

The Next Generation of Air Bearing
High-Speed Turbo Blower



TNE AIR-BEARING HIGH-SPEED TURBO BLOWER

THE NEXT GENERATION OF TURBOMACHINERY



TNE Korea

60-9, Daehwa-ro 32beon-gil, Daedeok-gu, Daejeon, 34364, Korea
info@tnekorea.com WWW.TNEKOREA.COM
82.42.932.9982 82.42.932.9983


TNE Global

500-3055 St-Martin, Laval, H7T 0J3, Canada
info@tne4global.com WWW.TNE4GLOBAL.COM
1.450.902.4995

The information is for reference only. Performance data and dimensions shown in this brochure are the best estimation and could be changed without prior notice. Certified performance data and dimensions shall be available on request.


ATB : All-around Turbo

Born to be versatile



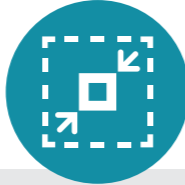
Budget air bearing high-efficiency turbo blower

- Price drop, yet the equal high-efficiency
- Oil-less patented air bearing airend direct coupled to high-speed PMSM
- Energy saving for everyone
- All-in-one package at the minimum capital cost




Hassle-free operation

- Easy startup: ready to go "plug and play"
- BOV free: no more trouble with BOV*
* operation under 6 psi,g
- Minimum control and less trouble
- Maintenance of air inlet filter only



Compact size and light weight

- Free standing at minimum foot print
- Flexible on-site setup
- Ease of logistics



Quick and easy troubleshooting

- Designed for "swap and fix" by module
- Simple operation of "Start and Stop" with manual speed control

Model	Standard Enclosure			
	W"	L"	H"	Weight(lb)
S0	14	16	20	77
S2	18	25	26	198
S4	26	41	45	418
S6	31	59	59	770

Tolerance : ± 1/2"



Scope of Supply

- Standard Package
 - High-Speed Turbo Blower Core with PMSM and Air Bearing
 - Acoustic Sound Enclosure (80dB(A) ± 2dB)
 - Air Inlet Filter
 - Internal Vibration Absorption Mount
 - Built-in High-Speed VFD
 - Remote Control by Hardwiring
- Options and Customization
 - HEPA Type 2 micron Filter
 - Discharge Pipe: Vertical/ Side
 - Outdoor Installation Package
- Accessories
 - Discharge Check Valve
 - Discharge Safety Butterfly Valve
 - Discharge Flexible Joint
 - Pressure Relief Valve



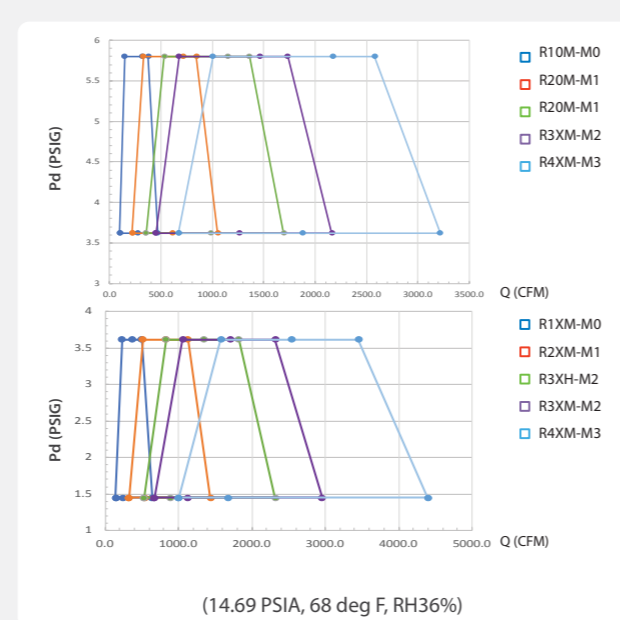
Certifications and Standard

- Core module integrated with motor and rotor:
 - UL1004-1
 - CSA22.2
 - CE
- The product is assembled and tested according to ISO and ASME PTC standard.

