

HSR turbocompressor



Main applications

The HSR turbocompressor is highly suitable for providing oil-free air in the following industries:

- pulp, paper and board
- food and beverage
- chemical processing
- pharmaceutical and medical
- electronics manufacturing
- textile manufacturing

Using a high-speed, premium-efficiency motor and digitally controlled magnetic bearings, the HSR range of turbocompressors offers truly outstanding wire-to-air efficiency. In other words, it gives you the best total output for your energy input.

Turbocompressors from Sulzer have a solid reputation for quality and reliability. Our technology has been tried and tested over two decades of operation.

The highly efficient HSR means substantial savings: lower energy consumption, reduced operating costs, lower maintenance costs and less downtime caused by breakdowns. By choosing the HSR you will also contribute to a healthier working environment and reduce your plant's carbon footprint.



Features and benefits

- 1 Totally oil free**
 - To satisfy the toughest quality requirements on air quality and to eliminate the risk of end product contamination, the HSR contains no oil whatsoever.
- 2 High overall efficiency**
 - An excellent combination of superior, well-proven designs ensures energy savings and lower lifecycle cost.
- 3 Magnetic bearings**
 - No other solution offers the same efficiency, stability or component life.
 - The condition of the machine is monitored continuously.
- 4 Compact package**
 - The turbocompressor has small dimensions.
 - The design allows new compressor rooms to be optimally designed and enables the easy replacement of older, inefficient equipment.
- 5 Superior capacity control**
 - Speed control and the optional diffuser control offer the widest operating range at a good efficiency.
 - In the case of intermittent lower air demand, the HSR employs precision blow-off valves achieving 0-100% flow regulation.
- 6 Heat recovery built in**
 - The advanced liquid cooling system enables easy energy recovery.
 - Up to 93% of the compressor power consumption can be recaptured for process, heating or other needs.
- 7 Lowest cost of maintenance**
 - No gears, no oil and no mechanical bearings means that all maintenance is clean, efficient and predictable. Hence it will also cost less than for any comparable equipment.

High-speed technology

Turbocompressors from Sulzer have a solid reputation for quality and reliability. The unique high-speed technology, which has been tried and tested over two decades of operation, can be found today in thousands of turbocompressors worldwide.

Minimum number of moving parts

Conventional compressors may contain hundreds of moving parts. In turbocompressors built with high-speed technology, the only moving components are the shafts that function as the motor's rotors, upon which the impellers are directly mounted.

No contact, no wear

The magnetic bearing technology provides a level of control that ensures optimal mechanical clearances. Even during starts and stops, there is never any contact between the rotating and static parts. When HSR turbocompressors are powered up, the rotors are lifted by the balanced magnetic forces. Only when the rotors are fully aloft is the variable-frequency current fed to the motor windings, which causes the rotors to turn. This means there is no mechanical wear. The result is a compressor with no performance degradation and minimal need for scheduled maintenance.

Real-time monitoring built in

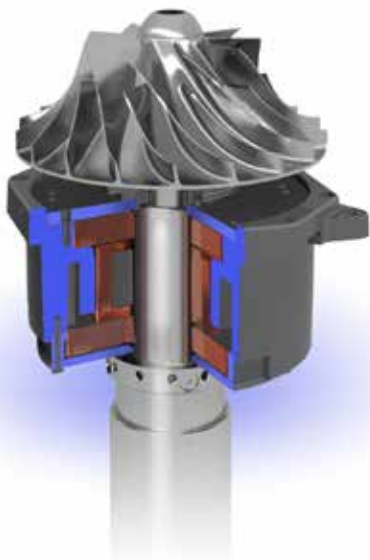
The use of magnetic bearings makes it possible to know what is happening in the turbocompressor at all times, and this means maximum protection against unscheduled stoppages. If any undue rotor movement is identified, the bearing controller will compensate for it within microseconds – and issue a warning if the problem is severe. If all else fails, the controller will trigger a fault and stop the turbocompressor, thus protecting the machine. This is a unique feature of active magnetic bearing technology.

Vibration-free

Because the position of the rotor is monitored and adjusted thousands of times per second, the turbocompressor does not vibrate during operation. If any slight mechanical imbalance exists after the thorough balancing of the rotor, the controller compensates for it by adjusting the rotational patterns at the rotor ends. This minimizes uncomfortable machine noise from the turbocompressor or from any attached or adjacent equipment.

No oil whatsoever

Our high-speed technology is 100% oil-free. The magnetic bearings work without physical contact, and there is no need for lubricating oil, oil pumps or oil cooling. This means there are no oil levels to monitor, and no oil leakage to threaten product safety or the working environment. As the condensate contains no traces of oil, it is easily disposed of.



