



ENGINEERED COMPRESSED AIR & NITROGEN SYSTEMS FOR LNG PROJECTS

Deliver successful projects with Ingersoll Rand's safe and reliable engineered air packages

Thanks to our dedicated project management team, Ingersoll Rand has successfully implemented hundreds of projects for applications with complex technical requirements.



Engineered Systems and Services
www.ingersollrand.com/air-compressor-systems

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01. Common challenges.

We support your LNG project

LNG – Energy Rising

Global gas and LNG markets have experienced a seismic shift as a result of a defiant worldwide scenario. LNG, a proven, reliable, and safe energy option, has increased its role in industrial activities in an accelerated fashion.

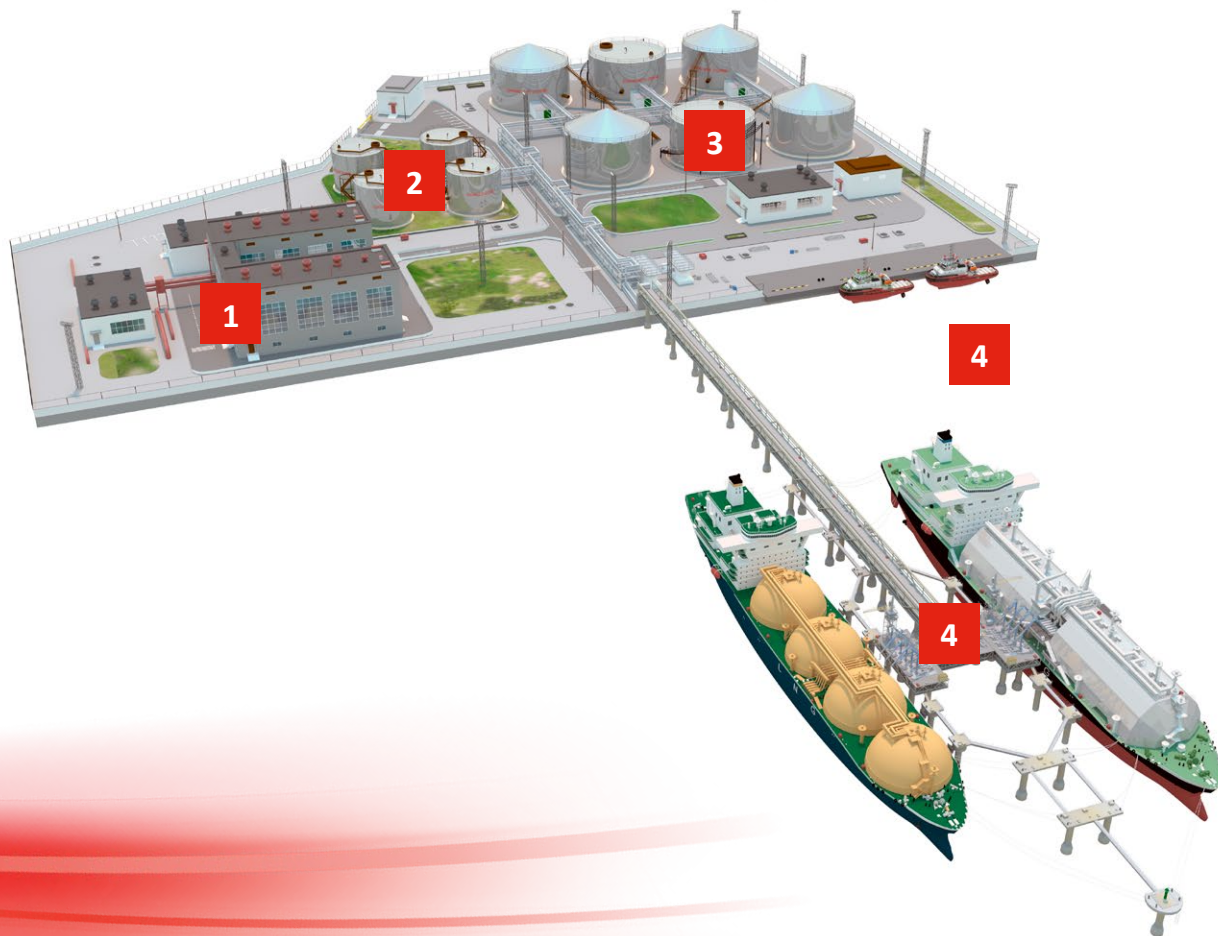
In the future, LNG facilities and equipment will increasingly be asked to do more. As a result, it will be paramount that specific equipment selections be based on increased yet more efficient performance, rigorous safety standards and comprehensive support to deliver success for LNG related projects.



