



Technology leader In turbo machinery

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Turbowin Co., Ltd



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Unbelievable

Energy Savings and Cleanness

Save Your Precious Cost
Up to maximum of **40%**
- acquisition and operation cost

Make Aeration system
Clean and
Environmentally Friendly



Turbo blower with air foil bearing

1. There are six (6) leading manufacturers with engineers that have technical ability and years of experience.
 - 1) K-Turbo -> Aerzen
 - 2) Neuros (APG-Neuros)
 - 3) Yentle -> Seah Engineering
 - 4) Turbo max (Lone star)
 - 5) TNE
 - 6) Turbowin (represented in Ontario by Directrick Inc.)
2. Approximately 50 other manufacturers around the world.
3. Not one maker is dominant globally.

Turbo blower with air foil bearing

1. Trend

- 1) Air foil bearing technologies for turbo blowers are evolved and generalized since it is introduced in 2001.
- 2) Challenging related to frequent start/stop, infiltration of foreign object, impeller surge, system cooling, narrow turn down has been solved significantly.
- 3) Automatic multi-blower operation with MCP and SCADA is getting more important role.

1. Market

- 1) The size of High speed blower market is approximately 772 million USD around the world in 2019.
- 2) Air foil bearing take 60%, magnetic bearing take 30%, others including geared type take 10% of the share.

Turbo blower with air foil bearing

1. Benefits compare to PD and Multi stage blower

- 1) Clean air, Clean system.
- 2) High system efficiency.
- 3) Small system foot print.
- 4) Easy to maintain .

-> Clean system with Low operation cost

2. Benefits compare to Magnetic bearing blower

- 1) Simple and Reliable.
- 2) Long system lifetime.

