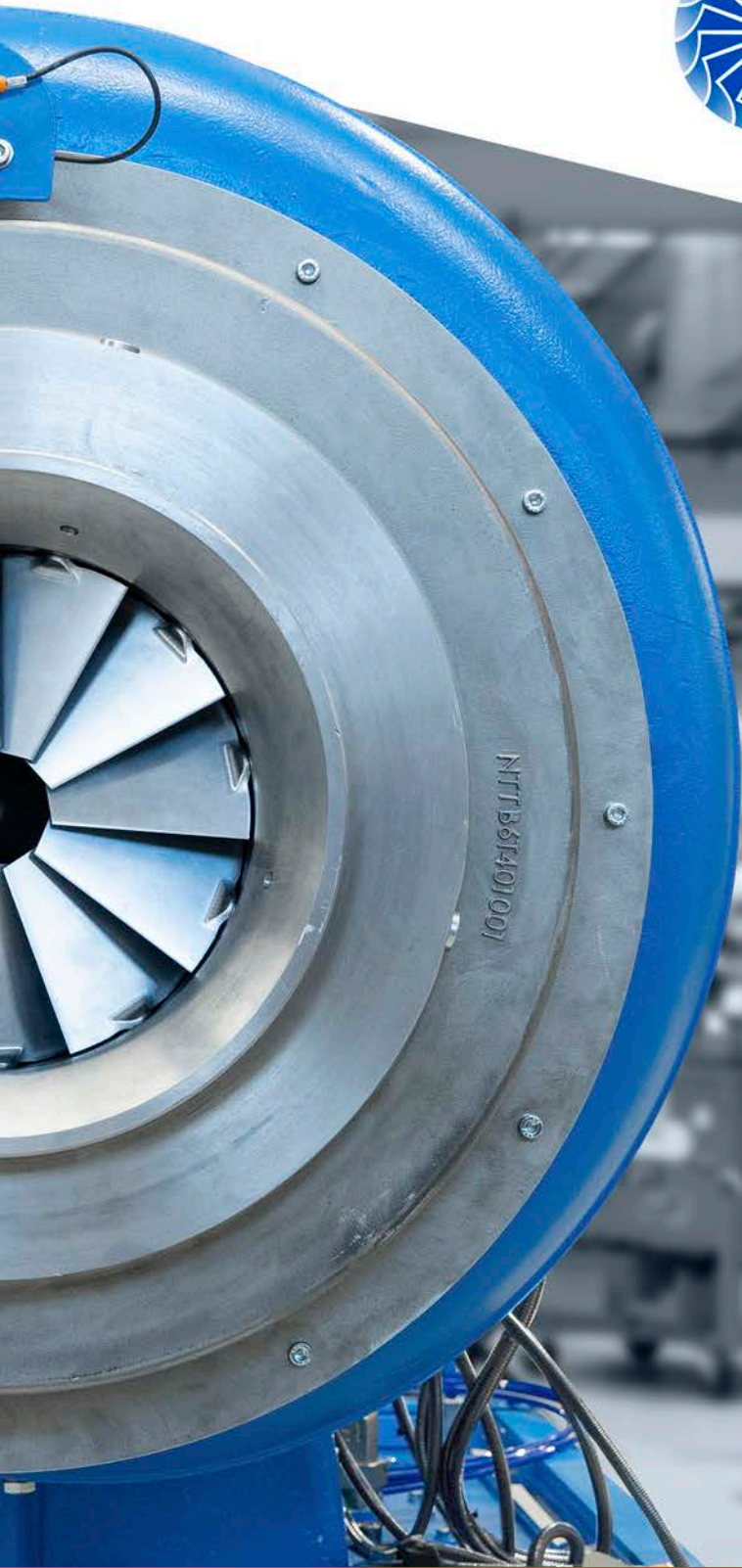




NexiTurbo
TECHNOLOGIES



**The next
evolution**
in single stage technology

The next evolution in single stage technology

Next Turbo was founded by a group of industry veterans with the belief that integrally geared single stage, centrifugal blowers and compressors were ready for reinvention.

Advancements in material science, bearing technology and design simulations have opened the possibility to design a new generation of turbomachines. This evolved design addresses the current disadvantages of VFD-driven high-speed turbos, increases reliability and reduces complexity and costs – especially in heavy duty and critical process industries.

Next Turbo's production is centered in Europe, with manufacturing largely located in Northern Italy (City of Varese, near Milan) utilizing nearby European suppliers.

Next Turbo designs, machines, assembles and tests advanced turbo-blowers /compressors in-house and utilizes a network of regional packaging locations throughout the world.

This network also provides the backbone for a large and ever-expanding local maintenance and service network.

