

# Premium Solutions

FOR BIOGAS APPLICATIONS

# Biogas



# Enhancing



## Enhancing Biogas Production

In the pursuit of sustainable energy solutions, biogas production stands out as an environmentally friendly and cost-effective method of generating energy from organic waste. Ingersoll Rand has a comprehensive range of vacuum pumps, blowers and compressors, which play a pivotal role in optimizing the biogas production and upgrading process.

### Biogas production

Biogas production involves the anaerobic digestion of organic materials such as agricultural waste, manure, municipal waste, plant material, and sewage. The absence of oxygen during this process allows microorganisms to break down the material, resulting in the production of biogas, primarily composed of methane and carbon dioxide. Biogas can be used as a fuel for heating, electricity generation, or as an alternative to natural gas after upgrading. The production of biogas is a sustainable practice that reduces greenhouse gas emissions, manages waste, and produces a renewable source of energy.

### Biogas clean-up and compression

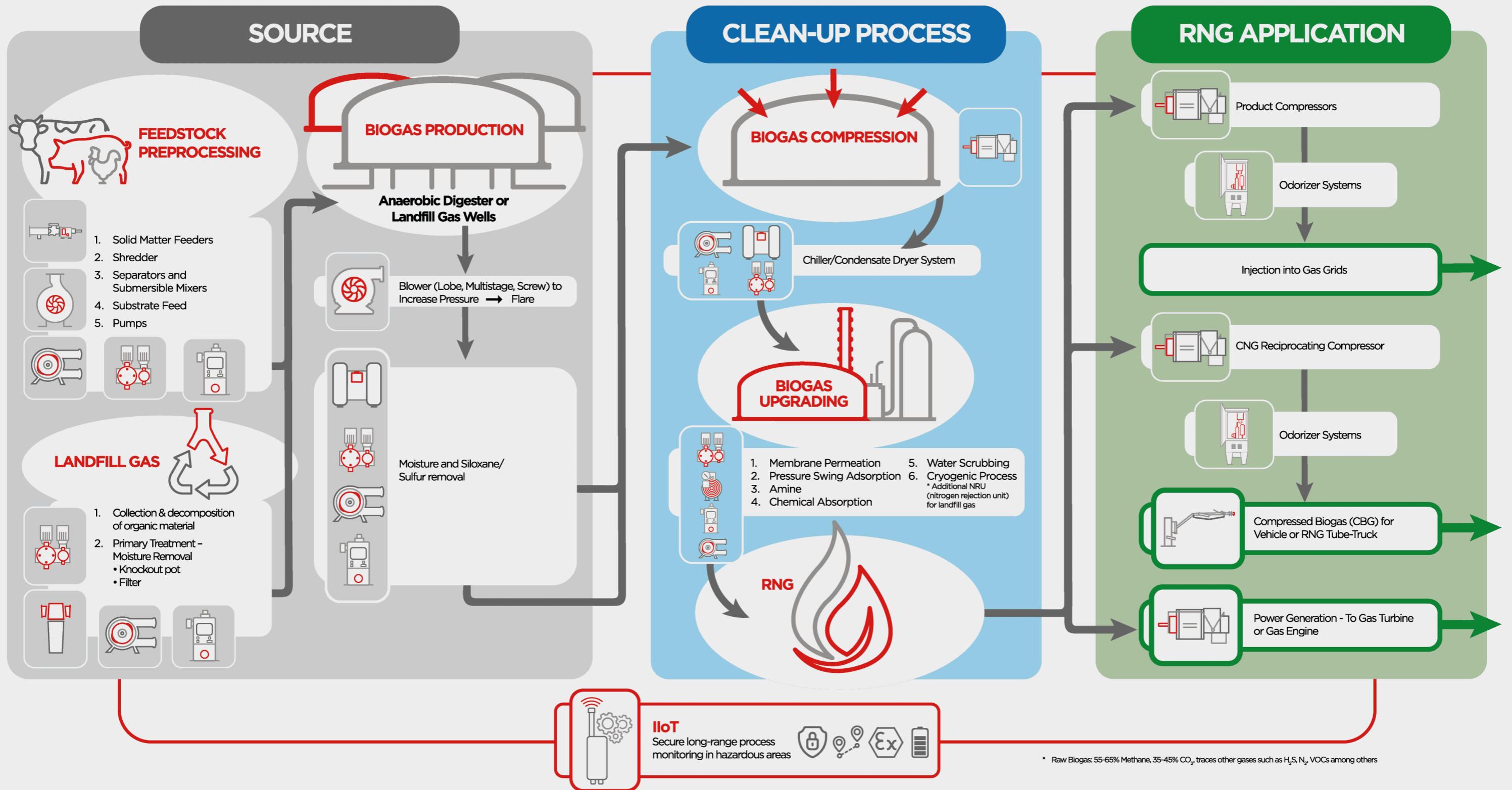
Methods have been established to capture biogas at its source, enhance its energy content, and transport it to areas of need. Typically, this involves purifying the biogas by extracting water vapor and impurities, followed by removing CO<sub>2</sub> to yield nearly pure, high-grade methane suitable for pipeline distribution.

