

INVENT iTURBO®-Blower

The most effective technology to reduce energy consumption for aeration systems

invent[®]
umwelt und verfahrenstechnik



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Water needs responsibility

Water is the basis and the source of all life. However, the pollution of our waters keeps reaching ever more ominous proportions. This makes the purification of contaminated water and the provision of water of high quality the most important ecological tasks of our times.

Since the early 1990s **INVENT** Umwelt- und Verfahrenstechnik AG has developed, produced and globally sold innovative machines, systems and processes for the purification and treatment of water. Our daily work and our efficient products contribute to the preservation of water quality on a global scale.

Find out more at
www.invent-uv.de

Leaders in mixing and aeration

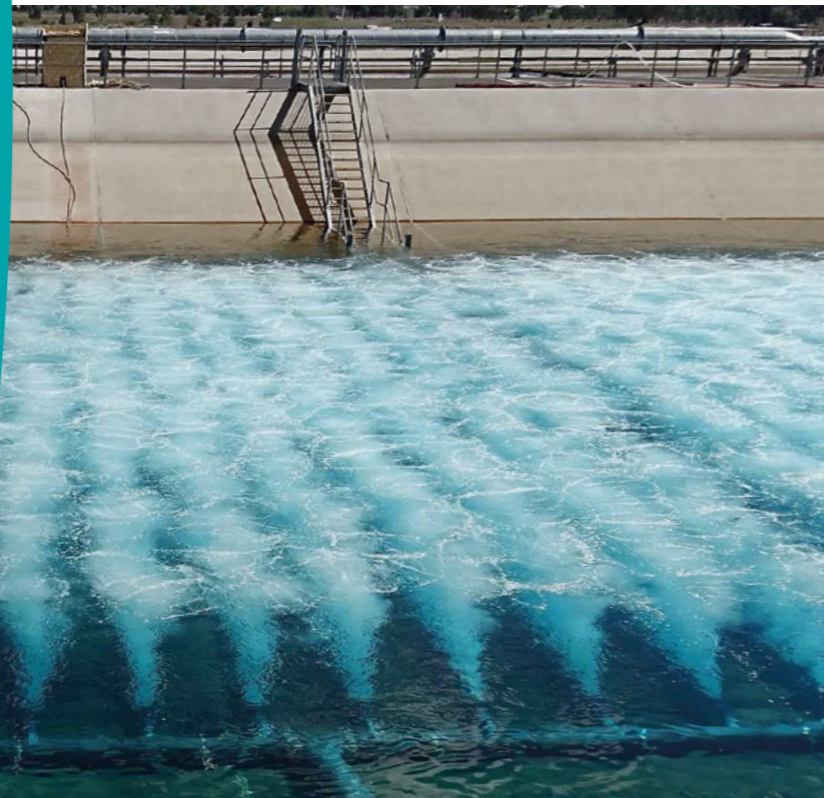
iTURBO[®], the INVENT high speed Turbo Blower

INVENT is focussed on municipal and industrial water and wastewater treatment. The iTURBO[®]-Blower is specially suited for supplying air to aeration systems in activated sludge plants. The iTURBO[®] complements INVENT's line of high efficiency aeration systems and aeration control products, maximizing system performance while minimizing energy costs. The iTURBO[®] is designed for peak efficiency and the perfect harmony of stability and reliability.



Overview of advantages of the iTURBO[®]-Blower

- Compact, light weight package for quick and simple installation
- Integrated low noise design with motor, turbo, VFD¹ and control system in a single package
- Reduce operating cost by up to 30 % when compared to conventional blowers
- The only maintenance item is the changing of air filters
- User friendly HD touch screen HMI
- Customised turbo impellers to provide peak efficiencies over the desired flow range
- High speed PMSM² optimised for speed and torque control



- Technology → Efficiency
- Simplicity → Reliability
- Experience → Performance



The iTURBO[®]-Blower
iTB 50 with Input
Power 50 hp/42 kW

INVENT iDISC[®]
in Westdale, Australia.