Specifications

Rated Power	8~55 kW	Cooling	Air Cooled Type
Bearing Type	Air Foil Bearing	Motor	PMSM
Speed Control	VFD	Airend	Single Stage Centrifugal
Input Power	380~480V, 3Ph, 50~60Hz		
Ambient Conditions	14~104 deg F, R H 0~100%		
Max Discharge Pressure	6 PSIG @Sea Level Static Condition		
Casing	Aluminum Alloy		
Impeller	Aluminum Alloy		
Magnet	Rare Earth Magnet		
Shaft	Inconel		
Foot Type	Adjustable Levelling Feet / Anchoring		
Suction Inlet	Louvered inlet/ Piped Inlet		

Product Range



		ATB High Pressure															
MOTOR FRAME		M0			M1			M2			M2+			M3			
Rated Power	kW	8			18			29			37			55			
AIREND		R10M			R20M			R30H			R30M			R40M			
Rated Speed N _d		59,571			39,714			27,700			22,720			22,720			
P _d (PSIG)	O.P.	MIN	OPT	MAX	MIN	OPT	MAX	MIN	OPT	MAX	MIN	OPT	MAX	MIN	OPT	MAX	
	Q	CFM	146	316	375	329	712	844	530	1,148	1,360	676	1,464	1,735	1,005	2,177	2,579
5.8	W _m	kW	3.8	6.6	7.9	8.5	14.8	17.8	13.8	23.8	28.8	17.6	30.4	36.7	26.1	45.2	54.5
	Q	CFM	97	273	468	219	614	1,052	353	989	1,695	451	1,262	2,163	670	1,875	3,215
3.6	W _m	kW	1.8	3.7	7.9	4.1	8.4	17.8	6.7	13.5	28.7	8.5	17.2	36.6	12.7	25.6	54.3

		ATB Low Pressure															
MOTOR FRAME		M0			M1			M2			M2+			M3			
Rated Power	kW	8			18			29			37			55			
AIREND		R1XM			R2XM			R3XH			R3XM			R4XM			
Rated Speed N _d		59,571			39,714			27,700			22,720			22,720			
P _d (PSIG)	O.P.	MIN	OPT	MAX	MIN	OPT	MAX	MIN	OPT	MAX	MIN	OPT	MAX	MIN	OPT	MAX	
	Q	CFM	229	370	502	515	833	1,129	830	1,342	1,819	1,059	1,712	2,320	1,574	2,545	3,449
3.6	W _m	kW	3.6	5.3	7.9	8.2	12.0	17.8	13.2	19.3	28.6	16.9	24.7	36.5	25.1	36.7	54.3
	Q	CFM	146	244	639	329	548	1,438	530	883	2,317	676	1,126	2,956	1,005	1,674	4,394
1.5	W _m	kW	1.0	1.7	8.0	2.3	3.7	17.9	3.7	6.0	28.9	4.8	7.7	36.9	7.1	11.4	54.8

CTB : Compact Turbo

The innovation of turbomachinery

Compact

- › Small footprint and lightweight for flexible installation
- › Quick and easy troubleshooting thanks to "Swap and Fix" components
- › Expandable design from simple standard



Affordable

- › Comparable efficiency at small size
- › Cost-effective design for minimum capital investment
- › Customizable budget by offering different options

Robust

- › Designed for standardization and mass production
- › Improved air bearing reliability due to marginal designs and patented mechanical assembly
- › Control algorithm engineered for each application

Eco-friendly

- › Oil-free air bearing
- › Low vibration and low noise
- › Minimum maintenance = less production of waste

Scope of Supply

- › Standard Package
 - High-Speed Turbo Blower Core with PMSM and Air Bearing
 - Acoustic Sound Enclosure (80dB(A) ± 2dB)
 - Standard Air Inlet Filter (Non-woven)
 - Blow-off Valve and Silencer
 - Internal Vibration Absorption Mount
 - Built-in High-Speed VFD
 - Built-in Local Control Panel with Remote Control Capability
 - Flow Rate Measurement and Robust Surge Protection Algorithm
- › Instrumentation
 - Inlet Air Temp., Motor Temp., Ambient Pressure, Discharge Pressure, Differential Pressure for Flow Measurement, Inlet Filter Pressure Drop
- › Technical Documents
 - Bill of Material
 - Installation layout Drawings
 - Electrical and Control Drawings
 - Operation and Maintenance Manual
 - Installation and Commissioning Instruction

Options

Accessories

- Discharge Check Valve
- Discharge Safety Butterfly Valve
- Discharge Flexible Joint

Spare Parts

- Standard Air Inlet Filter (Non-Woven)
- HEPA Type (2 micron) Modular Filter
- Air Inlet Pre-Filter (Non-Woven)