### Biogas upgrading to Biomethane (RNG)

The upgraded biogas reaches near-natural gas purity as Biomethane, allowing it to enter the grid or be converted to CNG (Compressed Natural Gas) for fuel. Additionally, it can be transformed into liquid fuels like methanol or DME (Dimethyl Ether), a clean-burning alternative suitable for power, transport, and domestic use, with minimal CO<sub>2</sub> and no particulates.

# Detailed Process Flow

Ingersoll Rand can serve customers through all the steps of the Biogas value chain.



# Solutions

## Comprehensive Biogas Solutions

Ingersoll Rand's range of vacuum pumps, blowers, compressors and loading arms are carefully designed to serve the multifaceted needs of biogas production and upgrading, ensuring optimal performance, durability, and adaptability.

## Partner with Ingersoll Rand Engineered Solutions for Tailored ETO Expertise

At Ingersoll Rand Engineered Solutions, we deliver the most reliable Engineered-to-Order (ETO) solutions by prioritizing your specific needs at every step:



### GUARANTEED PERFORMANCE

Our in-house testing facilities ensures each design solution meets your highest standards for performance and quality.



### UNIQUE REQUIREMENTS

We take the time to fully understand your application through comprehensive research, ensuring the best-fit solution for your project.



### MULTI-BRAND EXPERTISE

Our portfolio of brands enables us to confidently manage even the most complex projects, providing a broad range of innovative solutions tailored to your needs.



### UNMATCHED EXPERTISE

With over 300 years of combined experience, we ensure reliable, repeatable quality on every project.



### TECHNOLOGY FOR YOU

We select the most suitable and advanced technologies, customized to meet your precise specifications.



### END-TO-END SUPPORT

From concept to installation, we offer innovative, safe, and meticulously engineered solutions, partners throughout the entire project lifecycle.



### GLOBAL REACH

No matter where your project is, we deliver engineered systems to any corner of the world, backed by a commitment to excellence.

