



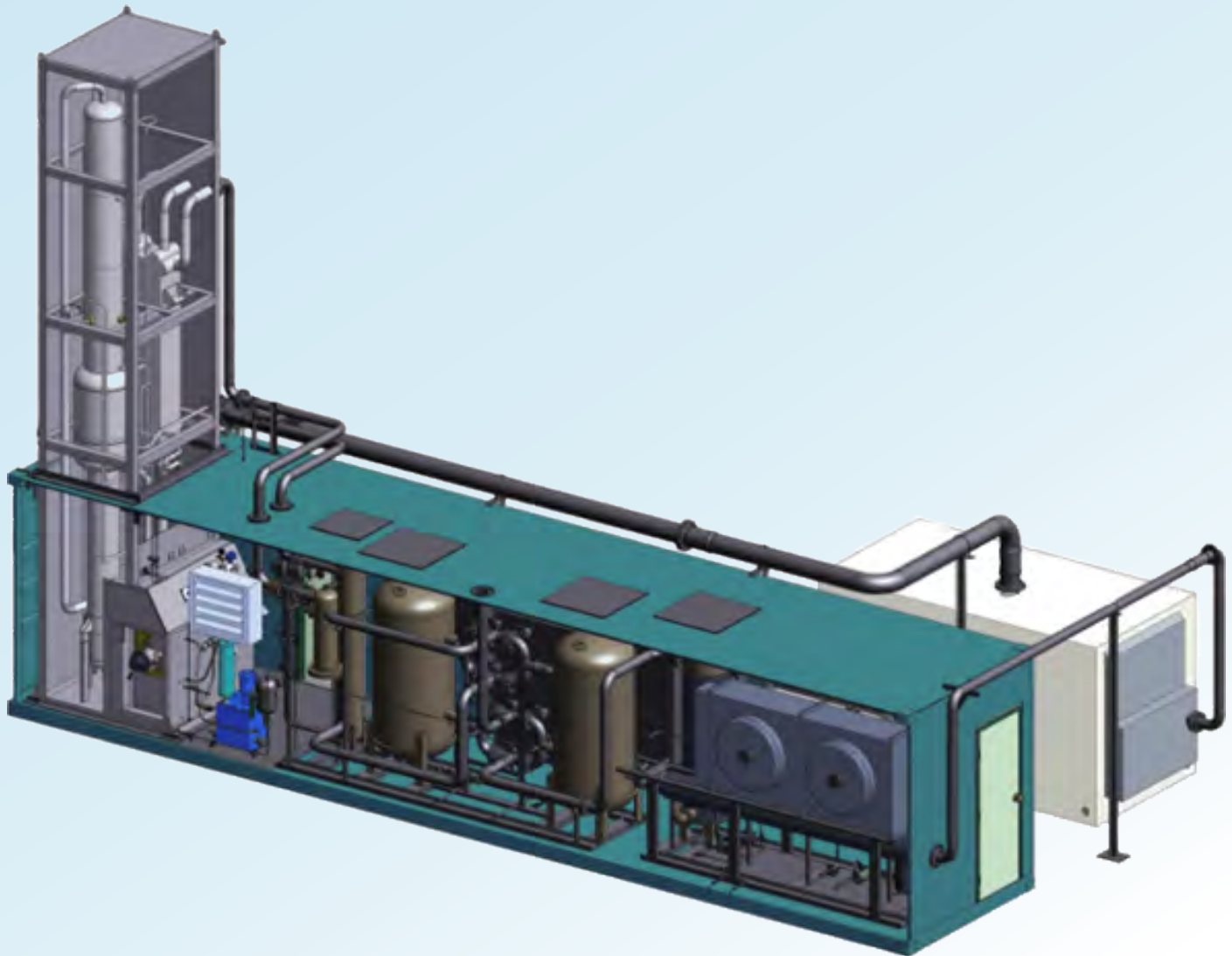
A Cryogenic Industries Company

COSMODYNE

PACKAGED PLANTS

GFED 1/2/3

PRODUCT CATALOGUE



For enquires please contact

General Manager
Senior Engineer

: Bruce Van Dongen
: Rohit Batarakhaye

| Email: vandb@cosmodyne.com
| Email: batar@cosmodyne.com

| Cell : (+27) 082-555-4928
| Cell: (+91) 942-919-8210

www.cosmodynepackagedplants.com

OXYGEN/NITROGEN OR NITROGEN ONLY AIR CONTAINERIZED 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.