¹ VFD: Variable Frequency Drive

² PMSM: Permanent Magnet Synchronous Motor

The Permanent Magnet Synchronous Motor

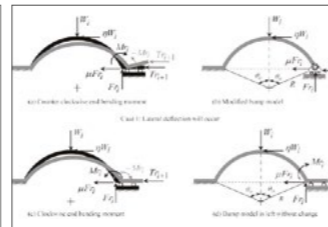
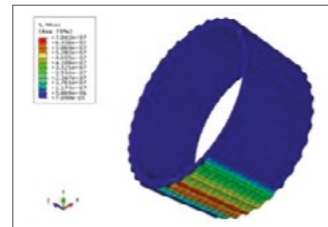
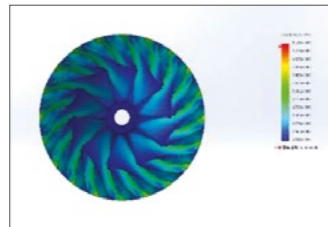
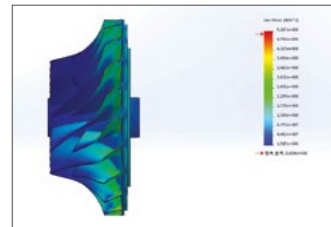
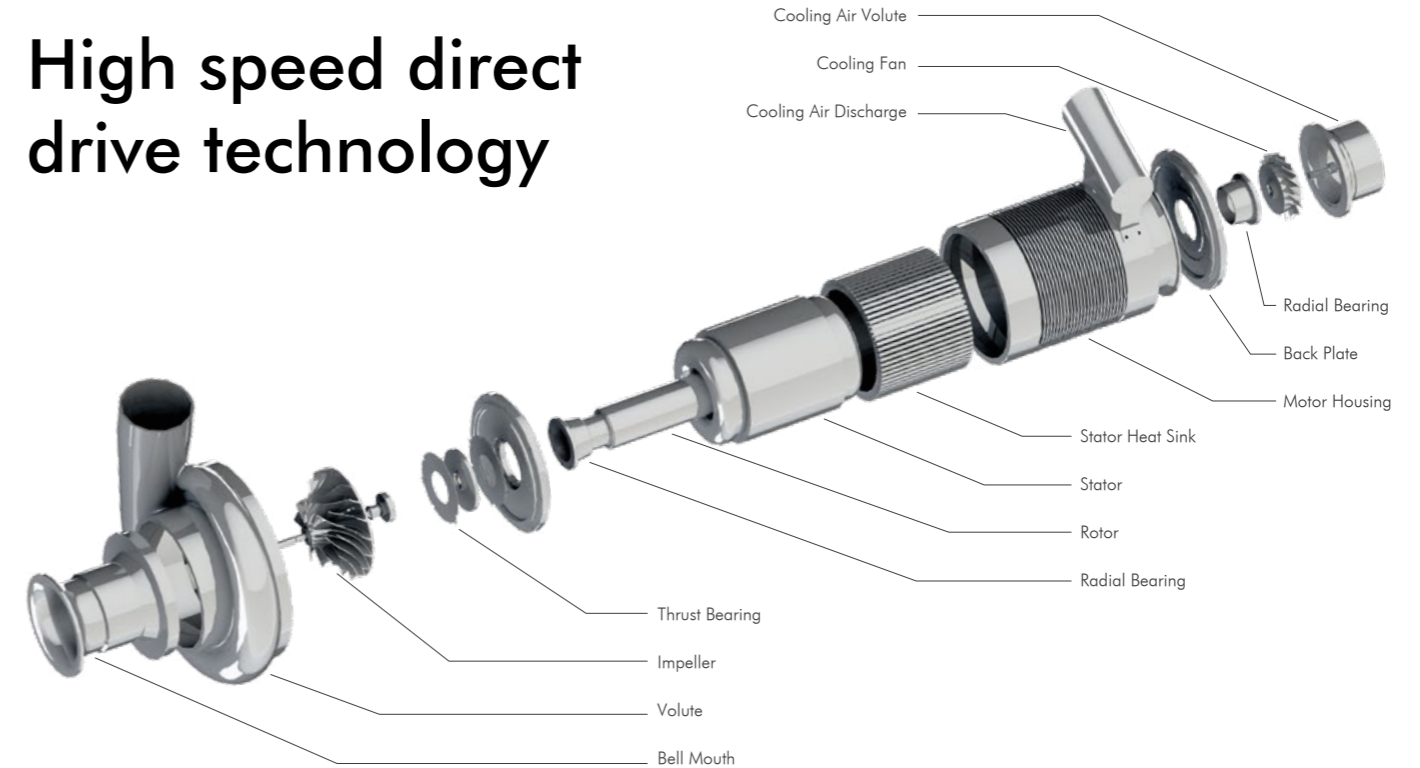
The Permanent Magnet Synchronous Motor (PMSM) uses imbedded rare earth material within the rotor to provide the motors magnetic field. This eliminates losses of electro-magnetic induction. Supremely suited to variable frequency drivers, PMSM motors offer the best torque-speed characteristics for high speed, low torque & power dense rotating applications. The **iTURBO**®-Blower is an advanced compact and simple design with very low noise and peak electrical efficiency of up to 98 %.



