



394, Jugam-ri, Hyeondo-myeon, Cheongwon-gun,
Chungcheongbuk-do, Republic of Korea
Tel : +82-43-275-6002~3 / Fax : +82-43-275-6004
E-mail : www.khl1686@naver.com
www.turbomax.co.kr

New Standard of Turbo Blower

TurboMAX Turbo Blower

Single Stage, Direct Drive, Centrifugal

The TurboMAX Turbo Blower is a product that provides the best efficiency through the use of a high-speed motor, air bearings, and a powerful centrifugal compressor design. The TurboMAX blower will reduce your electricity costs by more than 30% compared to traditional blower designs and provide you with a clean and quiet working environment, along with many other benefits.



TurboMax

is the best product of Turbo Blower
available in the world.

New Standard of Turbo Blower

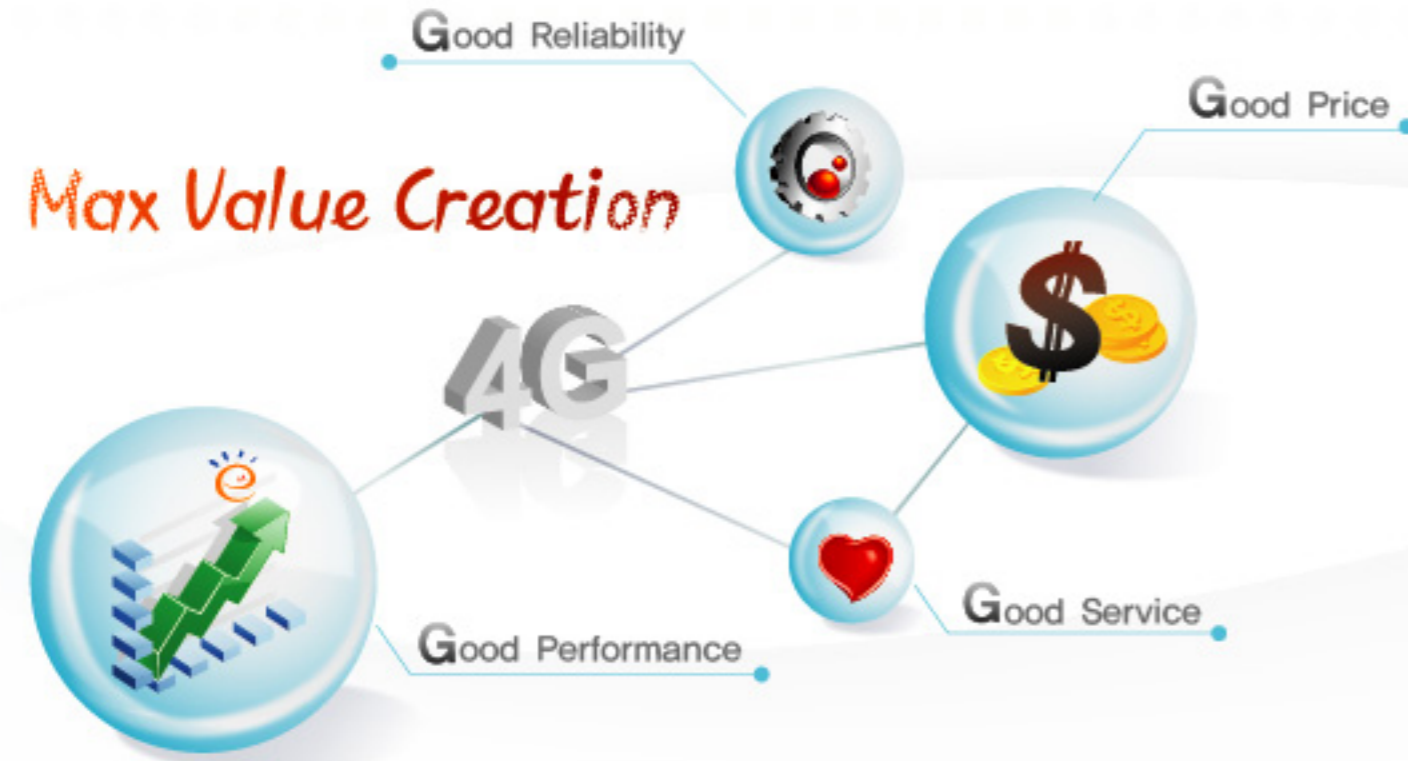
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 TurboMAX

>> >> Young enterprise! TurboMax TURBOMAX Introduction



VISION

Factor



Energy Cost Increase/
Greenhouse Gases
Need To Be Reduced

Needs



Save Energy/Create
An Environmentally
Friendly Product

Mission



To provide a highly
efficient, environmentally
friendly Turbo Machine.

*Low Carbon / High Efficiency / Environmentally Friendly
Provide Clean Energy*



Product Outline

The Turbo Blower, a system used to produce compressed air, is directly connected to permanent magnet, synchronous motor which is operated by an inverter. The product is a single stage, centrifugal type Turbo Blower which consists of air bearings, an impeller, a high speed motor, an inverter, a controller, and a cooling system.



