

GFED Series

Cryogenic Air Separation Plants

Liquid Oxygen and Nitrogen Production

Product Information



The World Standard in Packaged Cryogenic Air-Separation Plants

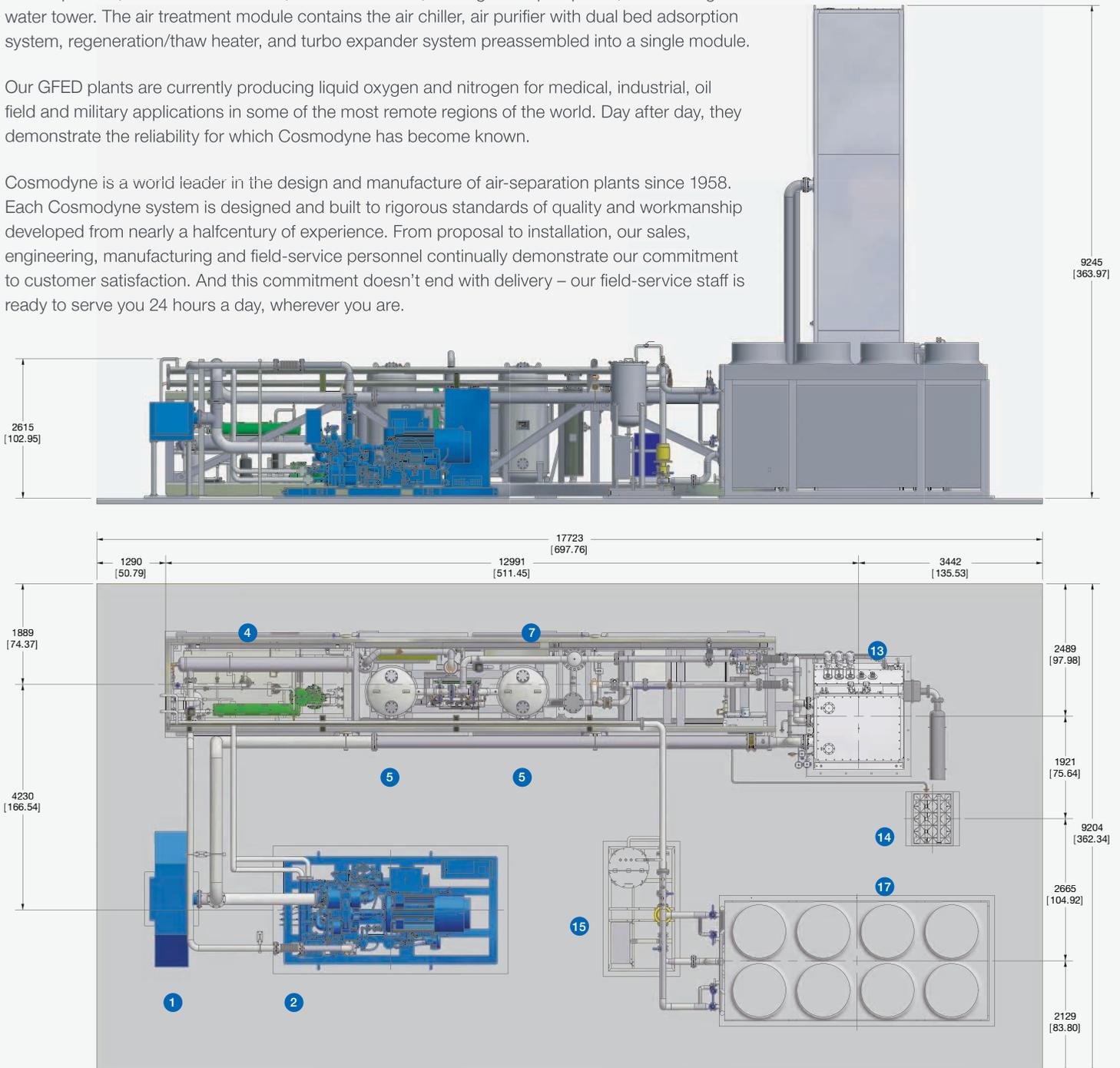
GFED Series plants are designed and built to the highest standards of reliability and efficiency to meet the most severe operating conditions. Each plant is assembled completely, thoroughly inspected and tested for performance under actual operating conditions to assure the highest level of quality. Structurally ideal for emerging markets and remote locations, the GFED plants have been proven in over 50 locations world wide.

The modular design of the GFED Series plant minimizes transportation and handling expense and enables rapid on-site installation. The comprehensive scope of supply includes five pre-assembled skid mounted modules and all necessary interconnecting materials. Plant modules include feed air compressor, air treatment module, cold box module, cooling water pump skid, and cooling water tower. The air treatment module contains the air chiller, air purifier with dual bed adsorption system, regeneration/thaw heater, and turbo expander system preassembled into a single module.

Our GFED plants are currently producing liquid oxygen and nitrogen for medical, industrial, oil field and military applications in some of the most remote regions of the world. Day after day, they demonstrate the reliability for which Cosmodyne has become known.

Cosmodyne is a world leader in the design and manufacture of air-separation plants since 1958. Each Cosmodyne system is designed and built to rigorous standards of quality and workmanship developed from nearly a halfcentury of experience. From proposal to installation, our sales, engineering, manufacturing and field-service personnel continually demonstrate our commitment to customer satisfaction. And this commitment doesn't end with delivery – our field-service staff is ready to serve you 24 hours a day, wherever you are.

