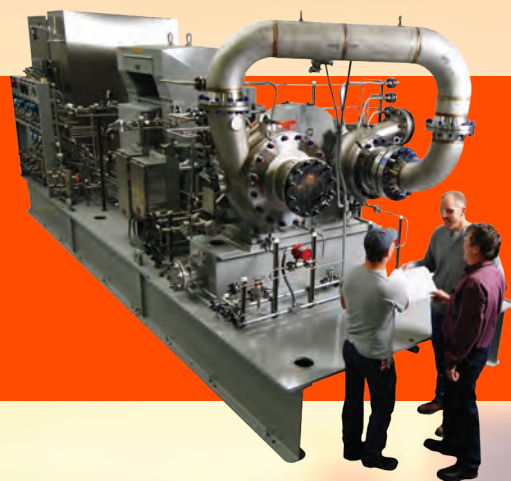




## **LF-2000 Series**

### **Integrally-Geared Centrifugal Compressors**



Developed from more than 70 years of technological advancement and with 5,000 units installed worldwide, Sundyne's latest generation of integrally geared compressors delivers the industry's best engineered-for-reliability solution for the Energy, Petrochemical, Chemical and General Industry sectors.

[www.sundyne.com](http://www.sundyne.com)







Designed to meet API-617 and related standards for mission-critical applications, our solution ensures up to 7 years of continuous operation with a 99.7% availability — minimizing downtime, maximizing performance and delivering oil-free process gas compression with zero emissions.

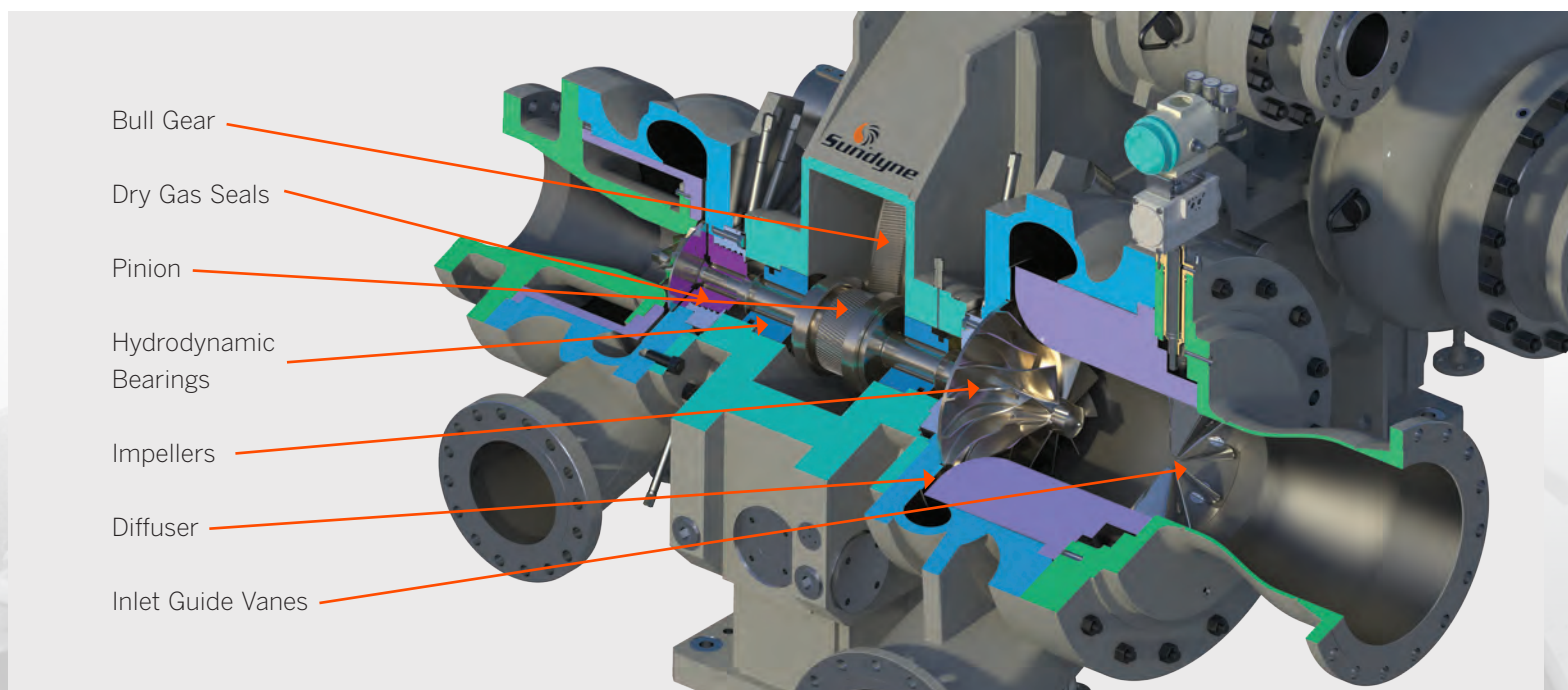
Engineered for seamless integration, the LF-2000's modular design allows for space-savings and easy installation across diverse industrial environments. Its innovative architecture maximizes operational flexibility, allowing up to six compression stages on a single gearbox.