Next Turbo is proud of its strict quality control throughout the production process which accumulates in extensive, full-load performance test complying with ISO5389 (or ASME PTC-10/13) of each compressor/ blower before it leaves our workshop.

The Next Turbo team is looking forward to implementing our technology for your blower / compressor solution.



The innovative GTB or reinvented GTH series



The reinvented turbo blower/compressor

The traditional single stage turbomachine features hydrodynamic bearings. Next Turbo utilizes tilting pad bearings in our GTH series. Characteristics are an lubrication oil tank located in the base frame and an auxiliary, pre-lubrication electrical oil pump. It allows for contact free proximity vibration sensors mounted on the gearbox.

This high duty design is suitable for large scale air flows & pressures.

The innovative GTB series

The GTB series features a compact design with a significantly smaller lubrication oil reservoir inside the gearbox, integrated oil distribution system and hydrodynamically-housed, hybrid ceramic contact bearings. This bearing technology eliminates the pre-lubrication electric oil pump and reduces the required quantity of lubrication oil. The integrated, simple oil system avoids external oil piping, appreciably increases reliability.

The GTB series is made possible by recent developments in bearings materials as well as innovative hydrodynamical bearing housing, isolating micro-vibrations by a small oil film surrounding the bearing housing.

The GTB series achieves unmatched low energy consumptions. This series is currently available for machines up to 800 kW drive power and we are working to expand this application range.

Advantages of GTB series

Currently for up to 800 kW drive power

- Significant less lubrication oil during operation
- Requires no pre-lubrication – runs with mechanical oil pump only - less complex oil system
- Integrated oil system – for increased reliability
- Hydrodynamically housed contact bearings, resulting in much reduced micro-vibrations and longer lifetime (100,000 hrs acc. ABMA L-10)
- Unparalleled low energy consumption due to lesser mechanical losses and reduced auxiliary consumers
- Compact build

Image on following page

Top image shows a GTB-T30 with 355 kW drive power, separate air cooler.

Bottom image shows a GTH-T50 with electric IGV and VDV actuators as well as water cooling. Installed X, Y proximity probes on radial and thrust bearings and separated Junction boxes.



A wide series of products

Our portfolio



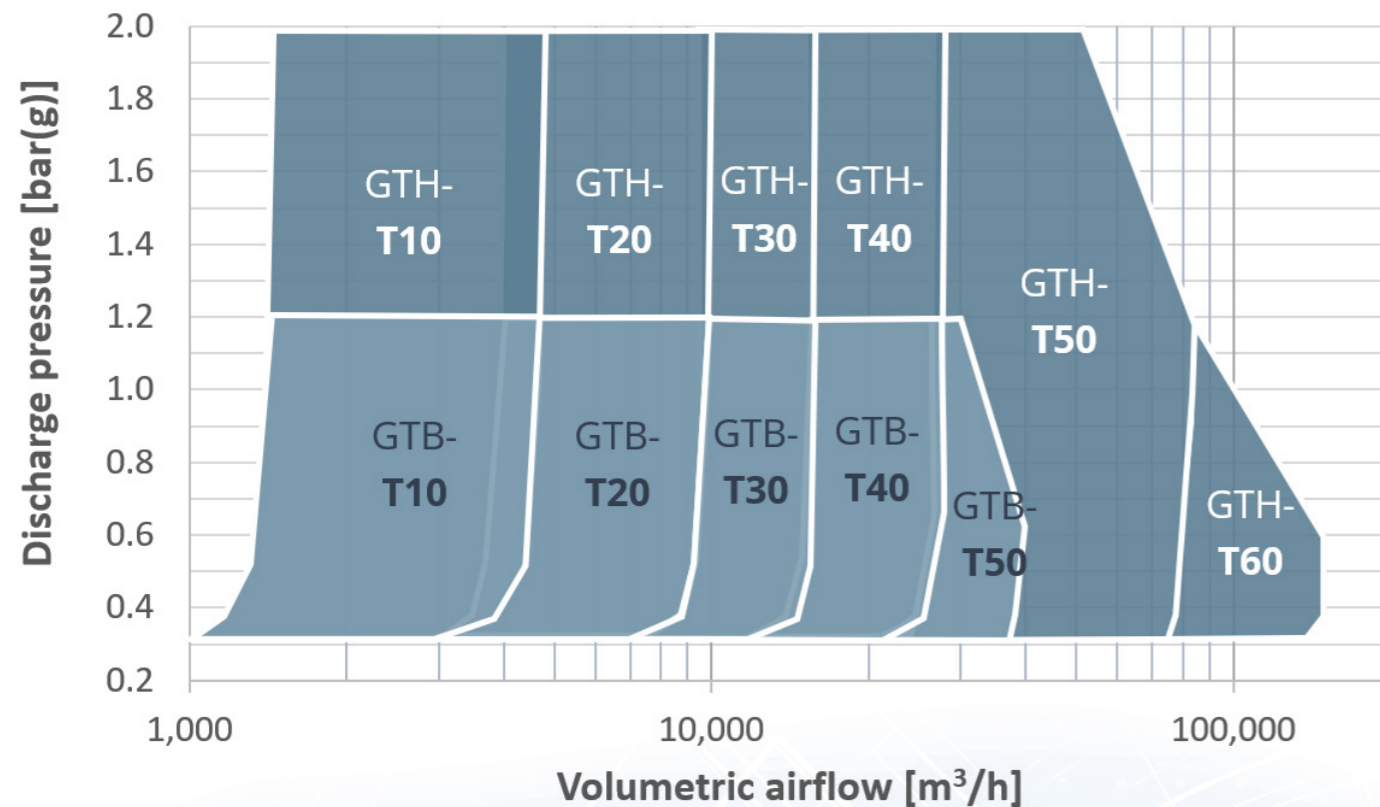
Predesigned frame sizes and optimized impeller design