Product Characteristics

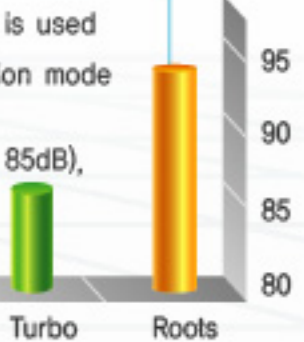


Energy Saving

- Reduces energy consumption by 20~40% compared to existing products
- Recoup initial investment in a short period of time : 2~3 years
- Designed to operate at high speed with high efficiency

User Friendly

- Convenient user interface is used
- Provides automatic operation mode that is required on-site
- Reduced noise (less than 85dB), no-vibration
- Oil free lubricating system



Simple Maintenance & Easy Installation

- Only regular inlet filter replacement is required
- Automatically detects errors and takes necessary actions
- Special foundation and anchor work are not necessary because turbo blower make no vibration
- Time required to install the product is minimized





>>> TurboMAX creates Happy Future

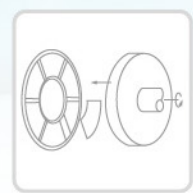
Turbo Blower Introduction

Core technology

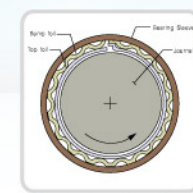
1 Air Bearing



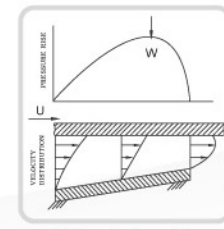
- Simple design with no need for oil
- Non-contact type, almost no mechanical maintenance required
- No vibration caused by bearings, very low noise
- Guaranteed durability, on-off mechanism tested 20,000 times
- Bump-type application: high load capacity and superior durability



Thrust Bearing

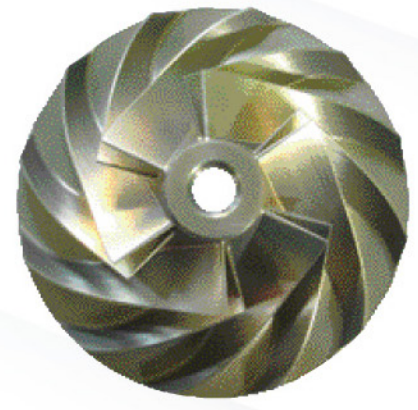


Radial Bearing

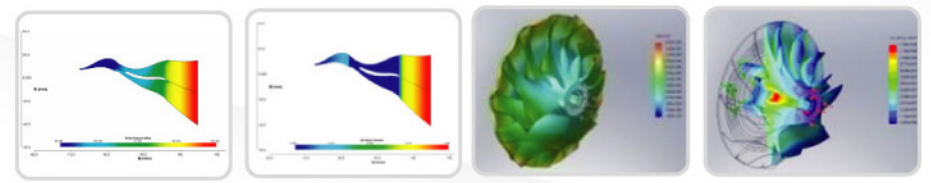


Principle of an Air Bearing

2 Impeller



- High compression efficiency
- High surge stability with enough pressure margin and wide flow range
- Manufactured with 5-axis machine, high efficiency impeller
- Sleek, clean surface – high efficiency compared to cast impellers
- Impeller and shaft are directly connected, power transmission efficiency is 100%



3 Inverter



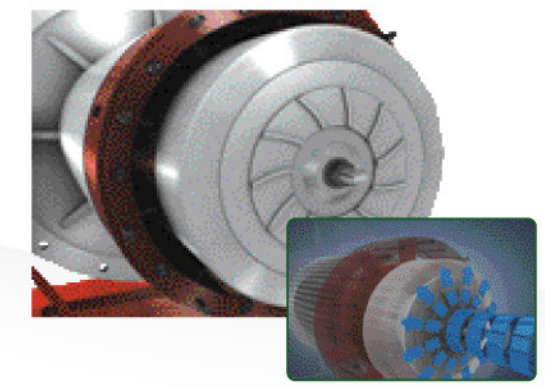
- Maximized product stability and reliability using verified high-speed inverter
- Uses electrical filter, AC Reactor and LC Filter (100 HP or above)
- Optimized algorithm for high speed rotation
- Reacts well to abrupt load variation

4 High Speed Motor



- Permanent Magnet Synchronous Motor : PMSM
- Small frame size even for large HP units
- Accurate speed control
- Direct connection with impeller means no loss of power transmission
- Optimal design for high-speed rotation

5 Motor Cooling



[High-speed motor cooling technology]

High-speed motors for Turbo-Machines are small in size but produce great power. Therefore, it is necessary to apply the cooling method best suited for your machines capacity and usage. Keeping the motor cool will greatly affect the motor output and longevity.

