Turboblowers

INECO®

www.in-eco.eu

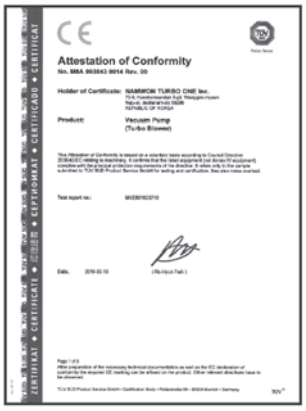
Air and Vacuum Components

Certificates

The turbochargers received a certificate with the CE mark, which comply with the legal regulations of the European Union. It was awarded the ISO 9001 certificate, which indicates product quality, as well as the ISO 14001 certificate, the subject of which is the promotion of environmental protection and pollution prevention. All devices are labeled „High efficiency appliance," certifying them as highly efficient.


Certificate of High efficiency energy using appliance

High Efficiency Appliance


Attestation of Conformity

CE


CERTIFICATE OF APPROVAL

NAMWON TURBO ONE INC.

Korea Employers' Federation Certification Register

ISO 9001


CERTIFICATE OF APPROVAL

NAMWON TURBO ONE INC.

Korea Employers' Federation Certification Register

ISO 14001

Turboblowers with air bearings

IN-ECO is a distributor of high performance turboblowers incorporating the latest innovations in air bearing, precision impeller machining, high speed, high efficiency permanent magnet motor, high speed control frequency converter, automatic control logic and system design.

Key features

Enegry saving

- saves up to 45% of energy relative to comparable blowers
- acquired a certificate of High Efficiency Energy

Low maintenance costs

- non-lubricating air-foil bearings
- replacing the suction filter only

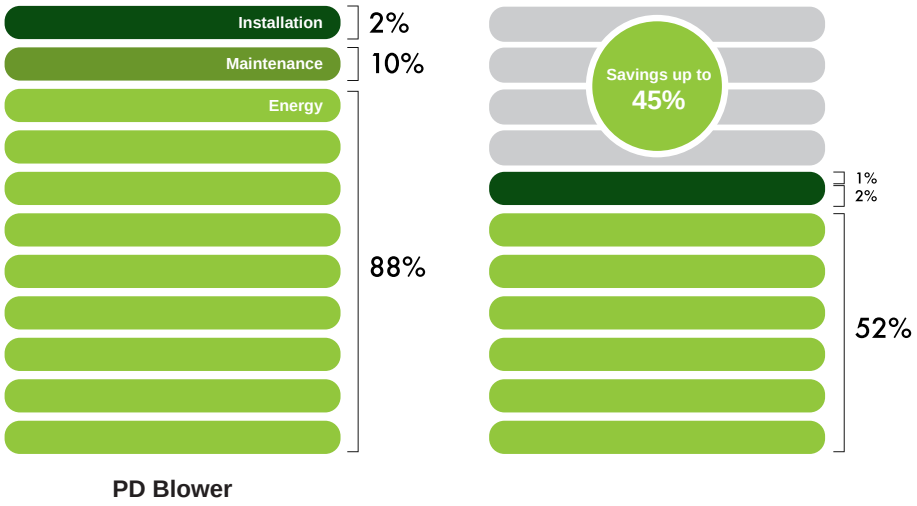
No vibration

- magnetic levitation shaft allows a vibration-free operation
- 75-80 dB equipment, no need of sound-proof auxiliaries

Compact dimensions

- the size of our Turbo Blower machine is only one third of PD Blower

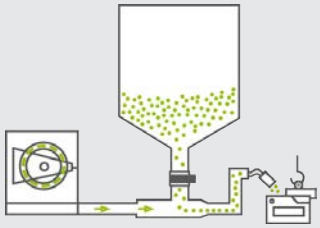
Cost Comparison



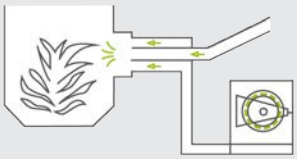
Exclusive product with variety of uses

Turboblowers have a wide range of uses in industry. They can be used as a source for high-quality sandblasting of large areas, for plating, for burning, for countercurrent cleaning of filters. They are an important part of large water treatment plants where compressed air supply is required. In industry, they are used for segmentation of materials, in aquariums and in other industries.