Your reliable partner in LNG

With over 60 years of experience managing and implementing engineered to-order air packages for applications with complex technical requirements, Ingersoll Rand has gained the knowhow and the capacity to produce leading engineering air and nitrogen packages to solve your LNG air needs.

Owing to a wide experience of delivering offshore engineered air and nitrogen packages, **Ingersoll Rand has successfully designed, built, and delivered a number of complete tailored compressed air and nitrogen generation installations for LNG and other onshore / offshore applications with the highest safety and reliability standards.**



Expertise at every point

We are uniquely suited to support your projects with our comprehensive LNG expertise, equipment and technology knowhow and comprehensive support throughout your project.

LNG PROCESS LAYOUT WHERE INGERSOLL RAND ENGINEERED AIR COMPRESSORS AND NITROGEN GENERATIONS CAN HELP YOU

1	LNG Gas Treatment Process
2	LNG Liquefaction Process
3	LNG Storage
4	LNG Distribution, Transportation and Regasification

KEY APPLICATIONS FOR LNG

- Tank Blanketing
- Instrument Air
- Purge Air and/or Nitrogen
- Service Air
- LNG Compressor Sealing (N2)

02. LNG application solutions

Application: Instrument Air

Widespread in almost every industry, much of the production equipment is pneumatically driven or controlled. Normally, **a system utilizes instrument air for various types of pneumatic equipment, valves and electrical controls.** The air required to carry out this function comes from a compressed air system that is either integrated in the process unit or included in the plant utilities. **In the LNG industry, or those facilities where process controls and sensitive pneumatic machinery are operated, the air quality supplied must meet “Instrument Air Quality” standards.**

The term “Instrument Air” refers to an extremely clean supply of compressed air. This air, is produced free from contaminants such as moisture & particulates.



Application: Tank Blanketing

Tank Blanketing, also referred to as “padding”, is a process by which the empty space of a liquid storage tank is filled with an inert gas, most frequently Nitrogen which is typically selected as blanketing gas due to its inert properties, wide availability, and relatively low cost.

Blanketing is a very important application because it increases the safety and protection of people and the environment, as well as increasing the quality of the product and the longevity of the equipment for the following reasons:

- A.** If the media is combustible, blanketing removes the Oxygen required for combustion.
- B.** Blanketing protects food and other substances from oxidation, contamination or evaporation.
- C.** It prevents harmful vapors from escaping into the atmosphere, thus reducing risks to the environment and cutting Green House Gas emissions.
- D.** Reducing corrosion through oxidation helps maintain the integrity of the tank and extend its lifetime.
- E.** Avoids losses by leakage of the product being stored in the tank farm.

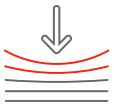
03. The benefits of Ingersoll Rand LNG Air Solutions

The Ingersoll Rand range of compressors is highly engineered to meet LNG application and industry standards and their technical requirements. Discover all the benefits when partnering with us:



MEETING SAFETY STANDARDS:

Our engineered air and nitrogen packages are designed to meet the stringent safety standards of the LNG industry.



