

CNG COMPRESSORS

Fueling Natural Gas Vehicles



WORLD STANDARD
COMPRESSORS

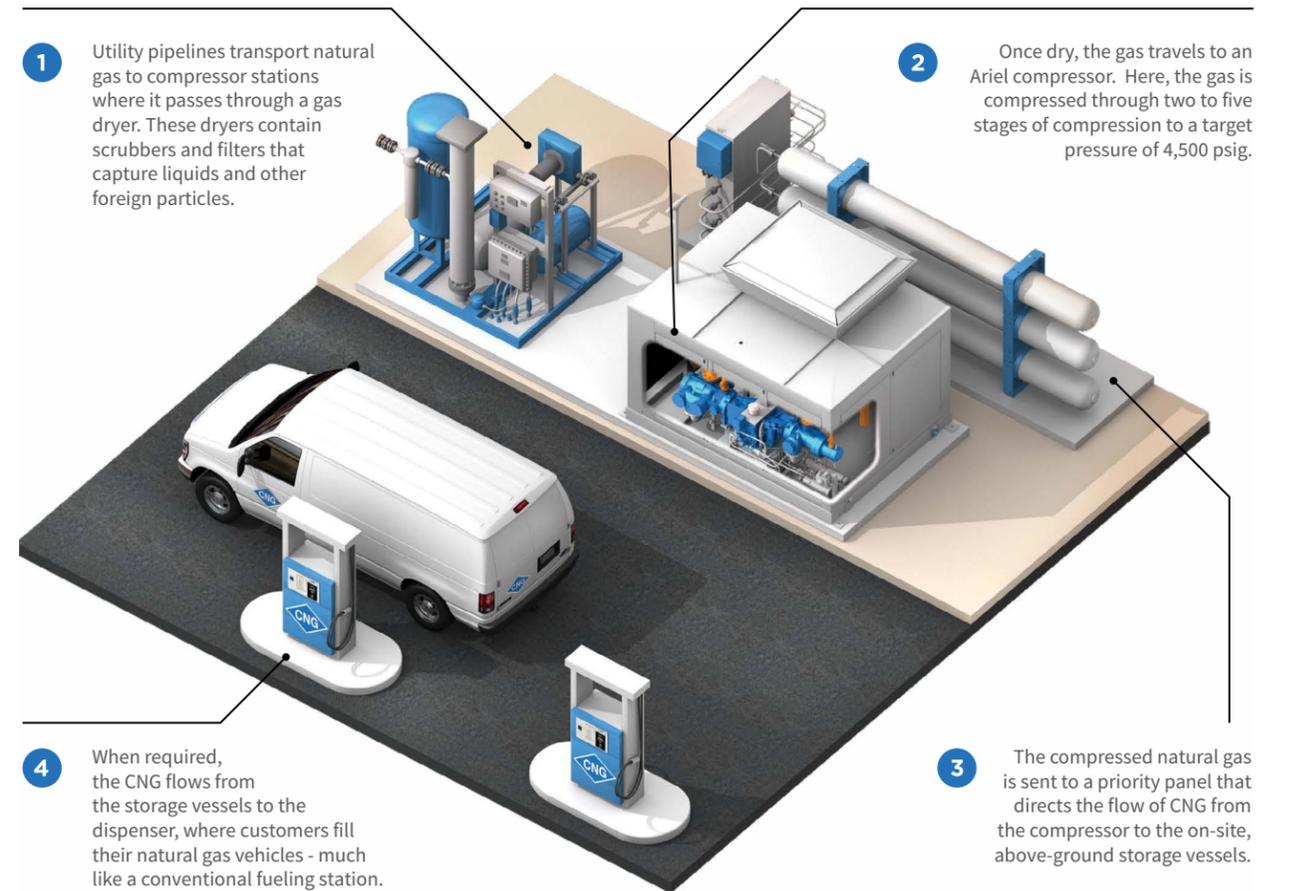




HOW CNG WORKS

CNG is a fuel made by compressing natural gas or biogas to less than one percent of its original volume. Once compressed, CNG is stored and distributed at a significantly lower cost than diesel or gasoline.

Vehicles running on CNG are cleaner burning than their conventionally fueled counterparts and reduce CO₂ emissions. Because CNG is cleaner than diesel or gasoline, engine wear is reduced, prolonging vehicle lifespan.



Learn More

To learn more about Ariel applications & compressed natural gas for vehicle fueling visit: www.arielcorp.com/cng



ARIEL CNG COMPRESSORS

Ariel compressors are operating in fueling stations for natural gas vehicles (NGV) around the globe. In over 100 countries, Ariel has built a reputation for safe, rugged and long-lasting equipment.