Tailored to each application's Best Efficiency Point (BEP), the LF-2000 delivers pulsation- and vibration-free performance for critical processes. Backed by Sundyne's global network of Authorized Service Centers, this best-in-class compressor solution is the ideal choice for the Energy, Petrochemical, Chemical and General Industry sectors, delivering unmatched reliability in the most demanding applications.



# Excellence in Design, Manufacturing & Quality

Sundyne Compressors are high-pressure, low-flow, multi-stage machines featuring a proven impeller and rotor assembly design, backed by 700 million hours of field operation. The compressor's impellers are precision-milled from solid forgings for enhanced strength. All geometries have been rigorously tested to ensure optimal performance and reliability.



## Optimized Efficiency

Our compressors are sized for optimum performance by combining operating speed with impeller and diffuser geometries, maximizing efficiency through advanced computer optimization techniques. Each impeller running at optimized flow coefficient and tip-speed delivers the best efficiency at each stage of compression.

Our integrally-gear technology accommodates multiple services with side stream injection or extraction, including intercooling between each and every impeller.



## Low Flow Capability

By leveraging Sundyne's extensive expertise in low flow-coefficient aerodynamics, we ensure higher reliability and an optimized Total Cost of Ownership compared to competing technologies. This technology is particularly crucial for high molecular weight gases and high pressure-ratio services, where the actual volume flow rate decreases rapidly across stages.

→ **Compression from 22,000 m<sup>3</sup>/h down to 100 m<sup>3</sup>/h**

## Dry Gas Seals

Our Dry Gas Seals (DGS) deliver oil-free compression, tailored to your specific applications for optimal reliability, safety and performance. We are committed to providing the latest technologies to reduce emissions, including optional API 692 compliance and custom solutions for unique applications. Available in both uni-directional and bi-directional designs, our seals support single, double or tandem arrangements, including carbon rings and labyrinth configurations. Our design allows for future field conversion without modifying the compressor casing.



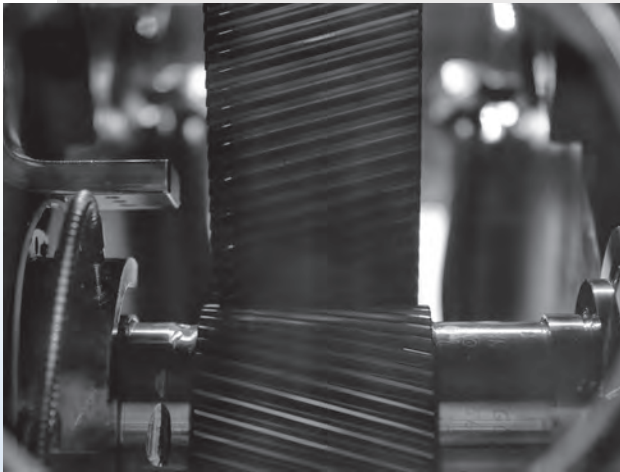
## Replaceable Diffusers

Our replaceable diffusers enable easy rerating of the compressor within the existing casing and can be conveniently converted in the field.



