

CNG COMPRESSORS

Fueling Natural Gas Vehicles



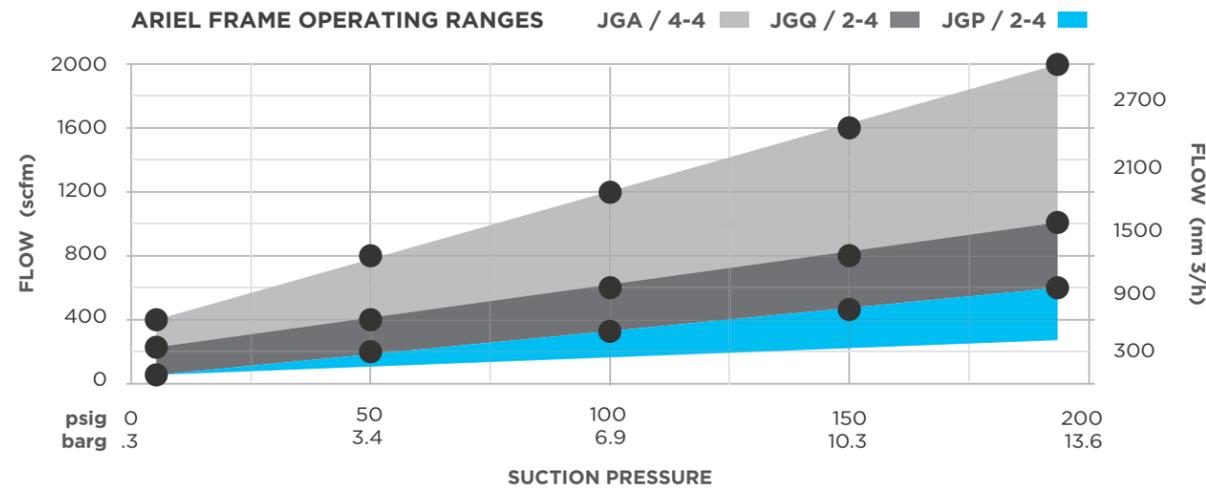
WORLD STANDARD
COMPRESSORS



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.

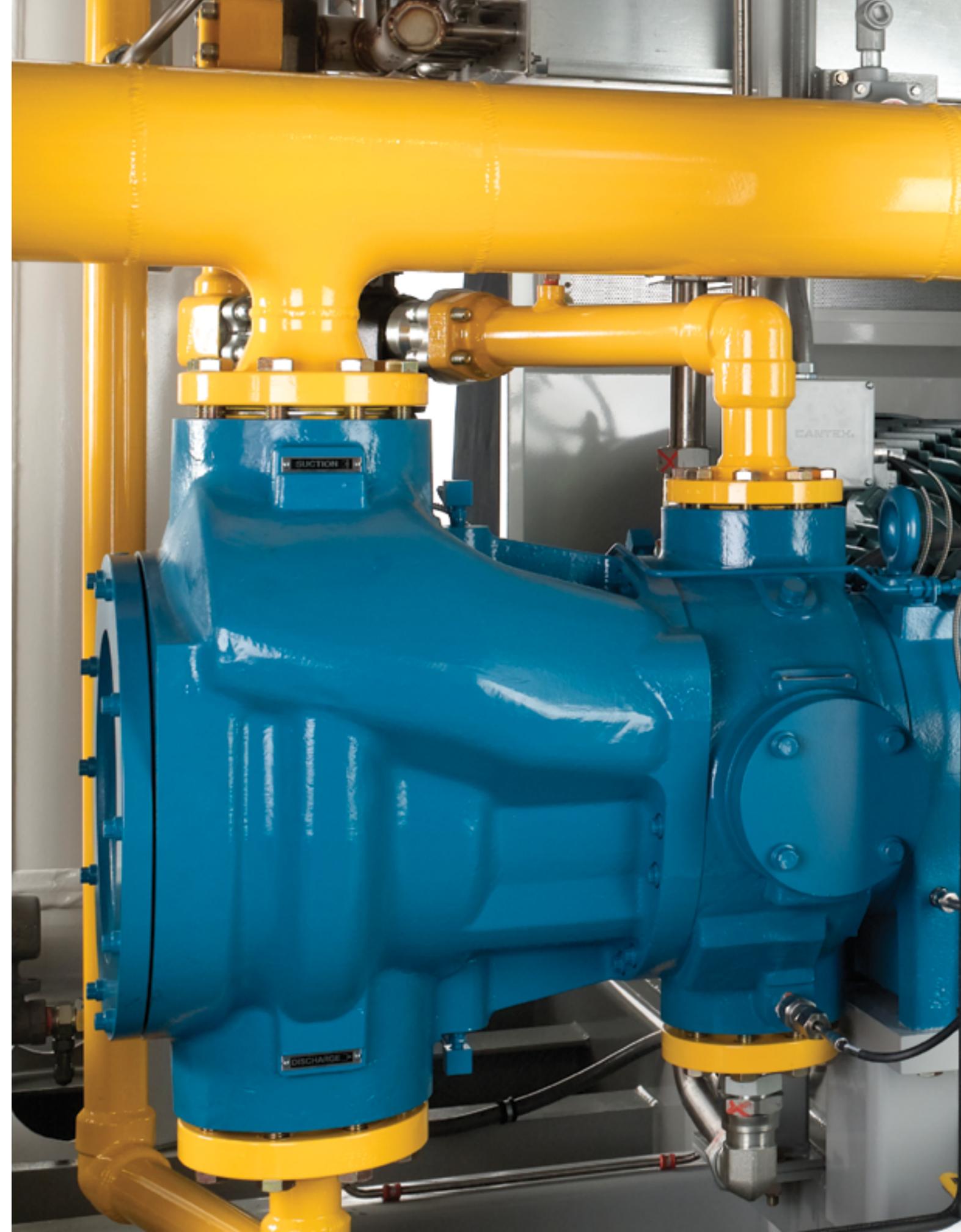
Utilized in NGV fueling services providing 125 to 2,000 + scfm (200 to 2,800+ nm/h), Ariel compressors are paired with drivers ranging in size from 50 to more than 1,200 BHP (37 to 895 Kw). Our extensive range of cylinder sizes allows units to operate with inlet pressures from zero to more than 200 psig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