Communication

- Ethernet IP
- Profinet/ Profibus
- Modbus

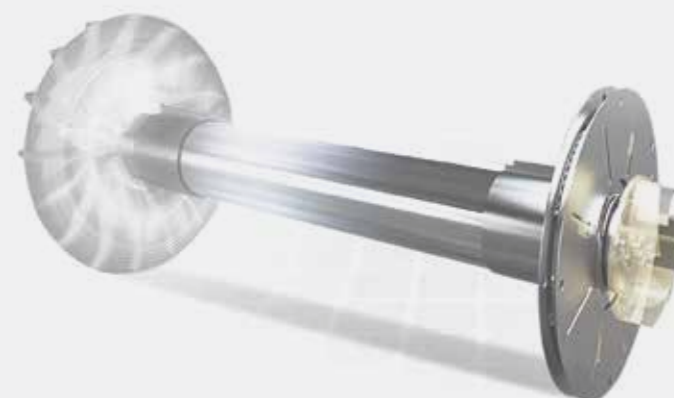
Certifications and Standard

- › Core module integrated with motor and rotor :
 - UL1004-1
 - CSA22.2
 - CE
 - › Standard Complete Package: available for
 - UL1450
 - CSA22.2
 - CE
- › The product is assembled and tested according to ISO and ASME PTC standard.

Specifications

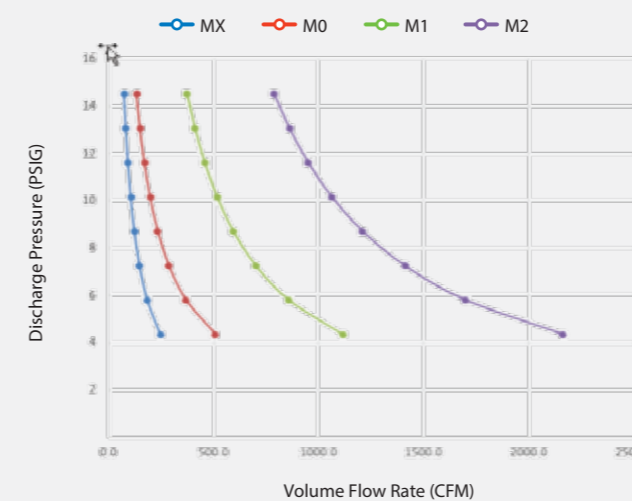
Rated Power	4~37 kW	Cooling	Air Cooled Type
Bearing Type	Air Foil Bearing	Motor	PMSM
Speed Control	VFD	Airend	Single Stage Centrifugal

Input Power	380~480V, 3Ph, 50~60Hz
Ambient Conditions	14~104 deg F, RH 0~100%
Max Discharge Pressure	36 PSIG @Sea Level Static Condition
Protection	IP52 or optional IP54
Casing	Aluminum Alloy
Impeller	Aluminum Alloy
Magnet	Rare Earth Magnet
Shaft	Inconel
Foot Type	Adjustable Levelling Feet / Anchoring
Suction Inlet	Louvered inlet/ Piped Inlet



Product Range

PRODUCT RANGE - CTB (14.69 PSIA, 68 deg F, RH 36 %)



Products of discharge pressure higher than 20 PSIG are available on request.

DISCHARGE PRESSURE		MODEL & VOLUME FLOW RATE (CFM)				
		CTB				
Pressure Ratio	Pressure Rise (ΔP) PSIG	SINGLE CORE				
		1.99	15	74.7	133	375
1.89	13	83.0	150	412	862	
1.79	12	93.3	171	459	951	
1.69	10	107	198	517	1,064	
1.59	9	124	236	595	1,210	
1.49	7	149	289	702	1,410	
1.39	6	186	370	859	1,699	
1.29	4	248	510	1,114	2,162	
MOTOR (PMSM)		MX	M0	M1	M2	
Rated Power	kW	4	8	18	37	
	HP	5	10	24	50	
Rated Speed	RPM	98,000	69,300	46,200	32,200	
PACKAGE		S0	S1	S2	S4	
Size	W	inch	TBD	18	19	26
	L	inch	TBD	26	38	44
	H	inch	TBD	26	35	45
Weight	lb	TBD	220	287	595	
Input Voltage	V	220 ~ 480		380 ~ 480		
Frequency	Hz	50 ~ 60		50 ~ 60		

STB : Standard Turbo

The improvement of turbomachinery



Optimal Capacity for Air Foil Bearings

- › Stable operation with an optimal air foil bearing load capacity
- › Designed for marginal bearing clearance, which reduces the sensitive to operating environment
- › Robust air foil bearings for consistent and reliable performance and quality

Innovative Designs

- › Improved quality with patented air foil bearings and dust-tight air-cooled sound enclosure
- › High-efficiency energy saving solutions without any liquid during operation
- › Patented H2S gas tight enclosure design

Optimized Module for Turn-Down and High Efficiency

- › Combination of single or dual and vaned or vaneless diffuser according to operation requirements
- › Optimized combination of individual modules for easy swap and fix with high-efficiency operation