The **modular design** of the GFED Series plant minimizes transportation and handling expense and enables rapid on-site installation. Packaged for shipment in two 40ft ISO containers, the plant can normally be installed and commissioned within two days, requiring only a simple foundation. The equipment can be supplied as air-cooled, so power is the only utility.

Over 50 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.

Standard Equipment and Features

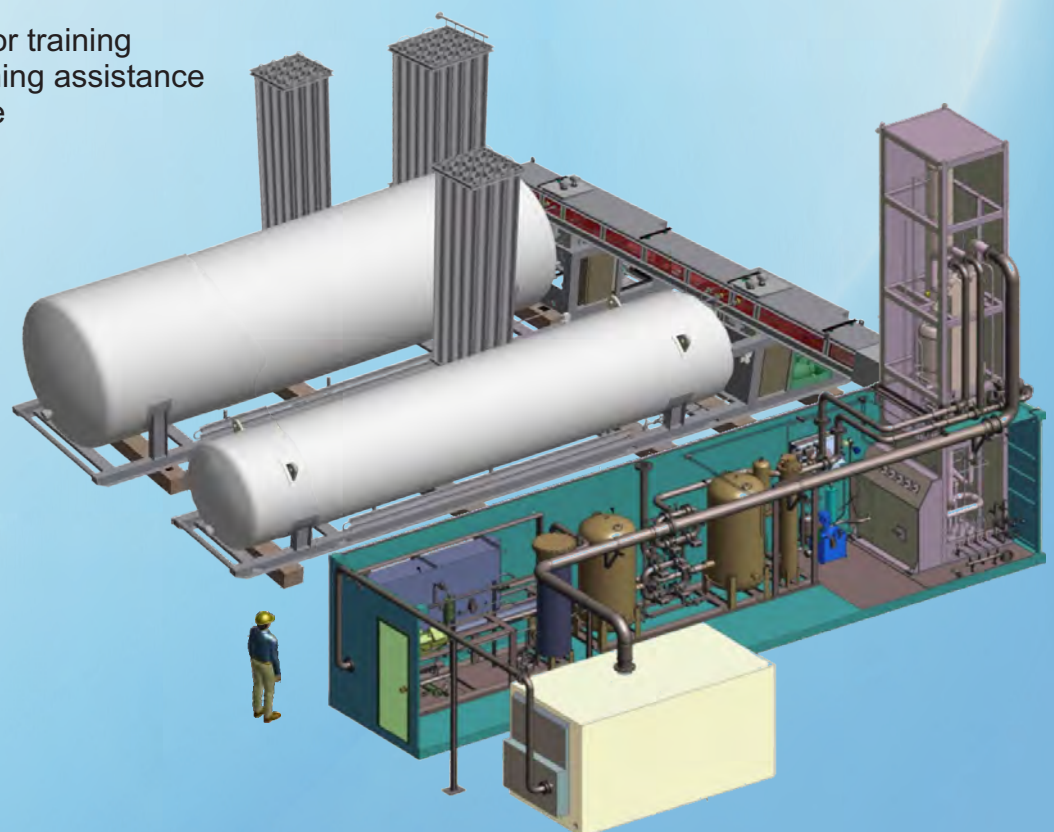
- High-performance ACD hydrodynamic bearing turbo expander with cartridge-style rotating element
- Efficient, reliable oil free; centrifugal or dry screw air compressor
- Proven TSA air pre-purification system
- Choice of 50 or 60 Hz power systems
- Ships as two standard ISO containers to minimize transportation expense
- 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
- Air cooled, evaporative water cooled or dry glycol cooling tower cooled
- Integrated cylinder filling system
- Integrated product storage system

Services

- On-site or in-factory operator training
- Installation and commissioning assistance
- Extended warranty package
- Service package



GFED 1/2/3 PERFORMANCE

Atms Press **14.7** psia
 Dry bulb **20** °C
 RH, % **50** %
 Wet Bulb **9.25** °C
 Cooling water **24** °C