JGQ/2-4 = JGQ two-throw frame, four stages of compression | Discharge Pressure = 4,500 psig (310 barg) | 126.67 scf = 1 GGE
KB100 chart shown elsewhere.

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.

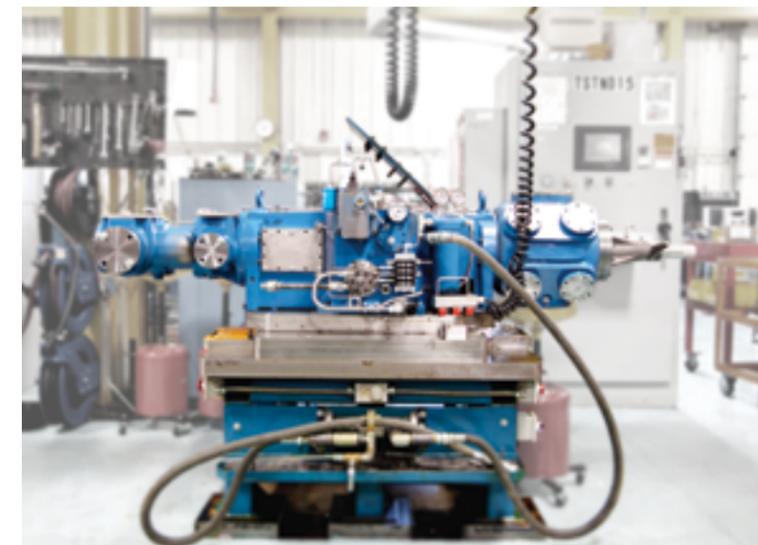




ARIEL RELIABILITY

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.



**Number of compressors
produced since 1966**

58,000+

**Countries where Ariel
compressors operate**

100+

**Rigorously tested in
3-step process**

4 hrs.

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.

KENTUCKIANA CLEANFUEL

Ariel CNG Case Study

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 pumps 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.

M&M Cartage trucks
converted to CNG

250+

Potential carbon
emissions reduction

90%

Savings in annual
fuel costs

\$30,000



"At Kentuckiana Clean Fuel, 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.



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 repurposed to fit other operating parameters

KB100 COMPRESSOR SPECIFICATIONS



Rated bhp

100

Stroke

3.0 in.