Utilized in NGV fueling services providing 125 to 2,000 + scfm (200 to 2,800+ nm/h), Ariel compressors are paired with drivers ranging in size from 50 to more than 1,200 BHP (37 to 895 Kw). Our extensive range of cylinder sizes allows units to operate with inlet pressures from zero to more than 200 psig (13.6 barg) and discharge pressures over 4,500 psig (310+ barg).

Low Maintenance

A balanced-opposed compressor design with a fully enclosed auxiliary drive assures quiet, virtually vibration-free operation. Additionally, Ariel compressors are designed with component accessibility and service in mind to reduce maintenance time and expenses.

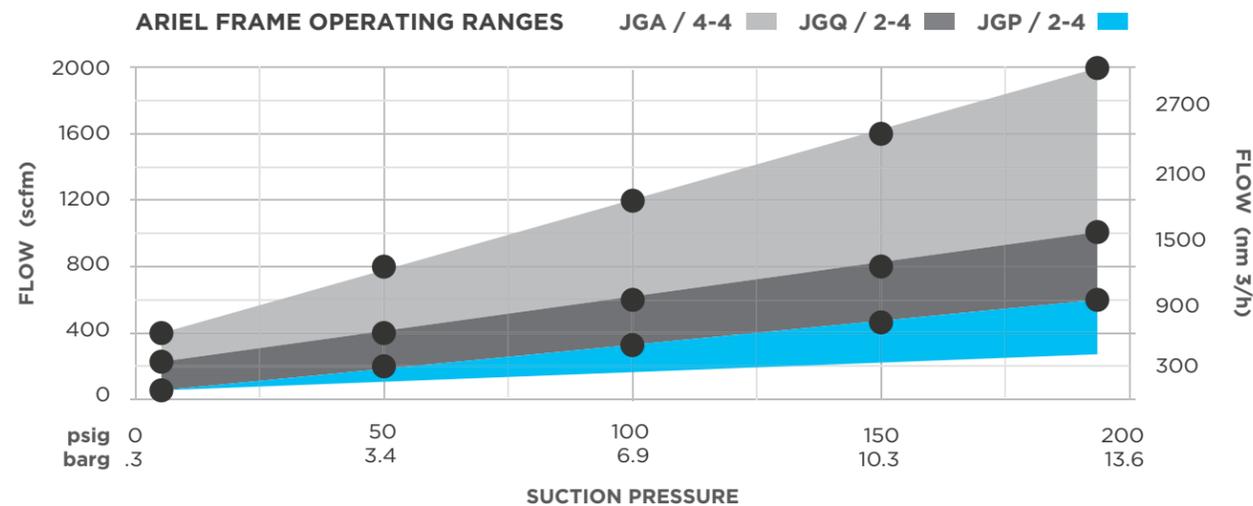


Ariel is the largest manufacturer of separable reciprocating gas compressors in the world, setting the standard in quality, reliability and customer support.

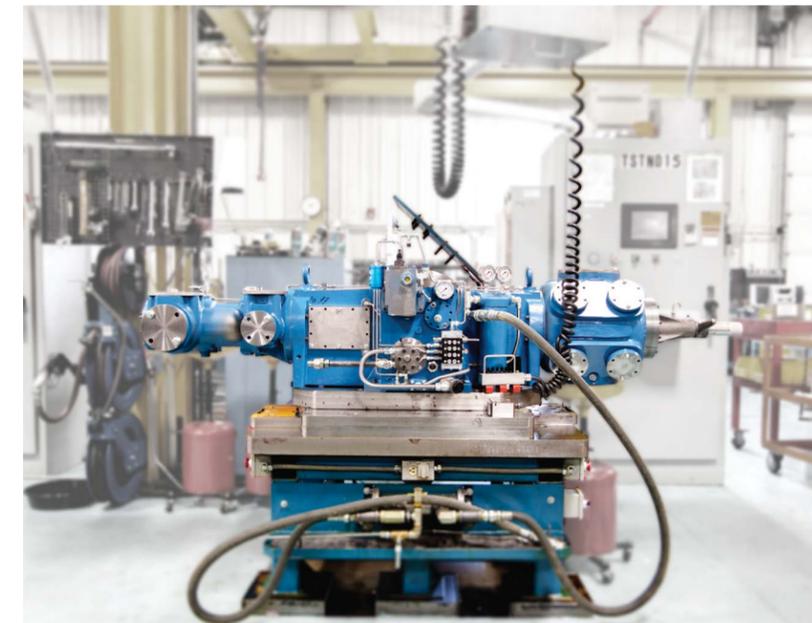
Ariel compressors used in NGV fueling are based on the same designs that are utilized in field gas, process, and transmission services, and are built to run 24 hours a day, 365 days a year. Our experience makes the Ariel compressor one of the most robust compressors in the CNG market. Ariel compressors are built to perform beyond expected and specified requirements. We lead the world in the development of modern compression technology with non-cooled cylinders; high-speed driver rated design and market-driven innovation. We are determined to remain the experts and the leaders in compression technology.