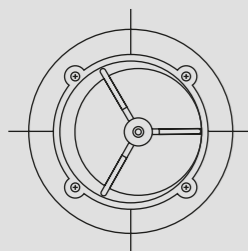
	BLOWERS	VACUUM	COMPRESSORS	LOADING ARMS
	ELMO RIETSCHLE ROBUSCHI HIBON / ROOTS	ELMO RIETSCHLE HIBON / ROOTS NASH	NASH / GARO WITTIG	EMCO WHEATON
<b>BIOGAS PRODUCTION</b>				
Digester Gas Mixing	●	-	-	-
Storage of Digester Gas	●	-	-	-
Pressure booster to pre-treatment	●	●	-	-
Landfill gas	●	●	-	-
Sewage gas	●	●	-	-
<b>BIOGAS UPGRADING</b>				
Booster to elevate pressure upstream main compressor	●	-	-	-
Membrane upgrading technology	-	●	●	-
Pressure swing adsorption	-	●	●	-
Water or Chemical scrubbing	●	●	●	-
CO <sub>2</sub> extraction	-	●	-	-
CO <sub>2</sub> compression for liquefaction or grid injection	-	-	●	-
<b>BIOMETHANE USAGE</b>				
Biomethane compression	-	-	●	-
Grid Injection	-	-	●	-
Loading/unloading process for road/rail/sea transport	-	-	-	●

Ingersoll Rand Group features an additional extended portfolio of products for high pressure compression, gas treatment, fluid and slurry handling, odorization and IIOT solutions. This gives the opportunity to have a one-stop supplier for almost any kind of Biogas installation.

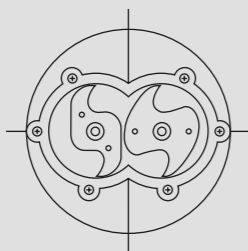
# Our Offering of Blowers, Compressors and Vacuum Solutions

A comprehensive portfolio of brands for your Biogas application.

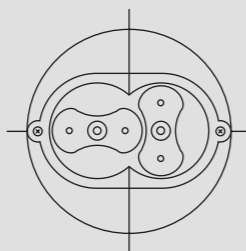
## Our Technologies



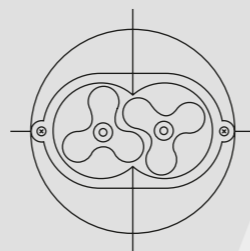
ROTARY VANE



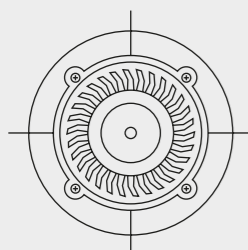
ROTARY CLAW



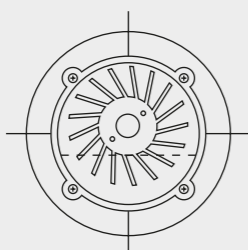
ROTARY LOBE



THREE LOBE



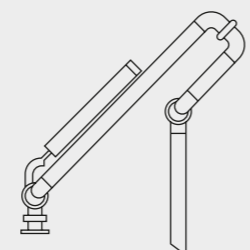
SIDE CHANNEL



LIQUID RING

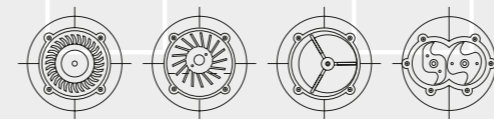


CENTRIFUGAL



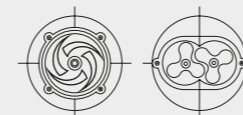
LOADING ARMS

## Our Brands



## Elmo Rietschle

Elmo Rietschle is one of the market leaders in vacuum creation and oil-free technologies. Two top class manufacturing locations in Germany supply a wide range of products with a high capability for standardization and ATEX certifications. Elmo Rietschle products fit perfectly into the smaller Biogas plants, where reduced sizes and short lead times are key drivers for the final technology selection.



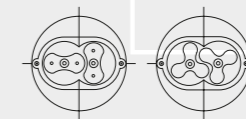
## Robuschi

Robuschi is a leader in the design and production of rotary lobe blowers and multi-stage centrifugal technologies. Robuschi's focus is on high flow rates and exceptional efficiency, making their products ideal for large-scale applications. The Robuschi ROBOX Bio & Gas ATEX product line features rotary lobe blowers specifically designed for boosting raw biogas to meet the needs of pre-treatment units.