- Air cooling: 150 HP or lower
- Integrated Water Cooling: 200 HP or higher
- #10-0675821 "Cooling Structure for Turbo Machines With High-Speed Motors"
- #10-0781298 "Air Blower"

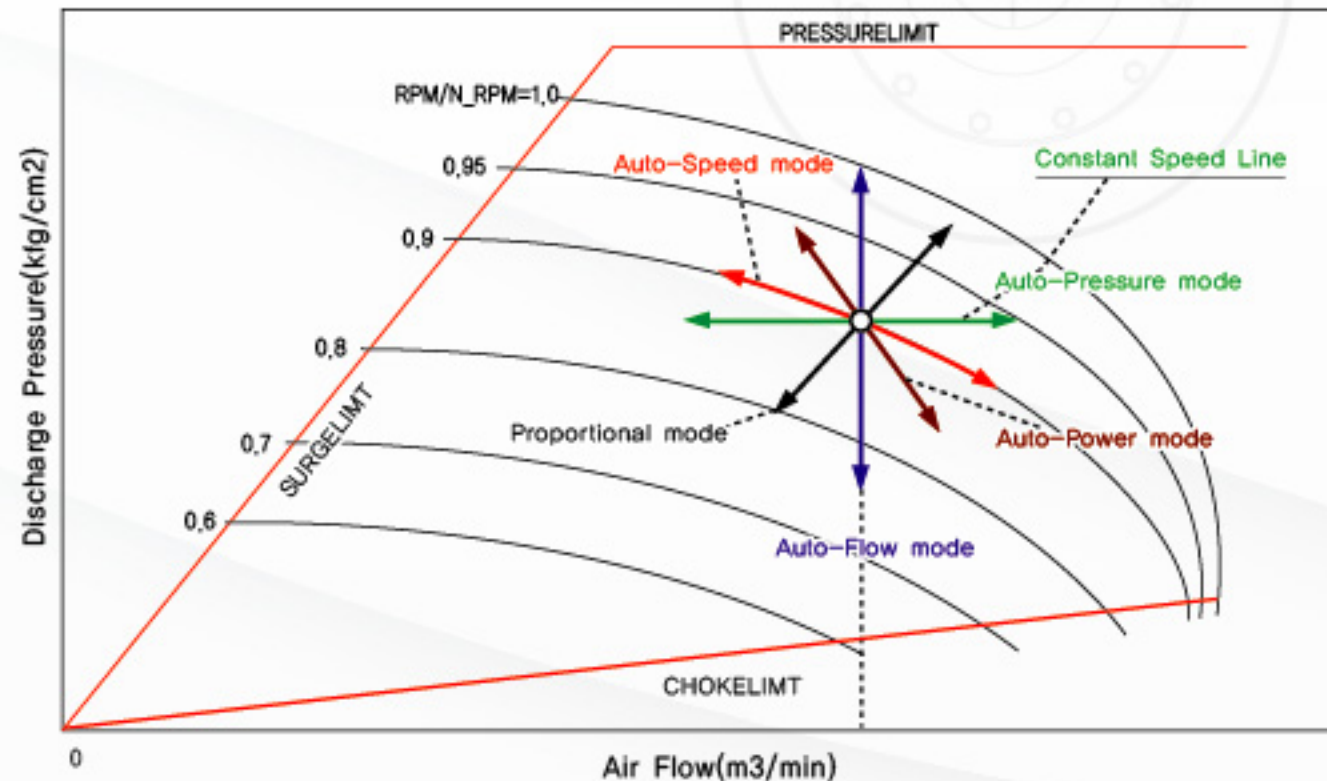


6 Controller



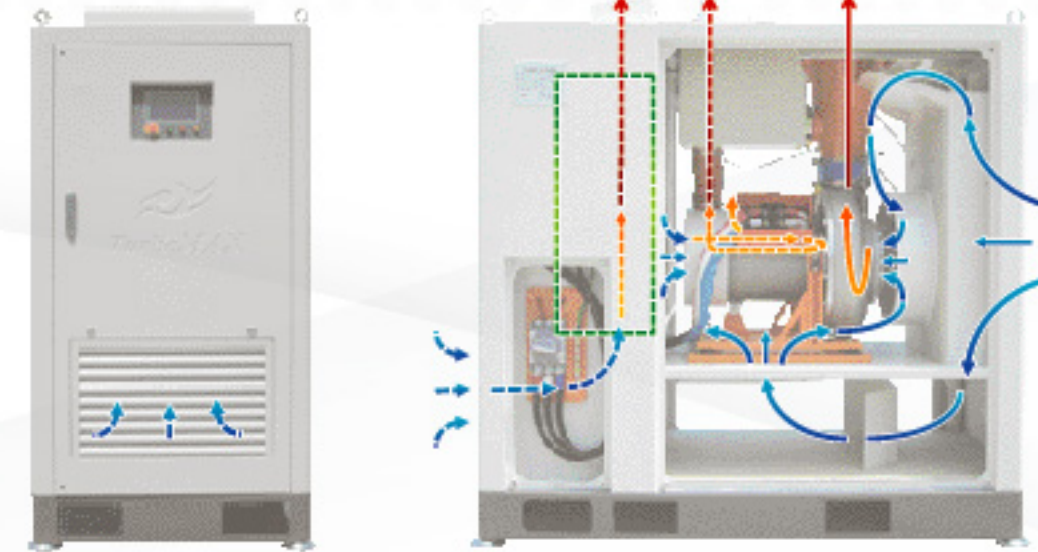
- 16 bit color touch screen
- Convenient user interface
- Maximized product safety using surge protection function
- Supports various operation modes

- Auto Flow Mode
- Auto Power Mode
- Auto RPM Mode
- Auto Pressure Mode
- Proportional Mode
- DO-Link Mode
- Failure, Check & Reset