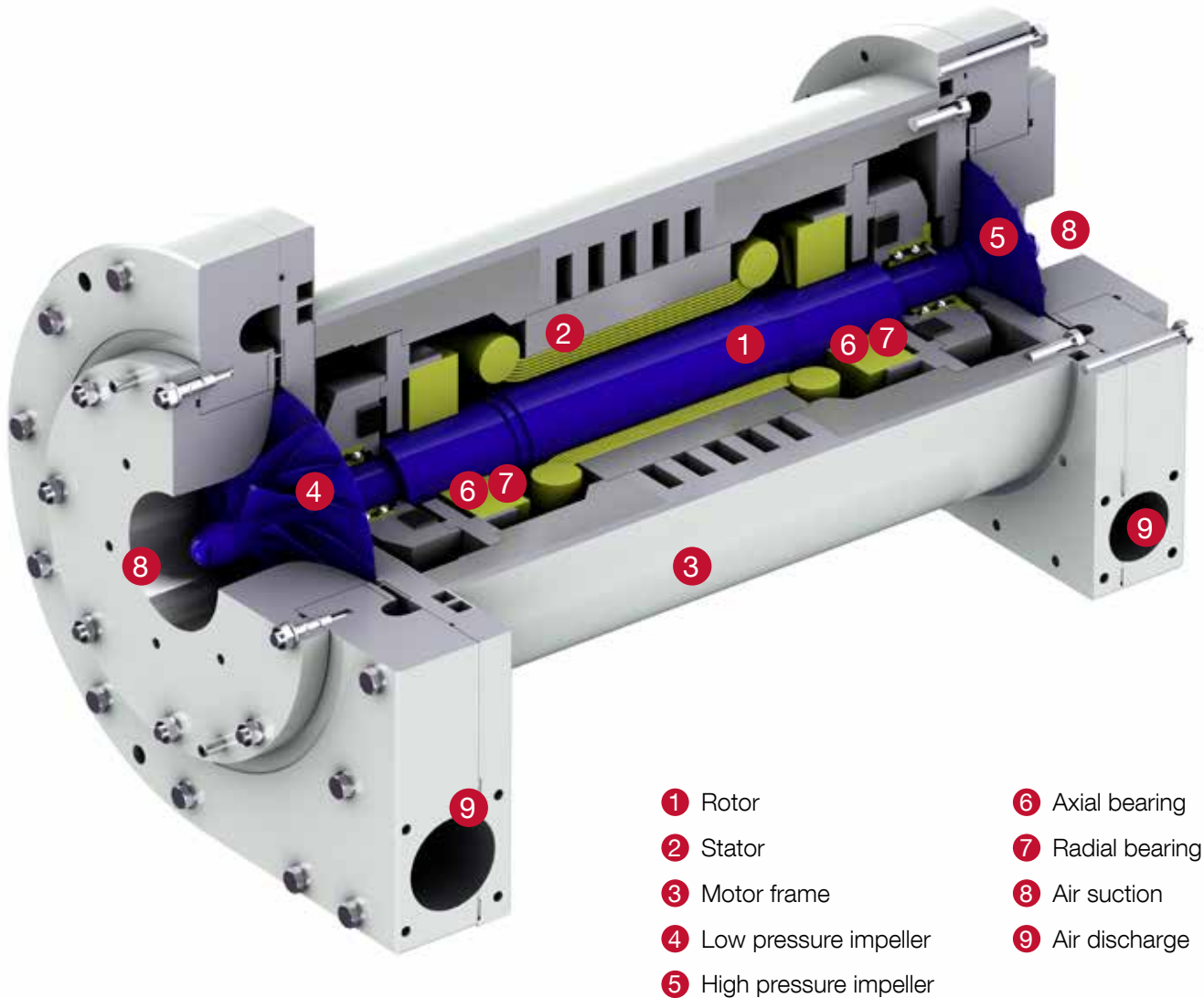
Magnetic bearings eliminate physical contact and thereby all mechanical wear.

Motor efficiency through design

The turbocompressor's synchronous motor is of a permanent magnet type and is specifically designed for the turbocompressor. Only premium materials are used in its construction. The result is an electrical efficiency that no combination of off-the-shelf parts can match.

From the originator of high-speed technology

The first Sulzer high-speed turbocompressors were delivered in 1996. These were the very first direct-driven high-speed turbocompressors for low-pressure applications. All of the experience from their many years of operation has been used in creating Sulzer's current state-of-the-art compressor products.



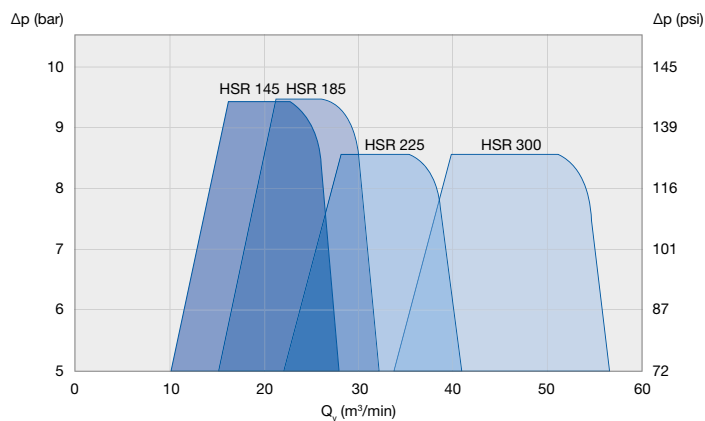
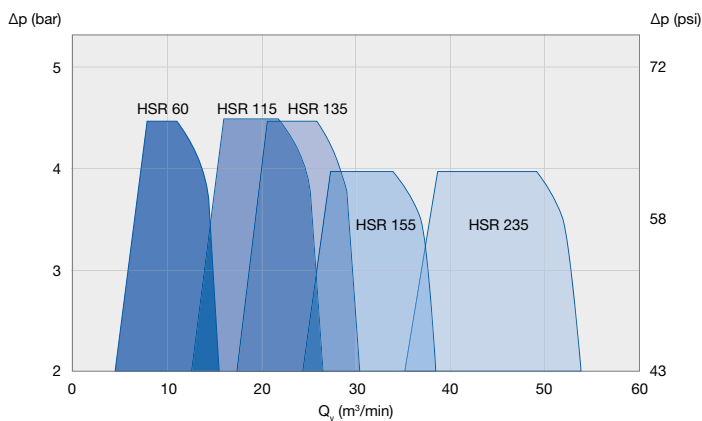
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Operating data

