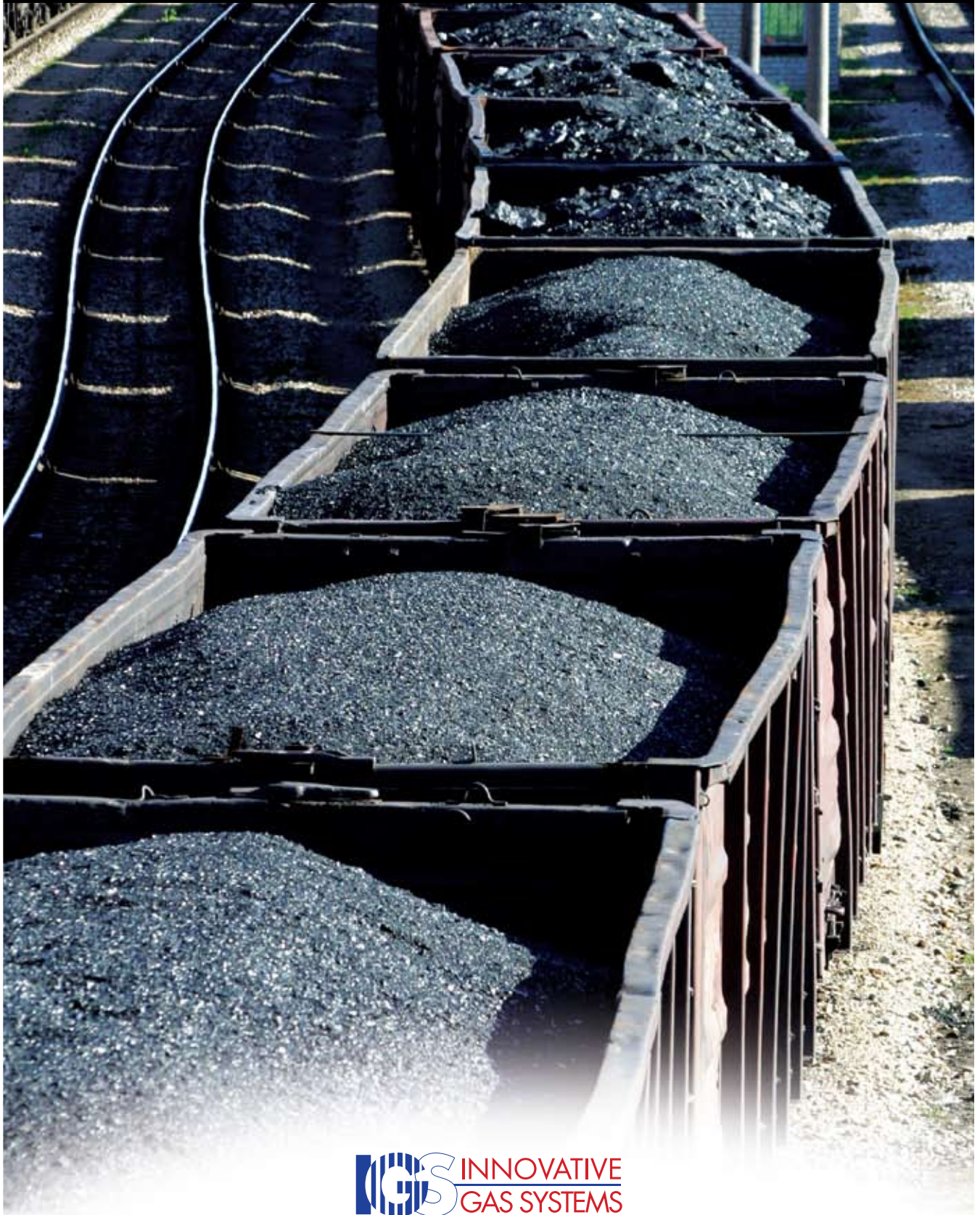


# NITROGEN FOR COAL MINING

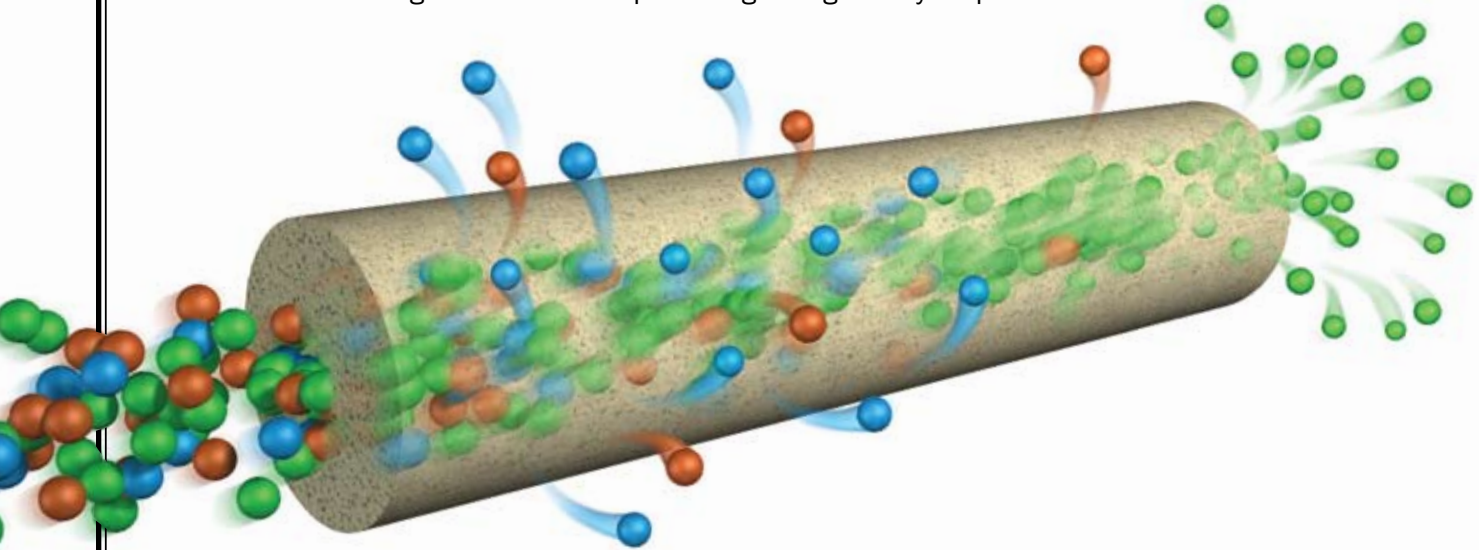


 INNOVATIVE  
GAS SYSTEMS



## How it works...

The actual air separation process takes place in the Generon IGS Nitrogen Generator Membrane Modules. The module in which the nitrogen and oxygen separation takes place is a cylindrical bundle of hollow fiber membranes. Each bundle contains several million fibers, each about the size of a human hair. Pressurized air enters one end of the fibers and flows to the opposite end of the module through the fiber bores producing Nitrogen for your process.



**Nitrogen Membrane Operational Dynamics** All Nitrogen Membranes are not created equal! The primary difference is the amount of compressed air needed to produce a unit of Nitrogen at a given purity and the operating pressure the membranes can operate at. The Generon IGS fiber is the world's most efficient at separating compressed air into Nitrogen. The following is an example of one supplier's efficiency compared to a Generon IGS's Nitrogen Generator System.

### Case Study - Typical Mine Requirement - 700 SCFM @95% Purity Nitrogen @ 150 PSIG

	Compressed Air Required SCFM	Power Required		Savings / Year	
		Gallons / Day	kw / Day	Diesel \$3.00 / Gallon	\$0.06 kW / Hr
Competitive System <sup>[1]</sup>	1,830	682	8,952	\$0	\$0
Generon IGS	1,280	420	5,376	\$286,452	\$78,314