Scope of Supply

- › Standard Package
 - High-Speed Turbo Blower Core with PMSM and Air Bearing
 - Acoustic Sound Enclosure (80dB(A) ± 2dB)
 - Molded Case Circuit Breaker (MCCB)
 - Standard Air Inlet Filter (Non-woven)
 - Blow-off Valve and Silencer
 - Internal Vibration Absorption Mount
 - Built-in High-Speed VFD
 - Built-in Local Control Panel with Remote Control Capability
 - Flow Rate Measurement and Robust Surge Protection Algorithm
- › Instrumentation
 - Inlet/Discharge Air Temp., Motor Temp., Ambient Pressure, Discharge Pressure, Differential Pressure for Flow Measurement, Inlet Filter Pressure Drop
- › Technical Documents
 - Bill of Material
 - Installation and Layout Drawings
 - Electrical and Control Drawings
 - Operation and Maintenance Manual
 - Installation and Commissioning Instruction



Accessories

- Discharge Check Valve
- Discharge Safety Butterfly Valve
- Discharge Flexible Joint

Spare Parts

- Standard Air Inlet Filter (Non-Woven)
- HEPA Type (2 micron) Modular Filter
- Air Inlet Pre-Filter (Non-Woven)

Communication

- Ethernet IP
- Profinet/ Proibus
- Modbus

Certifications and Standard

› Core module: available for

- UL
- CSA
- CE

› Standard Complete Package: available for

- UL
- CSA
- CE

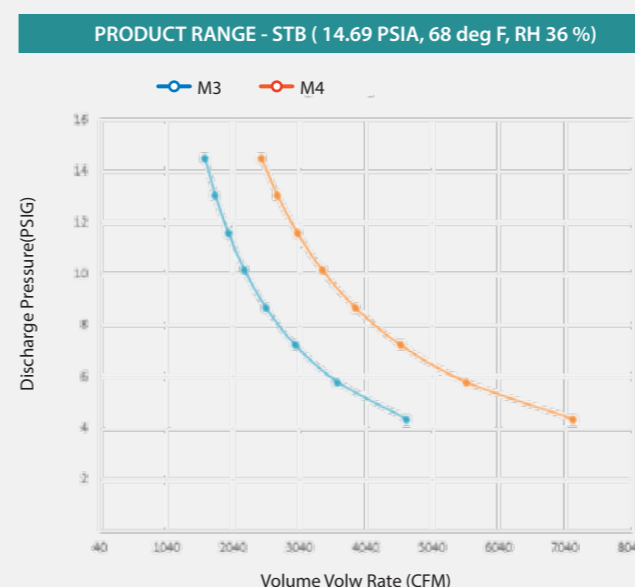
› The product is assembled and tested according to ISO and ASME PTC standard.

Specifications

Rated Power	45~115kW
Bearing Type	Air Foil Bearing
Cooling	Air Cooled Type
Speed Control	VFD
Motor	PMSM
Airend	Single Stage Centrifugal

Input Power	380~480V, 3Ph, 50~60HZ
Ambient Condition	14~104 deg F, RH 0~100%
Casing	Aluminum Alloy
Impeller	Aluminum Alloy
Magnet	Rare Earth Magnet
Shaft	Inconel
Protection	IP 52 / Optional IP54
Foot Type	Adjustable Levelling Feet / Anchoring
Suction Inlet	Louvered inlet/ Piped Inlet

Product Range



DISCHARGE PRESSURE		MODEL & VOLUME FLOW RATE (CFM)	
Pressure Ratio	Pressure Rise (ΔP) PSIG	STB	
		SINGLE CORE	
1.99	15	1,617	2,471
1.89	13	1,773	2,712
1.79	12	1,966	3,010
1.69	10	2,211	3,387
1.59	9	2,531	3,882
1.49	7	2,971	4,561
1.39	6	3,613	5,566
1.30	4	4,651	7,165
MOTOR (PMSM)		M3	M4
Rated Power	kW	75	115
	HP	100	150
Rated Speed	RPM	26,400	22,600
PACKAGE		56	58
Size	W	inch	33
	L	inch	58
	H	inch	57
Weight	lb	1,257	1,874
Input Voltage	V	380 ~ 480	
Frequency	Hz	50 ~ 60	

MTB : Multi-Core Package Turbo

The expansion and flexibility for the future

Adaptive Capacity

- › Highly improved on turn-down ratio
- › Operation at best efficiency point (BEP)
- › Dead Zone Control: no flow gap during core transition
- › Total air-cooled system: neither oil nor lubricant
- › Customizable discharge pipe configurations

