

Gas Gathering: Compressors gather natural gas from one or more sources, such as producing oil wells, gas wells, casing heads and production facilities. Once gathered, the gas is transferred through a network of pipes to a storage facility or transmission system.

Valerus Client Scenario: The customer needed full civil, mechanical, electrical and environmental engineering for a compressor station designed to accommodate simultaneous operation at two different inlet pressures. Valerus engineered a complete, 12,000 hp compression facility including nine compressor packages and two triethylene glycol (TEG) gas dehydration units in 180 days.

Gas Lift: Natural gas captured from the well can be injected into the wellbore through a series of mandrels and valves located at different elevations. Aerating the oil column reduces its hydrostatic pressure, allowing the higher formation pressure to force more oil to the surface. The gas can then be recovered and re-injected.

Gas Storage: Compressors are used to force excess natural gas recovered at the surface back into natural underground formations. Gas stored in these formations can be recovered later — again using compressors — to meet rising demand during winter months.

Injection (CO₂, Gas or Air): One of several secondary recovery methods, gas injection can be used to extend the life of a producing oil well. Natural gas recovered from the well is re-injected directly into the formation, maintaining formation pressure and forcing additional oil and gas into the producing well.

Valerus Client Scenario: Unique machine for air injection service is being utilized for a “fire flood” project. Specs include 1,200 hp, five stages, from atmospheric pressure to 3,200 psig, utilizing Waukesha 5794GSI and Ariel JGT/6. This application is very sophisticated with regard to the overall system design, and Valerus is one of the few packagers in the world capable of providing a solution of this type.

Pipeline Booster Stations: Natural gas travels through pipelines under pressure. Booster stations located at regular intervals along the pipeline ensure that natural gas remains pressurized as it flows toward its destination.

Vapor Recovery: Vapor recovery equipment is used to remove and recover potentially hazardous or valuable vapors from storage tanks. In the oil and gas industry, this equipment is used to capture natural gas for processing into a useful, profitable product. Valerus provides electric motor drive compressors for this application.

VALERUS CONTINUES TO DELIVER

Valerus delivers with highly experienced subject-matter experts in compression, production equipment, processing and treating, operations and maintenance, and turnkey services. As a global provider of these services, Valerus has extensive design, fabrication, installation and operations experience, and worldwide sales and service locations.

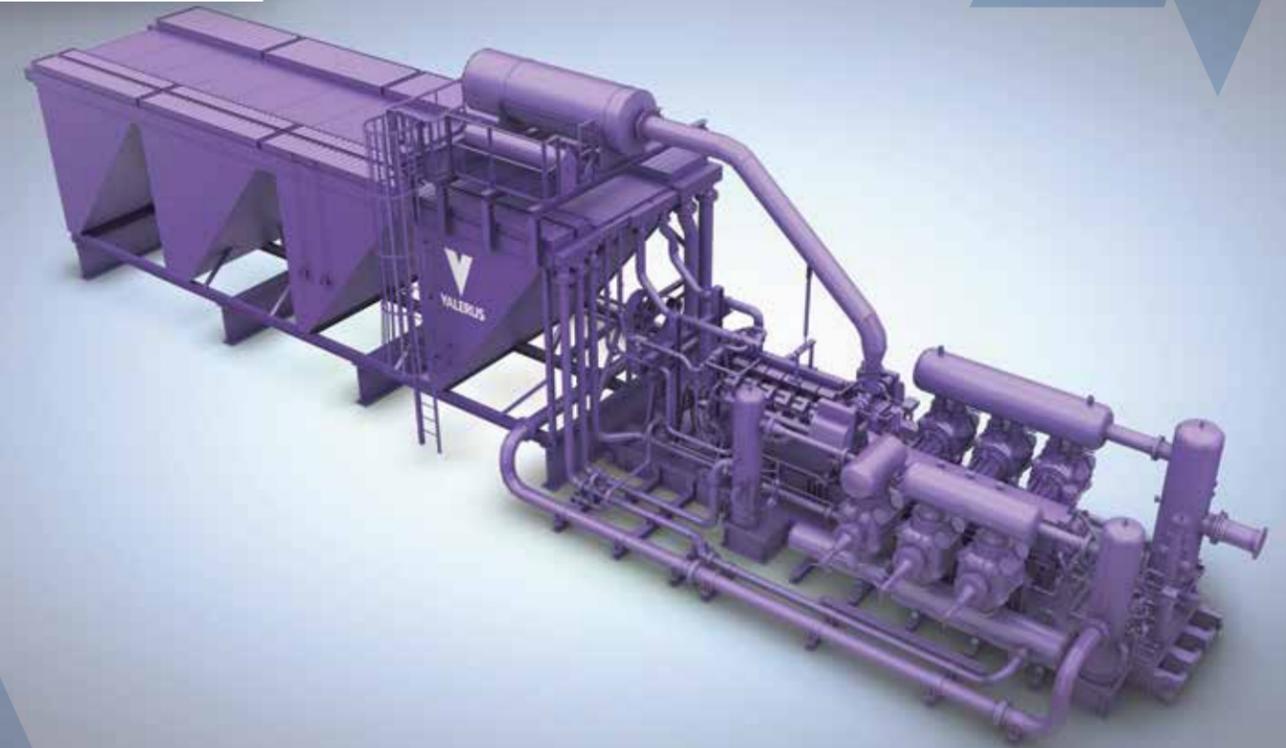
Valerus strives to find the simplest, most standard solution to the customer’s specialized application. Whether it’s compensating for planning problems or unexpected developments, Valerus delivers in quick fashion, even on tight deadlines.