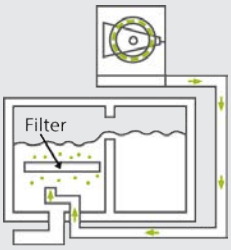
Application



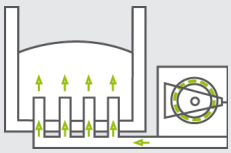
Sandblasting



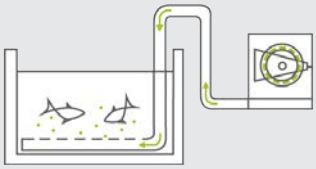
Incinerators



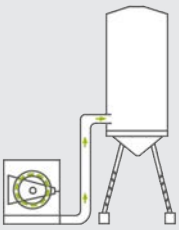
Countercurrent filter cleaning



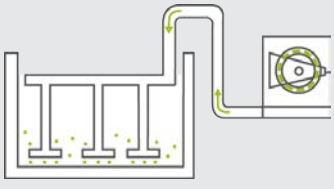
Composting, fermentation



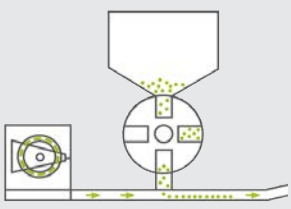
Aeration, oxygenation



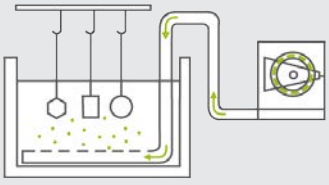
Dehumidification, drying



Wastewater treatment plants

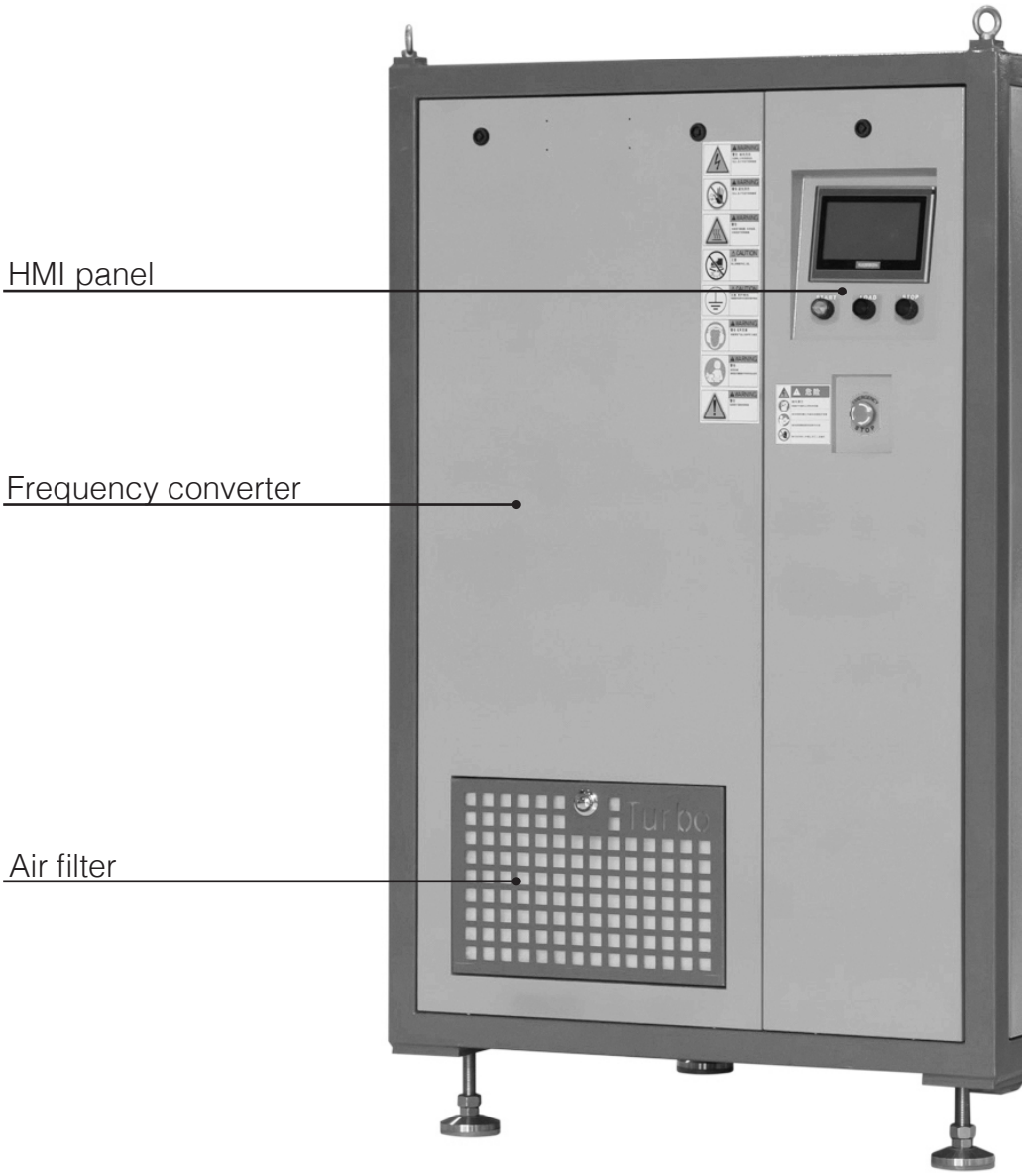


Segmentation of materials



