

Global Single-shaft Centrifugal Compressor Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Single-shaft Centrifugal Compressor market size was valued at US\$ 2120 million in 2025 and is forecast to a readjusted size of US\$ 1621 million by 2032 with a CAGR of -3.8% during review period.

In this report, the term "single-shaft centrifugal compressor" refers to a process-duty centrifugal compressor in which one or more impellers are arranged on the same shaft, supported by bearings at both ends, and operating at a single rotational speed. Its core characteristic is that it does **not** use an internal multi-pinion bull gear, split-shaft, multi-speed configuration, but instead achieves aerodynamic compression with a single rotor running at one speed; this is what distinguishes it from "integrally-gear" centrifugal compressors (Integrally-Geared Compressors, IGC). In terms of casing and assembly configuration, single-shaft trains can be axially/horizontally split or radially/vertically split (the latter commonly called "barrel" type); in terms of staging, they can be single-stage (typically for pipeline station duties with low-medium pressure ratios and very large flow rates) or multi-stage (with back-to-back or in-line arrangements to optimize axial thrust and overall pressure ratio).

At the system level, a compliant process-duty single-shaft centrifugal compressor is normally furnished with a complete set of auxiliary systems such as a dry gas seal (DGS) system, lube/seal oil system, and mechanical protection system: the design and support systems for the dry gas seal meet at least the minimum requirements of API 692; the lube, shaft sealing, and control oil systems comply with API 614; monitoring and interlocking functions for critical vibration, axial displacement, speed, overspeed/surge, and key temperatures comply with API 670; and type and acceptance

tests for the overall aerodynamic performance of the machine are typically conducted in accordance with ASME PTC 10. Application industries cover continuous process services in oil refining, chemicals, and natural gas, as well as high-reliability duties such as long-distance pipelines, underground gas storage, CCUS/CO₂ compression, hydrogen/blended hydrogen, and olefin chains (including electric-drive zero-emission solutions and constrained offshore/subsea environments).

In terms of standard boundaries, the API 617/ISO 10439 series specifies the minimum design and test requirements for process axial and centrifugal compressors, with ISO 10439-2 providing detailed provisions for “non-integrally geared (Non-IG) centrifugal and axial compressors”; at the same time, ISO 10439/API 617 also emphasizes that this family of standards does not apply to fans and blowers with pressure rises below approximately 35 kPa (which fall into a different equipment category). By contrast, integrally geared centrifugal compressors (IGC) “whose typical structure is a central bull gear with several pinions, overhung impellers on both ends of each pinion shaft, different rotational speeds for each stage, and possible interstage cooling” are specified separately in ISO 10442 and API 672 as “packaged centrifugal air compressors,” serving mainly air/clean-gas compression duties, and are strictly distinguished in scope from the single-shaft process machines covered in this report.

It should be noted that integrated, hermetically sealed electric-drive compressors (IMC/ICL/HOFIM, etc.) which use a single rotor at one speed without internal gearing, and house the motor and compressor within a pressurized casing (typically with active magnetic bearings and without conventional oil systems and DGS), are still included in the “single-shaft centrifugal compressor” category of this report; however, they offer differentiated advantages in terms of system boundaries, leakage control, and operation and maintenance model (near-zero emissions, smaller footprint, and higher availability), and will be discussed separately in the product segmentation section later in the report. The above definitions and boundaries are based on API 617/ISO 10439-2, supplemented by ASME PTC 10 for performance test scope and by API 692/614/670 for the definition of sealing, lubrication, and protection systems; the structural features and applications of IGCs refer to publicly available technical materials and engineering literature from multiple major OEMs.

To ensure data comparability, the market statistical scope and measurement conventions of this report are defined as follows:

(1) Scope of equipment counted: included are new shipments (“Shipments”) and installed base (“Installed Base”) of process-duty single-shaft centrifugal compressors,

covering both single-stage and multi-stage machines, axially/horizontally split and radially/vertically split configurations, and mainstream driver types such as electric motors, gas turbines, and steam turbines; included are single-stage pipeline compressors and low head-per-stage schemes for long-distance transmission pipelines and hub stations, as long as they are non-integrally geared centrifugal machines with a single rotor at one speed; included are units employing integrated hermetically sealed electric drives (ICL/HOFIM, etc.) that satisfy the non-integrally geared and process-duty conditions (counted under the 'single-shaft electric-drive zero-emission' subcategory).

(2) Exclusions: integrally geared centrifugal compressors (IGC), which are covered by ISO 10442/API 672 as 'packaged centrifugal air compressors,' are not included in the scope of this report; positive displacement compressors (reciprocating, screw, etc.) and axial compressors are excluded (reciprocating compressors may refer to ISO 13631); equipment such as fans and blowers with pressure rises below approximately 35 kPa is excluded (outside the scope of ISO 10439).

(3) Units and levels of measurement: sales volume is by default expressed in 'packages' (units/Packages), for technology comparison and installed-base statistics; revenue is by default expressed per package as well, corresponding to customer procurement and project financial dimensions (including the driver and major auxiliaries, with the auxiliary boundary varying according to standards and contract definitions; based on the minimum configurations defined by API 614/692/670, this report will provide an 'included/excluded' mapping table to avoid double counting or omissions).