Next Turbo selects your compressor from a wide range of predesigned frame sizes combined with project-specific gear selection and impeller designs to guarantee the best fit with your performance requirements.

Compressor solutions are chosen from our GTB and GTH series, as well as 'high-pressure' and 'high-flow' series.

All of our frame sizes feature vertically-split casings and overhung impeller design. And can be combined with the optimal regulation system to match your process.

Product naming explained	
<i>Example</i>	
GTH-T20 XY	
GT	Geared Turbocompressor
B	'B' for hybrid ceramic bearing
	'H' for hydrodynamic bearing
T20	Frame size
XY	Regulation system - see next page



Optimal Regulation type

Variable Diffuser Vane (VDV) regulation

X-configuration

The VDV regulation system offers wide airflow regulation, from <40 to 100%, for 'static pressure' applications, common for aeration and oxidation applications. The performance curves are shifted along the airflow axis by changing the VDV configuration (angle) and extending the available flow range envelope.

Inlet Guide Vane (IGV) regulation

Y-configuration

In the process industry, the required gas flow often follows the system pressure. In these cases, the requirement for 'pressure constant' airflow regulation is limited.

The regulation system of choice is an Inlet Guide Vane (IGV) regulation. The advantage is a simplified mechanical system, located pre-compression.

Two-point regulation (VDV & IGV or VFD)

XY-configuration

If the process requirements benefit from the VDV regulation above and the process medium is atmospheric air, a two point control with inlet guide vanes is recommended. The VDV system handles the wide airflow regulation, while the IGV system keeps the compressor in the best efficiency point with fluctuating suction pressures and temperatures.

XZ-configuration

In cases where the local power grid requires a Variable Frequency Drive (VFD) supported motor start, the IGV functionality can be replaced with small speed adjustments from a VFD. It is important that the VFD is not used for capacity regulation by simple speed adjustment.

The linear actuators for the variable IGV or VDV control are electrically-operated with limit switches and visual scale.



The blower/ compressor package that fits your plant



MODULAR ENCLOSURE PACKAGE Customizable Acoustic Enclosure

The GTB and GTH series can be packaged with our modular acoustic enclosure. The enclosure is shipped collapsed and erected around the machine onsite. The dimensions can be adapted to the specific requirements of the blower/compressor room and process piping. The discharge direction can be adjusted in 15-degree intervals.

A versatile solution for all blower room conditions.