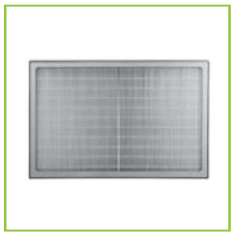
Galvanization

Turboblowers - structure

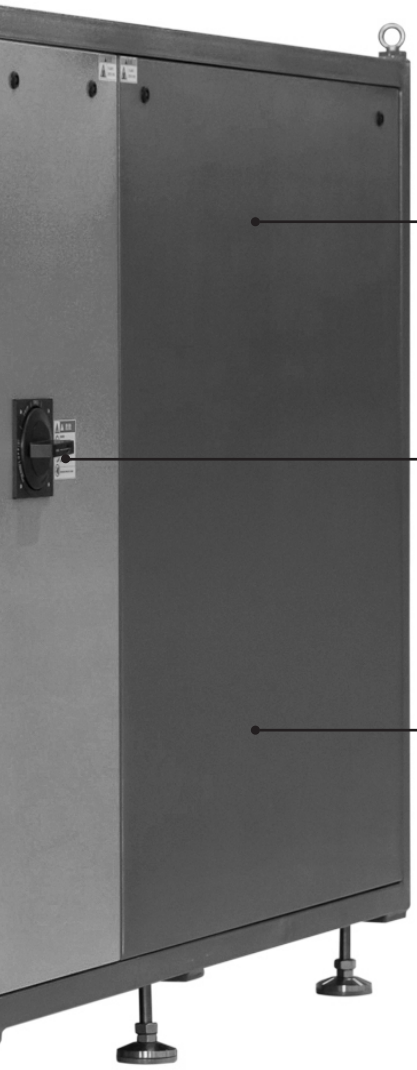


Frequency converter

HMI panel



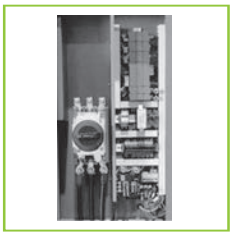
Main filter



Standard filter type

Inlet flange

BOV



Control panel
and circuit breaker

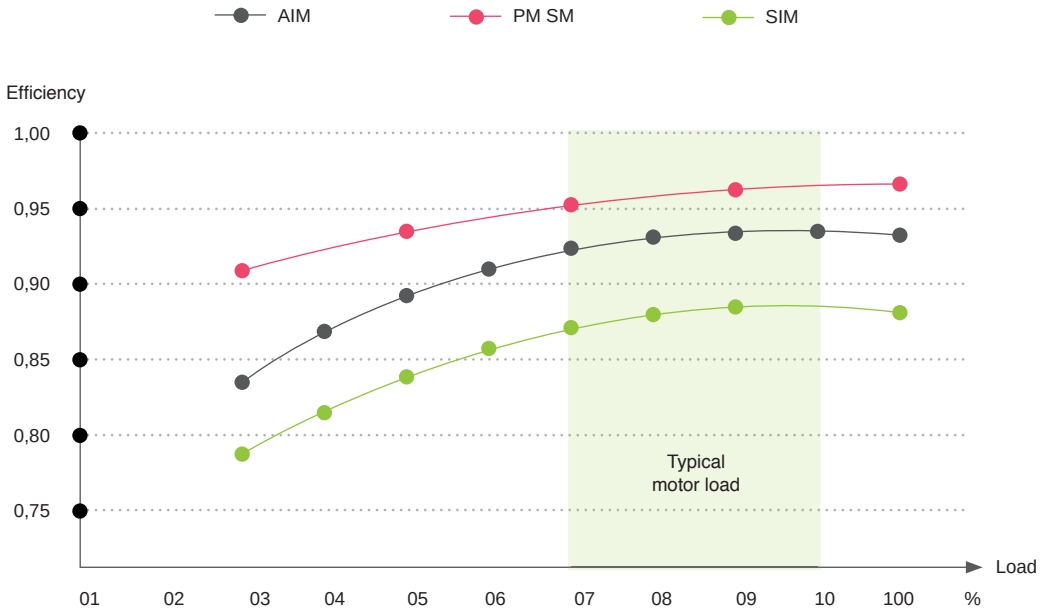
Engine body
+ chamber

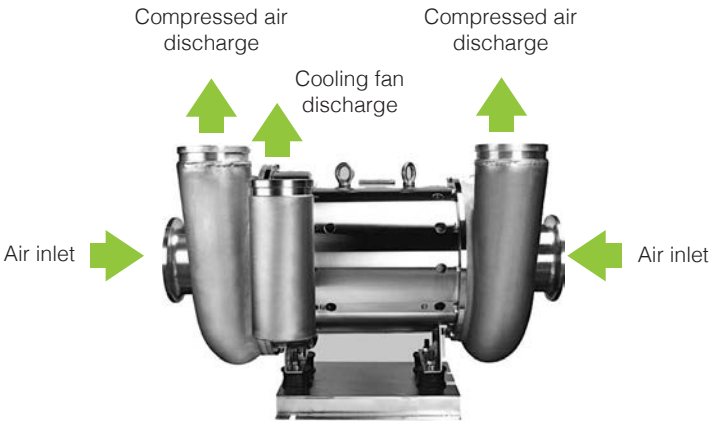
Highly efficient, high speed motor with a permanent magnet (PMSM)

PMSM motors are optimized for high-speed rotation;
minimizing current loss and delivering a maximum efficiency of 98%.

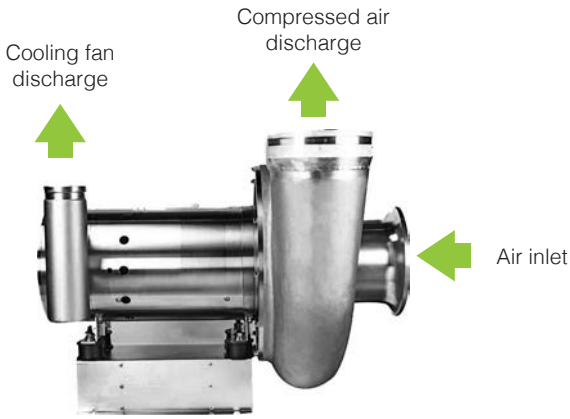
- No power loss due to direct drive
- Optimized design for high-speed rotation
- Rotate up to 120,000 RPM via inverter frequency conversion
- Efficient heat radiating structure, compared to other motors
- No need for separate start-up tool since start-up with 4.5% rated current
- Start-Stop test conducted over 100,000 times
- High-speed permanent magnet motor is significantly smaller than induction motor
- Accurate speed control