Better Availability

- › Built-in backup system with an independent operation mode of each core
- › Enable to operate the system continuously despite the single core failure
- › Operating at the optimal capacity based on real-time demand
- › No interference of inlet air flow and minimal downtime for maintenance
- › Available for dual/quad/hexa/octa core package



Scope of Supply

- › Standard Package
 - High-Speed Turbo Blower Core with PMSM and Air Bearing
 - Acoustic Sound Enclosure (80dB(A) ± 2dB)
 - Molded Case Circuit Breaker (MCCB)
 - Standard Air Inlet Filter (Non-woven)
 - Blow-off Valve and Silencer
 - Internal Vibration Absorption Mount
 - Built-in High-Speed VFD
 - Built-in Local Control Panel and Master Control Panel with Remote Control Capability
 - Flow Rate Measurement and Robust Surge Protection Algorithm
- › Instrumentation
 - Inlet/Discharge Air Temp., Motor Temp., Ambient Pressure, Discharge Pressure, Differential Pressure for Flow Measurement, Inlet Filter Pressure Drop
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Accessories

- Discharge Check Valve
- Discharge Safety Butterfly Valve
- Discharge Flexible Joint

Spare Parts

- Standard Air Inlet Filter (Non-Woven)
- HEPA Type (2 micron) Modular Filter
- Air Inlet Pre-Filter (Non-Woven)

Communication

- Ethernet IP
- Profinet/ Profibus
- Modbus

Certifications and Standard

- › Core module: available for
- › Standard Complete Package: available for

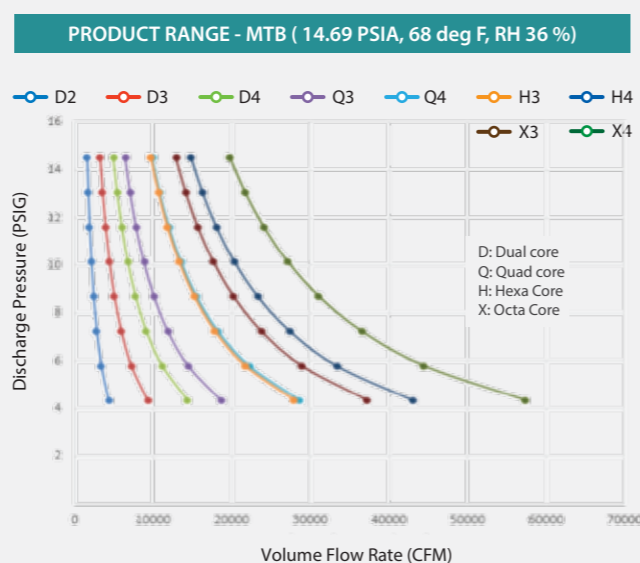


- › The product is assembled and tested according to ISO and ASME PTC standard.

Specifications

Rated Power	150~920 kW	Cooling	Air Cooled Type
Bearing Type	Air Foil Bearing	Motor	PMSM
Speed Control	VFD	Airend	Single Stage Centrifugal
Input Power	380~480V, 3Ph, 50~60Hz		
Ambient Conditions	14~104 deg F, RH 0~100%		
Protection	IP52 / Optional IP54		
Casing	Aluminum Alloy		
Impeller	Aluminum Alloy		
Magnet	Rare Earth Magnet		
Shaft	Inconel		
Foot Type	Adjustable Levelling Feet / Anchoring		
Suction Inlet	Louvered inlet/ Piped Inlet		

Product Range



Contact TNE for the blower capacity larger than 920kW.

DISCHARGE PRESSURE		MODEL & VOLUME FLOW RATE (CFM)								
		MTB								
Pressure Ratio	Pressure Rise (ΔP) PSIG	MULTI CORE								
		2	4	6	8	6	8	6	8	
1.99	15	1,579	3,233	4,942	6,466	9,885	14,827	12,933	19,770	
1.89	13	1,724	3,546	5,425	7,093	10,850	16,275	14,186	21,700	
1.79	12	1,903	3,933	6,020	7,866	12,041	18,061	15,731	24,081	
1.69	10	2,128	4,422	6,775	8,844	13,550	20,324	17,687	27,090	
1.59	9	2,421	5,062	7,764	10,125	15,528	23,292	20,250	31,056	
1.49	7	2,820	5,941	9,122	11,882	18,244	27,366	23,764	36,489	
1.39	6	3,399	7,227	11,122	14,453	22,223	33,335	28,906	44,447	
1.30	4	4,324	9,302	14,330	18,605	28,660	42,290	37,210	57,320	
MOTOR (PMSM)		M2	M3	M4	M3	M4	M4	M3	M4	
Rated Power	kW	74	150	230	300	460	690	600	920	
	HP	99	200	308	402	617	925	805	1230	
Rated Speed	RPM	32,220	26,400	22,600	26,400	22,600	22,600	26,400	22,600	
PACKAGE		DUAL		QUAD		HEXA		OCTA		
Size	W	inch	51	65	79	131	157	236	261	315
	L	inch	44	58	62	58	62	62	58	62
		inch	45	57	58	57	58	58	57	58
Weight	lb	1,190	2,513	3,748	5,072	7,496	11,244	10,053	14,991	
Input Voltage	V	380 ~ 480								
Frequency	Hz	50 ~ 60								

