

# HST™ 40 Turbocompressor



## Main Applications

The HST 40 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 40 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 40 means substantial savings: lower energy consumption, reduced operating costs, lower maintenance costs and less downtime caused by breakdowns. By choosing the HST 40 you will also contribute to a healthier environment and reduce your plant's carbon footprint.



## Features and Benefits



### 1 High overall efficiency

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

### 2 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

### 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 a low height and flexible connection options
- The design allows new compressor rooms to be optimally designed and enables the easy replacement of older, inefficient equipment

### 5 Fully air-cooled design

- The turbocompressor is a complete package with low losses and an optimized cooling arrangement
- With no liquid inside the machine, there is nothing to leak out onto the floor

# 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.*

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## Only one moving part

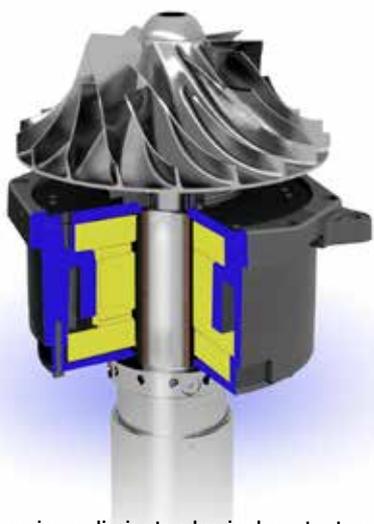
Conventional compressors may contain hundreds of moving parts. Turbocompressors built with Sulzer high-speed technology have just one moving part: a single shaft that functions as the motor's rotor, upon which the impeller and cooling fan are mounted. This leaves no need for inlet or diffuser vanes with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