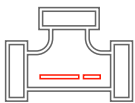
HIGH FLEXIBILITY:

Our flexibility in design allows us to custom design compressors and packages to meet your specific requirements.



OPERATE IN HARSH ENVIRONMENTS:

Ingersoll Rand air and nitrogen packages are designed to operate in harsh environments. Our equipment is engineered to face the most extreme ambient temperatures and environmental conditions, including temperatures from -47°C up to 55°C and “hazardous areas” where an explosive gas atmosphere exists (or is expected to be present).



SMALL COMPACT FOOTPRINT:

Ingersoll Rand compressors have an ultra compact footprint, simplified piping and fewer connections, providing simplified installation. The compressor package’s base simply needs to carry the static weight of the compressor and its ancillary equipment.



FULL PROJECT MANAGEMENT SUPPORT:

Ingersoll Rand Engineering Solutions offers complete project management service and support, including equipment installation and integration services. Our project management team of expert engineers control the whole process, from design through to assembly, commissioning and start-up; including technical & quality management.



SERVICE SUPPORT:

Ingersoll Rand offers a comprehensive line of maintenance packages and programs. We provide a range of support services, replacement parts and support products to help our customers increase their return on investment, maximize safety and performance, and provide total peace of mind.

04. LNG Product Portfolio



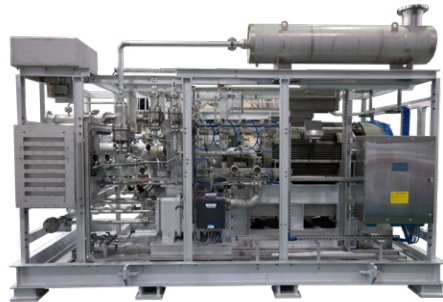
SCREW COMPRESSORS

Our lubricated and oil-free rotary screw compressors incorporate the very latest technological advances. Designed to operate in the most extreme temperatures, they are able to run between -10° to 55°C. Benefiting from a compact design and an optimized footprint, they are easy to use and ready for plug-and-play operation.

[READ MORE](#)

CENTRIFUGAL COMPRESSORS

Integrally geared centrifugal compressors represent the latest technology to deliver higher flows for relatively constant air demands. They are highly efficient and cost-effective when compared to other technologies. The centrifugal compressors are dynamically balanced and do not need expensive structural foundations, and are easy to maintain.



[READ MORE](#)



RECIPROCATING COMPRESSORS

Our reciprocating compressor packages are known for their excellent energy efficiency. We have consolidated and at the same time consistently developed this proven technology, maintaining its cutting edge, high-quality, robust construction along and excellent efficiency. The result is an improved Return On Investment (ROI), a long life expectancy and shorter payback time.

[READ MORE](#)



NITROGEN PACKAGES

Nitrogen packages are mainly used for blanketing and purging applications with the highest purity of up to 99,9%. Ingersoll Rand's nitrogen packages are designed to offer maximum efficiency, reliability, and up-time, offering simple installation and easy maintenance. Ingersoll Rand manufactures PSA and membrane systems.

[READ MORE](#)

AIR DRYERS

Ingersoll Rand engineered air dryer packages ensure high levels of reliability, and can ensure that quality standards are met and production costs reduced. They can be fully engineered for heavy-duty and severe ambient installations, extreme temperatures or explosive environment conditions. Ingersoll Rand manufactures a wide range of adsorption, refrigerant and hybrid air dryers.



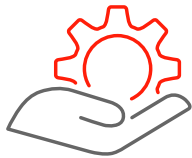
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05. A dedicated project management team for your peace of mind

At Ingersoll Rand, we have a dedicated team of expert engineers who provide **full project management support** from the design phase, to construction, commissioning and aftermarket service support.

Our project management team has the knowhow as a result of managing and implementing hundreds of projects with leading EPC (Engineering, Procurement and Construction) and engineering companies.

