

# SULZER

Compressors and aeration

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## HST™ 20 turbocompressor



# Main industries and applications

The HST 20 turbocompressor is highly suitable for the following fields of application:

- Aeration of water, wastewater or other liquids
- Floatation by air
- Supplying air to combustion processes
- Desulfurization

Using a premium-efficiency motor and digitally controlled magnetic bearings, the HST 20 turbocompressor 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, which is 100% air-cooled, has been tried and tested in two decades of operation.

The highly efficient HST 20 means substantial savings: lower energy consumption, reduced operating costs, lower maintenance costs and less downtime caused by breakdowns. By choosing the HST 20 you will also contribute to a healthier environment and reduce your plant's carbon footprint.



# Features and benefits

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## High overall efficiency

- An excellent combination of superior, well-proven designs ensures energy savings and lower lifecycle cost

## Superior low-noise operation

- Silent operation is integrated into the design early on
- Quiet running means a better working environment for employees and less noise pollution in the plant vicinity

## Magnetic bearings

- No other solution offers the same efficiency, stability or component life
- The condition of the machine is monitored continuously

## Integrated package

- The turbocompressor is designed for ease of installation and operation, with an inlet silencer, an outlet silencer and a silenced blow-off valve incorporated into the cabinet
- Complexity is reduced, along with the cost of installation

## State-of-the-art control and monitoring

- The new and fresh design of the control unit ensures ease of operation and good feedback on performance
- Smart connection to upper-level automation is possible, as well as remote monitoring

## Safety built-in and pre-approved

- The turbocompressor has been designed for total conformity with North-American standards
- The complete product has been tested by the UL and by CSA and both have awarded an official listing

## Suitable outer dimensions

- The turbocompressor fits well into most existing compressor rooms, making it easy to replace older, inefficient solutions
- The compact and integrated design reduces costs when planning new installations



# High-speed technology

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

## Only one moving part

Conventional compressors may contain hundreds of moving parts. Turbocompressors built with Sulzer high-speed technology have just one moving part: a single shaft that functions as the motor's rotor, upon which the impeller and cooling fan are mounted. This leaves no need for inlet or diffuser vanes with complex mechanics.

## No contact, no wear

The magnetic bearings used in our technology provide control that ensures optimal mechanical clearances. Even during starts and stops, there is never any contact between the rotating and static parts.

When the turbocompressor is powered up, the rotor is lifted by the balanced magnetic forces. Only when the rotor is fully aloft is the variable-frequency current fed to the motor windings, which causes the rotor to turn. This means there is no mechanical wear.

The result is a compressor element with no performance deterioration over time and no 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.

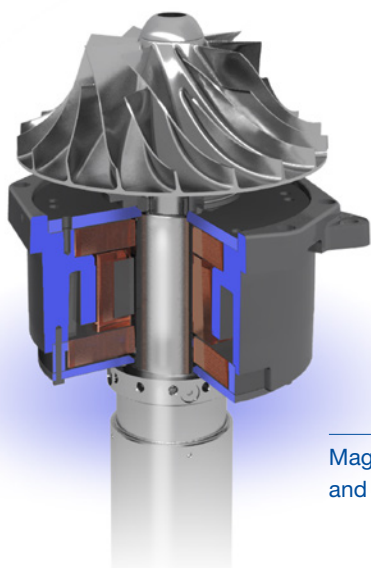
## Vibration-free

Because the rotor's position is monitored and adjusted thousands of times per second, the turbocompressor does not vibrate during use. 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 liquids whatsoever

Our high-speed technology is 100% air-cooled. With its appropriately designed air cooling system, there is no liquid that can leak or go bad. Nor is there any need for coolant pumps or reservoirs.

Because the magnetic bearings also work without physical contact, there is no need for lubricating oil, oil pumps or oil cooling either. This means there are no oil levels to monitor, and no oil leakage to threaten operator safety or the environment. The oil-free design fully prevents any contamination of the process air or compressor room.