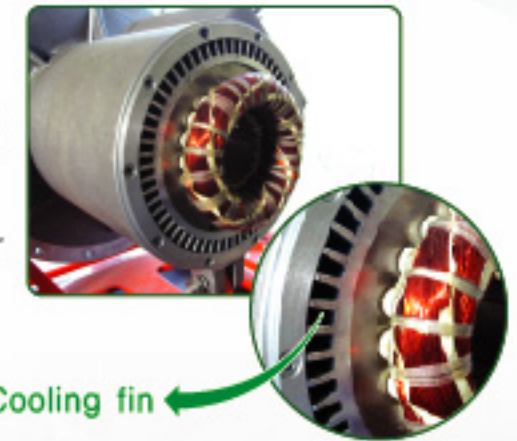


7 Cooling System

[Air-cooling : Less than 150HP]



- Cools the motor in an effective way by using a fan connected to the motor shaft, which pushes a high volume of air through the cooling fan and into the motor (Patent #10-0675821)
- Heated air, after cooling the motor, is discharged through the impeller or blow-off air discharge hole



Cooling fin

[Self Water Cooling Type : More than 200 HP]

- No separate cooling line is required because of the self circulating cooling system (Patent No. 10-0781298 'Air blower')
- No separate cooling fan is required as water cooling is done by suction air through the radiator
- The water cooling method is more efficient than the air cooling method and provides for a longer life of the motor and inverter



Water Jacket

Installation and Maintenance

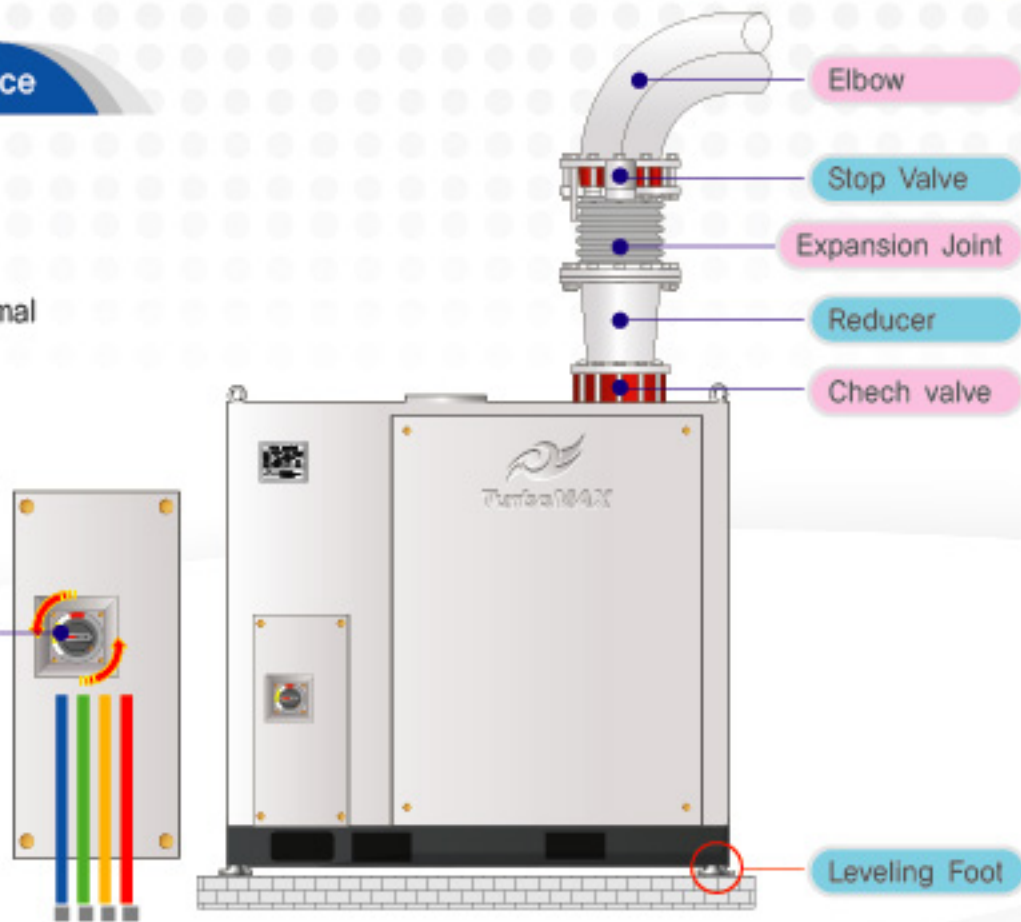
1 Installation

- Anchor work and normal construction are not necessary
- Simple leveling work

[Piping Wiring]

Cable Inlet

- Power Cable
- Ground Wire
- Communication Wire
- Control Wire



2 Simple Maintenance

- Regular replacement of filter required (Replacement period might differ depending on the on-site environment)
- Simple and easy filter replacement
- Low maintenance cost