-> Low acquisition and Maintenance cost

Reliable

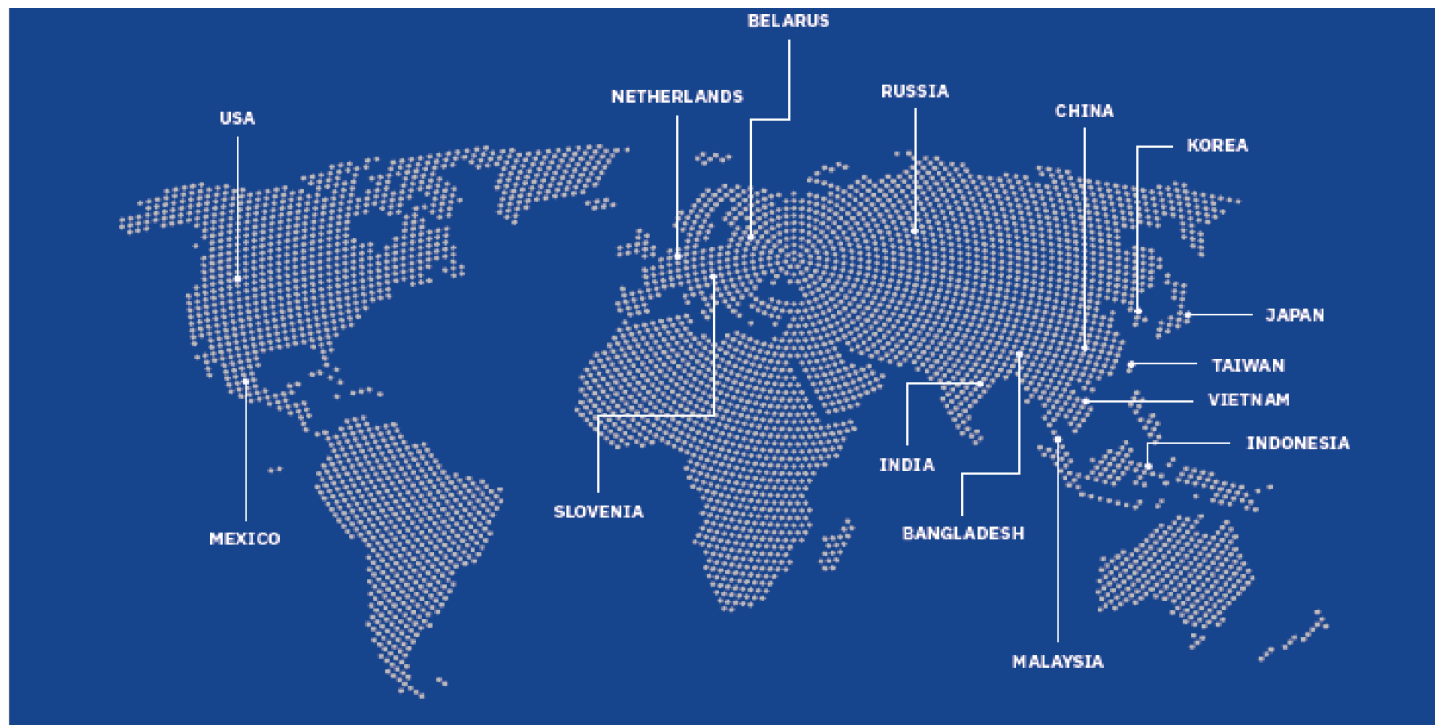
Global References : Worldwide



As of June 2020, totally 1612 blowers are running in service.

Turbowin blower benefits Peoples in more than 50 Countries.

- Aeration of new waste water treatment plants
- Replacement of PD or Multistage blowers
- Other Industrial applications



Reliable

Global References : North America

USA, since 2016

- Project : ANEHEIM, Brewery, MABR
- Product : WL100-06 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 5500mmAq
- Flow rate : 60m³/min



Reliable

Global References : Central and South America



Mexico, since 2018

- Project : Mexico MAZATLAN
- Product : WL30 2units
- User Mode : LOCAL, % speed Mode
- Pressure : 4000mmAq
- Flow rate : 20m³/min



Reliable

Global References : North America



Mexico , total

Monterrey	WL50-06	10/25/2018	3
Mazatlan	WL30-06	12/14/2018	2
Manzanillo	WL75-08	9/16/2019	4
Mexico City, CFE	WL400-12	11/1/2019	1
Manzanillo	WL100-06	11/18/2019	2



WL75-08 at Manzanillo



WL400-12 at Mexico city

Reliable

Global References : Canada

100HP, Belleville ON

- Installation and commissioning is planned in May, 2021
- Replacement of 100HP PD blower
- Use current power supply and piping system to minimize site modification



Reliable

Global References : Europe

Netherlands

- Project : Netherland NEREDA
- Product : WL125-08 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 6000mmAq
- Flow rate : 45m³/min



Reliable

Global References : Russia and CIS

Belarus

- Project : Belarus MINSK
- Product : WL300-06 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 5000mmAq
- Flow rate : 160m³/min



Reliable

Global References : Asia



Japan

- Project : Japan OURA
- Product : WL75-05 2units
- User Mode : LOCAL, % speed Mode
- Pressure : 5000mmAq
- Flow rate : 58m3/min



Reliable

Global References : Asia



- Project : China MAS
- Product : WL400-08 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 6000mmAq
- Flow rate : 252.4m3/min



Reliable

Global References : Asia



- Project : Taiwan FMS
- Product : WL300-08 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 12000mmAq
- Flow rate : 113m3/min



Reliable

Global References : SEA (SoutheastAsia)

Malaysia

- Project : Malaysia LOGI
- Product : WL100-06 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 6000mmAq
- Flow rate : 61m³/min



Reliable

Global References : Southwestern Asia (India and Bangladesh)

Bangladesh

- Project : Bangladesh HAMS
- Product : WL100-06 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 5500mmAq
- Flow rate : 56m³/min

