

TURBOWIN

SMART
Turbo Blower & Compressor

WH-i SERIES BROCHURE SMART TURBO COMPRESSOR

INNOVATION OF TURBO TECHNOLOGY
FOR TURBO COMPRESSOR INDUSTRY
BEYOND IMAGINATION

SMART IOT FUNCTION

MULTI-STAGE

ZERO-OIL AIR BEARING

Global No.1 Turbo Blower & Compressor Leader

Turbowin has been at the forefront of turbo technology since it was established in 2015. The Company is dedicated to developing turbo machinery for more than 20 years, accelerating investment to facilitate further development and commercialization of eco-friendly turbo technology as well as expansion of new product offering.

Turbowin strives to contribute to the sustainable and prosperous growth worldwide by providing reliable and clean air solutions across a range of industries from wastewater to chemical, semiconductor and stationary power.

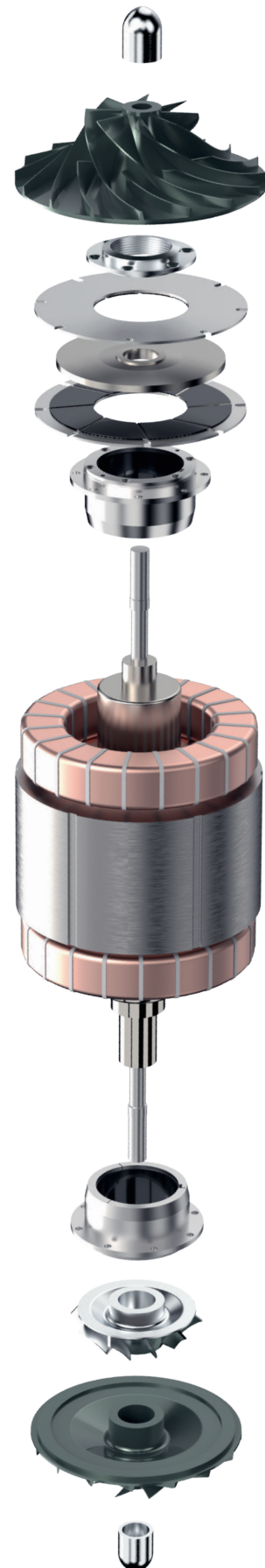
We have the widest smart turbo blower lineup ranging from 1HP up to 1200HP. We also have smart turbo compressor lineup from 1.5kgf/cm² to 8.0kgf/cm².

We do believe that our cutting edge products can be the world-best optimized solution that can meet diverse requirements in any industrial sites in the globe.



CERTIFICATIONS, PATENTS AND AWARDS

Domestic Certifications	33
International Certifications	21
Domestic & International Patents	56
Awards	14



SMART IOT FUNCTION

Turbowin's Smart Turbo Compressors, which are the first in the industry to apply IoT technology to turbomachinery, are connected with smartphones, tablet PCs, laptops, servers, etc.

MULTI-STAGE

While the products are robust and reliable with high power density, efficiency improvements have not come as easily when compared to alternative power sources. High compression ratio ensures better efficiency which leads to reduced cost eventually.

ZERO-OIL AIR BEARING

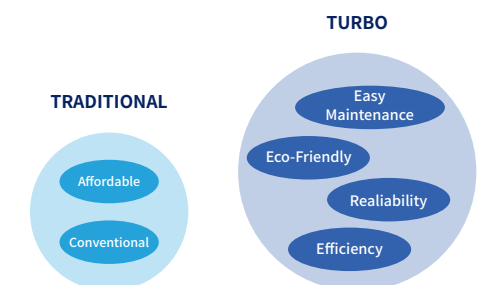
All Turbowin products are equipped with zero-oil air foil bearings. Maintenance costs are significantly reduced due to the absence of oil lubrication system. In addition, air foil bearings are free of friction and abrasion. The life of the product is increased while replacement / maintenance costs are greatly reduced. Our in-house designed top foils make the bearing even more durable and reliable.

ENERGY SAVING

Turbowin proudly offers its WH-i Series with a range of 50 to 800HP at pressure up to 8bar. Its internal structure is perfectly designed to perform at best with patented cooling system reducing maintenance costs.