COMPACT PLUG & PLAY

With Integral Softstarter, Pre-Wired And Tested

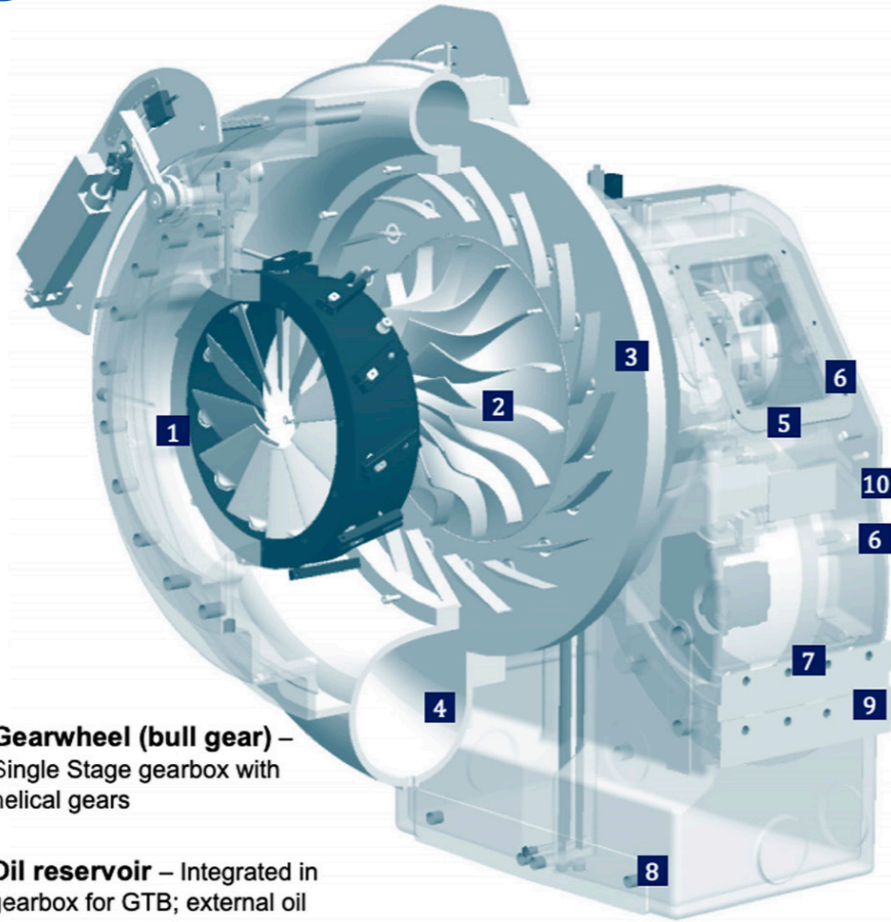
The compact GTB series is a fully-enclosed, pre-wired, and tested plug & play enclosure for immediate installation into the blower/compressor room. The package houses an integrated blow-off valve, local control panel (LCP) and the motor control center (MCC) with softstarter, direct start or VFD.

A simplified installation and commissioning effort. Reduces on-site works to a minimum.

- 1 BLOWER / COMPRESSOR** - Complete skid with drive motor, frame/ console, coupling and coupling guard
- 2 FLEXIBLE COMPENSATOR**
- 3 BLOW-OFF VALVE/ -SILENCER** Integrated into compact enclosure; supplied loose for mounting on pipe for modular enclosure (not shown)
- 4 CONICAL DISCHARGE DIFFUSER** with integrated discharge silencer
- 5 COOLING SYSTEM** air cooling inside or on top of enclosure; water cooling optional
- 6 INLET FILTER** - 2-stage inlet filter with pocket filters, Filtration: 90-98%; Fire Class F1, microbiologically inactive
- 7 INLET SILENCER** - labyrinth type silencer, fully integrated for compact package
- 8 MACHINE MOUNTS** - vibration dampening machine mounts
- 9 MOTOR CONTROL CENTER** - Fully integrated MCC within the compact enclosure; with DOL, Softstart or VFD starter
- 10 LOCAL CONTROL CENTER (LCP)** PLC based local control unit; integrated within compact enclosure; supplied as standalone panel with modular enclosure



Redesigned Efficiency and highest Reliability



1 Inlet Guide Vanes (IGV) –

Variable inlet guide vane system which pre-rotates the airflow for maximum efficiency