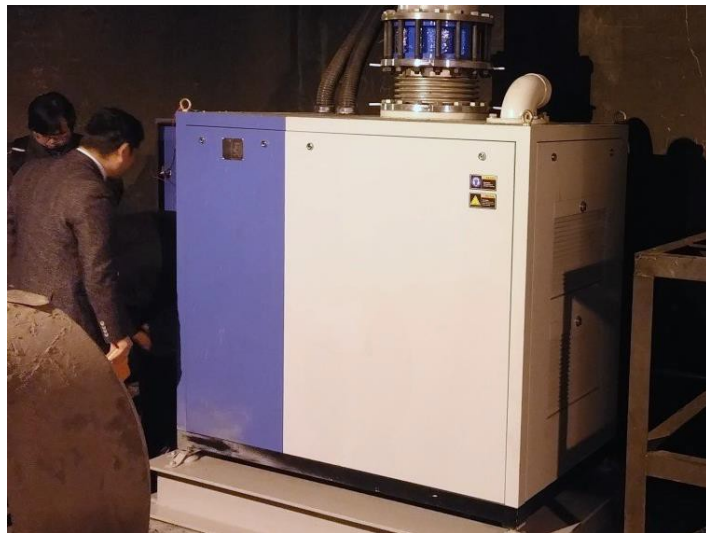


Reliable

Global References : Asia

Korea, powder moving

- Project : H CEMENT
- Product : WL100-06 1unit
- User Mode : LOCAL, % speed Mode
- Pressure : 6000mmAq
- Flow rate : 61m³/min



Reliable

Global References : Korea



Samsung Electronics, since 2016

- Project : WWTP at semiconductor manufacturing facility
- Product : WL200-100, 26 units
- User Mode : LOCAL/REMOTE, % speed Mode
- Pressure : 10,000mmAq
- Flow rate : 120 m³/min



Reliable

Global References : Korea

Samsung Electronics (137 units since July 2016)

Model	# of blower	remarks
WL200-12	42	200HP
WL200-10	52	200HP
WL175-12	16	200HP
WL150-08	4	150HP
WL150-06	8	150HP
WL150-04	2	150HP
WL100-04	1	100HP
WL75-10	2	75HP
WL50-08	6	50HP
WL30-08	2	30HP
WL20-08	2	20HP



Reliable

Global References : Korea

500HP twin impeller at Daegu WWTP since June 2017

- Project : metropolitan WWTP
- Product : WL500-080, 2 units
- User Mode : LOCAL/REMOTE, % speed Mode
- Pressure : 8,000mmAq
- Flow rate : 380 m³/min

VACON 500HP VFD



Reliable

Global References : Korea



LG display, WWTP for LCD manufacturing

Model	# of blower	remarks
WL400-08	5	Twin impeller, single core
WL350-08	2	Twin impeller, single core
WL300-08	5	Single impeller
WL200-08	7	Single impeller
WL150-08	1	Single impeller



Reliable

Global References : Korea



150HP, single impeller at SK Hynix

Model	# of blower	remarks
WL150-06	4	Outdoor, no canopy
WL125-08	5	Outdoor, no canopy
WL100-08	5	Outdoor, no canopy
WL40-08	3	Outdoor, no canopy



Wide Product Range

TURBO BLOWER WL SERIES 10 ~ 1000HP [0.4 ~ 1.2 BAR]



WL10
WL20
WL30



WL40
WL50



WL75
WL100
WL125



WL150
WL200



WL300



WL400



WL500

Wide Product Range

TURBO BLOWER WL, SINGLE IMPELLER SERISE 10 ~ 250HP

WL single impeller series are small, efficient and durable turbo blowers. These blowers can be used for air supply in water and wastewater treatment plants, dry powder transfer in chemical or cement plants, air knife and numerous other industrial applications. These single impeller machines are the best solution for low to medium air volume, low pressure requirements. **Dual core arrangement in one enclosure are available for all core models.**