Rigorous Run Tests

Each unit is run through a multi-step testing procedure to assure build quality and proper break-in. This vital quality check helps us to guarantee that every compressor will operate to the high standards for which Ariel is known.



JGQ/2-4 = JGQ two-throw frame, four stages of compression | Discharge Pressure = 4,500 psig (310 barg) | 126.67 scf = 1 GGE



Number of compressors produced since 1966

65,000+

Countries where Ariel compressors operate

100+

Rigorously tested in 3-step process

4 hrs.

JGQ COMPRESSOR SPECIFICATIONS



Rated bhp

280

Stroke

3.0 in.

Max RPM

1,800

Tension Rod Load

10,000 lbs.

Gas Compression Rod Load

11,000 lbs.

Total Rod Load

20,000 lbs.

Piston Rod Diameter

1.125 in.

A workhorse in field-gas applications, these separable reciprocating compressors are engineered to effortlessly pair with high-speed engines. Available with high-pressure cylinders, the JGN and JGQ are excellent choices for gas-lift and CNG vehicle-fueling applications.



CNG Specific Cylinders

Ariel's CNG purpose built 10-3/4" cylinder offers a wide suction pressure range from a single cylinder configuration:

- From under 5 psig to over 40 psig
- For 1+GGE/min. production up to 10+GGE/min. per unit
- Field flexibility allowing one configuration to be re-purposed to fit other operating parameters



CASE STUDIES

Kentuckiana Cleanfuel

Kentuckiana Cleanfuel, a compressed natural gas fueling station operator, was founded in early 2013 in order to accelerate the growth and development of CNG infrastructure in the Louisville, Kentucky area. The company opened its first public CNG station in 2014 after partnering with M&M Cartage, a family-owned trucking company based in Louisville.

Kentuckiana's pilot station features two Ariel JGQ 2-throw reciprocating compressors and supplies more than 100,000 gallons of CNG a month. Thanks to the success of its first station, Kentuckiana opened a second station in Cincinnati, with plans for more along the way.

“We believe the future for compressed natural gas is very bright. As we continue to expand the stations that we have now, our geography may change, but the guts and heartbeat of everything we do as a fueling business is the Ariel compressor.”

“We know we can rely on it, we know how to work on it, and we know the people at Ariel stand behind it 100 percent.” - Alan Steiden, Kentuckiana Cleanfuel CEO.

M&M Cartage trucks converted to CNG

250+

Potential carbon emissions reduction utilizing RNG

90%

Savings in annual fuel costs

\$30,000





CASE STUDIES

Rumpke Waste Management

Rumpke Consolidated Companies, Inc. is one of America's largest privately owned residential and commercial waste and recycling firms. Headquartered in Colerain Township, Ohio, Rumpke is known for keeping neighborhoods and businesses clean by providing innovative waste disposal solutions and recycling options. Since 1986, Rumpke has recovered landfill gas to provide heat and energy for local homes and business. With excess landfill gas, Rumpke focused on fueling its 1,200 fleet vehicles.

After partnering with the U.S. Department of Energy, Rumpke purchased 10 CNG/RNG (Renewable Natural Gas) refuse collection trucks, two Ariel JGQ two throw compressors, and built a CNG/RNG filling station. By doing so, Rumpke became one of the nation's first waste haulers to run its garbage trucks on trash, while also reducing their greenhouse gas emissions up to 26 percent. This pilot program offers another potential use for garbage, beyond electricity generation, creating an alternative fuel option for the future.

“As a leading hauling and waste disposal company, our customers depend on us to research innovative and environmental methods to manage their waste efficiently.”

“The CNG (RNG) fuel option has the potential to change our hauling operation drastically. It presents an opportunity to use a cleaner burning fuel, which helps provide cleaner air as we perform the essential service

that keeps our neighborhoods clean.” - **Jay Roberts, Director of Engineering and Environmental Affairs, Rumpke Consolidated Companies, Inc.**



Renewable Natural Gas (RNG)

Rumpke has put itself on the cutting edge of alternative fuels since 1986 by converting solid waste into pipeline quality natural gas. Today Rumpke uses Ariel compressors to take its bio natural gas and compress it into BioCNG also known as RNG. RNG is a type of compressed natural gas (CNG) that is chemically identical in the pipeline and when burned in vehicle engines.

RNG is the only alternative fuel that, when produced according to best practices, is a carbon negative fuel. Natural gas vehicles (NGV) burning RNG have a net impact on the environment allowing fleets to reduce their carbon footprint dramatically. RNG has the lowest life-cycle analysis carbon footprint of any alternative fuel available today, including electric vehicles (EV) charged by renewable electricity. Renewable natural gas is a permanent part of our energy and transportation future. Ariel can help you take full advantage of RNG's benefits.