2 Impeller– Milled from a solid billet of high strength aluminum alloy; open type, with radial backward leaning blades

3 Variable Diffuser Vanes (VDV) Discharge diffuser system for wide airflow regulation

4 Compressor volute – Aerodynamic design, cast from high strength nodular iron GJS 400

5 Pinion shaft – high speed compressor drive shaft

6 Bearings– ceramic anti-friction ball type or hydrodynamic, tilting pad type bearing

7 Gearwheel (bull gear) – Single Stage gearbox with helical gears

8 Oil reservoir – Integrated in gearbox for GTB; external oil tank in base for GTH model

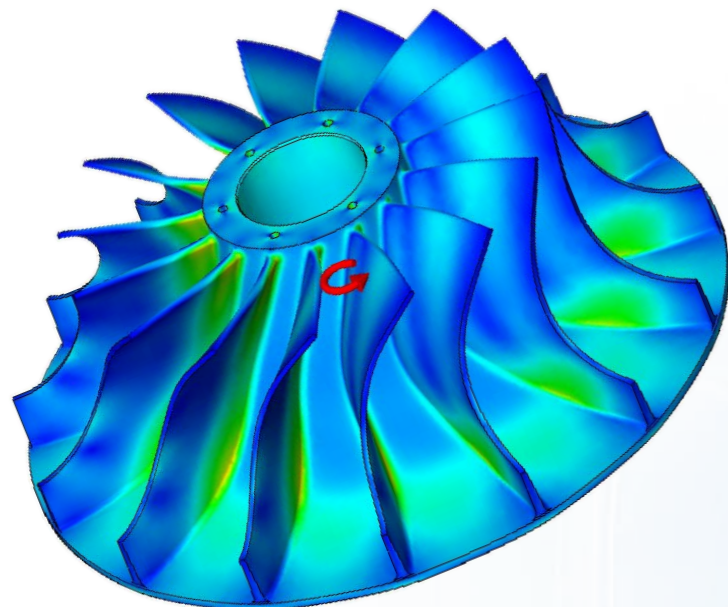
9 Mechanical oil pump– for forced lubrication driven by the bull gear of gearbox

10 Main drive motor– flange (B5) or foot (B3) mounted motor connected via flexible or spacer type coupling to the input drive shaft

A PROJECT SPECIFIC IMPELLER DESIGN

Each impeller is designed in height, radius and blade bending geometry according to each project's requirements of flow, pressure and suction conditions for maximum efficiency.

Milled from a solid forged billet of high strength aluminum alloy (DIN3.1924 AlCu2MgNi). The impeller is of open type, with radial backward leaning blades; designed with the latest CFD software and years of experience. Impellers also available with soft-anodized and alternative materials.



The blower/ compressor package
that fits your plant



Our commitment to **uncompromising quality**

Full load Performance testing acc. ISO5389, ASME PTC-10 or PTC-13

A full load performance test ensures that we hold our promise on specified power figures.

Our modern test center features

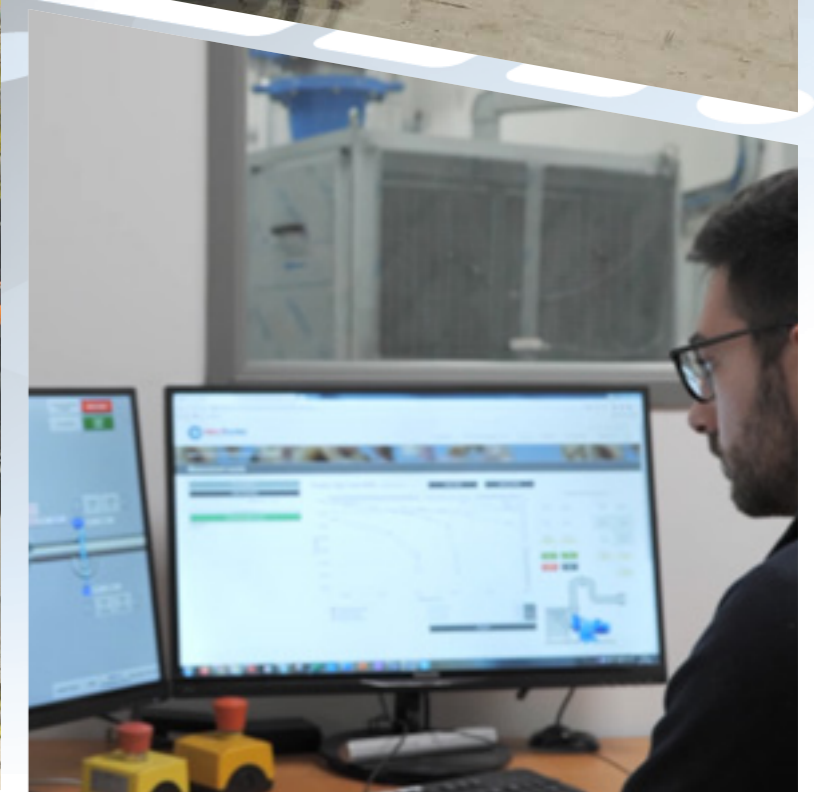
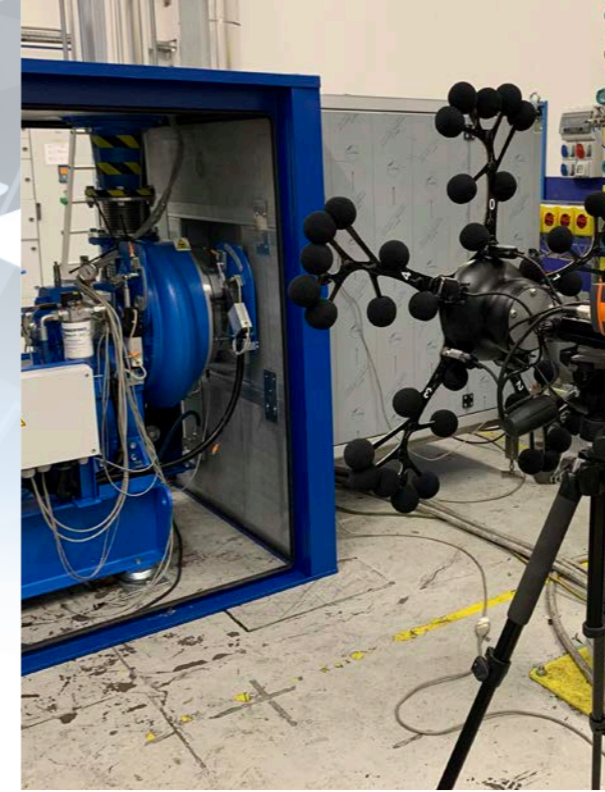
- Test bed type: open loop with atmospheric ambient air
- Regularly certified instrumentation acc. the requirements of ISO5389 and ASME PTC-10
- Transformer of 2 MW capacity; step down to 690 V for testing in low voltage
- Step-up transformer to 3, 6, 10 kV with +/-10% voltage adjustment
- Variable frequency drive (VFD) also for 60 Hz testing
- The full load test can be performed with job or test motor