Comparison of motor efficiency





Dual impeller - 300 HP or higher



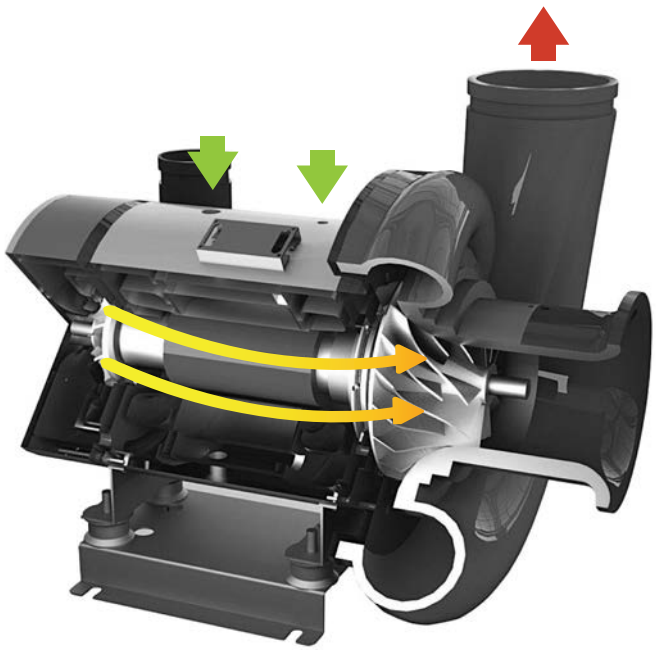
Single impeller - up to 250HP

Cooling system

Completely self-cooling system that cools the motor with the sucked outer ambient air by rotating the cooling fan

Our cooling system does not require a separate power source, unlike the water-cooled type which requires a complex cooling water circulation system (including a pump)

No maintennce required, including cooling water replenishment and pump management etc.



Turboblower air bearing

Air foil bearing

Non-contact air bearing supports the load of the rotating body by leveraging the compression via the wedge effect around the shaft rotating at a high speed.

- Our air bearings are 100% lubricant-free, contactless, and eco-friendly
- No maintenance needed due to proprietary non-lubricant system
- Special coating reduces frictional wear between the rotor and bearing, providing a stable and long service life

Comparison of bearings

Air foil bearing

Tilting Pad Bearing

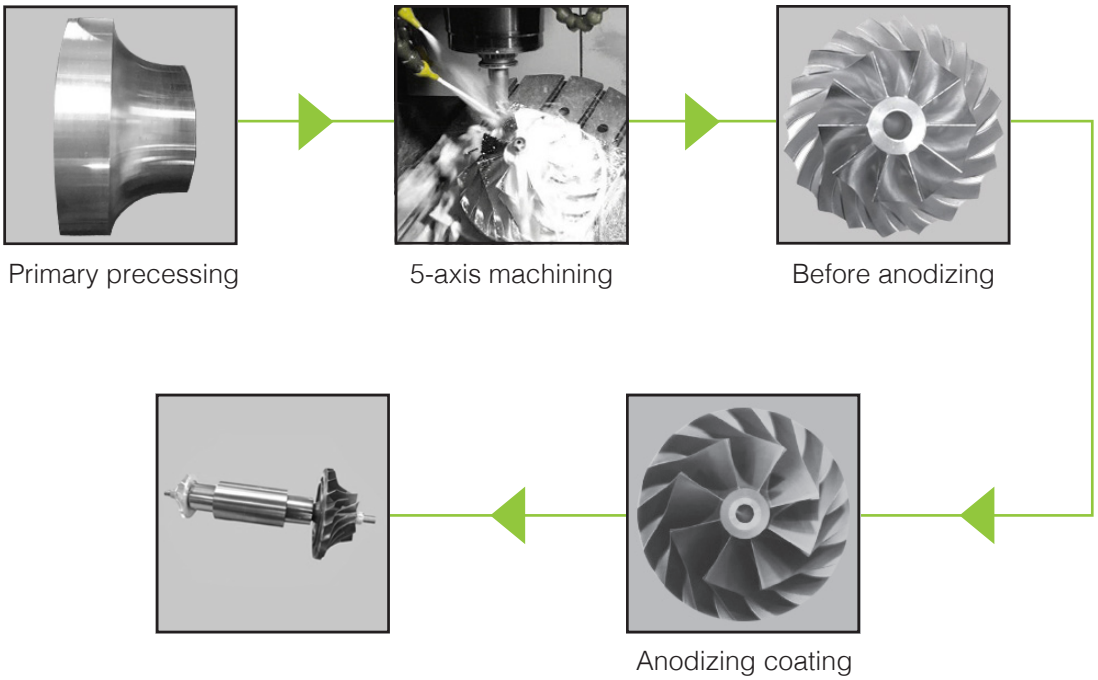
Ball Bearing

Lubricant	Not required	Required	Required
Durability/Life	Semi-permanent	Semi-permanent	Need‘s replacement
Maintenance	None	Check once every 5 years	Replace after a certain period of operation
Reliability	20	1	1
System	Simple	Complex oil system (Pump, filter, decompression system, pressure sensor etc.)	