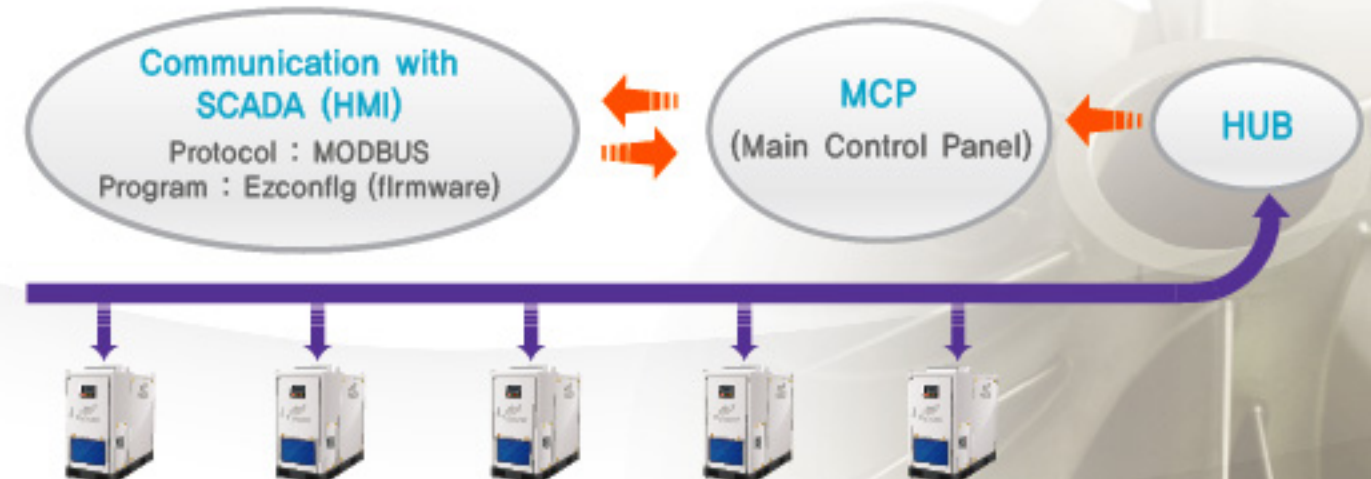
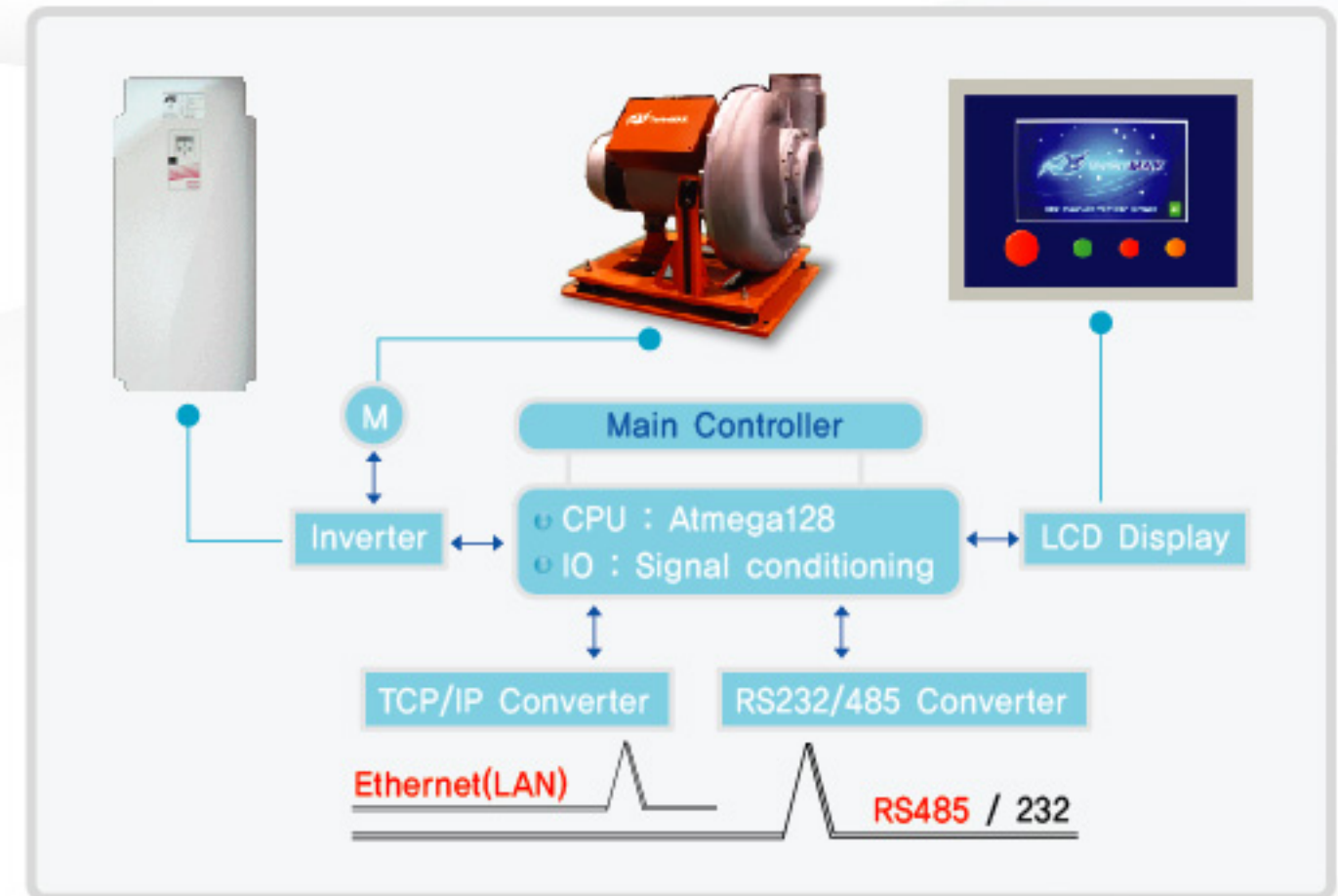