Functional, mechanical run and sound-test as standard quality plan

Each compressor is mechanically and functionally tested before delivery. A sound test ensures project specific noise requirements.

Project specific Inspection and Test plan

We offer a wide range of optional quality inspections and test procedures, from material certificates to hydrostatic and dye penetration test of volute and impeller.



Your engineering partner

Why Next Turbo is your trusted partner for wastewater aeration!

Next Turbo offers a dedicated blower product line focused on the unique challenges at municipal and industrial water and wastewater treatment plants.

Our robust, efficient and highly versatile blower products offer exceptional airflow regulation range and multiple air distribution solutions.

Suitable for all treatment processes (e.g. conventional aeration, MBR, MBBR, SBR, intermittent aeration) with no mechanical or electrical constraints. Guaranteed airflow range 40 to 100%.

- Guaranteed pressure-constant airflow regulation **40-100%**
- **Exceptionally high efficiency** over wide operational range
- **Reliable** and easy to control operation
- Full set of **engineering documentation** including 3D formats available
- **Plug & play** solutions availability for remote operated plants
- Read about our **easy maintenance philosophy** in next chapter
- Combination of different blower technologies and brands in **one automation solution**
- Small foot-print and **adaptable design** to existing blower room constraints

Reliability and safety

Next Turbo offers heavy duty blowers and compressors for the process industry

- > Wide range of material and painting system selection to suit the process gas and environmental challenges
- > Wide range of capacity regulation options to match process demands
- > Build in accordance with international standards (e.g. API 672, NEC, UL)
- > Versatile gas flow design to match your specific process requirements
- > Extensive Inspection and Test procedures available, ensuring high quality material and workmanship
- > Customized instrumentation and control systems available, also for hazardous environments
- > Expertise with extreme ambient (-40 °C to +60 °C, tropical, desert, arctic) and corrosive conditions
- > Ex (explosion) proof designs, satisfying international and national standards

Sulphur Recovery Units (SRU)

Chemical Reactor (e.g. Phthalic Anhydride - PA)

Flue Gas desulphurization (FGD)

Air Separation Units

Bacterial Mineral Extraction

General combustion processes

Industrial Waste Water treatment (refineries/ others)

Yeast and Pharmaceutical productions
Marine related applications

ATEX Directive 2014/34/EU

GOST R Ex-proof (RU)

HAZLOC standard (USA)



Automation solutions

Local control panel

The local control panel (LCP) features the main functions for sequenced compressor start and stop and integrated protection.

Other features:

- All compressor controls, alarms, trips and auxiliaries
- Diffuser capacity control (flow control) and Inlet Guide Vane (efficiency optimization)
- Connection to our master control system (MCS) or plant control system (SCADA or DCS)
- Power supply between 380 and 690Vac - 3-phase - 50 or 60Hz

Master control system (MCS)

The Next Turbo Master Control System (MCS) controls the blower's airflow with an automatized high efficiency airflow distribution using multiple blowers on the main header, that perfectly matches process air requirements and equalizes compressor duty hours. Our MCS is a stand-alone panel situated in the blower or electrical room. Communication with the central SCADA/ DCS plant system based on all common communication protocols and hardwired signals, ensuring a full integration of the compressors/ blowers.

The master control system with integrated dissolved oxygen (DO) or Ammonia control

The MCS-DO system offers full functionality of the MCS system, and additionally controls the aeration valves in the treatment basin based on the DO/ Ammonia set point and process values.