SPECIFICATION WL10 WL20 WL30 WL40 WL50 WL75 WL100 WL125 WL150 WL200 WL250

Single Impeller Type												
DISCHARGE PRESSURE (psi)		Condition : 14.7psia, 68°F, 65% RH, Tolerance of air flow rate ±5%										
AIR FLOW RATE (ft3/min)	5.80			988.81	1306.64	1659.79	2472.03	3531.47	4061.19	4590.91	-	-
	8.70	247.20	494.41	706.29	882.87	1200.70	1801.05	2436.71	2895.80	3708.04	4944.05	5650.35
	11.60	176.57	388.46	600.35	776.92	988.81	1483.22	1942.31	2472.03	2966.43	3849.30	4767.48
	14.50	-	-	494.41	635.66	741.61	1200.70	1589.16	1942.31	2295.45	3072.38	3672.73
	17.40	-	-	-	-	635.66	988.81	1341.96	1659.79	2012.94	2648.60	3284.26
SHAFT POWER (hp)		10	20	30	40	50	75	100	125	150	200	250
(kw)		7.5	15	22.5	30	37.5	56.25	75	93.75	112.5	150	187.5
EXHAUST PIPE (in)	5.80			6	6	8	10	12	12	12	-	-
	8.70	3	4	6	6	6	8	8	8	12	12	12
	11.60	3	4	6	6	6	8	8	8	10	12	12
	14.50	-	-	4	6	6	6	8	8	10	10	10
	17.40	-	-	-	-	6	6	6	8	8	10	10
DIMENSION (ft-in)	W	2'-2"	2'-2"	2'-2"	2'-4"	2'-4"	2'-9"	2'-9"	2'-9"	2'-11"	2'-11"	3'
	L	3'-7"	3'-7"	3'-7"	4'-3"	4'-3"	4'-11"	4'-11"	4'-11"	5'-11"	5'-11"	5'-11"
	H	3'-3"	3'-3"	3'-3"	3'-7"	3'-7"	4'-7"	4'-7"	4'-7"	5'-5"	5'-5"	5'-5"
WEIGHT (lbs)		661.4	705.5	771.6	992.1	992.1	1212.5	1322.8	1433.0	1763.7	1873.9	1984.2
BLOW OFF V/M(in)		2	2	2	3	3	6	6	6	6	6	6
FUSE, BREAKER (Amphere)		30	50	60	80	100	150	200	250	300	350	400



Wide Product Range

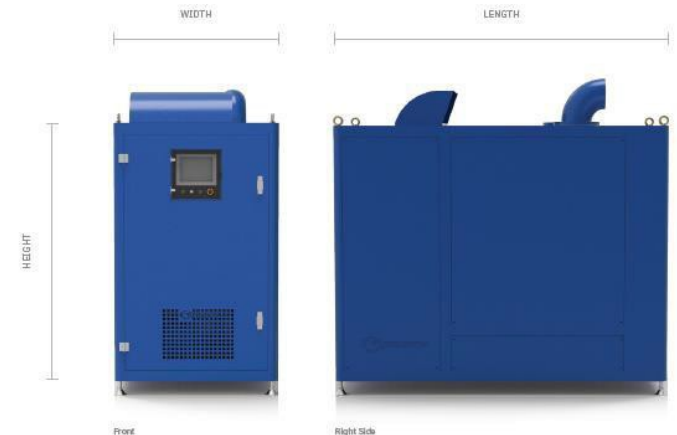


TURBO BLOWER WL, TWIN IMPELLER AND TWIN CORE SERIES 200 ~ 1000HP

WL Twin Impeller / Single Core and Twin Impeller / Twin Core machines can be utilized for all of the same applications as the single impeller machines, but are suited to the larger volume, medium to high air flow ranges. The Twin Core machines are also well suited to applications where a wider turn-down range is desired with turn-downs of up to 4:1 compared to the standard 2:1 turndown of single core machines. This model reduce the load on the thrust bearing significantly.

Either air or water cooling for cores are available from 200HP to 1000HP.