The above choices of statistical scope and measurement are based on, and annotated by, the definition of process compressors in API 617/ISO 10439-2, the dedicated scope for IGCs in ISO 10442/API 672, the performance test scope in ASME PTC 10, the boundary for reciprocating compressors in ISO 13631, and the coverage description of HTS/HS 8414.80.

As a key equipment for gas compression and transportation in industrial production, the technical iteration and application expansion of single-shaft centrifugal compressors have always kept up with the core needs of industrial development, and multiple driving forces jointly promote their continuous progress. The large-scale development of the energy and chemical industry is the primary driving factor. With the continuous emergence of large-scale refining and chemical, natural gas processing and other projects, higher requirements have been put forward for the processing capacity and operation stability of gas compression equipment. Single-shaft centrifugal compressors, with the characteristics of relatively simple structure and high efficiency per unit flow,

can adapt to the continuous production needs of large-scale devices and become an important choice for such scenarios. At the same time, the deepening of energy conservation and environmental protection policies has pointed out the direction for its technological upgrading. The limitations of traditional compressors in terms of energy consumption and emissions have gradually become prominent, and the market demand for compressors with low energy consumption and low noise is increasing. This has prompted enterprises to improve equipment energy efficiency by optimizing impeller design and improving sealing technology, thereby reducing energy consumption and environmental impact during operation. In addition, the improvement of industrial automation level has also provided support for the development of single-shaft centrifugal compressors. The integrated application of intelligent control systems enables the equipment to realize real-time monitoring and precise regulation of operating parameters, which not only improves the convenience of operation, but also can reduce downtime by predicting faults, further ensuring the smoothness of the production process.

Despite the significant application advantages of single-shaft centrifugal compressors, their development and application still face many challenges that need to be overcome. Insufficient adaptability to variable working conditions is a prominent problem. In industrial production, parameters such as gas flow and pressure often change due to process adjustments. However, the characteristic curve of single-shaft centrifugal compressors is relatively steep. When operating deviating from the design conditions, it is prone to risks such as a sharp drop in efficiency and surge. How to broaden its stable operation range through technical improvements has become the key to adapting to complex production scenarios. The balance between equipment reliability and maintenance costs cannot be ignored either. Core components of large compressors, such as impellers and bearings, are prone to wear and fatigue under long-term high-speed operation. Although the use of high-strength materials can improve the service life of components, it will significantly increase the manufacturing cost. If conventional materials are selected to control costs, it may lead to increased maintenance frequency and affect production continuity. In addition, the degree of autonomy of high-end technologies and core components needs to be improved. In some scenarios of high-parameter and special medium compression, some key components still rely on imports, which not only increases the cost of equipment procurement and maintenance, but also may be affected by supply chain fluctuations, restricting their independent application and development in the high-end industrial field.

This report is a detailed and comprehensive analysis for global Single-shaft Centrifugal Compressor market. Both quantitative and qualitative analyses are presented by

manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Single-shaft Centrifugal Compressor market size and forecasts, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2021-2032

Global Single-shaft Centrifugal Compressor market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2021-2032

Global Single-shaft Centrifugal Compressor market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2021-2032

Global Single-shaft Centrifugal Compressor market shares of main players, shipments in revenue (\$ Million), sales quantity (Units), and ASP (K US\$/Unit), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for Single-shaft Centrifugal Compressor

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

This report profiles key players in the global Single-shaft Centrifugal Compressor market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Siemens Energy, Solar Turbines, MHI Compressor (MCO), Everllence (MAN Energy Solutions), HMS Group, Atlas

Copco, Baker Hughes, Shaanxi Blower (Group) Co., Ltd., Chart Industries (Howden Turbo), Shengu Group, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Single-shaft Centrifugal Compressor market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Horizontal Segmentation

Vertical Segmentation

Single-Stage Pipeline

Other

Market segment by Structure

Single-Axis Single-Stage

Single-Axis Multi-Stage

Market segment by Power

1?5 MW

5?15 MW

Others

Market segment by Application

Oil and Gas Gathering and Pipeline Transportation

LNG

Oil Refining

Petrochemicals

Fertilizers and Syngas

Hydrogen and CCUS

Industrial Gases and Others

Major players covered

Siemens Energy

Solar Turbines

MHI Compressor (MCO)

Everllence (MAN Energy Solutions)

HMS Group

Atlas Copco

Baker Hughes

Shaanxi Blower (Group) Co., Ltd.

Chart Industries (Howden Turbo)

Shengu Group

Kobelco

Ebara Elliott Energy (EEE)

GPE Turbo

Kawasaki Heavy Industries (KHI)

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Single-shaft Centrifugal Compressor product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Single-shaft Centrifugal Compressor, with price, sales quantity, revenue, and global market share of Single-shaft Centrifugal Compressor from 2021 to 2026.

Chapter 3, the Single-shaft Centrifugal Compressor competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Single-shaft Centrifugal Compressor breakdown data are shown at the

regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Single-shaft Centrifugal Compressor market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Single-shaft Centrifugal Compressor.

Chapter 14 and 15, to describe Single-shaft Centrifugal Compressor sales channel, distributors, customers, research findings and conclusion.

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