Air Bearing High-efficiency Airend

High Efficiency for everywhere

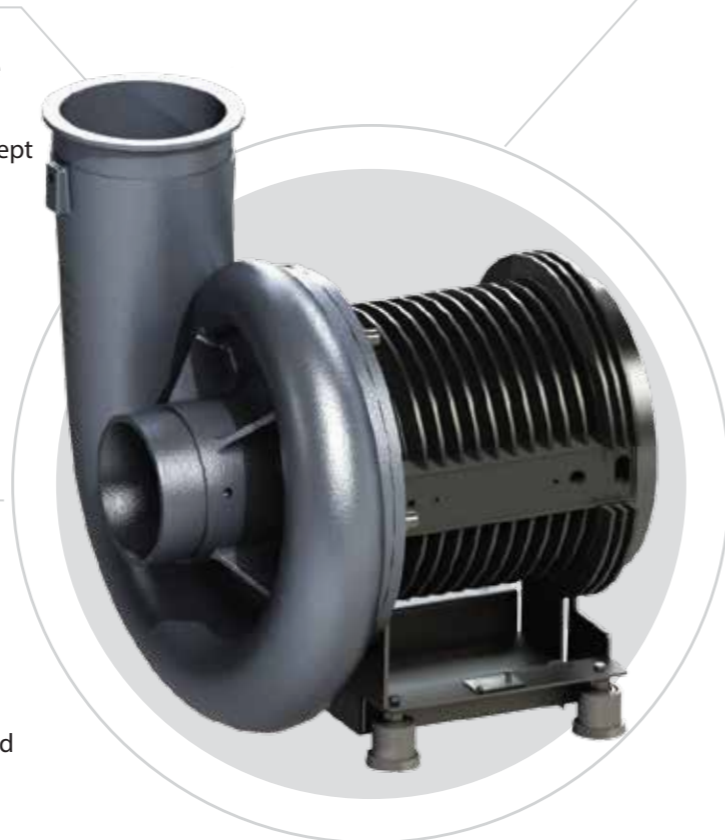
MINT Technology: Made in Turbo

TNE turbo blower is developed with unique core and enclosure designs that maximize efficiency and wide range operations.

Air bearing high-efficiency airend is available for better flexibility of the system integration and customization to the project. TNE airend comes with complete technical manuals including tested performance and installation guidelines.

High Efficiency Airend

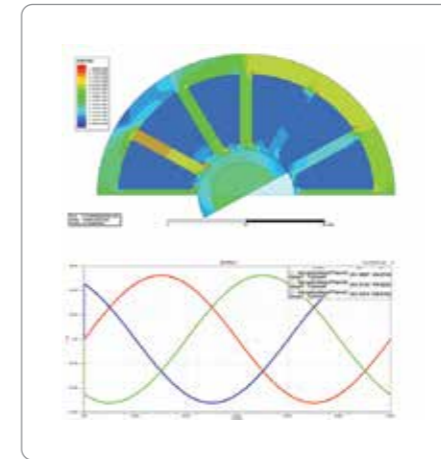
- › Unrivalled efficiency in the same class and comparable efficiency to medium/large size turbo blowers
- › High efficiency configuration with the full 3D back-swept impeller design directly mounted with a rotor
- › Optimized for a wide range of operation and high efficiency with the various diffuser and volute combination
- › Optional vaned or vaneless diffuser



Rotor Dynamics

- › Robust rotor design supporting the optimum aerodynamic performance
- › Direct-drive by high-speed PMSM
- › Rotor integrated air bearing design
- › Dynamic stability over a wide range of operating speed

High Speed PMSM



Robust and Reliable Air Foil Bearing

- Simple Assembly!
- No Welding!
- No Burst!

› Innovative bearing designs are patented in the US.