## Nash & Garo

Nash and Garo are leaders in the design and production of Liquid Ring technologies. They boast a global manufacturing footprint, ensuring efficient delivery. Their engineered-to-order solutions cover a wide range of flow rates and pressures, making them a versatile option for various applications. Nash and Garo's products are ATEX certified, leak-free and proven to handle corrosive gas mixtures. This makes them a perfect fit for Biogas projects.



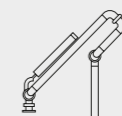
## Hibon & Roots

Hibon and Roots are leaders in the customization of ATEX certified rotary lobe technologies and positive displacement blowers, catering to specific needs within the Biogas industry. Their focus lies on water-cooled or air-cooled, leak-free technology capable of handling high flow rates. This combination perfectly aligns with the requirements of large Biogas installations where reliability is paramount.



## Wittig

Wittig's team designs and manufactures compression systems built to withstand the harshest conditions. Their systems comply with the most demanding standards, including ATEX. This expertise positions Wittig as a key player for biogas upgrading projects, where efficiency, durability and minimum maintenance are essential requirements.



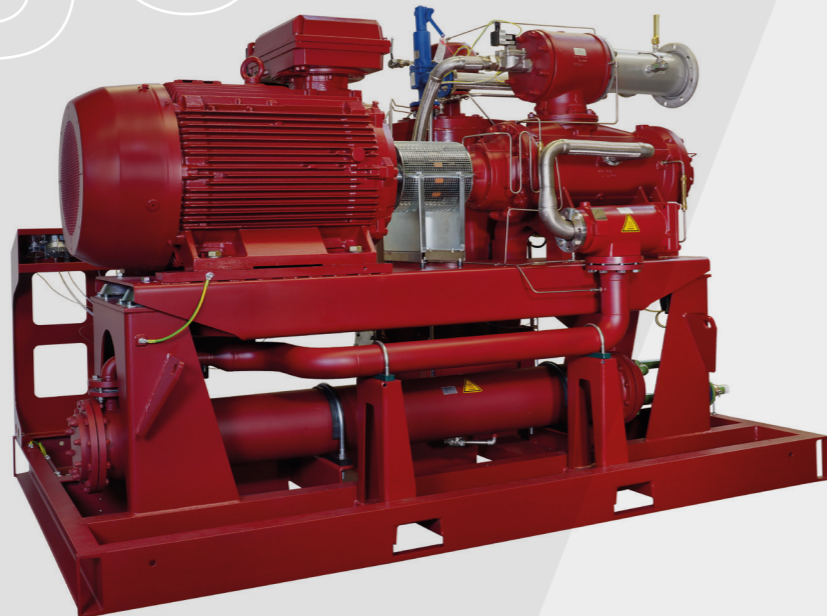
## Emco Wheaton

Pioneering Biogas Transfer Excellence with over 100 years of mastery in fluid transfer technology, Emco Wheaton stands as a pillar in the biogas industry. Specializing in engineered loading arms and coupling devices, the company's solutions epitomize safety, efficiency, and reliability.