With only one single moving part, the **iTURBO**® direct drive optimizes the rotational speed and Turbo Impeller profile for peak performance.

- Maximum efficiency
- Optimized turndown
- Customized pressure capability
- Integrated air cooling

High speed direct drive technology

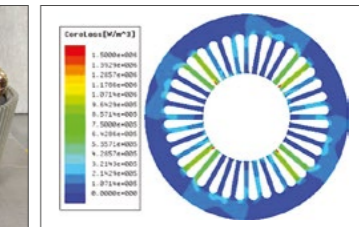


Impeller

- Customized aerodynamic shapes tailored to meet site specific airflow ranges and pressures.
- Computational Fluid Dynamic (CFD) analysis and tuning to achieve peak efficiency.
- Precision 5 axis CNC machining of 7075-T6 Aluminium Alloy for maximum strength and accuracy.

Air Foil Bearing

- Simple, reliable and dynamically stable bearings independent of external control systems.
- Frictionless operation to maximize blower energy efficiency.
- Unique cartridge design for high load capacity and inspection capability.



Rotor

- Centerless ground "Inconel" superalloy light weight shaft.
- Rare earth Samarium Cobalt (SmCo) permanent magnet core.
- Quality controlled precise fully assembly rotor balancing and documented analysis.

Stator

- Double immersion vacuum pressure impregnation for increased durability.
- Direct coupled "boundary layer" cooling fan providing no noise high flow motor cooling.
- Class H+ motor winding temperature classification.

Design of the iTURBO®-Blower

INVENT is moving forward to get value for the technology. We only supply the most reliable turbo blower in the industry through our engineering passion, long term experience and advanced technology.



Variable Frequency Drive (VFD)

The high speed PMSM motor operates with an integrated variable frequency drive. The VFD not only drives the motor but also monitors the torque, power and speed delivered to the motor to ensure reliable operation.

- Stable high speed operation through sensor-less vector control
- VFD efficiencies of > 96 %
- Inbuilt torque monitoring for surge fail safe operation
- Motor protection and status for overload, shutdown and tripping

Controller

The iTURBO®-Blower has an operator focused high definition touch screen interface, easy to navigate with real time display of key blower performance parameters, such as discharge pressure, power consumption, speed etc.

- Fully programmed PLC and HMI Touch Screen
- A choice of PLC makes to suit specific client needs, or standardisations
- IP Protocol communications or hard wire I/O



Package design

The package design is light weight and compact. Removable panels on both sides of the unit provide easy access to the turbo unit section which incorporates the integrated “blow-off” valve and cooling air silencers. The power components including VFD and power supply MCCB¹ are within separate lockable compartments. The unit is supplied standard with adjustable mounts for installation onto any load bearing trafficable surface.

The complete package is acoustically engineered with all surfaces lined internally with an attenuating shell to limit breakout noise to less than 78 dB (A) during operation.

Simple and easy maintenance

The iTURBO® incorporates a two part air filter system to maximise the filter longevity, reducing the costs associated with filter changes.