## Variable Inlet Guide Vanes

Variable Inlet Guide Vanes (IGV) feature multiple triangular-shaped vanes that direct process gas into the compressor, creating a “pre-swirled” effect. This reduces the work required from the main driver and enhances process control over the operating map. As the vanes close, directional flow increases, reducing stress on the impeller compared to other control methods. This makes inlet guide vanes more efficient during low capacity operation. Sundyne IGVs are easily retrofittable on existing units in the field, optimizing performance without impacting the compressor casing.



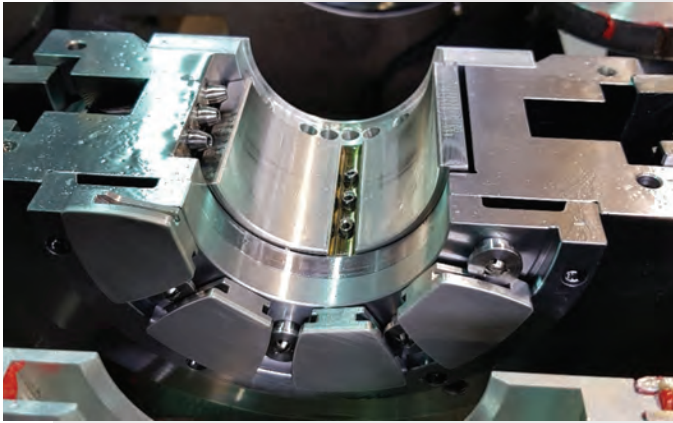
## Horizontal Gearbox with Split Bearings

Our integrally-gearbed technology optimizes speed for each impeller and accommodates multiple services with side stream injection or extraction, including intercoolers between impellers. Our gearbox features carbon steel housings, AGMA Quality 13 gears and an integral pinion design that meets API 617 vibration levels. The internal lube oil distribution and compressor case mounting allow for the removal of the gearbox top-housing without affecting any piping. Our high-speed rotor is supported by radial tilting pad bearings, designed to eliminate all vibration and ensure superior operating stability. The horizontally-split bearings enable easy removal and replacement without disturbing the impeller or seals, facilitating smooth inspections and maintenance.

## Hirth Connection

Provided as standard, the hirth attachment increases transmittable torque, reduces mechanical stress and ensures repeatable rotor balance upon reassembly for maintenance.





## High-Speed Bearings

Our high-speed rotor is supported by radial tilting pad bearings, designed to eliminate detrimental vibration and ensure superior operating stability. Our high-speed thrust bearings efficiently transfer high axial loads from rotating shafts with minimal power loss, simplifying installation and maintenance. These bearings enhance control over axial tolerances, improving impeller clearance and resulting in higher aerodynamic efficiency. Our high-speed thrust bearings allow for compressor start-up against high settle-out pressure without depressurization of the process loop. Optional riding rings are available upon request.

## Purged Labyrinth Seal

For maximum reliability, Sundyne recommends a purge to keep dirt and humidity out of the gearbox, especially during non-operation. This small investment ensures optimal performance and longevity.