- 1 Air inlet filter
- 2 Feed air compressor
- 4 Air chiller
- 5 Adsorber vessels
- 7 Warm end skid
- 13 Cold box module
- 14 High pressure vaporizer (optional)
- 15 Glycol cooling water pump skid (optional)
- 16 Air cooled glycol cooling tower (optional)



Units of measure: mm [in]

Performance Specifications

Plant Model	GFED 1		GFED 2		GFED 3	
	MAX LOX	MAX LIN	MAX LOX	MAX LIN	MAX LOX	MAX LIN

Production

		GFED 1	GFED 2	GFED 3
Liquid Nitrogen	Nm ³ /hr	0.0	137	242
	MTPD	0.0	4.1	7.3
Liquid Oxygen	Nm ³ /hr	126.9	3.0	7.0
	MTPD	4.4	0.1	0.2
Total Liquids	Nm ³ /hr	126.9	140	249
	MTPD	4.4	4.2	7.5
Oxygen Gas	Nm ³ /hr	0.0	28	84
	MTPD	0.0	1.0	2.9

Product Purity

		GFED 1	GFED 2	GFED 3
Oxygen	% O ₂	99.6	99.6	99.6
Nitrogen	% N ₂	99.9	99.9	99.9

Pressure

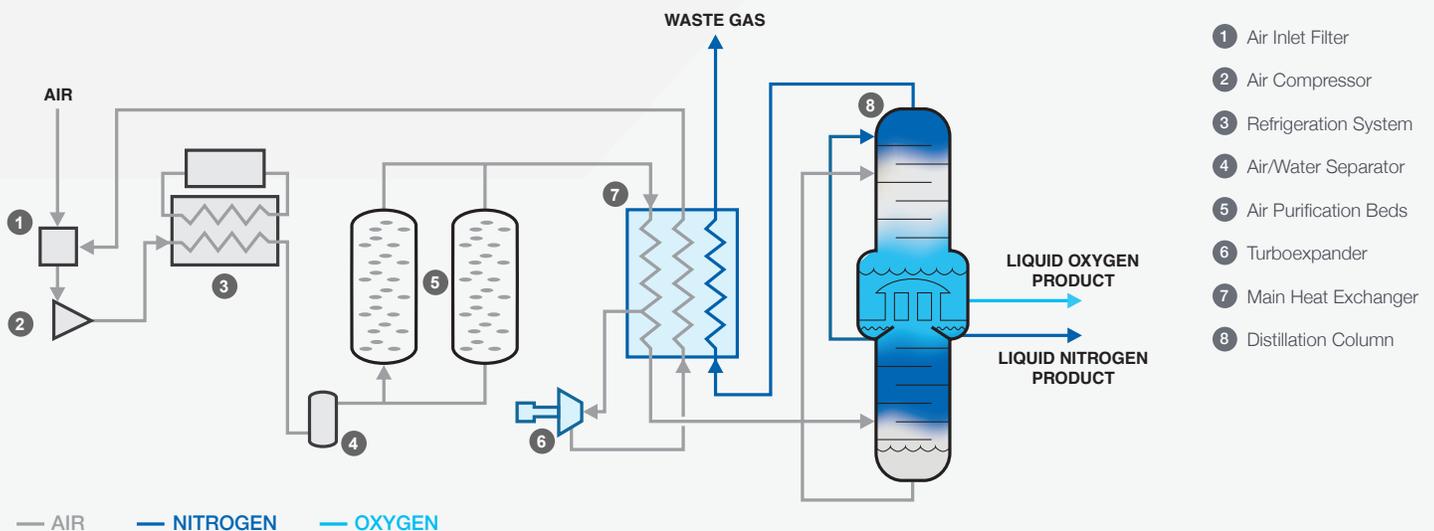
		GFED 1	GFED 2	GFED 3
Nitrogen	barg	4.8	4.8	4.8
Oxygen	barg	0.55	0.55	0.55

		GFED 1	GFED 2	GFED 3
Power	kW	299	362	449
Specific Power	kWh/Nm ³	2.36	2.31	2.22

NOTES:

1. Performance is based on STP (20 °C, 50% RH, Sea Level, Cooling water 24 °C)
2. Nm³ is measured at 1.0 Atmospheres and 0 °C
3. Nitrogen purity to 1ppm O₂ in N₂ possible
4. Liquid N₂ subcooled to -188°C

Simplified Process Flow Diagram



- 1 Air Inlet Filter
- 2 Air Compressor
- 3 Refrigeration System
- 4 Air/Water Separator
- 5 Air Purification Beds
- 6 Turboexpander
- 7 Main Heat Exchanger
- 8 Distillation Column

GFED Series

Standard Equipment and Features

- High-performance turboexpander with cartridge-style rotating element
- Efficient, reliable 2-stage feed air compressor
- Proven TSA air pre-purification system
- Completely air cooled – no cooling water required
- Choice of 50 or 60 Hz power systems
- Complete with all interconnecting piping and electrical systems, ready for installation

Options and Accessories

- CE compliance
- Fully automatic digital process-control system with “touch screen” operator interface
- Integrated cylinder filling system
- Integrated product storage system
- Integrated cooling system
- Containerized option (versus open skid)

Services

- On-site or in-factory operator training
- Installation and commissioning assistance
- Extended warranty and service packages available



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