**Magnetic bearings eliminate physical contact and thereby all mechanical wear.**

## 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.

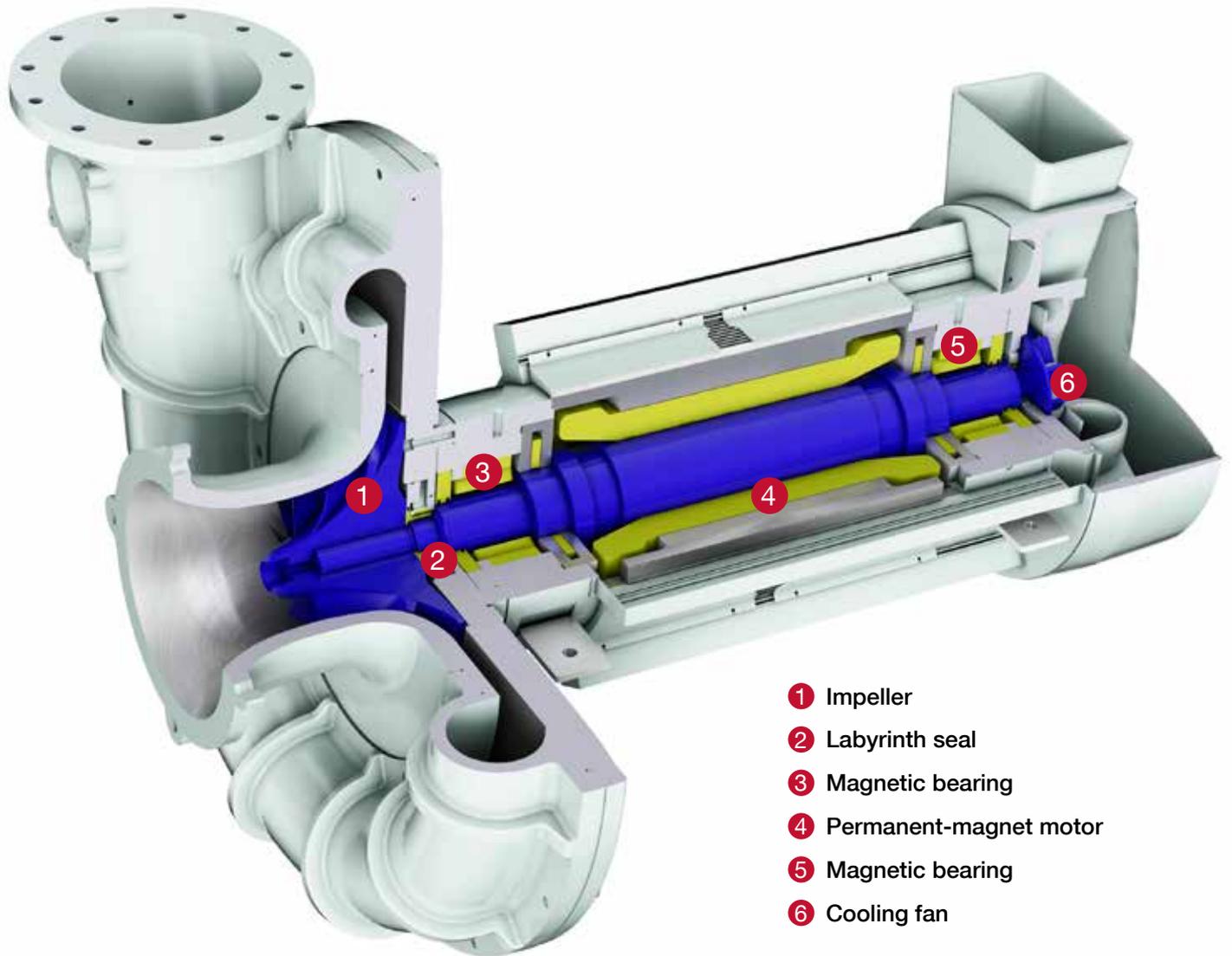
## Vibration-free

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.



- ① Impeller
- ② Labyrinth seal
- ③ Magnetic bearing
- ④ Permanent-magnet motor
- ⑤ Magnetic bearing
- ⑥ Cooling fan

### 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.

# HST™ 40 Turbocompressor



Oil and gas



Hydrocarbon processing



Power generation



Pulp and paper



General industry



Chemical process industry

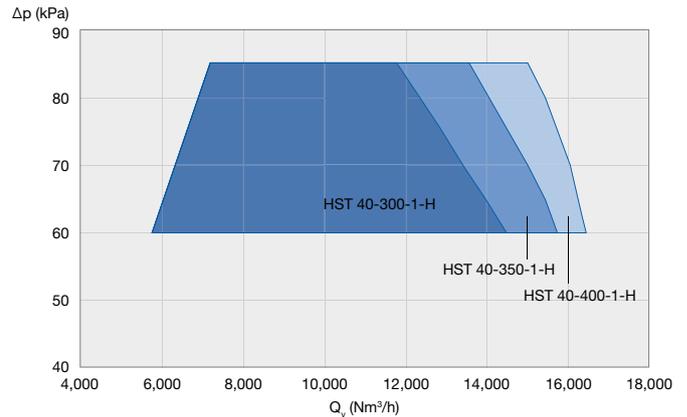
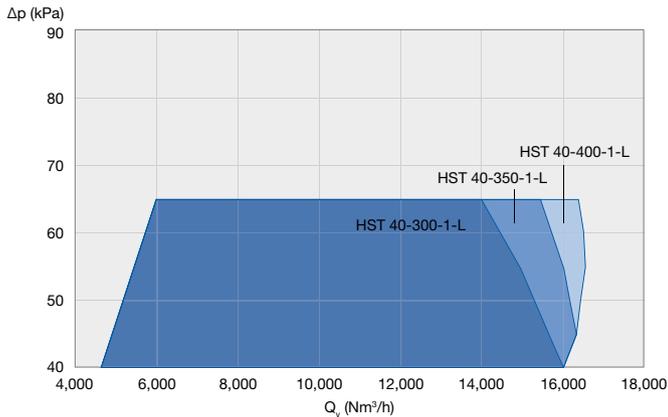


Water and wastewater

## Operating data

Airflow range	4100-16000 Nm <sup>3</sup> /h
Pressure rise	30-85 kPa
Input power	300-400 kW
Max. current (400 V)	470-610 A
Power supply	380-690 V
Input frequency	50-60 Hz
Protection class	IP33D
Thermal protection	PT100
Max. noise level	70 dB

## Performance ranges



## Materials

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

# We Do What We Say

## Customer partnership

- We are **reliable partners**
- We provide a **high level of service**
- We **make our customers more competitive**



## Committed people

- We drive **accountability**
- We are **open and transparent**
- We are **team players**



## Operational excellence

- We **focus on results**
- We take **initiative** and work within **established processes**
- We **act safely**



# 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.



● Sulzer headquarters,  
Winterthur, Switzerland



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