## Compressor Monitoring

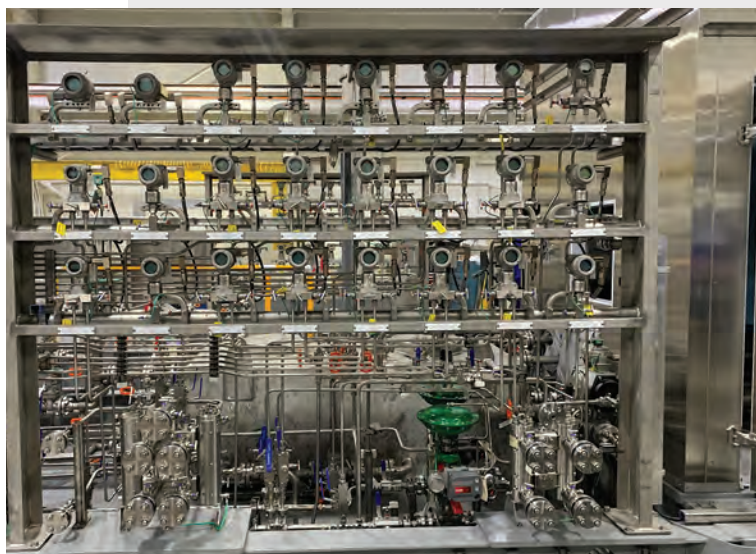
Vibration and temperature probes are installed to monitor rotor-dynamics and bearing performance, enhancing safety, efficiency and long-term operation. Monitoring systems and API-670 standard compliance are available upon request.



## Compressor Testing

- Performance Tests: All Sundyne compressors are tested, stage-by-stage or section-by-section on our test bench, in accordance with ASME PTC10 standards.
- Mechanical Run Tests: are conducted on our rotating equipment to verify mechanical integrity, check bearing performance, identify defects before deployment and ensure compliance of the compressor.
- Complete Unit Test: For highly critical projects, a full string test can be proposed to verify the complete integrity of the package, including all sub-systems (LOS, SGP, Motor, UCP, etc...)



