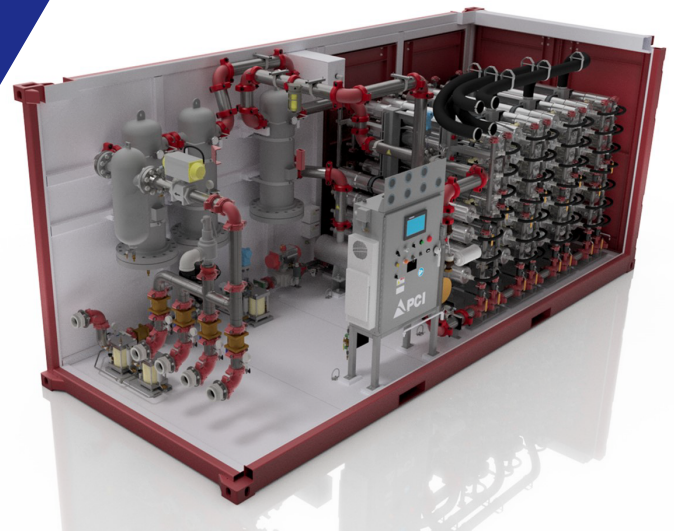


ON-SITE NITROGEN GENERATOR

NGU

- **Nitrogen Generating Unit (NGU)** utilizes a unique and flexible design which can be matched to meet your needs and equipment. These units allow air compressors to become nitrogen generators.



Characteristics	Value / Description
Flow rate	Up to 3000 scfm 85 scmm
N ₂ Purity	95%, up to 99%
Pressure	Up to 350 psig 2.4 MPa
Containerized	10 ft. or 20 ft. ISO containers
High temperature membranes	Up to 180° F (82° C)
Best in class membrane separation	Feed air to N ₂ output up to 57%

Nitrogen Generating Unit (NGU)

PCI is pleased to introduce our new line of configurable membrane nitrogen generator unit for the Oil & Gas market. Rather than forcing the job to fit the hardware, PCI offers a dynamic product to fit your needs.

These systems are best used for remote locations where the cost of delivered liquid nitrogen (LIN) is high and when the scheduling and delivery of nitrogen takes a long time. You would never run out of nitrogen or have to terminate a job prematurely while waiting on a nitrogen bulk transport for supplemental LIN. PCI's nitrogen generators eliminate the troublesome logistics and timing of LIN supply while delivering nitrogen at a portion of the cost of hauled in LIN.

Benefits

- Convert air packages into nitrogen generation systems
- Designed and built to meet your air inputs and nitrogen outputs
- Low cost of ownership
- Easy to operate and maintain
- Multiple compressor inlets
- Stainless steel pipe
- Integrated electric feed air reheater
- Local control and display panel (remote operation available)
- Containerized
- Field proven global

Applications

- Pipeline / refinery
 - Purging
 - Testing
- Underbalance Drilling (UBD)
- Enhanced Oil Recovery (EOR)

OIL AND GAS APPLICATIONS

PCI is the leading manufacturer of integrated mobile and portable nitrogen generation equipment for the oil & gas industry. Our innovative nitrogen systems are specifically designed with the operator and applications in mind – ease, efficiency, and reliability of operation.

Oil and Gas Nitrogen Applications Performance Ranges

Application	Description	Flow		Pressure		Purity (%N ₂)
		scfm	scmm	psig	MPa	
COILED TUBING OPERATIONS	Coiled tubing is a flexible coil of piping that is run down a well and used in workovers, drilling operations, and fracturing. Nitrogen is sent down the hole to stimulate production, clean out debris, etc.	350 to 3000	10 to 85	1000 to 10000	7 to 69	95%+
PIPELINE PURGING & DRYING	Dry nitrogen is used to displace hydrocarbons in a pipeline or push a "pig" down a pipeline during cleaning. Nitrogen is also used to dry chemical pipelines to very low dew points, or for general inerting during plant turnarounds.	100 to 3000	3 to 85	300 to 3000	2 to 20	95%+
UNDERBALANCED DRILLING (UBD) MANAGED PRESSURE DRILLING (MPD)	Drilling operation where the pressure in the wellbore and bottomhole is less than the formation, allowing for production during drilling as well as protection of the formation. Nitrogen is commonly used because of combustion issues, and to far lesser extent, corrosion issues.	500 to 3000	14 to 85	1000 to 5000	7 to 35	95%+
WELL COMPLETIONS & WORKOVERS	Wells are sometimes capped off after drilling operations are concluded. Perforating the production string and displacement of the hydrostatic fluid head must be done to get the well to flow on primary pressure. Workovers are subsequent cleanouts performed on a regular basis to remove hydrostatic fluids.	350 to 3000	10 to 85	1000 to 5000	7 to 35	95%+
GAS LIFT	Introducing nitrogen in the produced oil product lightens the fluid, and the gas helps carry the lighter fluid to the surface. This is a secondary or enhanced oil recovery technique.	300 to 3000+	8 to 85+	1000 to 5000+	7 to 35+	95%+
ENHANCED OIL RECOVERY (EOR) NITROGEN FLOODING	When the primary pressure of the reservoir is gradually depleted over time, additional energy must be added to the reservoir to drive the reservoir products to the surface. Nitrogen or natural gas is used to provide this additional pressure. Injection of nitrogen is used to push a miscible front through a reservoir which pushes banks of displaced oil to production wells.	1000 to 3000+	28 to 85+	1000 to 5000+	7 to 35+	95%+
STIMULATION	Nitrogen is used as a carrier gas for a number of chemicals, including acids, and various proppants used to fracture a reservoir to increase the permeability and total oil recovery of the well.	1000 to 5000	28 to 140	2000 to 10000	13 to 69	95%+