Max RPM

1,800

Tension Rod Load

5,700 lbs.

Gas Compression Rod Load

6,700 lbs.

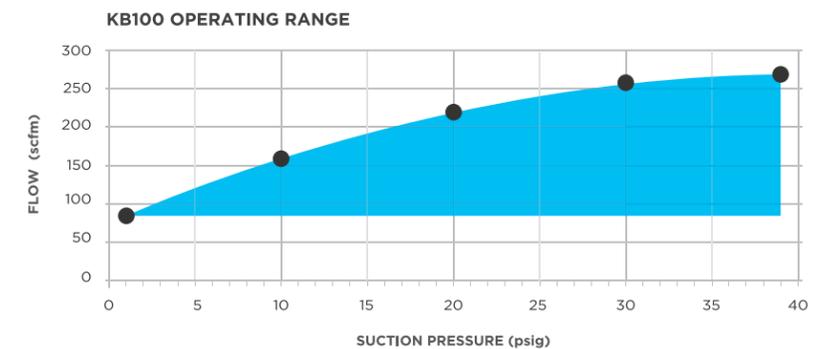
Total Rod Load

11,400 lbs.

Piston Rod Diameter

1.125 in.

The KB100 is a purpose-built compressor for low-flow CNG applications requiring 100 horsepower and lower. It is designed to give CNG customers a cost effective option with the quality and reliability you expect from Ariel.



CNG Specific Cylinders



The KB100 mirrors the pressure operating range of larger Ariel models at lower power ratings. This provides cost effective solutions for smaller fleets requiring lower GGE/min delivery rates.



RUMPKE

Ariel CNG/RNG Case Study

Rumpke Consolidated Companies, Inc. is one of America's most significant 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)

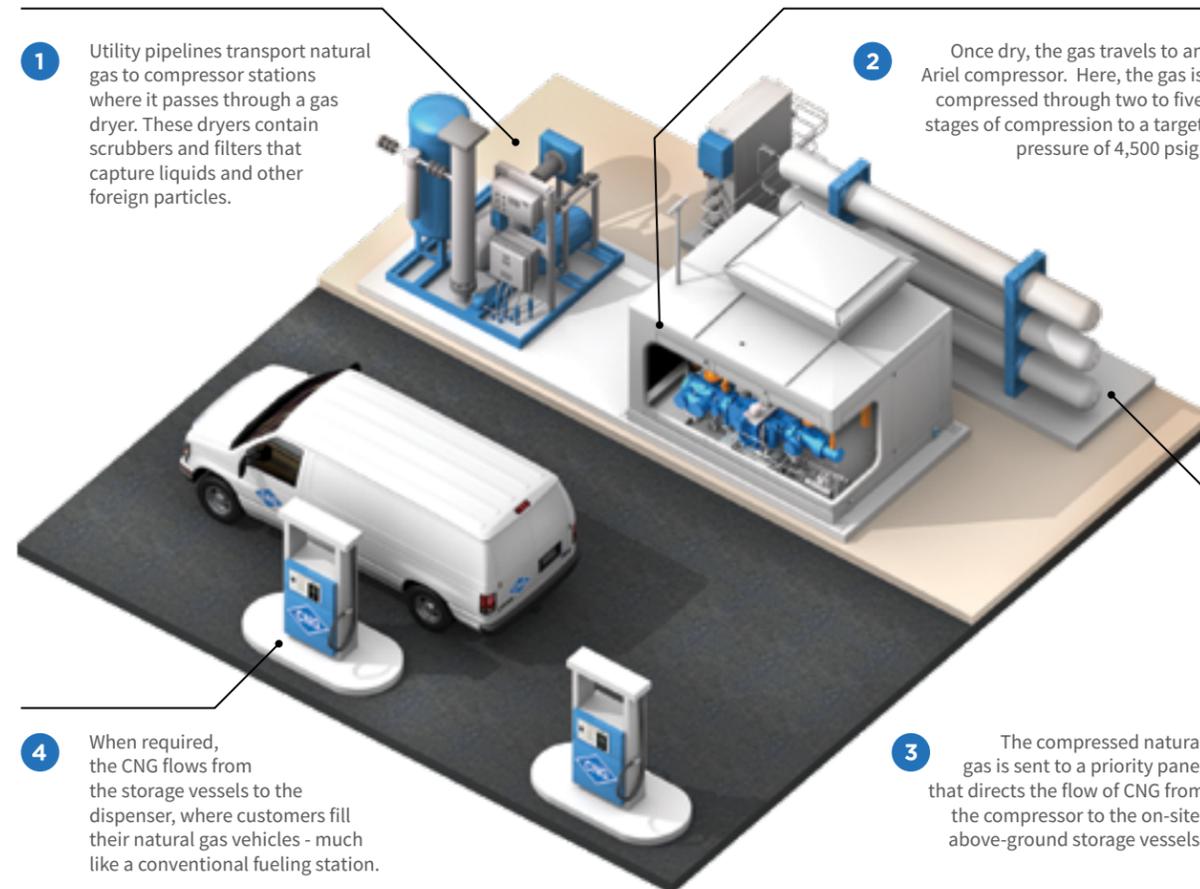
Rumpke has put itself on the cutting edge of alternative fuels since 1986 by converting solid waste into pipeline quality natural gas. Today Rumpke uses Ariel compressors to take its bio natural gas and compress it into BioCNG also known as RNG. RNG is a type of compressed natural gas (CNG) that is chemically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