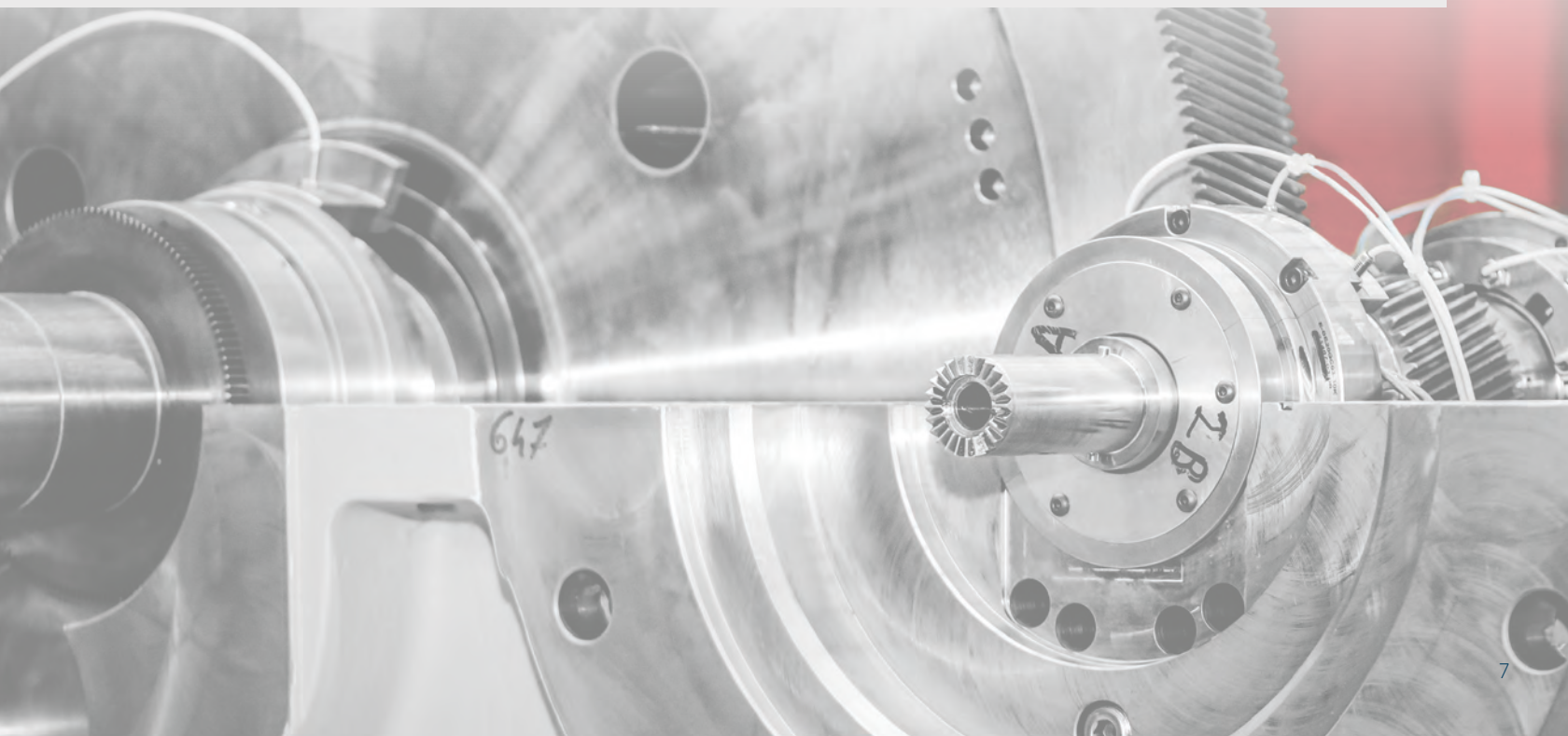
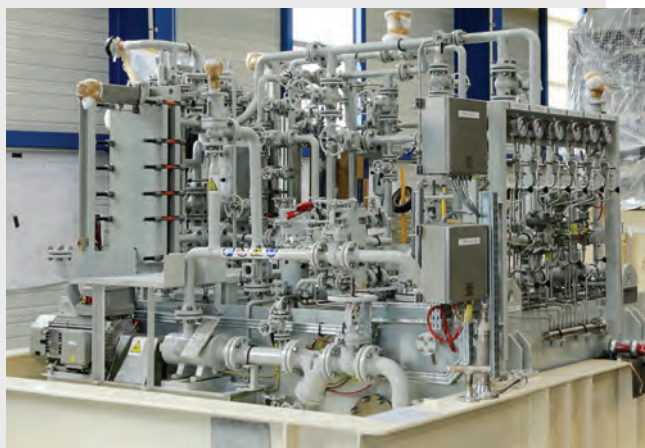


## Fully Integrated Seal Gas System

Our specially designed dynamic, contactless dry gas seals prevent process gas from escaping into the atmosphere, eliminating mechanical wear. The Seal Gas System can be skid-mounted or panel-mounted and is designed for compliance to API-614 or API-692. This ensures potential unlimited operation by conditioning the seal gas under all operating conditions, including transient, shutdown and startup phases. Seal leakages are controlled and monitored along their routing to a safe area. A seal recovery system is available upon request and can be adapted for field conversion.

## Fully Integrated Lube Oil System

Customized upon request, the Sundyne integrated lube oil system supplies oil to the compressor and driver bearings, as well as the gears. The main lube oil pump is typically shaft-driven, eliminating the need for a rundown tank. Purged seals on gearbox shafts prevent oil contamination. The lube oil console can be a standalone unit or mounted directly on the compressor's structural steel bases to facilitate and expedite further site erection work. Compliance with API-614 standards is a typical request that Sundyne is accustomed to meeting.