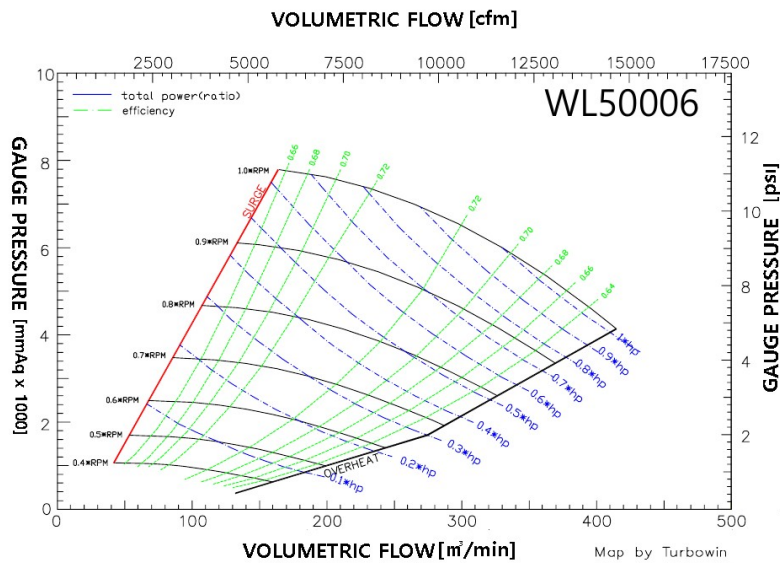
SPECIFICATION		WL200	WL300	WL400	WL500	WL600	WL700	WL800	WL1000
DISCHARGE PRESSURE (psi)		WL200-WL500: Twin Impeller Type / WL600-WL1000: Twin Core Type Condition : 14.7psia, 68°F, 65% RH, Tolerance of air flow rate ±5%							
AIR FLOWRATE (ft3/min)	5.80	7062.93	9393.70	-	-	-	-	-	-
	8.70	-	7416.08	9605.59	11300.69	14832.16	16774.47	19069.92	22601.39
	11.60	-	5791.61	7627.97	9534.96	11300.69	13066.43	15185.31	19069.92
	14.50	-	4696.85	6074.12	7345.45	9181.81	10594.40	12006.99	14690.90
	17.40	-	3990.56	5120.63	6533.21	8051.74	9005.24	10241.25	13066.43
SHAFT POWER (hp)		200	300	400	500	600	700	800	1000
(kw)		150	225	300	375	450	525	600	750
EXHAUST PIPE (in)	5.80	16	20	-	-	-	-	-	-
	8.70	-	16	16	20	20	24	24	24
	11.60	-	16	16	16	20	20	24	24
	14.50	-	12	16	16	16	16	20	24
	17.40	-	10	12	16	16	16	16	20
DIMENSION (ft-in)	W	3'-11"	3'-11"	5'-3"	5'-3"	6'-3"	6'-3"	6'-3"	11'-6"
	L	7'-3"	7'-3"	9'-10"	9'-10"	11'-6"	11'-6"	11'-6"	11'-6"
	H	6'-7"	6'-7"	6'-7"	6'-7"	6'-11"	6'-11"	6'-11"	6'-11"
WEIGHT (lbs)		2866.0	3306.9	3747.9	4409.2	6613.9	7054.8	7716.2	7716.2
BLOW OFF V/M (in)		8	8	8	8*2	8*2	8*2	8*2	8*2
FUSE, BREAKER (Ampere)		400	500	630	800	500*2	630*2	630*2	800*2