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Magnetic bearings eliminate physical contact and thereby all mechanical wear.

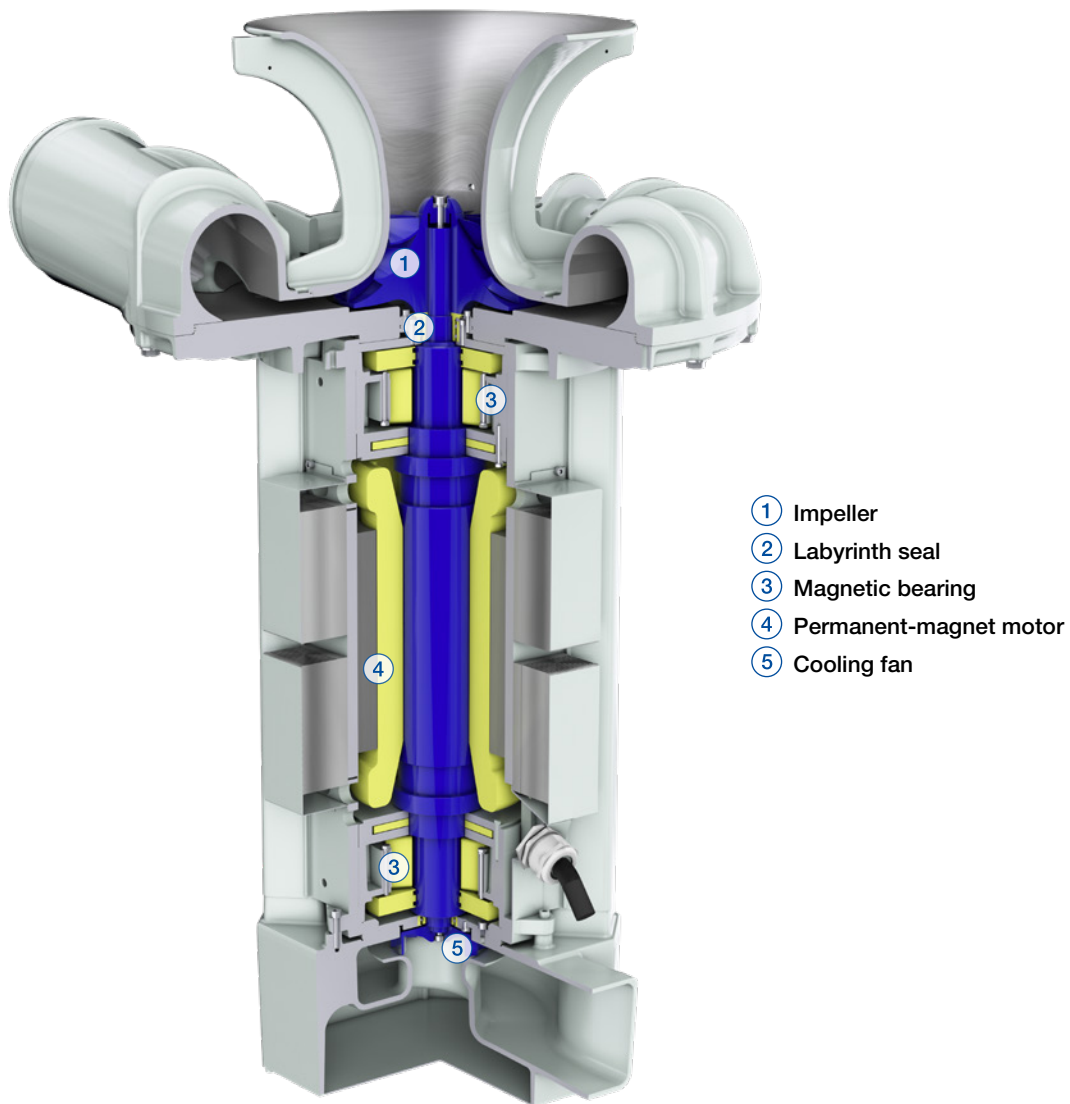
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### Motor efficiency through design

The turbocompressor's synchronous motor is a permanent-magnet type and is specifically designed for it. 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 HST 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 HST products.