# Specifications

<b>Maximum Flow</b>	60 to 13,000 ACFM	100 to 22,000 Am <sup>3</sup> /h
<b>Maximum Speed</b>	50,000 rpm	
<b>Working Pressure</b>	4,000 PSI	350 bar
<b>Temperature Range</b>	-200 to +500 °F	
<b>Maximum Power</b>	10,000 HP	7 500 kW
<b>Reference Standard</b>	<ul style="list-style-type: none"> <li>- API-617 for Integrally Geared Process Centrifugal Compressors</li> <li>- Other standards on request</li> </ul>	
<b>Availability / Reliability</b>	- 99.7% / 99.8%	- Up to 7-years uninterrupted operation
<b>Casing</b>	<ul style="list-style-type: none"> <li>- Castings in Carbon Steel, Stainless Steel, Ni-Alloys, other materials on request</li> <li>- NACE and other standards compliance available</li> </ul>	<ul style="list-style-type: none"> <li>- Coatings available for anti-fouling</li> <li>- Side streams injection or extraction</li> </ul>
<b>Flanges</b>	<ul style="list-style-type: none"> <li>- 18 in. to 2 in.</li> <li>- 150, 300, 600, 900# RF standard; other ratings available</li> </ul>	
<b>Impellers</b>	<ul style="list-style-type: none"> <li>- Fully machined</li> <li>- Forged 17-4PH SS, Titanium, Ni-Alloys, NACE compliance available</li> </ul>	
<b>Sealing Technology</b>	<ul style="list-style-type: none"> <li>- Dry Gas Seals, Carbon Rings, Labyrinths</li> <li>- Single, Tandem or Double arrangement</li> </ul>	- API-692 / API-614 standard compliance available
<b>Gearbox</b>	<ul style="list-style-type: none"> <li>- Integral gearing</li> <li>- Horizontal split</li> </ul>	- Gear rating per API / AGMA
<b>Bearings Technology</b>	<ul style="list-style-type: none"> <li>- Thrust: Tapered Land and Tilt Pad</li> <li>- Journals: Plain and Tilt Pad</li> </ul>	<ul style="list-style-type: none"> <li>- Thrust rider rings available on request</li> <li>- Start-Up at SOP without depressurization</li> </ul>
<b>Gearbox Lube System</b>	- Pressurized with filtration and cooling	- API-614 standard compliance available
<b>Coupling</b>	<ul style="list-style-type: none"> <li>- Low-Speed coupling only is needed</li> <li>- Nonlubricated flexible type with spacer</li> </ul>	- API-671 standard compliance available
<b>Control System</b>	<ul style="list-style-type: none"> <li>- Anti-Surge System</li> <li>- Performance Control with global or individual controlled processes</li> <li>- IGV at one or more stages</li> </ul>	<ul style="list-style-type: none"> <li>- VFD</li> <li>- Suction or Discharge Throttling</li> <li>- Intercooling / K-O Drums</li> </ul>
<b>Testing</b>	<ul style="list-style-type: none"> <li>- Hydrostatic Test</li> <li>- Performance Test as per ASME PTC-10</li> <li>- Mechanical Run Test</li> </ul>	<ul style="list-style-type: none"> <li>- Complete Unit Test (String Test)</li> <li>- Additional tests on request</li> </ul>
<b>Packaging</b>	<ul style="list-style-type: none"> <li>- From Industry Standard to full API compliance</li> <li>- E-Motor or Turbine Driver</li> <li>- Enclosures for Noise Attenuation and/or Temperature Control</li> </ul>	<ul style="list-style-type: none"> <li>- Process Skids</li> <li>- Intercooling / KO Drum</li> <li>- Modular Arrangement</li> </ul>