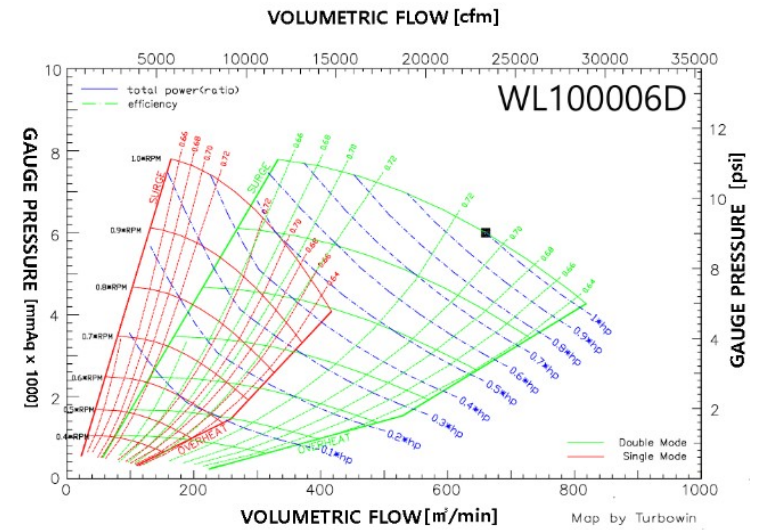
Wide Product Range



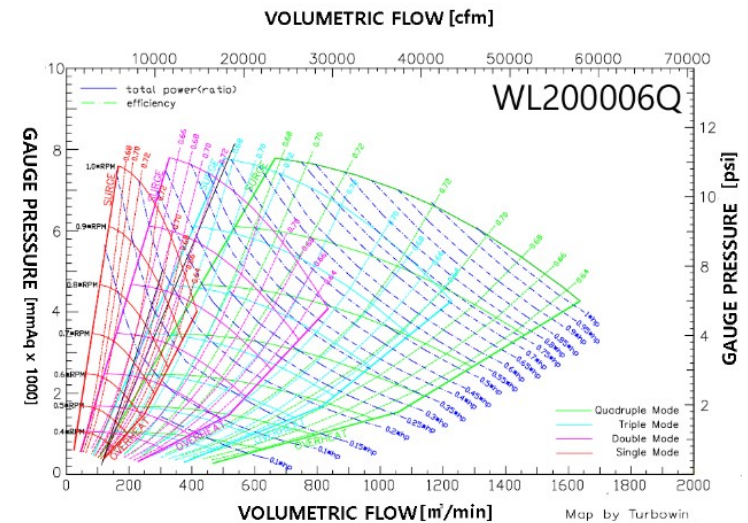
TURBO BLOWER WL, MULTICORE PACKAGE, 500 HP -> 2000HP