Valerus Client Scenario: Valerus recently delivered two 7044/K4 pipeline machines for service in South Texas in less than 16 weeks. Typical lead time on similar equipment is more than 24 weeks, a significant value to the customer for early service.

Valerus can provide a turnkey solution, including both personnel and equipment, with full operations from wellhead to pipeline. Today, Valerus continues to deliver with global expertise in total gas solutions.



ELEVATED STANDARDS. DEEPER INSIGHTS.



Valerus Compression Solution

Valerus addresses the challenges of gas producers with compression solutions suitable for almost any onshore or offshore application, as part of its full offering of oil and gas handling and processing equipment and services. Valerus designs, deploys and maintains equipment ranging from 25 hp compressor packages to 50,000 hp compression facilities and beyond, with equipment available for rapid deployment — in many cases within a week of inquiry.

Valerus provides compression services with unique options and benefits. These include but are not limited to:

- Single-stage and multi-stage units at any horsepower.
- “Flex” packages engineered to switch quickly from single- to two-stage or from two- to three-stage as customer gas conditions change.
- Turnkey solutions including both personnel and equipment, with full operations from wellhead to pipeline.
- “Build, own and operate” options where Valerus will finance, construct, operate and maintain a compression station or any type of gas gathering or processing facility we provide to customers.

APPLICATIONS

Valerus’ expertise includes dealing with a variety of climate and geographical challenges, such as:

- Sour gases including H₂S and CO₂
- Heavy gases associated with crude production and processing
- High pressures in injection and storage services

- Handling harsh environments, including high elevations and high ambient temperatures
- Special applications, such as propane refrigeration and fuel gas boosting

As part of an overall solutions approach, Valerus offers a range of maintenance, installation and equipment operations services, all designed for rapid service availability, in addition to keeping customers' equipment operating at optimal levels and at reasonable cost. Valerus enjoys established relationships with all major manufacturers, enabling quick response time for parts or service.

REMOTE MONITORING AND PREDICTIVE MAINTENANCE

Valerus now takes quick response time to a whole new level by offering remote monitoring (RM) services to provide predictive maintenance and proactive issue resolution.

The RM system sends notifications of telemetry, status updates or problems in the field, by way of email, text or voice. As soon as a compressor unit is shut down or an alarm point is triggered, Valerus will know about it and respond.

Since the RM system is Bluetooth-equipped, access is no problem. While on location, field technicians can wirelessly monitor all the data points trending in real time, including oil pressures, temperatures, engine speed, suction pressure and discharge pressure.

The system's wireless capability allows for multiple compression units at a compressor station to tie into a single RM device — so a separate device for each compressor is not needed.

This asset management and remote monitoring system is sophisticated, yet quite simple to operate. The system can gather tons of information remotely, and its innovative "dashboard" easily lets the user drill through and down into graphical charts to retrieve detailed, exportable equipment information.

The system is also designed to indicate areas of inconsistencies and patterns in trending that look unusual, and not only suggest they be investigated but immediately generate work orders to do so — predictive maintenance in action.

Valerus remote monitoring differs from other available offerings in the following ways:

- **Cellular-based communication:** lower cost than satellite, but also operates by satellite where cellular service is unavailable.
- **User-friendly "dashboard":** easy data interaction brings the data alive with just a couple of clicks.