High-efficiency, high-precision machining impeller

Turbo One' s impeller is manufactured with state-of-the-art aerodynamic system technology. With the same technology found in aeronautical engineering, our products are sophisticated by design to deliver a highly-efficient and precise processing.

- Precise design ensures wide flow range and surge margin
- Precision machining through 5 axes machining ensures uniform efficiency for every product
- High durability due to the use of high strength heat treated aluminum AL7075
- Anodized coating enhances surface strength
- Direct connection to the shaft minimizes power transmission losses



High-efficiency inverter optimized for high-speed rotation motor

High efficiency inverter

- Inverter with state-of-the-art energy saving technology
- Smaller motor start-up current required compared to other inverters
- Reduced electricity rates with automatic maximum efficiency operation
- Smaller noise generation, electronic noise suppression
- DC reactor internally suppresses harmonic level
- Precise operation and smooth start
- High efficiency and reliability with 96% or more control efficiency
- Fast reaction rate even with sudden load fluctuations
- KEB (Kinetic Energy Back-up) function that can decelerate and stop quickly and safely in case of power failure
- Sensor-less technology prevents malfunctions at high temperatures
- Less than 1% starting current- No need of a separate startup control panel
- 0.3% Unload Power Consumption
- Lightweight design

Comparison of Efficiency by Type of Blower

	Roots blowers	Blowers with gearbox	Turboblowers
Principle	Volumetric	Centrifugal	Centrifugal Turbo
Power transmission	V-belt	Booster Gear	Direct connection
Discharge pressure	0.8 bar	0.8 bar	0.8 bar
Flow Rate	29 m^3/min	29 m^3/min	29 m^3/min
Power	55 kW	48 kW	35 kW
Noise (1m)	95-110 dB	90 dB	Less than 75-78 dB
Vibration	Severe	Minor	No Vibration
Lubricant	Required	Required	Not required
Maintenance	Regular and complex	Regular and complex	Very simple (only regular air filter replacement required)

User-friendly control system

Use of premium PLC

- Highly stable, accurate and precise blower control
- Lower rate of malfunction due to noise
- Optimized control logic for high-speed blower allows control operation according to various user's needs in different modes such as constant pressure, constant flow rate, and constant speed
- Realization of remote control by Modbus RTU protocol support via RS485 serial port
- Reduces the possibility of surge that can occur during operation of the blower through surge prevention control logic

Usage of HMI from a system specialized company

- Real-time monitoring of the information of the blower operation such as flow rate, pressure, temperature, and rotation speed through the LCD display
- Touchscreen display allows for easy operations
- Enhanced user convenience with multi-language support

Control system

Advatages of turboblowers

Simple maintenance

- Periodic maintenance is completed by removing the dirty filter and replacing it with a new one
- Dual filter structure (non-woven pretreatment filter + medium filter) improves compressed air quality
- Low pressure loss due to optimized design of fabrication filter

Low noise, low vibration

- The noise of device is as low as 75-80dB at 1m
- No need for soundproofing
- Centrifugal blower with continuous suction and discharge
- The vibration of the product itself is at ZERO level

Convenient remote control

- Real remote control (IIoT) available at anytime and anywhere through various network infra structures including general telephone network, internet, mobile wireless network