The DO transmitters and aeration control valves are connected to the MCS-DO panel (via hardwire or network). The MCS-DO PLC software, with multiple parallel algorithms, compares the DO process value to the set-point and adjusts the aeration valves accordingly.

In high fluctuating aeration situations, the system pressure in the header pipe is continually changing. The MCS-DO automatically calculates the lowest system pressure set point using MOV (Most Open Valve) philosophy. This function allows the system pressure to be kept at a minimum because the aeration valves will be operated in their most efficient operational ranges while reducing operating costs and eliminating "system hunting".



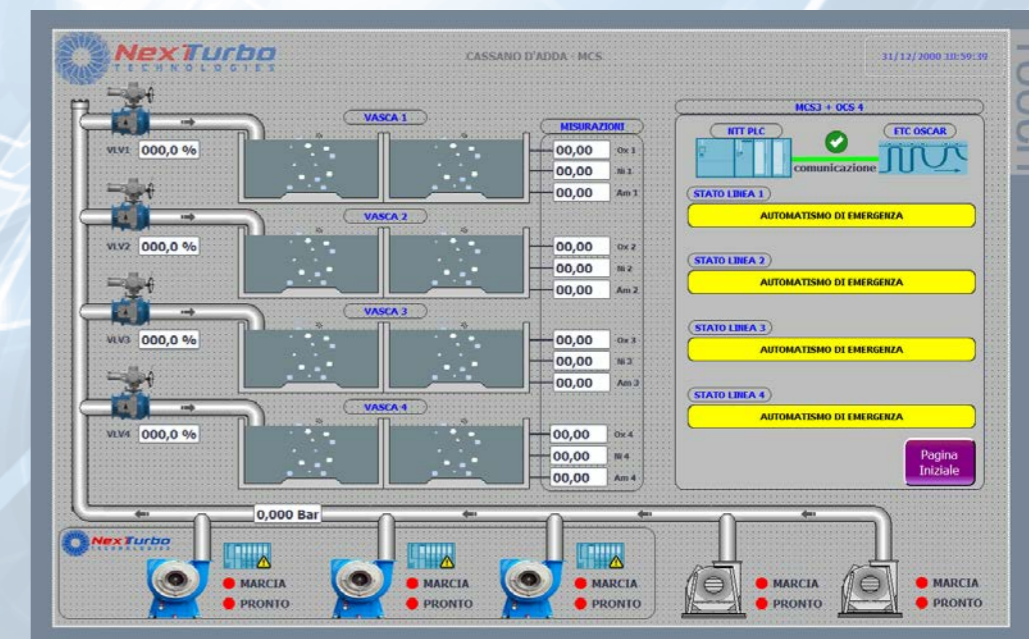
Let Next Turbo keep an eye on your equipment.

Next Turbo offers a remote troubleshooting service via an simple 3/4G connection, reducing expensive service trips and allowing remote commissioning/ initial start-up.

Take the next step and utilize Next Turbo's customer data portal. Operational data is collected, processed and analysed. Performance Optimization and condition-based maintenance operations are derived and displayed.



NexTurbo TECHNOLOGIES				PLANT NAME 20.0xxxx GTX-Txxxx	2/23/2021 1:43:07 PM
WORKING DATA					
0.000 bar	Outlet Air Pressure	Oil Temperature	150.0 °C		
0.0 °C	Inlet Air Temperature	Oil Pressure	0.0 bar		
0.0 °C	Outlet Air Temperature	Vibration	0.0 mm/s		
0.0 °C	Enclosure Temperature	HS Shaft Bearing Temp. "K"	0.0 °C		
0.0 mm/wc	Inlet Air Filter Delta Pressure	HS Shaft Bearing Temp. "M"	0.0 °C		
0 Amp	Motor Current	LS Shaft Bearing Temp. "NDE"	0.0 °C		
nan m3/h	Air Flow	LS Shaft Bearing Temp. "DE"	0.0 °C		
Decrease VDV		VDV local command	Increase VDV		
Partial Hour Counter		0 h	0 m		
Total Hour Counter		0 h			
RESET TRIP		Main Motor Data	PID Setting		