- **Lube-oil monitoring:** only RM solution to offer lube-oil monitoring.
- **Hourly preventive maintenance schedule:** more efficient, less expensive than calendar-based schedules.
- **System-generated reports:** no guesstimates on data entry.
- **Timely alert notifications:** no costly delays.

"PLUG-N-PLAY" DESIGN SOLUTIONS

The Valerus "plug and play" design approach is based on speed-to-market without sacrificing quality control. Everything is built and assembled in a controlled environment, with compression equipment manufactured in an ISO 9001-certified facility.

Valerus has proven modular designs, where the product is self-contained. The designs are field-tested to be flexible and repeatable in use, one machine with multiple applications. This is just one way Valerus continues to respond to customer needs. By doing so, our design capabilities have been broadened to meet those continued challenges.

Because of the Valerus design approach — building everything in a controlled environment — equipment installation involves relatively simple reassembly in the field, minimizing construction time. Components just plug right in, enabling the fastest possible time-to-market.

BUYING COMPRESSION EQUIPMENT NOT AN OPTION?

No problem. Valerus maintains a fleet of rental compressors and expertise to meet your gas-handling needs. It's a young, flexible fleet, with much of Valerus' large-horsepower equipment capable of operating at multiple stages with minimal customization.

Additionally, consider these leasing advantages:

- Leasing equipment may be a better use for your capital — rather than investing in compression assets, invest in the drill bit and outsource non-core activities such as compression.
- Ensure improved mechanical availability.
- Contracting equipment and services is a practical alternative when field service force is limited or unavailable.
- Leasing simplifies asset management — customers may not want to manage and maintain a wide variety of assets, or ensure their compliance with changing environmental rules and regulations.
- Leasing can be a cost-effective way to manage risk, especially when future well performance is in doubt or future compression plans may be unclear.

- Leasing equipment can simplify accounting in joint ventures, working interests and other circumstances.
- As a global contract services provider, Valerus has the flexibility to provide the right equipment and expertise for each job.

TRUSTED OEMs

The Valerus fleet is composed primarily of equipment from the following OEMs:

- Ajax
- Ariel
- CAT
- GE
- Waukesha

Valerus delivers compressor packages that are designed to take advantage of any of the OEM components' distinct advantages:

- **Waukesha Engines:** Rich burn combustion process leads to a high tolerance of poor quality fuel; they also meet the most stringent emission regulations through the use of a catalyst system, making them ideal for today's hydrocarbon rich fuel streams.
- **Caterpillar Engines:** Having the latest available control technologies and market-leading service and support makes Cat engines a mainstay. Their lean burn combustion technology provides for real-time emissions on continuous basis, and more efficient operation with better fuel gas consumption.

- **Ariel Compressors:** The gold standard for reliability, serviceability and field support, Ariel ensures the gas is always flowing.
- **GE Compressors:** GE's global presence and corporate scale ensure end users have a viable machine.

COMPRESSOR APPLICATIONS AND SIGNIFICANCE

Compressed Natural Gas (CNG): In a compressed natural gas (CNG) solution, natural gas recovered from a producing oil or gas well is captured, compressed and stored in high-pressure cylinders for later use as an alternative fuel — with fewer emissions and reduced environmental impact — by CNG-equipped vehicles and other machinery.

Valerus Client Scenario: In a rather unique application, the compressor package is being used for filling CNG tube trailers that the customer intends to use for pipeline outage support. The equipment utilizes Cat 3406TA/Ariel JGA-2, 2 Tandem 2 stage configuration.

Challenge	Solution	Features
Maximize production	<ul style="list-style-type: none"> • Optimize run time and maintenance needs • Identify ways to improve throughput 	<ul style="list-style-type: none"> • Lower lifecycle (labor/maintenance and operating) costs • Best-in-class mechanical uptime, including potential uptime improvements • Better data and unit history; enables actual root cause analysis of equipment downtime for compliance and traceability • Availability and transparency to all data and KPIs customized for various types of users (decision-makers versus field personnel) • Real-time monitoring and decision-making expertise • Technicians with the best tools in the industry to perform the work more professionally, effectively and efficiently • Enables predictive analytics (higher utilization and lower overall costs)
Reduce facility operating cost	<ul style="list-style-type: none"> • Proactively prevent downtime and issues • Optimize equipment performance 	
Reduce environmental footprint	<ul style="list-style-type: none"> • Ensure compliance with regulations • Improve efficiency of surface facilities 	
Help ensure safe operations	<ul style="list-style-type: none"> • Proactively mitigate safety risks • Automate operations and reduce personnel required 	