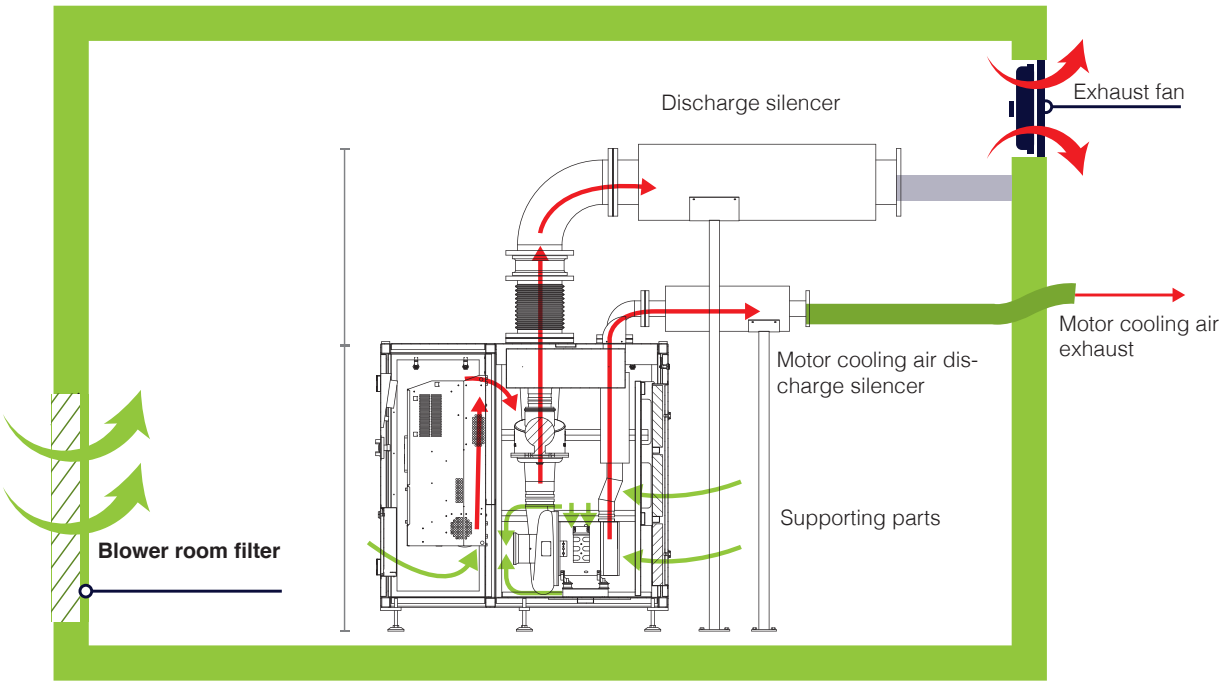
Turboblower installation

Plug & Play simple and easy installation

- No anchor or foundation work required due to minimal vibration of our equipment
- Complete the installation simply by placing the blower in the desired location and connect power line and piping
- Easy leveling and installation complete with level foot adjustment at the bottom of the blower

Recommended installation drawing

- Ventilation enhancement
- Heat insulation of discharge piping, which causes rise in the blower room temperature
- Exhaust of the motor cooling discharge air out of the motor room
- Order of installing the piping: Flexible joint - Check valve - Elbow - Discharge silencer
- Refer to installation diagram below, installation support axis in exhaust structure