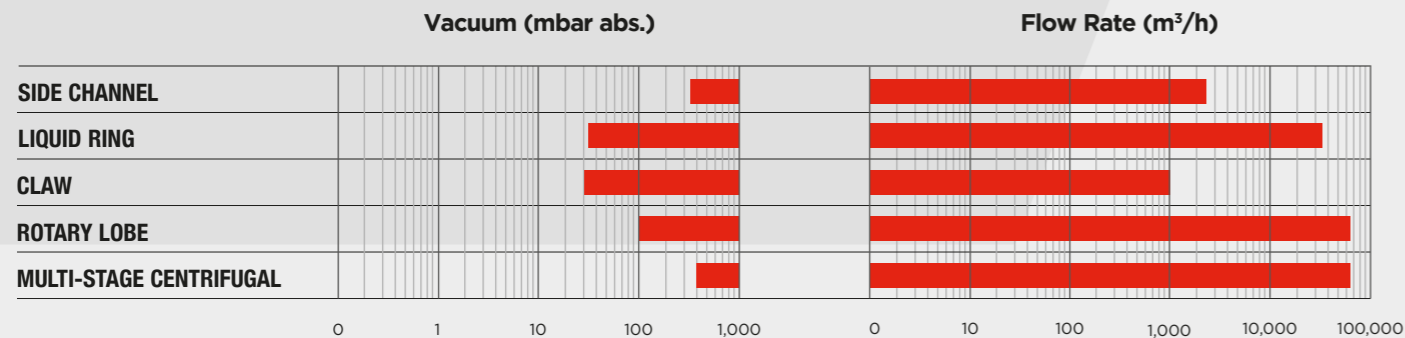
# Range

## Operating range

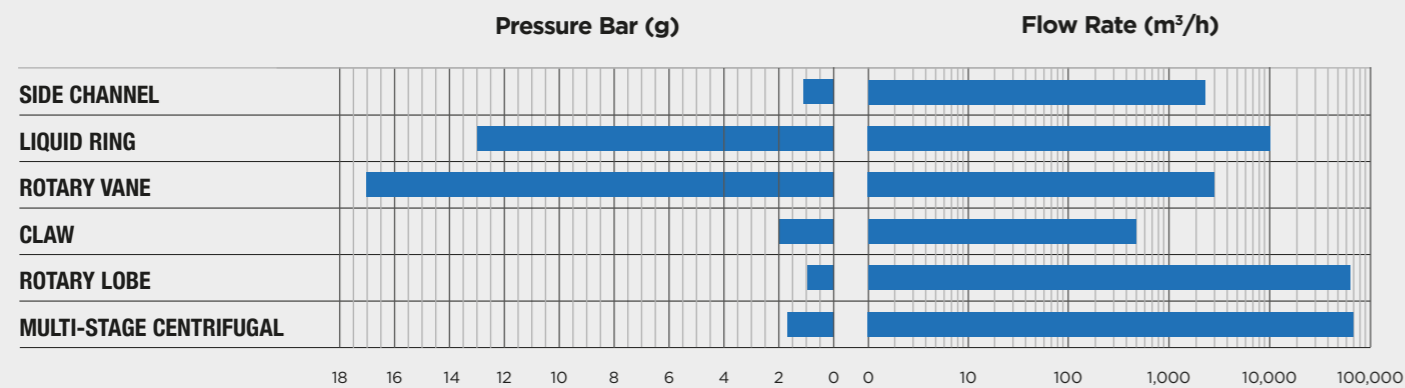
We offer the widest range of vacuum and pressure technologies. Delivering outstanding choice of both oil lubricated and dry running solutions.



### Vacuum



### Pressure



## Advanced Service

Our dedication to excellence goes beyond delivering high-quality solutions. We recognize that continuous support is vital for maximizing uptime, maintaining reliability and extending longevity of your equipment. That's why we offer a range of advanced services, customized to address your specific needs:

- + Inventory Checks and Equipment Audits
- + Commissioning and Start-Up
- + Preventive and Corrective Maintenance
- + Pre-commissioning Activities
- + Genuine Spare Parts
- + Material Traceability



# Partner

## Your Partner in Biogas Excellence



Ingersoll Rand is a trusted partner in the biogas applications, renowned for our high-quality products and custom-engineered solutions.

Rigorous testing ensures that each product meets exacting standards, reflecting our dedication to quality and reliability. Working in close collaboration with customers, Ingersoll Rand develops tailored solutions that boost both the efficiency and sustainability of biogas operations.

Ingersoll Rand's global footprint ensures that customers receive unparalleled service and expertise, no matter where you are. Choosing Ingersoll Rand means more than just purchasing a product; it's entering a partnership with a sustainable energy leader committed to improving the performance and environmental impact of biogas operations.



[www.ingersollrand.com](http://www.ingersollrand.com)