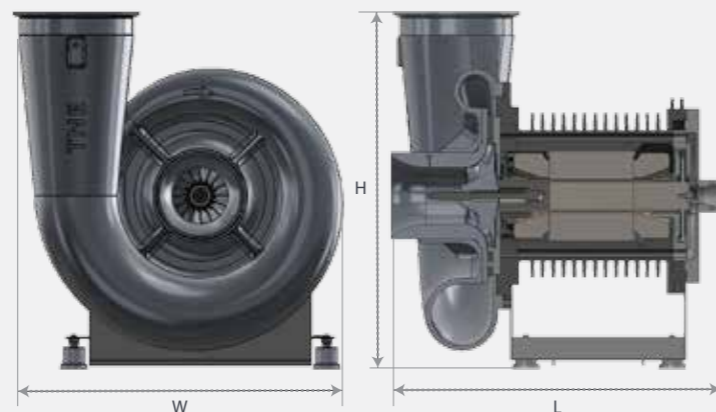
- › Improved reliability with patented designs for mass production and simple mechanical assembly
- › Designed for enduring frequent on/off operation
- › Longer life spans with contactless, gearless, and vibration-free operation
- › Operation at zero discharge pressure with improved load capacity and stability.
- › Bearing module inspection at the component level for high level of quality control



Core Specifications

Motor Type	Rated Power (kW)	Size (WxLxH")	Weight (lb)
M0	4~8	7.5x7.5x9.0	20
M1	11~18	11.5x12.0x14.5	48.5
M2	22~37	14.0x17.5x18.0	123.5
M3	45~75	24.5x25.0x27.0	253.5
M4	95~115	28.0x29.0x28.0	330.5

Tolerance : ± 1/4"


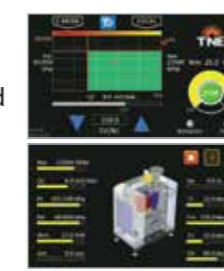


Standard Package

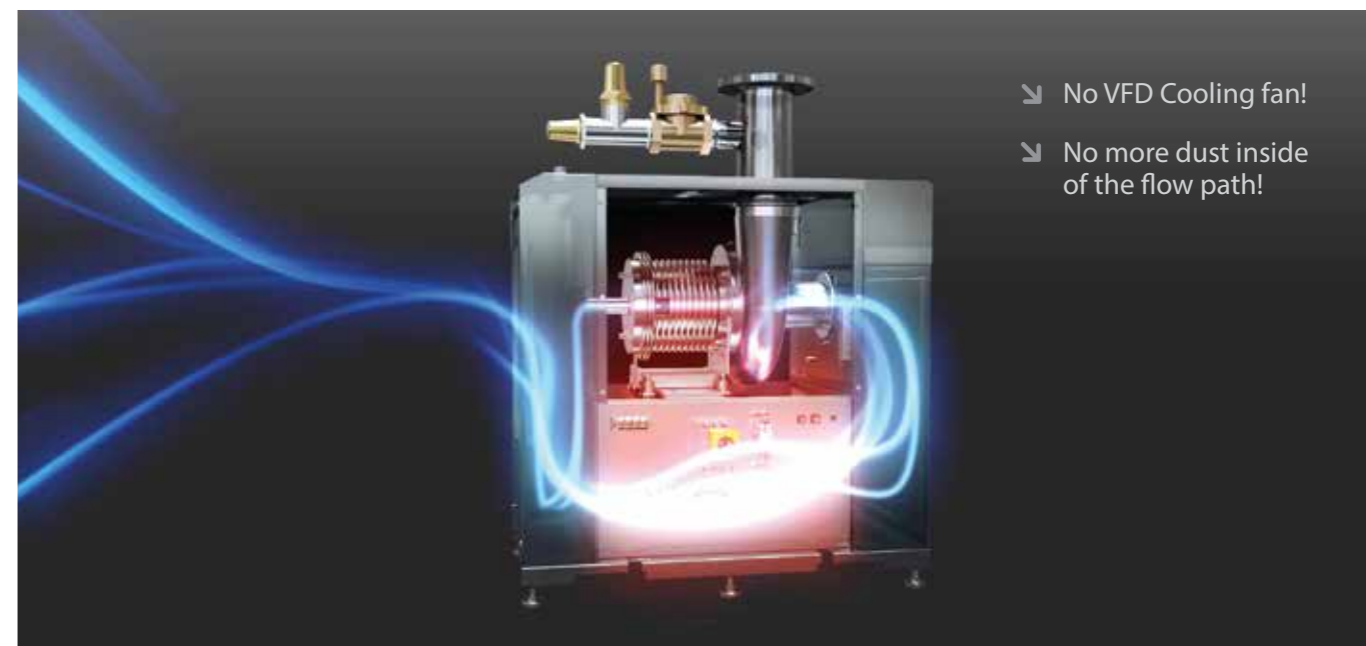
Patented dust-tight air cooled sound enclosure