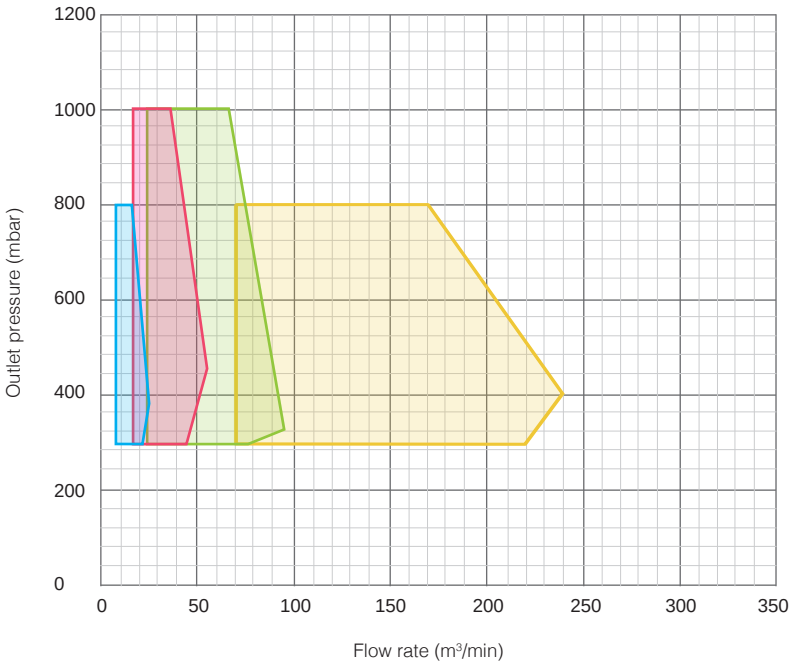


Performance table

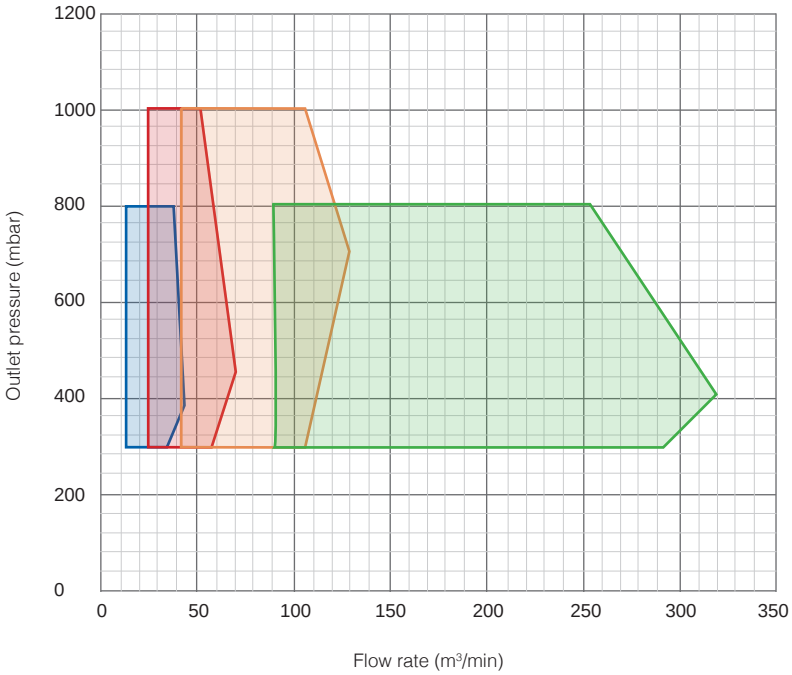
Model Name	Flow	Pressure	Shaft Power	Discharge	Size (mm)			Cooling
	(m^3/min)	(bar)	(HP)	(A KS 10K)	w	l	h	
TB10	3 ~ 8	0.3 ~ 0.8	10	80	700	1200	1130	Air cooled
TB15	5 ~ 13	0.3 ~ 0.8	15					
TB20	6 ~ 15	0.3 ~ 0.8	20					
TB30	7 ~ 25	0.3 ~ 0.8	30	150			1120	
TB50	10 ~ 42	0.3 ~ 0.8	50					
TB75	18 ~ 62	0.3 ~ 1.0	75	200	1033	1690	1425	
TB100	23 ~ 105	0.3 ~ 1.0	100					
TB125	25 ~ 115	0.3 ~ 0.8	125					
TB150	28 ~ 130	0.3 ~ 1.0	150	300	1033	2050	1697	
TB200	36 ~ 210	0.3 ~ 1.0	200					
TB250	40 ~ 235	0.3 ~ 1.0	250					
TB300	80 ~ 260	0.3 ~ 1.0	300	400	1263	2260	2187	
TB400	80 ~ 275	0.3 ~ 1.0	400	500	1760	2260	2187	
TB500	90 ~ 330	0.6 ~ 1.0	500	500	1760	2260	2187	
TB600	100 ~ 420	0.6 ~ 1.0	600	600	2210	3500	2187	
TB800	100 ~ 520	0.6 ~ 1.0	800	600	2210	3500	2187	
TC100	10 ~ 30	1.2 ~ 2.0	100	150	1033	1690	1425	
TC150	12 ~ 51	1.2 ~ 2.0	150	200	1033	2050	1697	
TC200	12 ~ 76	1.2 ~ 2.0	200	250	1033	2050	1697	
TC300	20 ~ 85	1.2 ~ 2.0	300	250	1263	2260	2187	

Performance ranges

- TB30 0,8
- TB75 1,0
- TB150 1,0
- TB300 0,8



- TB50 0,8
- TB100 1,0
- TB200 1,0
- TB400 0,8



Notes

IN-ECO, spol. s r.o.
Radlinského 13
034 01 Ružomberok
Slovak Republic
T +421 44 4304662
E info@in-eco.eu
www.in-eco.eu

1.6.2022