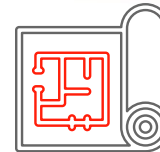
Our expert engineers and project managers **deliver on time technical & quality documentation**. We know how to help our clients proceed smoothly through the entire process.



Support during
the whole project



Highly engineered
to technical
requirements



Complete technical and quality
documentation: sectional
drawing and 3D modelling.



Honesty
and transparency

Ingersoll Rand Engineered Solutions supports you throughout the project lifecycle



*Engineering, Procurement and Construction

06. Customer Stories

Maximum energy savings in a gas terminal

- EPC contractor: world's leading EPC&PM company.
- End user customer: national oil company.
- Location: Malaysia.
- Product: 3 oil free screw compressors, 2 air dryer packages and 2 nitrogen generator packages.
- Application: supply of instrument air, high purity nitrogen in order to develop gas fields system.

Customer Benefits:

- Engineered solution to match the customer necessities.
- Assembly and dismantling and assembly at site.
- Cost savings following payback of up to 90%.
- Compact space saving design.
- Robust and reliable industry proven design.
- Lower maintenance.



Totally safe even in extreme cold / low temperature conditions

- End user customer: global energy group.
- Location: Kazakhstan.
- Product: 3 oil-free compressors, 2 heatless dryers, 2 PSA type N2 generators and 2 piston type nitrogen boosters. The scope of supply also included air and nitrogen receivers, closed-loop cooling system and a fully redundant PLC based Master Control Panel for the entire system.
- Application: supply of instrument air, high purity nitrogen in order to develop gas fields system.

Customer benefits:

- Highly engineered solution to meet technical requirements.
- Operate in extreme low ambient temperatures below -40 °C.
- Ensure maximum safety levels: entire system was containerized and conditioned so that all equipment was protected and operators could work under controlled and safe conditions.



Engineered Air Compressors plug & play solution in a LNG terminal

- EPC contractor: international general contractor.
- End user customer: global energy group.
- Location: Spain.
- Product: 2 oil-flooded rotary screw compressors, 2 heatless desiccant dryers and air receivers. Whole supply installed in a common including the piping, control and electrical installation.
- Application: Supply of instrument air.

Customer Benefits:

- A low footprint (9 m x 2,4 m) and plug & play solution. The customer only needs to provide one single power feed to produce compressed air.
- Simplified package control including one common box for signal collection and communication.
- Complete support during the whole project phase, providing exhaust documentation package and quality procedures.



07. Service support. Aftermarket

Ingersoll Rand provides a comprehensive line of maintenance programs to help our customers increase cost-effectively and at optimum performance.

We have a comprehensive global network of strategically located manufacturing facilities, sales offices, and authorized service centers. This allows us to **think globally and act locally**, providing service and support to our customers where and when they need it.

We offer a comprehensive portfolio of maintenance service packages and programs that include:



Inventory checks and equipment audits



Pre-commissioning activities



Commissioning and start-up



Site trainings



Genuine spare parts



Preventive and corrective maintenance



Performance and reliability upgrades,
post-upgrades of the customer's machines





08. Engineered Systems and Services (ESS)

Ingersoll Rand's Engineered Systems and Services (ESS) is dedicated business line to providing market-leading, **custom-engineered solutions**.

Formed from a merger of three renowned business units - Ingersoll Rand Air & Gas Solutions, Ingersoll Rand Engineering Project Solutions, and K. LUND Offshore - Ingersoll Rand Engineered Systems and Services (ESS) leverages extensive experience to serve Engineering, Procurement, and Construction (EPCs) contractors and other firms in need of specialized engineering Services.

With a portfolio that includes state-of-the-art **air and gas compressors, dryers, nitrogen generators, and gas recovery Systems**, Ingersoll Rand Engineered Systems and Services (ESS) is committed to pioneering innovation and maintaining the highest standards of engineering excellence. We pride ourselves on managing intricate projects across the globe, employing cutting edge technology to drive the success of our customers.

09. Our Manufacturing Facilities

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