An ever expanding
local network of service centers



Pro-active and life-extending service

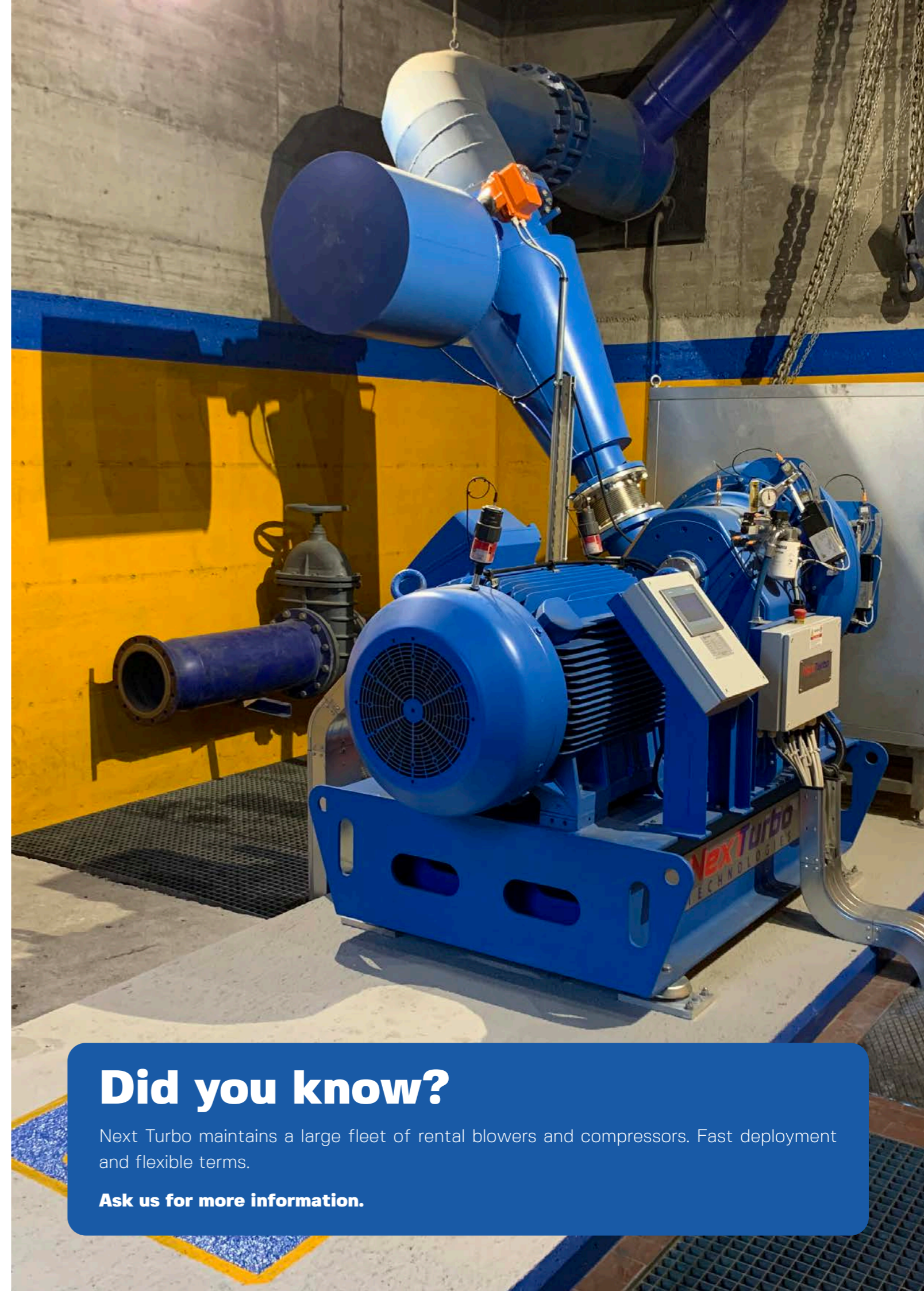
We empower your plant staff or a selected local service provider maintain your equipment

Our customers are pleased that our equipment is serviceable by their plant maintenance staff. Our machines are designed for exceptional long and productive equipment life.

Next Turbo units avoid surprise break-downs and “blackbox” designs. All components can be inspected and their remaining life determined.

We jointly develop an affordable maintenance plan with you, centered around what can be performed directly by regional, remote and plant staff.

-  Installation & Commissioning
-  Including remote commission
-  Original Spare Parts
-  Preventive Maintenance
-  Troubleshooting & Repairs
-  Specific Plant operator training programs available



Did you know?

Next Turbo maintains a large fleet of rental blowers and compressors. Fast deployment and flexible terms.

Ask us for more information.



Published and copyright © 2022 – Next Turbo Technologies S.p.A.
Registered Office in Carlo Robbioni 39 – 21100 Varese – Italy
Headquarters in Via San Francesco 62 – 21020 Inarzo (Varese) – Italy
More information available at <http://www.next-turbo.com>

All rights reserved. Trademarks mentioned in this document are the property of NTT S.p.A., its affiliates, or their respective owners. Subject to change without prior notice. The information in this document contains general description of the technical features, which may not apply in all cases. The required technical options should therefore be specified in the contract.