Package with Modular Component

- › Quick and Easy connection between components
- › “Swap & Fix” components for quick and easy troubleshooting on site
- › Lightweight and compact size component for easy logistics and replacement

Motor Controller: High-Speed VFD	Local Control Panel
<ul style="list-style-type: none"> • Variable frequency driver(VFD) allows variable operation mode to operate relevant flow rate and discharge pressure. • Modular design : Easy swap & troubleshooting • Closed-loop vector control for the reliable starting of PMSM at various site power conditions 	<ul style="list-style-type: none"> • Touch Screen with MCU or PLC module • Operation: Local or Remote by speed command / DO • Various customizable control package options • Built-in flow measurement based on test data calibration and universal surge protection • Supporting a variety of communication protocols 

Dustproof Sound Enclosure with Innovative Cooling System

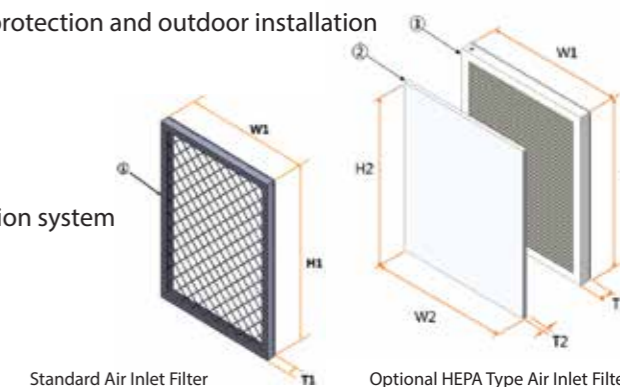


- › No VFD Cooling fan!
- › No more dust inside of the flow path!

- › Patented air cooling systems with the closed-air inlet to blower cores
- › Total air-cooled system: oil-free and lubricant-free operation
- › Single control of flow from air inlet filter -> improved reliability and easy maintenance
- › An option for IP54 or equivalent grade enclosure for dust protection and outdoor installation

Air Inlet Filter

- › Maximizing efficiency and reliability through double filtration system
- › Easy replacement and low maintenance costs
- › An optional water separator for the outdoor installation



› Standard Air Inlet Filter (Non-woven)

Model	Standard Enclosure		
	W1"	L1"	T1"
S2	13.0	15.8	1.2
S4	15.8	21.7	1.2
S6	15.8	21.7	1.2
S8	18.1	30.7	1.2

Tolerance : ± 1/10"

› Air Inlet Main Filter (HEPA type, optional)

Model	Standard Enclosure		
	W1"	L1"	T1"
S2	13.0	15.8	1.2
S4	15.8	21.7	1.2
S6	15.8	21.7	1.2
S8	18.1	30.7	1.2

Tolerance : ± 1/10"

› Air Inlet Pre-Filter (Non-woven)

Model	Standard Enclosure		
	W2"	L2"	T2"
S2	12.8	16.0	0.2
S4	15.6	21.7	0.2
S6	16.0	21.7	0.2
S8	18.5	30.7	0.2

Tolerance : ± 1/4"

Value Engineering

Options and customizations

Application

Various industry and worldwide installation

Robust Outdoor Blower

- › Right size of the blower for each water basin
- › Central control of distributed blowers for the optimization of power savings
- › Double layered IP54 stainless steel outdoor enclosure



IP 54 Outdoor Enclosure



Water and Wastewater Treatment Process

- › Fiine bubble or coarse bubble aeration
- › Activated sludge, MBR/MBBR
- › Deep aeration
- › Grit chamber aeration
- › Filter backwash



Pneumatic Conveying

- › Petrochemical pellet, cement powder
- › Powder and tablet in pharmaceutical industry
- › Sugar, flour, grain and molt in food industry
- › Lime in mining industry
- › Twine and dyeing process in textile industry

TNE Air Bearing High-Speed Turbo Blower

A versatile state-of-the-art technology is everywhere!

Aeration Control

- › Control multi units of blowers with the central panel.
- › Constant Speed/ Flow/Pressure/ DO Mode
Comply with Most Open Valve Control
- › Ethernet communication to each blowers
Modbus/Ethernet/Profibus/Profitnet
communication to PLANT control
- › IP52 enclosure



Master Control Panel



Air Knife Application

- › Food and beverage wash and drying
- › Metal mill process
- › Green house heating and snow removal
- › Zero leakage closed-loop process for gas



Other Industries

- › Gas Collector/ Booster
- › Themroplastic extrusion
- › Fish farm aeration
- › Dust collection system