Control and Operation

TurboMAX



- [CASE 1] Local Operation
- [CASE 2] Remote Control
- [CASE 3] Automatic Operation

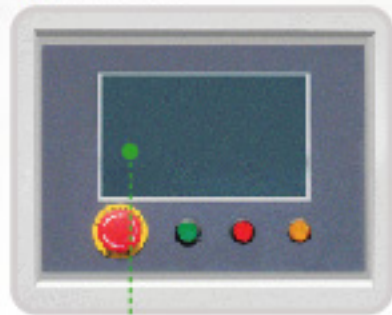


>>> Human-friendly Turbo Blower Turbo Blower Structure



Structure

1 Controller



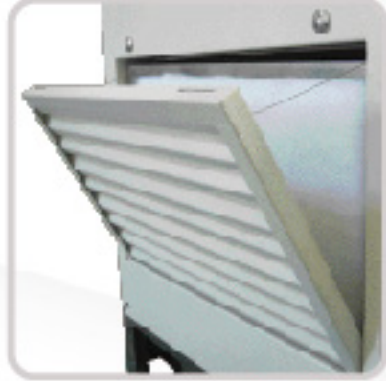
2 Touch Screen



3 Electrical panel



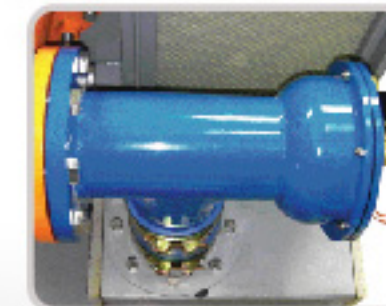
4 Inverter filter



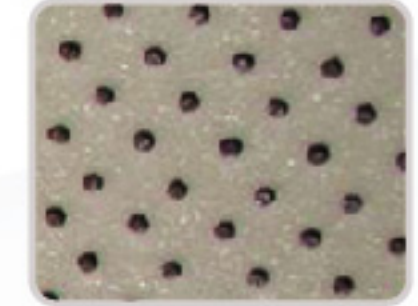
5 MCCB



11 Name plate

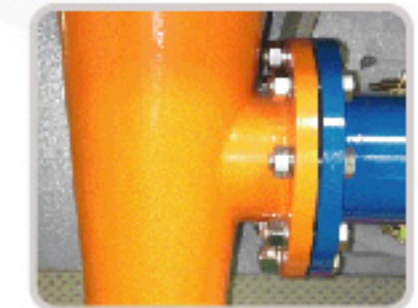


10 BOV(Blow-off Valve)



9 Sound absorbing material

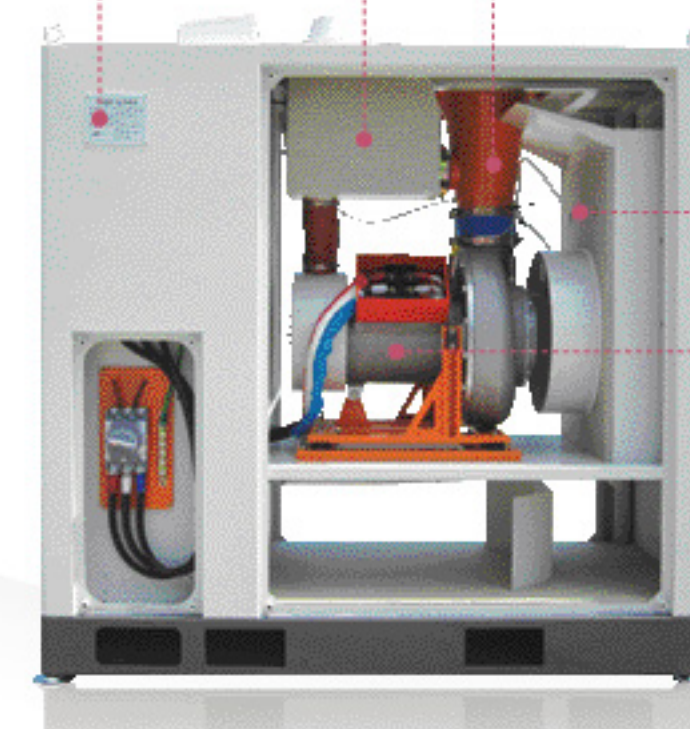
8 Reducer



7 Suction Filter



6 Main part of machine

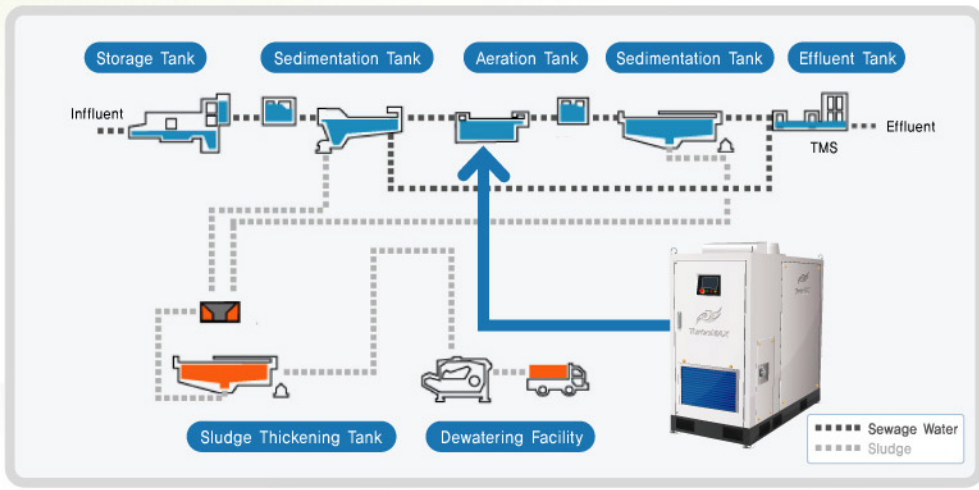




>>> Environmentally-friendly Turbo Blower Turbo Blower Application

Applications

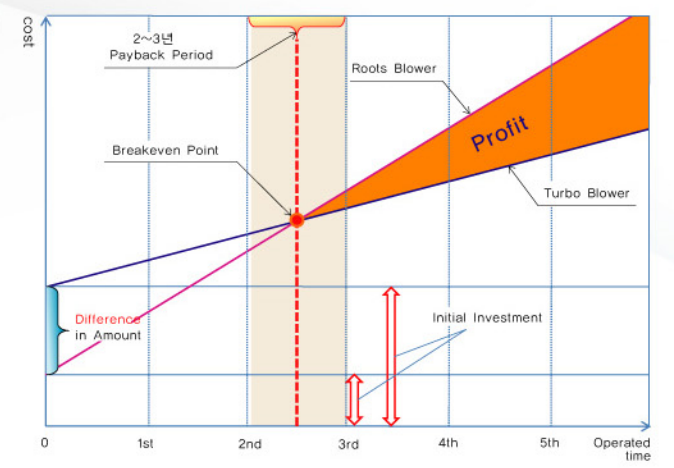
- ① To provide air for foul water/waste water treatment center
- ② Livestock farming night soil treatment plant
- ③ To deliver chemical/cement chromatid
- ④ Supply Oxygen for desulfurization process in powerplants



Expected Benefits

1. Economical Effect

- Saves energy by more than 30-50% compared to existing Roots Blower
- Designed as module type to provide quick and perfect A/S
- Minimize operation & maintenance cost by applying air bearing – no oil required
- 30-50% lower price compared to existing gear box type or magnetic bearing type Turbo Blower



2. Environmental Effect

- Environmentally-friendly facility with no vibration and low noise
- Minimum space is required to install as the Blower package is compact and requires little space
- No environmental pollution as oil or grease is not used



3. Technological Effect

- Airflow range can be widely controlled by variation of motor speed
- Improve aeration effect with discharged air at low temperature due to the high efficiency



