

LGN & TGN NITROGEN GENERATOR



The LGN series plants produce high purity gaseous nitrogen (600 – 1000 Nm³/hr) by cryogenic distillation of atmospheric air. The generator is a liquid assist type and features a compact and modular design.

The TGN series plants produce high purity liquid and gaseous Nitrogen (1,000 Nm³/hr – 2,100 Nm³/hr) by cryogenic distillation of atmospheric air. The TGN series units are efficient, reliable, and compact. The plant is semi-automatic and self-refrigerated.



Process Description

- The LGN series plant is a high purity gaseous Nitrogen generator. The plant utilizes an air compressor to provide feed air that operates above the gas Nitrogen delivery pressure. A small amount of liquid Nitrogen is necessary to be added to the top tray of the distillation column to provide additional refrigeration required for the plant to make up for the cold box heat loss.
- The TGN series plant produces gaseous Nitrogen and liquid Nitrogen. Air separation is achieved by means of cryogenic distillation. Low temperature refrigeration is produced by a waste gas expansion cycle using a turboexpander. The self-refrigeration capability makes it possible for the TGN to be installed anywhere where it is restrictive and not economical to deliver liquid Nitrogen. An added advantage is that it produces a small amount of liquid Nitrogen that can be used to top off a back-up system.

Control System

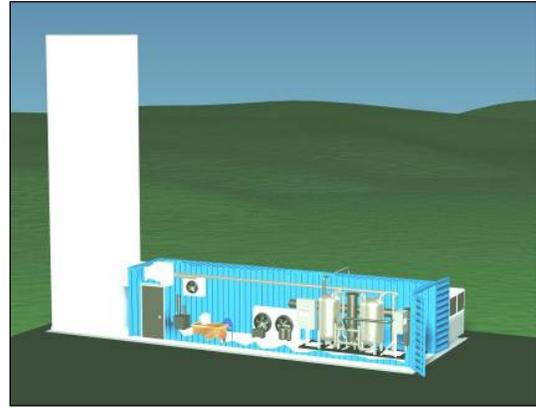
- The LGN series process control is automatic. It is designed for unattended operation. Once the plant is started and running, the air separation process, purity control and all the subsystems external to cold box are fully automatic.
- The TGN series can be remotely operated. The control system can be remotely accessed by a modem connection. After start up the plant is designed to automatically monitor and run unattended. The system includes an industrial computer, a PLC I/O base and other instruments.

Quality

The LGN and TGN series plants are designed and constructed to Cosmodyne's high quality standards. The vessels are designed and built to Section VII, Div. 1 of the ASME Boiler and Pressure Vessel Code and carry the Code stamp and nameplate. The electrical system is designed and constructed in accordance with NEC, NEMA, and UL standards. The piping systems are designed in accordance with ASME B31.3 . Refrigeration is built to industry standards.

LGN and TGN Plant Layout

The layout is configured to provide maximum efficiency and ease of maintenance. The plant consists of three modules, an Air Compressor Module (ACM) that provides process air, a Warm Equipment Module (WEM) that purifies compressed air and a Cold Box Module (CBM) that houses the distillation equipment.



LGN Performance	LGN 600	LGN 800	LGN 1000
Production Gaseous Nitrogen Nm ³ /hr	666	837	993
Purity Gaseous Nitrogen PPM O ₂	5	5	5
Product Pressure (at cold box outlet) bar(g)	7.3	7.3	7.3
User supplied Liquid Nitrogen (% of production)	5.66 %	5.22 %	5.20 %
Specific Power kW-hr/Nm ³	0.32	0.32	0.32

TGN Performance	TGN 1000	TGN 1600	TGN 2000
Production Gaseous Nitrogen Nm ³ /hr	890	1442	2000
Liquid Nitrogen Nm ³ /hr	67	140	155
Total Production Nm ³ /hr	957	1582	2155
Purity Gaseous Nitrogen PPM O ₂	5	5	5
Liquid Nitrogen PPM O ₂	5	5	5
Product Delivery Pressure Gaseous Nitrogen bar(g)	7.0	7.0	7.0
Liquid Nitrogen bar(g)	7.0	7.0	7.0
Specific Power kW-hr/Nm ³	0.41	0.37	0.35