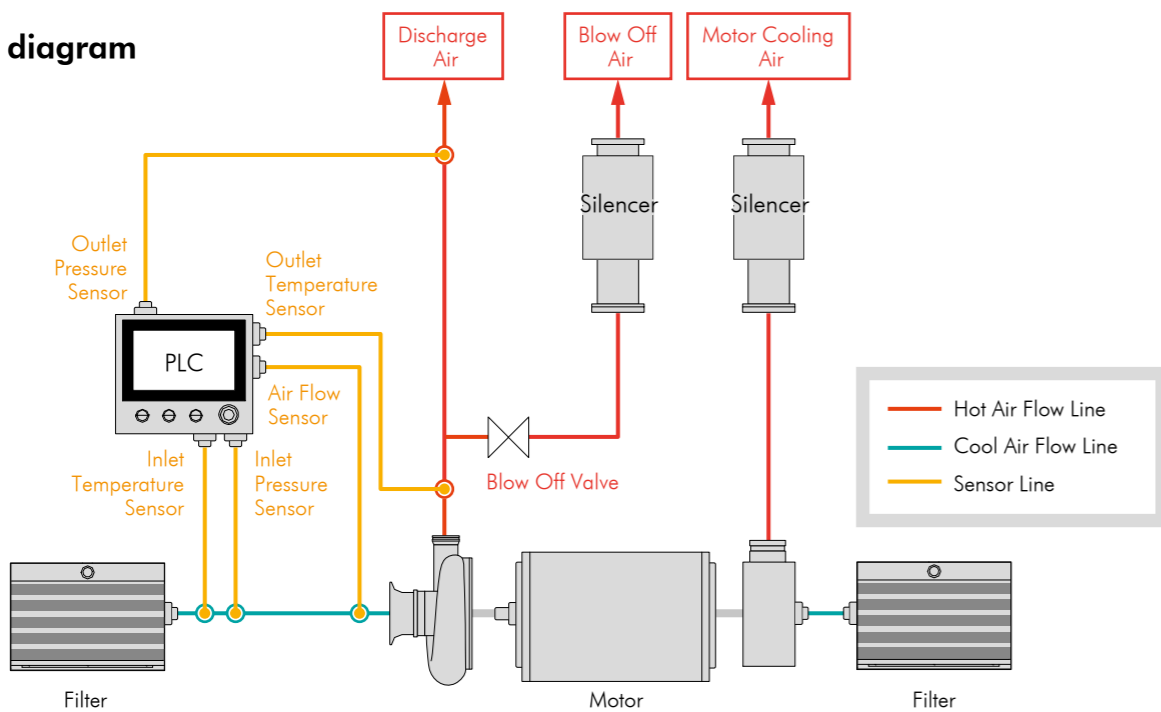
	Prefilter	Main Filter
ISO 16890 Classification	ISO Corase >10µm	ISO ePM10 90 %
Material	Non-woven Fabrics	Synthetic Fiber
Expected Life	6 - 12 Months	12 - 36 Months



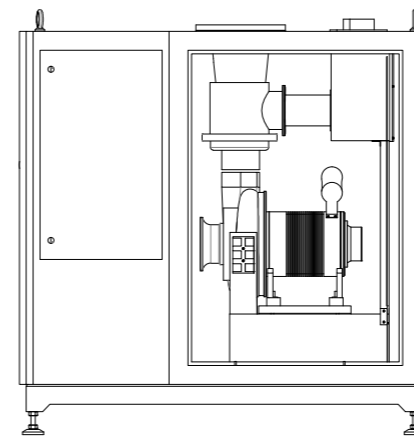
iTURBO®-Blower
in Bålsta, Sweden.

Technical information

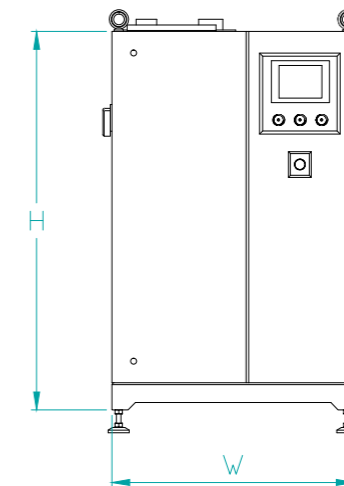
System diagram



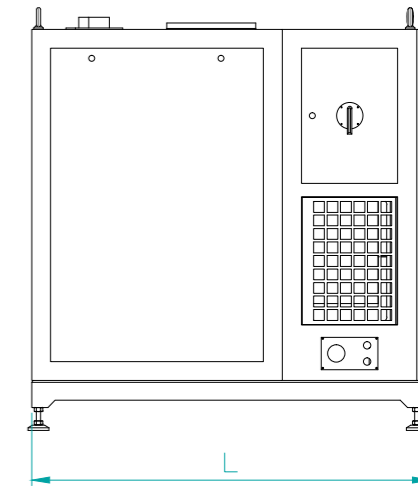
Dimensions of the iTURBO®-Blower



Cross Section



Front view



Right side view

Technical data

Model	iTB 30	iTB 50	iTB 75	iTB 100	iTB 150	iTB 200
Length Dimension (mm)	1,300	1,300	1,460	1,460	1,760	1,760
Width Dimension (mm)	800	800	900	900	1,000	1,000
Height Dimension (mm)	1,200	1,200	1,400	1,400	1,650	1,650
Flange Dimension (mm)	150	150	200	200	300	300
Weight (kg)	530	550	580	600	900	950
Pressure Range	40 kPa to 150 kPa (5.5 psi to 17 psi)					
Input Power (hp/kW)	30/25	50/42	75/63	100/84	150/126	200/168
Supply Power/Network Frequency	380 - 580 V, 50 & 60 Hz					
Flow Capacity	500 Nm ³ /hr to 10,000 Nm ³ /hr					

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Leaders in mixing and aeration

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