# Specifications

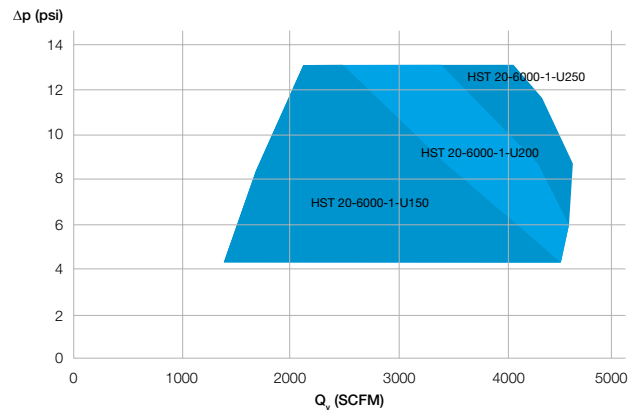
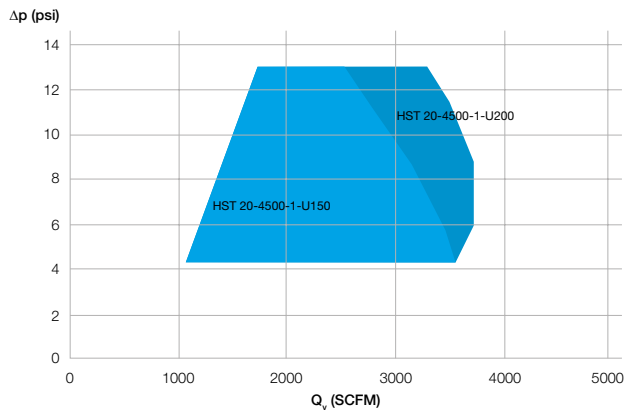
## Materials

Part	Material
Impeller	High-strength aluminum alloy
Volute and backplate	Aluminum alloy
Motor frame	Aluminum alloy
Enclosure	Plated steel with structural steel base

## Operating data

	HST 20-4500	HST 20-6000
Airflow range, SCFM	1'100 - 3'700	1'300 - 4'700
Pressure rise, PSIG	4.4 - 13.1	4.4 - 13.1
Input power, hp	150 - 200	150 - 250
Power supply, V	480 or 580	480 or 580
Input frequency, Hz	50 - 60	50 - 60
Protection class	NEMA 12	NEMA 12
Thermal protection	PT 100	PT 100
Maximum noise level, dB	61 - 62	60 - 62
Permitted chemical vapors	IEC 60721-3-3 class 3C3	IEC 60721-3-3 class 3C3
Approvals	UL, CSA	UL, CSA

## Performance range



# Service when and where you need it

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Since water and wastewater plants rely on continuously operating equipment, Sulzer offers all the services and technical support you need to maintain your performance.

We have an extensive network of workshops that places us close to you for rapid response. Staffed by highly trained engineers and closely partnered with our manufacturing centers, our workshops are ready to help you whenever and wherever you need it.

## On-site services

- Supervision of HST turbocompressor installation
- Start-up and commissioning
- Site service and periodical maintenance
- On-site testing and commissioning of master control unit (MCU)

## Specialist solutions for asset management

- Optimization of aeration systems
- Flexible maintenance packages providing optimal lifecycle cost
- Control, automation and monitoring

## Upgrades of existing equipment

We are committed to keeping your products in the best possible working condition. As most key components are designed and manufactured by us, we provide excellent parts and support availability.

For externally sourced parts that are no longer obtainable we try to offer a suitable replacement.

## Quick replacement and rental compressors

Downtime puts your operation at risk. Should any problem occur, we offer rental machines ready to go to service immediately or quick shipment of replacement machines. For more information, contact your local Sulzer office.



**The Sulzer Flow division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.**

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The Flow division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments.

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