CASE STUDIES

GreenGasUSA

GreenGasUSA – an integrated renewable natural gas (RNG) producer – called upon Ariel to provide a compression solution for a wastewater biogas capture project in South Carolina. Ariel compression solutions for RNG offer robust methane-capturing capabilities for the RNG industry.

RNG, a derivative of organic waste, is chemically identical to conventional pipeline gas and, when produced according to best practices, is carbon-negative. The gas can be used for on-site power generation, dispensed into existing gas pipelines for the energy grid, or as a compressed natural gas (CNG) for vehicle fueling.

GreenGas developed a methane capturing system for McCall Farms, a flourishing vegetable canning operation incorporating several well-known national food brands headquartered in Effingham, S.C. The system was designed to capture methane from McCall's wastewater ponds at their extensive vegetable processing facility.

McCall's core business is food production, which produces a large amount of food waste during processing. The McCall Farms RNG initiative captures fugitive methane from its wastewater processing plant and converts the biogas into a renewable energy source.

The RNG compression system safely takes processed gas from the McCall plant, treats it, and then injects it into the pipeline for industrial or home heating purposes.

Ariel RNG compression technology is utilized to better the environment, improve air quality, and help our end-users meet their sustainability goals. Ariel can help you take full advantage of RNG's benefits.

"GreenGasUSA was founded on an idea to make the environment better by capturing fugitive methane."

"The demand for that renewable fuel, (produced from fugitive methane) that we generate from the waste streams is enormous, and it's being driven by sustainability leaders, Fortune 500 companies that are adamant about decarbonization and doing the right thing." - Marc Fetten, Founder of GreenGasUSA



PRODUCT & CUSTOMER SUPPORT

Ariel Distribution Network

Ariel compressors are packaged to meet industry specifications by authorized Ariel CNG Distributors located around the world. These partner companies follow the highest standards for design and construction of packaged equipment. Each of our distributors brings a unique reach and skill set to the market and are ready to support your Ariel compressor package, OEM parts, or service needs.

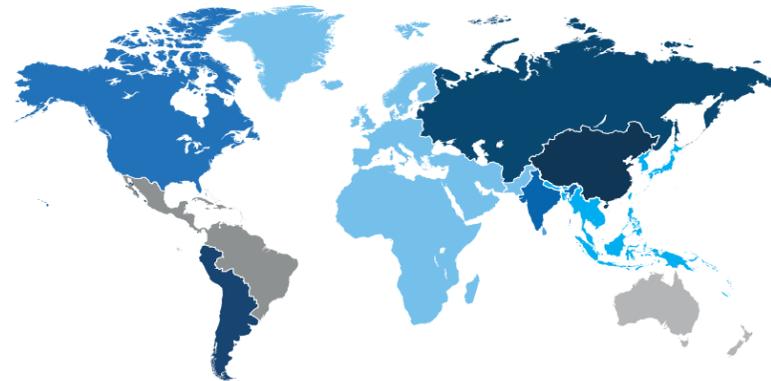


Trusted Ariel distributor locations around the world

700+

Ariel compressors packaged for CNG service

4,300+



World Headquarters in Mount Vernon, Ohio

Ariel Regional Sales and Support Locations

- Houston, Texas
- Fort Worth, Texas
- Denver, Colorado
- Calgary, AB, Canada
- Beijing, China
- Sydney, Australia
- The Netherlands
- Singapore
- Bangkok, Thailand
- Mumbai, India
- Dubai, UAE
- Buenos Aires, Argentina

Find a Distributor

To view a full list of Ariel Distributors who provide compressor packages, parts & service visit www.arielcorp.com/distributors



Our commitment to supporting our products for the lifetime of installation is still as true today as it was over 50 years ago. This has led to the creation of one of the most robust portfolios of support offerings in the industry. Our comprehensive service and support team is available around the clock with the information you need – anytime and anywhere.

Our support includes experienced Application Engineers working with proprietary software to maximize your compressor package. After installation, our regional compressor technical experts around the world are ideally placed to assist you with keeping your Ariel compressors running strong.

Digital Solutions

Ariel offers a variety of software and applications designed with our customers in mind. These programs give our customers decision-support capabilities to maximize their compression efficiency, performance, and reliability.



Corporate Outreach

We have long worked closely with the oil and gas industry, from distributors to end-users worldwide, and we have engaged with the public about what we do. We recognize the importance of education and training for the continued growth of the industry, and we know that a professional workforce, knowledgeable about the natural gas industry and its associated technology and equipment, is essential for the future of our industry.



Contact Us

Our customers can get in touch with us 24/7 through the Ariel Response Center – the best place to start for world-class customer assistance. Office Hours: 8:00-19:00 US Eastern (UTC -5:00), or 24/7 for emergencies.

North America: **888.397.7766** | Worldwide: **+1 740.397.3602**





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