HOW CNG WORKS

CNG is a fuel made by compressing natural gas or biogas to less than 1 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.



DISTRIBUTOR QUALITY & SUPPORT

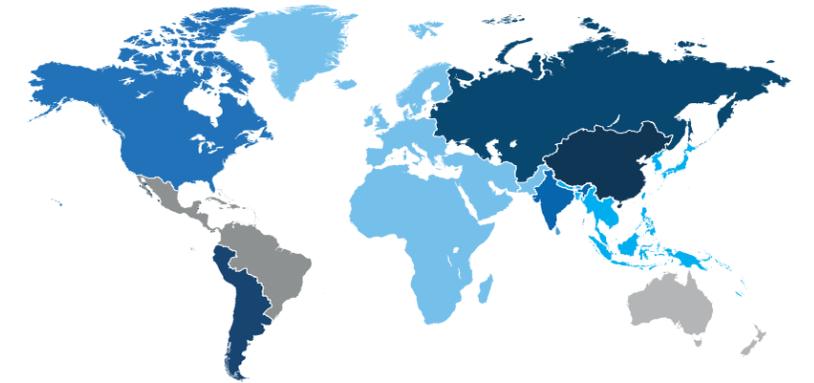
Ariel compressors are packaged to meet industry specifications by authorized Ariel CNG Distributors located around the world. These partner companies follow the highest standards for design and construction of packaged equipment, as well as parts and service support. For a complete list of Ariel CNG Distributors, please visit www.arielcorp.com.

Trusted Ariel distributor locations around the world

700+

Ariel compressors packaged for CNG service

4,300+



Ariel Regional Sales and Support Locations

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



WORLD CLASS CUSTOMER SUPPORT

Since 1966, Ariel has shipped over 58,000 compressors, with the majority still operating today. Supporting this ever-growing fleet is a network of Ariel professionals who are available 24/7. Ariel's engineering and field service professionals are backed by a lean manufacturing group that produces parts of the highest quality for both new unit assembly and aftermarket support.

Comprehensive Warranty

Subject to proper maintenance and normal use, Ariel's warranty covers every part for 12 months and the frame, guide and running gear castings for three years. Provided all replacement parts are Ariel OEM parts, cylinder bodies, pistons and piston rods are covered for two years, while coverage for the frame, guide and running gear castings is extended to six years. Please see Ariel's Limited Warranty Summary for details.

Comprehensive Product Training

Ariel offers training free of charge to our customers and distributors at our world headquarters in Mount Vernon, Ohio. Many courses and "how to" video tutorials are online as well. These are important resources designed to educate owners and operators on the proper maintenance of an Ariel CNG compressor.



24- Hour Support

- North America: [888.397.7766](tel:888.397.7766)
 - International: [1.740.397.3602](tel:1.740.397.3602)
 - arc@arielcorp.com
 - www.arielcorp.com/ARC
-



WORLD STANDARD
COMPRESSORS

ARIEL CORPORATION
www.arielcorp.com/cng
35 Blackjack Rd. Mount Vernon, OH



Follow us

CNG COMPRESSORS

© Ariel Corporation 2018 A-20246