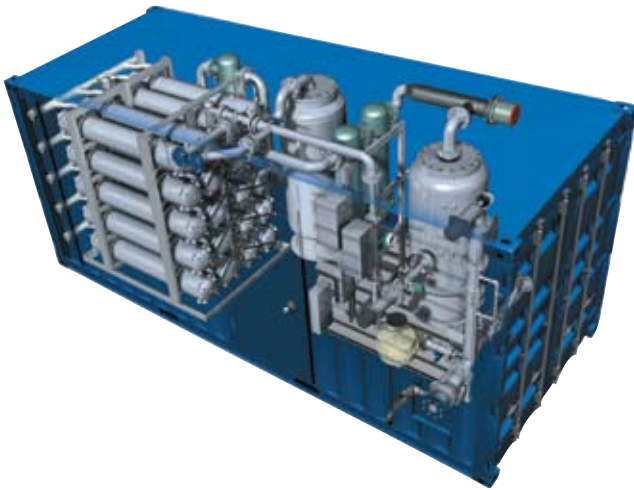
Note: Generon IGS systems are supplied with Certified Flow Meter and Oxygen Analyzers. All performance numbers are guaranteed. [1]This comparison was done against a single competitor. Generon IGS has at its R&D facility benchmarked its product against all competitors. Data is available upon request.

**Generon IGS also offers the following services to support our customers 24 hours per day 365 days per year.**

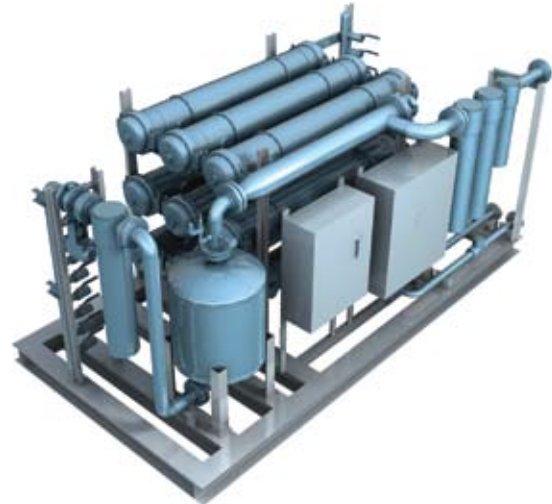
- Rental Units available 24 hours a day
- Service personnel available 24 hours a day
- All compression equipment needed to operate the Nitrogen systems
- Engineering consultation for system design to meet our customers exact requirements
- Operations and safety training for Nitrogen and Compression systems operation

**Products** Generon IGS offers two types of Nitrogen Generators to the Mining Industry. Containerized Systems are suitable for locations outside of the mine shaft and Skid Mounted systems are suitable for operation inside of the mine shaft. All Generon IGS systems are certified to meet the mining industries exact specifications.

### Containerized Nitrogen Generator Unit



### Skid Mounted Nitrogen Generator Unit



## Features

- Nitrogen Flow Rates up to 4,000 SCFM from a single unit
  - Supply pressures 100 – 500 psig standard
  - Field tested and proven feed air pre-treatment system to ensure long system life with over 250 systems in operation in every conceivable environment
  - Nitrogen dew point -70 °F
  - Fully automatic Nitrogen purity control
  - Systems supplied with certified Oxygen Analyzers and Nitrogen Flow Meters for accurate monitoring and control
  - Systems can be supplied with remote operational control and monitoring
  - Built for all 3rd Party certifications, i.e. NIOSH, MSHA, all Classified areas for Explosive Gases and Dust Environments
- Skids are designed with a small footprint to fit into any standard mine shaft
  - Supply pressures 100 – 500 psig standard
  - Field tested and proven design to ensure long system life with over 1,000 systems in operation in every conceivable environment
  - Nitrogen dew point -70 °F
  - Fully automatic Nitrogen purity control
  - Systems supplied with certified Oxygen Analyzers and Nitrogen Flow Meters for accurate monitoring and control
  - Systems can be supplied with remote operational control and monitoring
  - Built for all 3rd Party certifications, i.e. NIOSH, MSHA, all Classified areas for Explosive Gases and Dust Environments

All IGS facilities are ISO 9001 certified



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