*i*TURBO® – Compressor

INVENT has a long tradition of providing energy efficient products, systems and solutions for wastewater treatment plants around the world. The ***i*TURBO**® – Compressor is specially suited for supplying air to aeration systems in activated sludge plants. The ***i*TURBO**® complements **INVENT's** line of high efficiency aeration systems and aeration control products, maximizing system performance while minimizing energy costs.

Higher Efficiency with Measurable $avings!

Design

The ***i*TURBO**® – Compressor is a single stage high-speed turbo compressor. This modern, frequency controlled machine has no gears and features lubricant-free airfoil bearings, guaranteeing an economical, reliable low maintenance operation. The ***i*TURBO**® is designed for the lowest energy use over a wide range of air flows and pressures.

***i*TURBO**® – Compressor (panels removed)

1 High Speed Permanent Magnet Motor

The air cooled high speed permanent magnet motor was especially designed for the ***i*TURBO**®, featuring the following:

- Samarium–Cobalt permanent magnets pressed and enclosed into the titanium motor shaft.
- Vacuum impregnated wiring for highest electrical efficiency.
- Loss-free self-aligning radial and axial airfoil bearings.
- Extra thin laminated sheet design for reduced vortex current losses.

2 Transonic Centrifugal Impeller

The monolithically cast stainless steel impeller is optimized for transonic operation. The impeller design provides efficient operation over a wide range of operating conditions. The high strength, space industry proven stainless steel alloy allows for an efficient impeller design and a safe operation of the machine. The ***i*TURBO**® is available in a single or twin version.

3 Integrated Control System

The integrated Control System features a variable frequency converter, which controls the speed of the motor depending on input information such as a signal from a dissolved oxygen probe. The ***i*TURBO**® can be individually controlled by the touch screen panel provided. The system displays the airflow in Nm^3/h[(1 or SCFM[(2.

4 Enclosure and Insulation

The ***i*TURBO**® cabinet is designed as a sound enclosure, reducing the sound level for the machine in operation to a low 75 – 80 dB(A). The cabinet is an integral part of the compressor package. To improve overall efficiency, the cooling air is kept separate from the process air. Internal piping is insulated to avoid transfer of heat to the process air.

Minimal Maintenance

The ***i*TURBO**® is designed for minimal maintenance. There are few moving parts and individual components are selected to keep maintenance needs to a minimum. The compressor has a direct drive high speed motor eliminating the gear box which traditionally is a source of high maintenance costs.

The airfoil bearings keep the rotor shaft in place. During normal service the rotor operates on an air cushion in the airfoil bearing, with no physical contact. The airfoil bearings are designed for long life. The bearings include a dry lubricant that will last for more than 10 years.

(1 at Normal conditions (0°C and 1.013 mbar)
(2 at Standard conditions (68°F and 14,7 psi)

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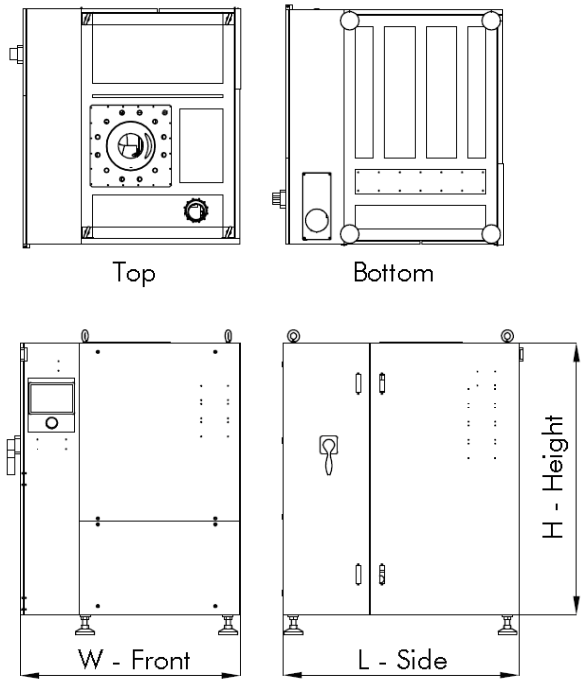
90 % of the Life Cycle Cost is Energy!

Easy Installation
The ***i*TURBO**® is factory tested, ready-to-install and ready-to-run. It is extremely compact. The integrated enclosure provides sound and heat insulation. It is designed to be easily moved to its final location by a fork lift. There is no need for any special foundations or plinths.

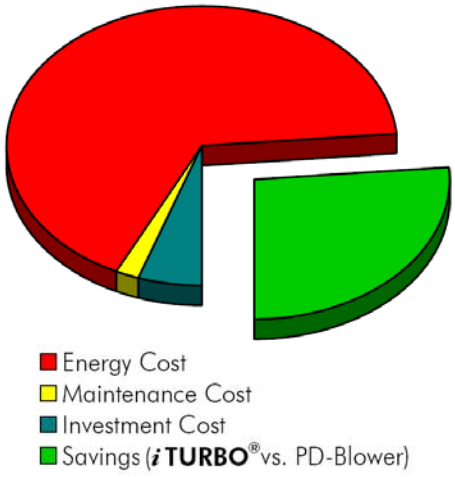
Complete System Supplier
INVENT supplies complete aeration systems including aerators, compressors and aeration control systems to ensure energy efficient oxygen transfer under different operational conditions. By providing the complete aeration system energy optimization is assured.

Dimensions


Dimensions (L×W×H)

Model	L	W	H
	[mm]	[mm]	[mm]
ITC 50, 75, 100	1.236	1.153	1.426
ITC 150, 200	1.616	1.417	1.798
ITC 300, 400	1.913	1.667	2.104

Life Cycle Cost
Aeration systems consume more electricity than any other system in a typical wastewater treatment plant. Having a compressor that has the highest efficiency is crucial to reduce the energy costs. Comparing the total life cycle cost of the ***i*TURBO**® with a standard positive displacement blower, savings of more than 25% can be achieved.



15 Years Life Cycle Cost for a Compressor System

Technical Data

Airflow Range	500 – 10.500 Nm^3/h
Motor Power	37 – 336 kW
Pressure Range	200 – 1,000 mbar
Power Supply	380 – 460 V (600 V Optional)
Noise Level	75 – 80 dB(A)
Control Range	40 – 100 %

Connections
Standard: Analog, Digital I/O, Modbus, TCP/IP
Option: Ethernet, Profibus or DeviceNet

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