problems reduces lost production time and minimizes the likelihood of a catastrophic machine failure.

GEA's Laser Alignment Service is essential to ensure prolonged life of the drive coupling and bearings and should be included as part of a comprehensive predictive maintenance program.

GEA's Infrared Thermography Service can detect numerous electrical problems and mechanical defects.





This illustration indicates a defect in the male rotor bearing (C1). Vibration analysis detected the problem, avoiding a catastrophic compressor failure.

GEA ORIGINAL SPARE PARTS



Quality you can trust

While imitation spare parts may be less expensive based on price alone, the long-term value is often sacrificed when compared to investing in GEA original spare parts. Why is this? For one, GEA's precisely designed and engineered systems rely on, and are tested, using only GEA original parts.

These key components are integral to effective system operation and is often a warranty requirement. Risk is heightened when alternative parts are used as they may perform inadequately, and, in some cases, result in system damage or catastrophic failure and voided warranties.

By using GEA original spare parts, your valuable equipment operates with the exact same, high-quality, engineered components as originally designed and the risks, which can be significant, associated with imitation parts is eliminated.

Our dedicated spare parts team is your go-to resource for fast, responsive GEA original spare parts service, delivered where and when you need them. Don't subject your operation to imposter parts. Protect your system investments and maintain their quality and integrity with GEA original spare parts. In order to minimize your downtime in emergency cases, GEA stocks millions of dollars of spare parts inventory ready to ship throughout North America and the world.



GEA PEACE OF MIND

Allow GEA to maintain your equipment thereby freeing up valuable time and resources to handle your daily tasks and operations.

GEA offers several ways to maintain your equipment and extend standard warranties:

Service-level Agreements

These preplanned service visits provide peace of mind by giving you the confidence that your critical maintenance tasks will be completed as recommended, resulting in potentially less downtime, reduced potential of catastrophic failure and enhanced longevity and performance of your equipment.

Service-level agreements include the following:

- Multiple Class-A inspections
- One Class-B inspection
- Oil analysis twice per year
- Vibration analysis once per year

GEA Premium Protection

GEA offers enhanced coverage via its silver, gold and platinum level Premium Protection extended warranty programs. Designed as a continuation of standard GEA warranties, GEA Premium Protection is available on standard compressor packages, propane gas packages and chillers.

Contact your local GEA sales representative for details.



Training Programs

Job-relevant courses to enhance technical skills and safety knowledge



Led by GEA experts with decades of experience in their areas of specialty, our GEA training programs enable students to advance their personal and career development and bring new and higher-level key skill sets to their employers' operations. Limited class sizes ensure a personalized, focused and interactive training environment.

Contractor Training – GEA Screw Compressor Startup

This hands-on course, designed for refrigeration contractor personnel, fully trains and certifies technicians to perform standard GEA screw compressor startups. The certification covers the technicians for two years. As an immersive, four-day class conducted at various times each year, the program introduces and familiarizes technicians with the latest GEA compressor package technology and components. The course agenda includes, but is not limited to, internal compressor component orientation; motor starter setup; VTrac (vibration) setup; GEA IntelliSOC valve setup; and GEA Omni control panel setup & troubleshooting.

Upon successful completion, technicians leave with the knowledge and skills required for starting up standard GEA screw compressor packages.

Screw Compressor & Controls Training

This day-and-a-half course is open to all industry professionals and provides a comprehensive overview of GEA screw compressor operation and maintenance as well as control panels. The training is held regionally throughout the United States each year. Classes may also be held at a customer's location, if desired.

Agenda items include current and legacy GEA screw compressor package operation and maintenance as well as GEA screw compressor control panels (start/stop sequences, safety circuits and control panel operation) and system control functions (compressor sequencing, condenser control, air-unit control). Limited class sizes, hands-on lab exercises for in-person classes, a workbook and reference documents are designed to deliver a lasting, high-value learning experience.

Seminar participants should be familiar with basic refrigeration systems and electricity or controls operation. This course is not intended to cover specific equipment installations or detailed refrigeration engineering theory.



Site-Specific Screw Compressor and/or Controls Training

These classes vary in length based on content and site requirements. Training content is designed to provide optimal benefits to the facility. Content of custom classes typically includes a combination of standard as well as tailored material to ensure coverage of the specific equipment in service at the facility. This is accomplished through a combination of lecture and hands-on segments and may also include plant P&ID, lubrication oil flow and control panel drawings. Where drawings are covered, each participant is provided with a copy of each that they can mark up and retain. Visits to operational plant equipment to further enhance the learning experience are also available.

All three GEA training courses are recognized by the Refrigerating Engineers & Technicians Association (RETA) and qualify for RETA Professional Development Hours (PDH). A GEA certificate is awarded by GEA to attendees who successfully complete these courses.

GEA Service Support Hotline

1.800.858.2209 | service.fes@gea.com

GEA Heating & Refrigeration Technologies
GEA Systems North America LLC

Service Locations:

Pennsylvania
3475 Board Road
York, PA 17406
+1 800 858 2209
service.fes@gea.com

Texas
3451 Pasadena Blvd.
Pasadena, TX 77503
+1 800 858 2209
service.fes@gea.com

California
555 Baldwin Road
Patterson, CA 95363
+1 800 858 2209
service.fes@gea.com