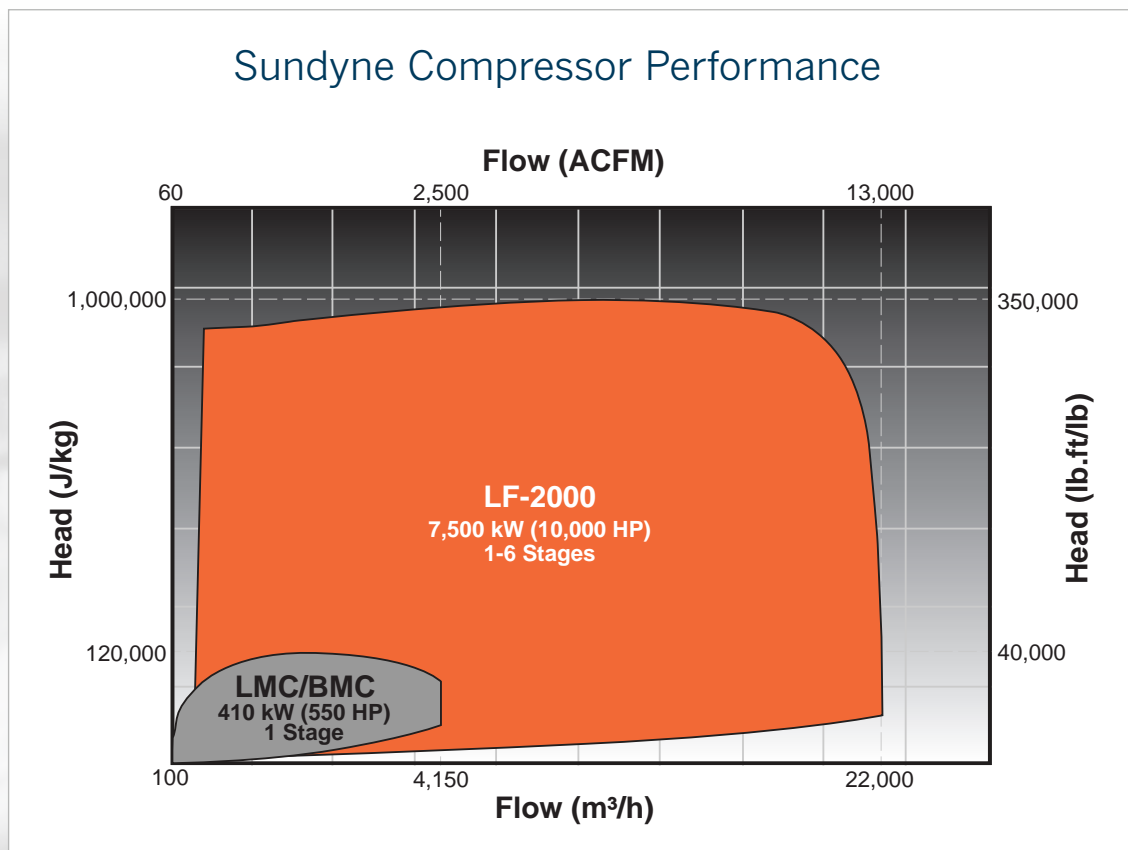


## Why Choose Integrally Geared Compressors?

- **Oil-Free & Pulsation-Free**  
No contamination of process gas – clean, reliable compression.
- **Efficient for Low Flow / High Pressure Ratio Applications**  
Ideal alternative to traditional volumetric compressors.
- **Proven Centrifugal Reliability**
  - Up to 7 years uninterrupted service.
  - No spare installed unit required.
- **Versatile & Flexible**  
Supports multiple services on a single multi-stage machine – including side streams.
- **Compact & Integrated Design**  
Single skid package with no external gearings.  
Fewer impellers than single-shaft = fewer spare parts, easier maintenance.

### BEST Total Cost of Ownership

Delivering long-term value through reduced downtime, maintenance, and footprint



Please consult Sundyne to confirm compressor performance, as gas composition has a significant influence on thermodynamic properties and thus the developed head and efficiency.



## Upstream, FPSO, FLNG, FSU

- Flash Gas
- Treated Gas / Off Gas
- Recycle Gas
- Boil Off Gas
- Fuel Gas
- Refrigerant Gas
- Regeneration Gas
- Nitrogen Deoxo
- Flare Gas / Vent Gas Recovery
- Vapour Recovery



## LNG

- Mole Sieve Regeneration
- Deethanizer / Depropanizer
- Mixed Refrigerant
- Helium Gas
- Boil-Off Gas
- Stabilizer



## Midstream/Gas Processing

- Mole Sieve Regeneration
- Demethanizer / Deethanizer
- Stabilizer Overhead
- Slug Catcher Recycle
- Booster
- Nitrogen Circulation
- Off Gas
- Residue Gas



