

# Industrial Nitrogen Services (INS) for Inerting, Blanketing and Purging

## We deliver:

- 24/7 service and product availability for seamless operations
- State-of-the-art equipment and robust shutdown systems for operational safety
- Commitment and support for diverse volume requirements
- Peace of mind with a proven safety record and experienced personnel



**Industrial Nitrogen Services (INS)** provides temporary gas and engineering solutions to address customer needs beyond standard supply capabilities. Nitrogen's (N<sub>2</sub>) inert properties make it a safe, versatile, and cost-effective solution for global oil and gas, petrochemical, and industrial operations. N<sub>2</sub> is essential throughout all project phases, including pre-commissioning, commissioning, decommissioning, and turnarounds, which require detailed engineering and logistical planning.

With increasing productivity demands in pipelines, refineries, LNG, and chemical processing facilities, the need for reliable and efficient N<sub>2</sub> services is growing. Increasingly, businesses trust Air Liquide's INS to meet these demands.

## INS Applications

### **N<sub>2</sub> and Helium Integrity Tests**

Leak detection technique in which a process system is pressurised to a predetermined level with a trace concentration of Helium (H<sub>2</sub>) carried by N<sub>2</sub> to prove the integrity of flange joints.

### **Drying and Preservation**

Prevent corrosion of iron base equipment and pipelines, as well as remove moisture after hydro testing and before introducing product. After drying operations are conducted, N<sub>2</sub> is usually left at a low positive pressure in order to prevent moisture ingress into the dried system.

### **N<sub>2</sub> Pipe Pigging**

N<sub>2</sub> pipe pigging operations are usually performed to gauge, clean, swab and dry a pipeline.

### **N<sub>2</sub> Purging**

To avoid developing flammable conditions during mechanical work, process systems need to be purged of hydrocarbons during pre start-up and shut-down.

### **Pneumatic Pressure Testing**

Pneumatic tests are usually performed to prove the integrity of the systems, ensuring the system is 'fit for purpose' and to obtain the relevant necessary certification.

### **LNG facilities Pre-Cooldown and Cooldown Services**

High flows of cold N<sub>2</sub> is introduced into vessels, process piping or LNG systems to rapid cool down the systems to remove all flammable/toxic elements at the same time to create a safe for mechanical work and confined space entry.

## N<sub>2</sub> Supply



### Vessel purging considerations

- Volume of the tank
- Product in the vessel
- Existing pressure in the vessel
- Pressure rating of the vessel
- Type of service (i.e. lower to a specific dew point)
- Vessel and pipeline connections



### Pipeline services considerations

- Outside diameter of pipeline
- Pipeline length and wall thickness
- Existing pressure in the pipeline
- Type of service (i.e. pressure test, purge, push pig)
- Product, if any, in the pipeline
- Significant drops in the pipeline (i.e. riser to riser)
- Pipeline connection



### LNG considerations

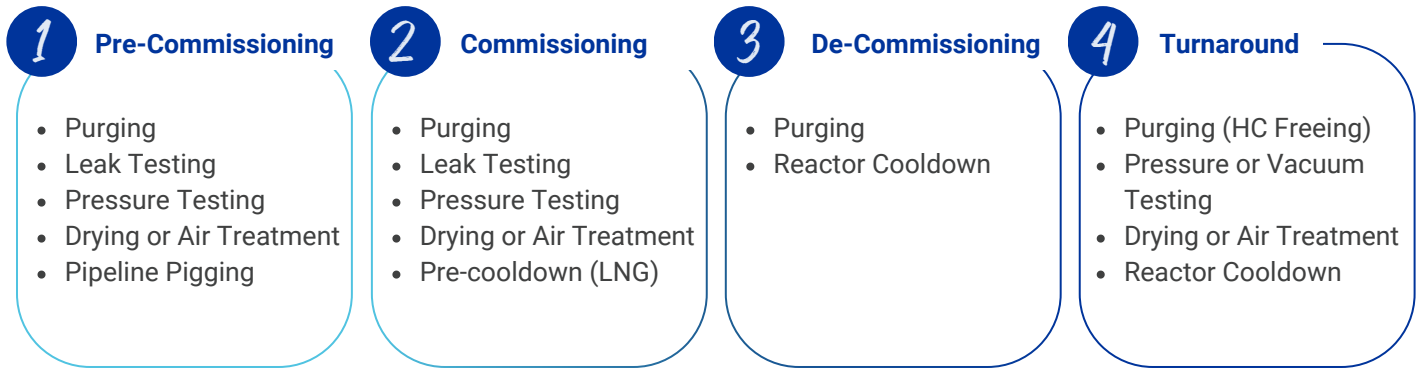
- Pressure test internal pipeline
- Cool down and sweep dock line
- Flare changeout and maintenance
- Purging trains for TAR
- Dry out of condensates
- LEL O<sub>2</sub>-free start up
- Mechanical Integrity Testing (MIT)



### Downstream services considerations

- Type of service (i.e. reactor cool down, hot strip, inert support, vessel blanketing)
- Flow of N<sub>2</sub> per minute or hour
- Pressure desired
- Temperature requirements
- Duration of job (i.e. 24/7)
- Product phase (i.e. liquid or gas)
- Estimate volume of N<sub>2</sub>

## Phase of Implementation



## Equipment

Wide range of equipment customised to suit your needs (various feed pressure, flow rate and temperature)



### Ambient Vaporiser Skid

Low - High operating flow rate  
Low - Middle operating pressure  
Ambient Temperature



### Steam Vaporiser Skid

High operating flow rate  
Middle operating pressure  
Low - High operating temperature  
Safety Features / Shutdown



### N<sub>2</sub> Pumper

High operating flow rate  
High operating pressure  
High operating temperature  
Safety Features / Shutdown



### Cryogenic Tank

N<sub>2</sub> cryogenic tank; several sizes can be prepared depending on the usage volume and requirement



### Mobile Purging Unit

Tank and vaporiser are equipped on the trailer for the quick setting



### Gas Cylinder Bundle & Instrumentations

Portable assembly of high pressure gas cylinders for small pressure testing

## References

In Southeast Asian oil refinery turnarounds, Industrial Nitrogen Services (INS) requirements are typically phased over several months. Air Liquide assembles dedicated project teams, and due to the continuous 24/7 nature of these operations, work is performed using day and night shift rotations.

Air Liquide employs a range of gas equipment, including gas manifolds, steam and ambient vaporisers, 10ft/20ft N<sub>2</sub> storage tanks, and pumper trucks, to support upstream N<sub>2</sub> supply operations. Equipment setup and N<sub>2</sub> delivery are tailored to customer-specific parameters throughout the project. Air Liquide ensures high-volume liquid N<sub>2</sub> supply within tight project timelines.



## One Stop Solution

Air Liquide delivers dry N<sub>2</sub> with customisable temperature, pressure, and flow rates to meet diverse process applications. Our extensive fleet of N<sub>2</sub> pumping equipment, coupled with robust engineering resources, ensures uninterrupted supply from project initiation to completion. You can rely on us to fulfill your requirements.



## Contact us

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