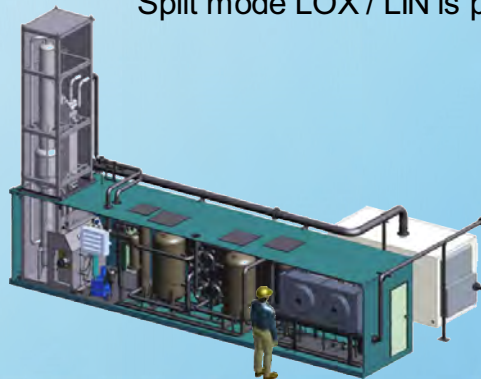
Nm³/hr defined at 0°C 1 Atms

Multiple different split modes are possible

Performance based on oil free centrifugal compressors

MODEL	GFED1		GFED2		GFED3		
MODE	MAX LOX	MAX LIN	MAX LOX	MAX LIN	MAX LOX	MAX LIN	
LIQUID N ₂ 99.9%	0.0	4.1	0.0	5.3	0.0	6.6	Metric TON/DAY
LIQUID O ₂ 99.6%	4.1	0.1	5.2	0.1	6.7	0.1	
GAS O ₂ 99.6%	0.0	2.0	0.0	2.6	0.0	3.0	
TOTAL PRODUCTS	4.1	6.2	5.2	7.9	6.7	9.7	
TOTAL LIQUIDS	4.1	4.2	5.2	5.3	6.7	6.7	
LIQUID N ₂ 99.9%	0	137	0	175	0	220	Nm ³ /hr
LIQUID O ₂ 99.6%	120	3	150	2	194	3	
GAS O ₂ 99.6%	0	58	0	76	0	87	
TOTAL PRODUCTS	120	198	150	253	194	310	
TOTAL LIQUIDS	120	140	150	177	194	223	
POWER	328	328	392	389	476	476	KW
SPECIFIC POWER (Gas+ Liquids)	2.74	1.66	2.61	1.54	2.46	1.53	Kwh/Nm ³
SPECIFIC POWER (Liquids)	2.74	2.35	2.61	2.20	2.46	2.14	Kwh/Nm ³

Nitrogen purity to 100ppm O₂ in N₂ possible
 Split mode LOX / LIN is possible

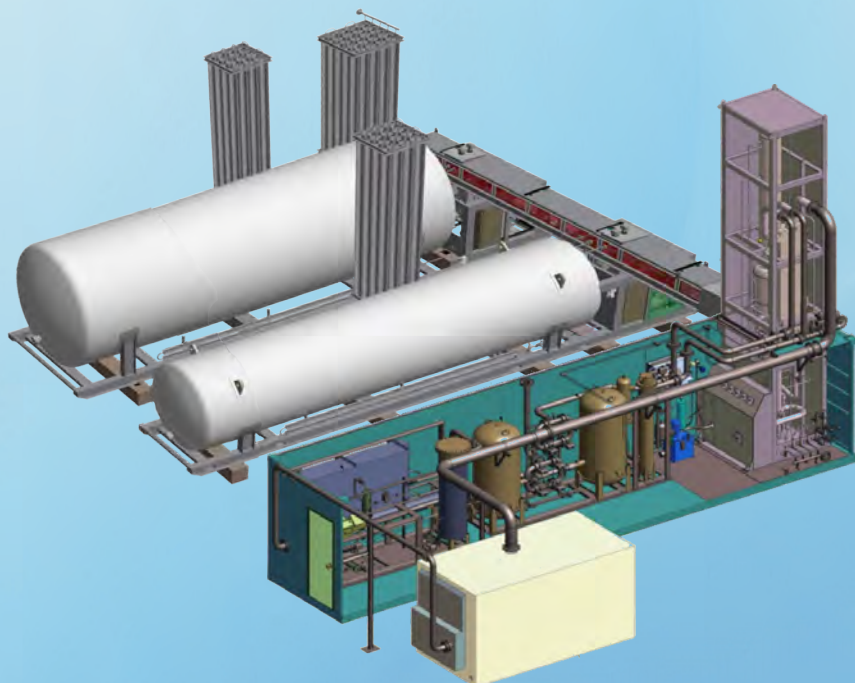


PRODUCT HANDLING AND STORAGE SOLUTION

Cosmodyne Packaged Plants offers a liquid storage, pumping and cylinder filling solution. The innovative, skid-mounted system is engineered for the safe and efficient storage of liquid Oxygen and liquid Nitrogen in low pressure horizontal tanks. The package facilitates remote process monitoring, automatic pump cool-down and loss of prime protection, inventory control, liquid pump transfer to road tankers, high pressure pumping and vaporization for cylinder filling, as well as off specification liquid disposal.