Dual core

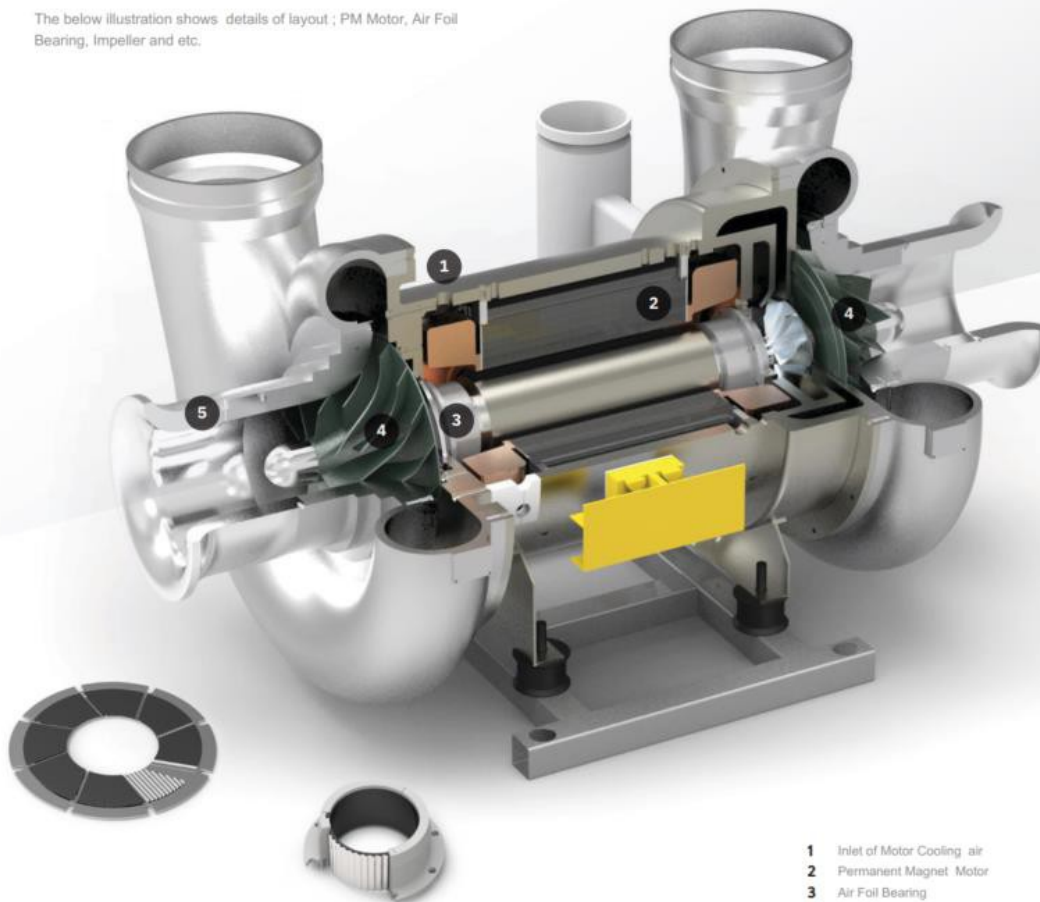


Quad core



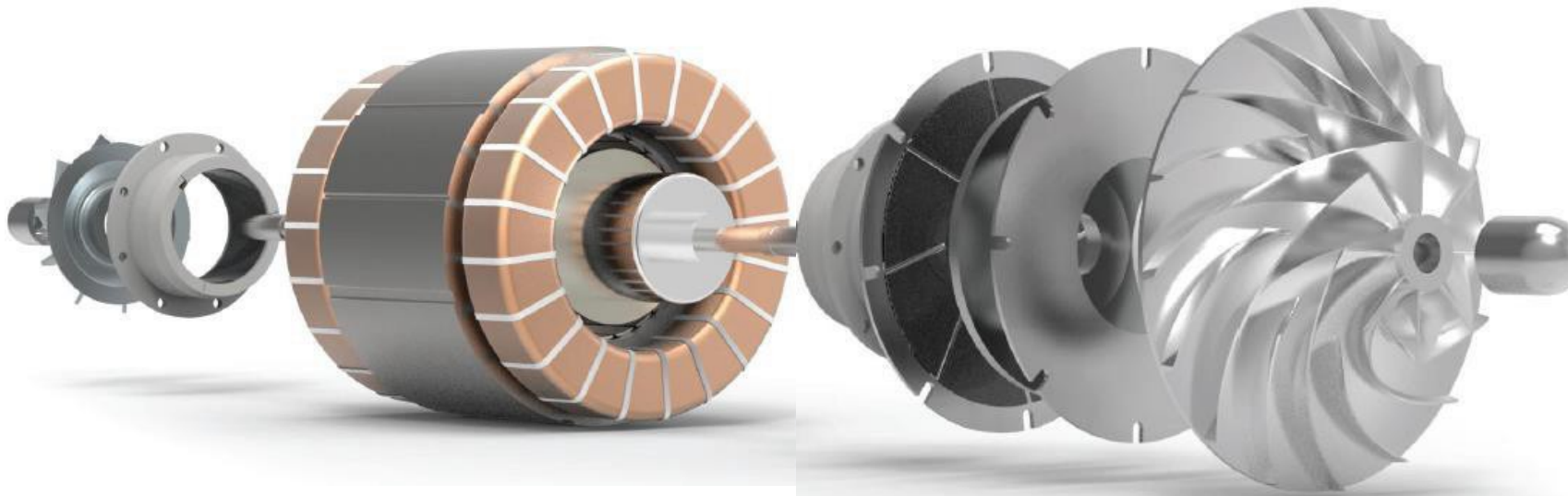
Air bearing World-Best Turbo Technology

The below illustration shows details of layout ; PM Motor, Air Foil Bearing, Impeller and etc.



- 1 Inlet of Motor Cooling air
- 2 Permanent Magnet Motor
- 3 Air Foil Bearing
- 4 Impeller
- 5 Parameter sensing system

1. Cooling Air Inlet
2. Permanent Magnet Motor
3. Air Foil Bearing
4. Impeller
5. Actual Measurement of Air flow rate



Key Design goal

1. Best wire to air efficiency when testing with PTC-13.
2. Long bearing lifetime under frequent start/stop, hot ambient condition.
3. Strong core which can cope with sudden pressure change or surge.

Advanced bearing design and efficient system cooling are the main achievement.

Core Technology

key difference from others

1. Advanced design of air foil bearing guarantee very low core failure rate.
2. Low internal operating temperature guarantee long lifetime of major parts.
3. Advanced cooling system improve overall system efficiency.
4. Precise control of air flow by measuring actual flow rate in the core inlet.
5. Integrated blow off valve (BOV) inside of the blower enclosure.

Customer support

Technical and maintenance support

1. Technical support

- 1) for selection, installation, startup and commissioning
- 2) for system integration with MCP and SCADA
- 3) for system protection and safe operation.

2. Maintenance support

- 1) Same size core and VFD are reserved in Mississauga ON for prompt replacement during warranty.
- 2) Other spare parts such as air filter are located in Mississauga ON.
- 3) Trained Local maintenance person is ready to support



Thank you

Walter Kim

Sales Director

Turbowin North America

www.turbowinamerica.com

Email: wdkim@turbowinamerica.com

Cell : 514-893-3189

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