	2-stage version	3-stage version
Pressure	2 - 5 bar (g)	5 - 9 bar (g)
Volume flow	max. 52 m ³ /min	max. 56 m ³ /min
Input power	60 - 235 kW	145 - 300 kW
Input voltage	380 - 500 V	380 - 500 V
Input frequency	50 - 60 Hz	50 - 60 Hz
Protection class	IP33D	IP33D
Max. noise level	80 dB	80 dB

Performance ranges



Materials

Part	Material
Impeller	Titanium
Volute and backplate	Aluminum alloy
Motor	Aluminum alloy
Enclosure	Plated steel
Shaft	Steel

We do what we say



Operational excellence

We continuously strive to
be faster and better.



Customer partnership

Together, we win.

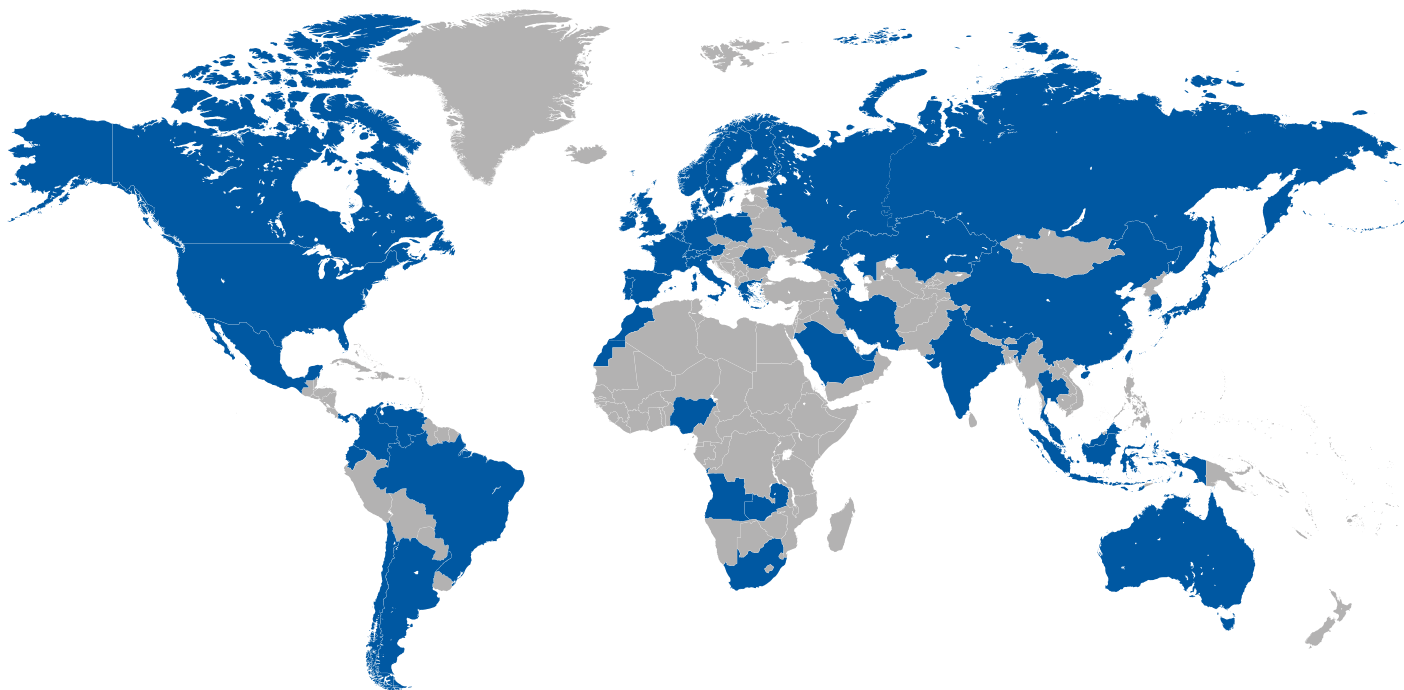


Committed people

We build on the strengths
and diversity of our people.

A global specialist at your doorstep

Sulzer serves clients worldwide through a network of over 150 production and service sites and has a strong footprint in emerging markets.





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