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_2) inert properties make it a safe, versatile, and cost-effective solution for global oil and gas, petrochemical, and industrial operations. N_2 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_2 services is growing. Increasingly, businesses trust Air Liquide's INS to meet these demands.

INS Applications

N_2 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_2) carried by N_2 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_2 is usually left at a low positive pressure in order to prevent moisture ingress into the dried system.

N_2 Pipe Pigging
N_2 pipe pigging operations are usually performed to gauge, clean, swab and dry a pipeline.

N_2 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_2 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_2 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_2-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_2 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_2

Phase of Implementation

1 Pre-Commissioning

- Purging
- Leak Testing
- Pressure Testing
- Drying or Air Treatment
- Pipeline Pigging

2 Commissioning

- Purging
- Leak Testing
- Pressure Testing
- Drying or Air Treatment
- Pre-cooldown (LNG)

3 De-Commissioning

- Purging
- Reactor Cooldown

4 Turnaround

- Purging (HC Freeing)
- Pressure or Vacuum Testing
- Drying or Air Treatment
- Reactor Cooldown

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

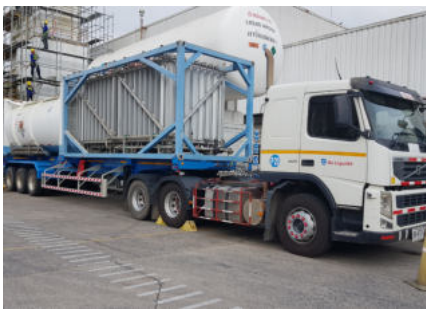
High operating flow rate
Middle operating pressure
Low - High operating temperature
Safety Features / Shutdown

N_2 Pumper

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

Cryogenic Tank

N_2 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_2 storage tanks, and pumper trucks, to support upstream N_2 supply operations. Equipment setup and N_2 delivery are tailored to customer-specific parameters throughout the project. Air Liquide ensures high-volume liquid N_2 supply within tight project timelines.

One Stop Solution

Air Liquide delivers dry N_2 with customisable temperature, pressure, and flow rates to meet diverse process applications. Our extensive fleet of N_2 pumping equipment, coupled with robust engineering resources, ensures uninterrupted supply from project initiation to completion. You can rely on us to fulfill your requirements.

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