Specification



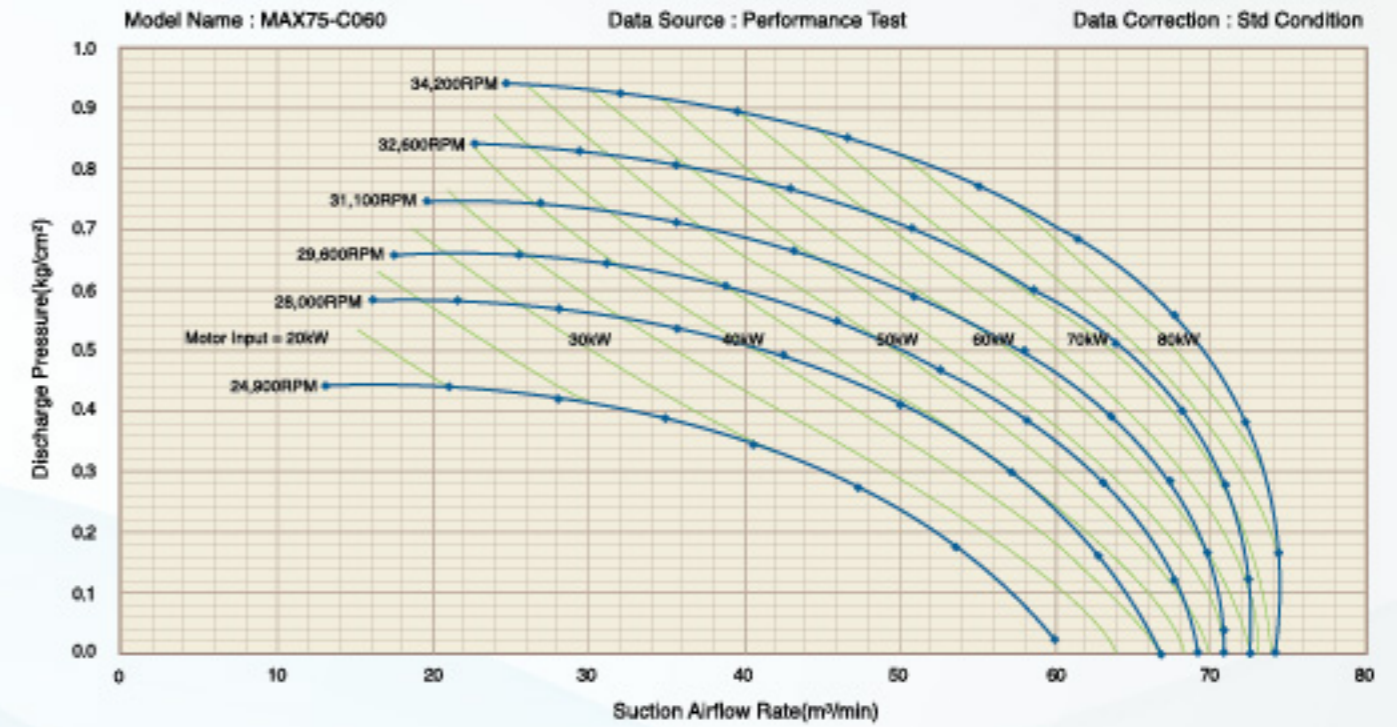
Performance Table

Dis. Pressure [kg/cm ² / psi g]	MAX20	MAX30	MAX50	MAX75	MAX100	MAX150	MAX200	MAX250	MAX300	MAX400	
	Air Flow [m ³ /min / scfm] - 1atm(14.7psi), 20°C(68°F), 68RH, Air Flow Tolerance : ±5%										
0.3 / 4.3	18/636	26/918	47/1660	76/2684	107/3779	130/4591	174/6145	243/8582	135/4768	348/12290	
0.4 / 5.7	16/565	23/812	43/1519	68/2402	86/3037	130/4591	164/5792	217/7664	242/8547	328/11584	
0.5 / 7.1	14/494	20/706	38/1342	68/2402	74/2613	113/3991	148/5227	195/6987	225/7946	296/10454	
0.6 / 8.5	12/424	18/636	33/1165	49/1731	66/2331	104/3673	132/4662	160/5651	200/7063	264/9324	
0.7 / 10.0			26/918	44/1554	58/2048	92/3249	116/4097	145/5121	180/6357	232/8194	
0.8 / 11.4			23/812	40/1413	58/2048	82/2896	106/3614	135/4768	162/5721	216/7628	
0.9 / 12.8				37/1307	50/1766	69/2437	92/3249		137/4838	184/6498	
1.0 / 14.2				31/1095	42/1483	62/2190	86/3037		125/4415	172/6075	
1.1 / 15.6					38/1342	57/2013	76/2684		114/4026		
1.1 / 17.1					37/1307	56/1978	75/2649		112/3956		
1.3 / 18.5					35/1236	53/1872	70/2472		106/3744		
1.5 / 21.3					32/1130	48/1695	64/2260		96/3390		
2.0 / 28.4					27/954				81/2861		
Weight [kg/lb]	250/551	250/551	250/551	415/915	550/1213	750/1653	830/1830	1000/2205	1100/2425	1100/2425	
BOV Pipe [mm/inch]	100/4	100/4	100/4	125/5	125/5	125/5	125/5	150/6	150/6	150/6	
Dis. Pipe [mm/inch]	150/6	150/6	150/6	200/8	200/8	200/10	200/12	400/16	400/16	400/16	
SIZE (mm/inch)	W	700/27.6	700/27.6	700/27.6	800/31.5	850/33.5	850/33.5	950/37.4	1100/43.3	1100/43.3	1200/47.2
	L	1050/41.3	1050/41.3	1050/41.3	1200/47.2	300/51.2	1700/66.9	1700/66.9	1750/68.9	1750/68.9	1900/74.8
	H	1000/39.4	1000/39.4	1000/39.4	1350/53.1	1600/63.0	1600/63.0	1700/66.9	2000/78.7	2000/78.7	2000/78.7

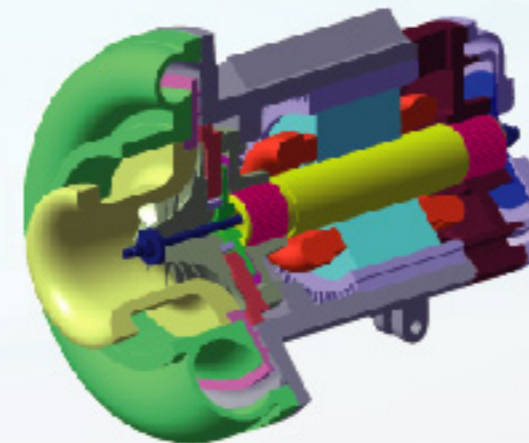
Performance Map

Performance Map

Ambient Condition : 1 atm, 20°C, density=1.2kg/m³



Supply Scope



Standard

- Single stage centrifugal blower
- Inverter
- Blow off Valve
- High speed motor(PMSM)
- Controller
- BOV Silencer

Option

- Check Valve
- Expansion Joint
- Discharge Silencer
- Stop Valve
- Remote Control
- Monitoring

Major Installations



Human wastes processing center in Taebaek



Sewage treatment center in Cheongju



Sewage treatment center in Ahsan



Sewage treatment center in Uijeongbu



Sewage treatment center in Ulsan



On-site aeration



China (Nano)



China (Joongsan)



China (Ssantow)



Poland



Saudi Arabia (On-site aeration)



Saudi

Intellectual Property Rights