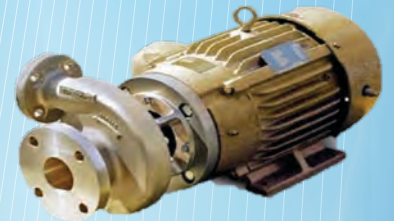
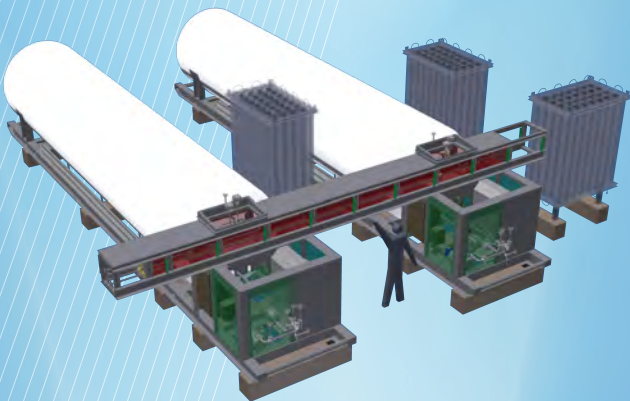
Efficient, versatile, moveable, safe, cost-effective

- Safe shipping and rapid deployment / relocation
- Ships in standard 45 foot high-cube containers
- Eliminates expensive on-site engineering and labor
- Interface skid provides product piping insulation
- Flexible product connections to all the skids
- Single point electrical connection
- Single point control connection
- Lighting included
- Remote dial in for: problem solving:
 - quality control
 - production trending
- IP55 dual door waterproof enclosures
- PLC automatic cool down and loss of prime detection for all pumps
- VFD control for the transfer pumps
- Rigorous testing at the point of manufacture
- Flawless and rapid commissioning in challenging or remote locations
- Independent control from main ASU plant PLC HMI
- Each Tank has a Touch screen HMI
- Safety as a priority, the system includes safety and vent valves
- Easy access for equipment maintenance
- The oxygen pumps are fitted with Stainless Steel 6mm blast shields
- The tanks utilize gravity filling with vapor return lines to the plant to minimize transfer and flash losses



CUSTOMIZABLE SCOPE:

- A interface skid to tie all components together, for one or two tanks , transfer pumping skid, high pressure pump, HP vaporizer for cylinder filling and a dump vaporizer
- 25/50/75/100 m3 vacuum + perlite insulated horizontal type storage tank designed to ASME sec. VIII div. I Ed.2010 with “U” stamp certification. PED as a option
- ACD transfer pumps with VFD controls for road tanker or VIE filling
- ACD P2K cylinder-filling pump for cylinder filling features a vertical pump with a dual wrist-pin bearing design, allowing higher rod loading and greater drive-end life. Vacuum jacket at cold end minimizes the losses
- Customizable Vaporisers for Customer pipeline backup or HP Cylinder filling requirements
- A state of the art Siemens PLC Control System with HMI touch screen Electrical and PLC panels
- Tank has a pressure build-up coil to allow for pressure decants from the tank if necessary
- A VFD transport pumps
- Insulated Pump suction lines with aluminum weather-proof jacketing
- Independent liquid feed lines are provided to all pumps, facilitating separate operation of the Transfer pump and Cylinder Filling pump
- Interface between the plant PLC and the tank PLC system so that both systems can be viewed from either location.
- The PLC includes the automatic cool down protection, loss of prime on both pumps as well as the tank level and pressure indication
- HMI screen incorporate a sun shield for easy viewing in bright environments
- The design includes safe disposal of liquid from safety and vent valves
- Easy access for equipment maintenance





Cosmodyne is a world leader in the design and manufacture of air-separation plants SINCE 1977, Each Cosmodyne system is designed and built to rigorous standards of quality and workmanship developed from nearly a half century of experience. From proposal to installation, our sales, engineering, manufacturing and field service personnel continually demonstrate our commitment to customer satisfaction.



This commitment does not end with delivery – our field service staff are ready to serve you **24 hours a day**, wherever you are. With over 450 functioning plants around the world we continue to set the industry standard for design, manufacture, sales and field-service.



Cosmodyne offers a wide range of plants under 300 metric ton/day. This brochure covers the smaller plants under 31 metric ton per day. Please contact us for any requirement over 31 metric ton/day



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