## Refining

- Tail Gas
- Benzene Recovery Unit
- Stripper Overhead
- Hydrogen Recycle
- H2S Gas / Desulfurization
- PSA Tailgas
- CCR Lift Gas
- Clean Fuels
- MTBF Replacement



## Petrochemical

- Polypropylene Recycle/Feed
- Polyethylene Recycle/Feed
- C3 Splitter OVH
- Hydrogen Recycle Gas
- Regeneration Loop
- Reactor Feed
- Recirculation Gas



# Applications



## Carbon Capture & Storage

- CO<sub>2</sub> Export
- Flash Gas
- Regeneration Gas
- sCO<sub>2</sub>
- Gas Removal Unit
- CO<sub>2</sub> Polishing and Purification



## Sustainable Energy

- Heat Pumps
- Mechanical Vapor Recompression
- Vapor Recovery Unit
- CO<sub>2</sub> / sCO<sub>2</sub> Cycle
- Battery Production, Specialty Gases
- Recycle
- Refrigeration



## Hydrogen

- H<sub>2</sub> Booster
- Recycle
- Make-Up
- LTS Start-Up
- Tail Gas
- Regeneration Gas
- Deoxygenation
- Ammonia Cracking
- N<sub>2</sub> Circulator



## Chemical

- Chlorine Gas
- Hydrogen Chloride
- Syngas and Recycle Gas for Ammonia
- H<sub>2</sub> Recycle
- Waste Gas Recovery
- Refrigeration Gas
- Purge Gas
- Flue Gas Treatment
- CO<sub>2</sub> / CO
- Nitrogen
- Vinyl fluoride
- Boil-Off Gas
- Ammonia



## Power

- Fuel Gas Boost
- Atomizing Air
- Carbon Capture Recycle
- Syngas Recycle
- Flash Gas

## Backed By Global Support

Sundyne is more than just a manufacturer of high quality compressors and pumps. We offer some of the fastest delivery times in the industry, and we back each product shipped with a full range of aftermarket support services, extending the value of our highly engineered machines well beyond the point of sale.

And with our engineered solutions, worldwide presence and compact designs, installation and maintenance has never been more efficient.

The Sundyne service team is here to help protect your investment and provide a trouble-free customer experience at every turn. That's **RELIABILITY REALIZED.**

Our Aftermarket Programs Include:

- Gearbox Exchanges & Upgrades
- Maintenance Kits
- Conversion Programs
- On-Site SundSCHOOL
- Field Service Support
- Overhaul and Repair Services
- Site Surveys
- Emergency Expedite Services
- Commissioning and start-up of new units

For more information on Sundyne's product fit in Clean Energy Markets, refer to our other clean energy brochures:

- Green and Blue Ammonia Production
- Sustainable Aviation Fuel and Renewable Diesel
- Clean Hydrogen Value Chain
- Carbon Capture and Storage



For more information please  
visit [www.sundyne.com](http://www.sundyne.com)  
and fill out the  
Contact Me form.  
A Sundyne representative  
will contact you.



### Sundyne Headquarters:

Sundyne, LLC  
14845 West 64th Avenue  
Arvada, Colorado 80007 USA  
Toll Free: 1-866-Sundyne  
Phone: +1-303-425-0800

Sundyne International S.A.  
13-15 Bldg. Eiffel - B.P. 30  
21604 Longvic Cedex France  
Phone: +33 380 383300

Sundyne Asia Japan Co., Ltd.  
Odakyu Dai-Ichi Seimei Bldg. 6F  
2-7-1, Nishi-Shinjuku Shinjuku-Ku  
Tokyo, 163-0706 Japan  
Phone: +81-3-3344-0911

Sundyne Pumps & Compressors  
India Pvt. Ltd.  
3rd Floor Westend Centre III,  
Aundh, Pune, 411007, India  
Phone: +91 99870 76165