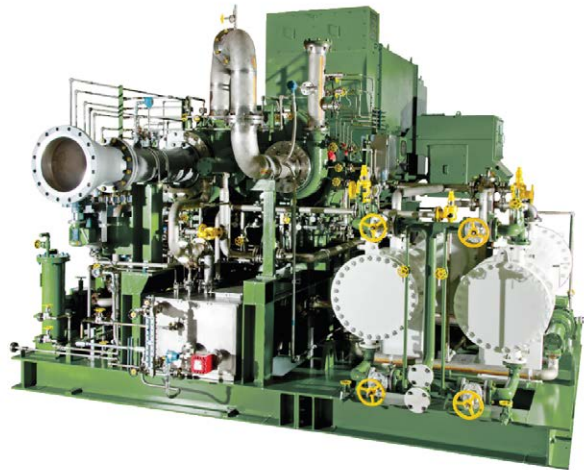


# Centrifugal Compressors for Fertilizer Applications

From critical process air to natural gas compression, Ingersoll Rand offers highly reliable centrifugal compressors, custom designed for optimized efficiency and compliant with the industry's toughest standards.



## Custom Solutions for Your Application

Reliable MSG® TURBO-AIR® and MSG® centrifugal compressed air and gas systems are designed to operate in the harsh environments found in fertilizer plants. The typical production process mixes nitrogen and hydrogen across a catalyst to synthesize ammonia. Natural gas is commonly used as a feedstock for obtaining hydrogen for this process. Our custom compressor packages, designed specifically for ammonia synthesis process applications, facilitate installation, reduce maintenance and meet the toughest certifications and classifications in the industry.

Typical compressed air and gas applications include:

### Production Processes

- Kellogg Brown & Root LLC
- Udhe GmbH
- Casale SA
- Haldor Topsoe A/S
- Linde AG

### Gas Applications

- Natural Gas
- Refrigeration
- Syngas
- CO<sub>2</sub>

### Air Applications

- Main Process Air
- Service and Instrument Air

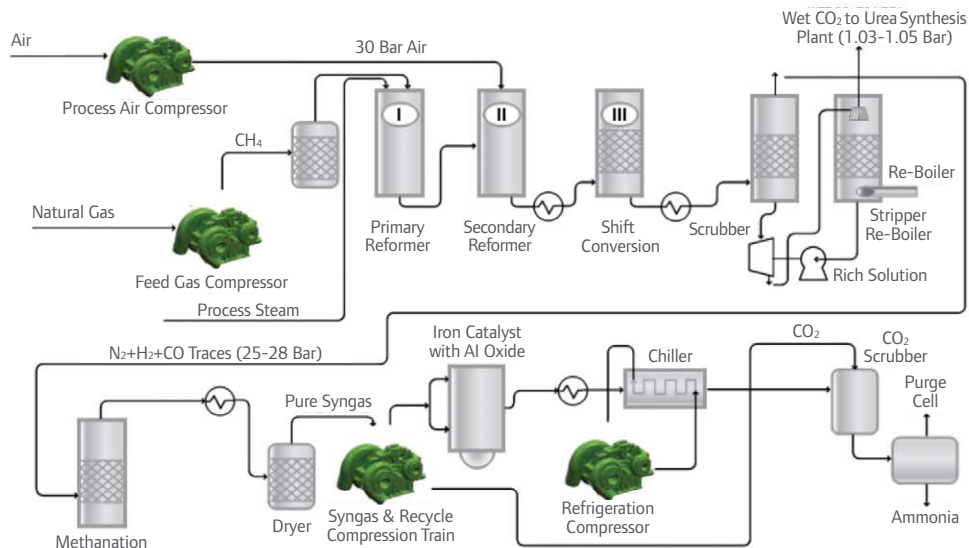
Specifications	
Feature	Data
Flow Range	Up to 60,000 cfm (1,700 m <sup>3</sup> /min)
Pressure Range	Up to 1,450 psi (100 bar)
Gases	Natural gas, nitrogen, syngas, CO <sub>2</sub> , ammonia, mixed refrigerants and more
Certifications & Classifications	ISO 9001, 29001 & 14001, API, CE, PED, ATEX, CHINA CODE, GOST, KOSHA, ASME

# Why Choose Ingersoll Rand Centrifugal Compressors?

Features	
Attribute	Description
<b>High Reliability and Availability</b>	Custom material selection to suit environment or process gas components and conditions
	Reliable non-wearing parts leads to longer intervals between scheduled maintenance
	Highly resilient to damage caused by surging
	Industry-tested proven designs
	Advanced control systems improve efficiency and meet SIL requirements
<b>Optimized Efficiency</b>	Custom designed 5-axis milled impellers using latest CFD and FEA software
	Up to three pinions per compressor to optimize impeller aerodynamics
	Inlet guide vanes offer efficient flexible operation
<b>Stringent Industry Compliance</b>	State-of-the-art PLCs ensure efficient operation with high-availability
	Designed to meet API 617 or API 672, ASME and CE codes and standards as required
	Customizable to meet your specifications
<b>Process and Environmentally Friendly</b>	Compliance to local codes and standards as needed
	Variety of sealing options to reduce valuable product loss
	Advanced seal support systems prevent damaging gas condensate from entering the seals
<b>Low Cost Installation and Maintenance</b>	Atmospheric separation between scroll and gearbox prevents oil from entering process flow
	Inherently vibration free, requiring minimal foundation work
	Custom package layouts ensure ease of access to maintenance components
	Pre-assembled delivery on skids minimizes overall site installation time and cost
	Horizontally split gearbox and small rotor size greatly reduce maintenance

## Fertilizer Plant System Diagram

*Simplified to demonstrate potential applications for integrally geared centrifugal compressors.*



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