Turbowin's WH-i Series is a direct driven centrifugal type, meaning impeller is directly connected to motor shaft resulting in 0% transmission loss.

Air compressors have similar purposes, but the key difference is in efficiency and energy saving. Traditional compressors have been in the market for decades with lower product cost. Turbowin's WH-i Series however are superior in terms of wider operating range, higher efficiency, lower noise, lower vibration, longer product life and lower maintenance cost.



Low -dB

**LOW VIBRATION
UNDER 1.0 MM/S**



**LOW NOISE
UNDER 75DB ± 5DB**

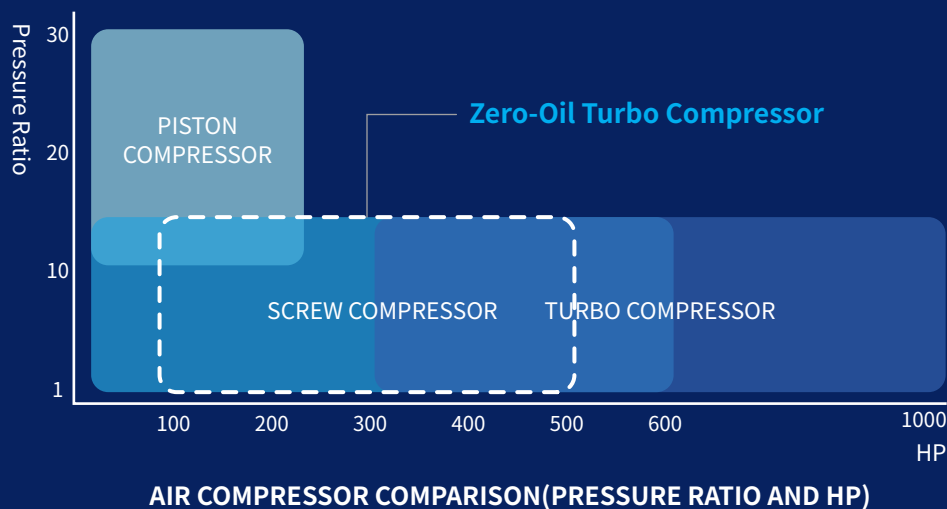


**ROUTINE MAINTENANCE
REQUIRED**

REDUCE ENERGY COSTS

HIGH EFFICIENT TURBO COMPRESSOR

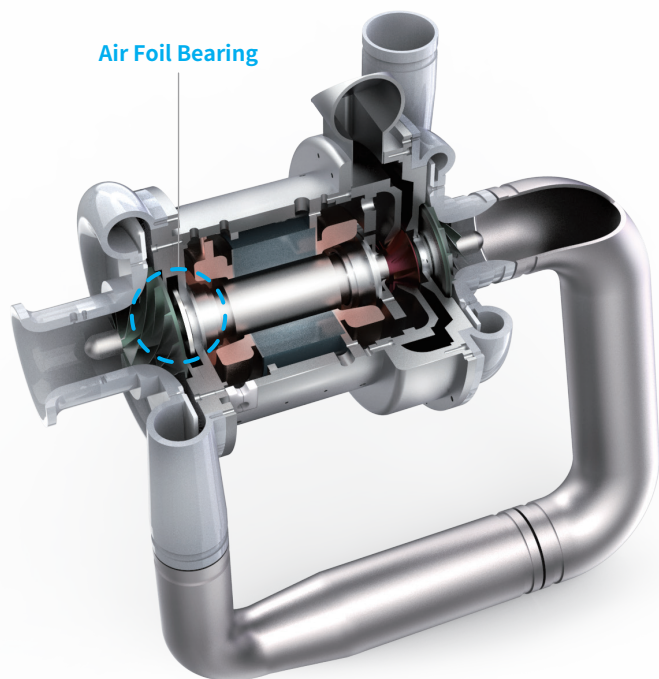
Centrifugal turbo compressors are often run with high speed, high efficiency motor with either magnetic or air foil bearings. They offer outstanding wire-to-air efficiency meaning they can give the maximum amount of compressed air for the energy input. Centrifugal turbo compressors have high reliability and efficiency with lower noise level compared to others. However, only limited pressure ratios can be achieved for each stage.



SMALLER SIZE WITH LIGHTER WEIGHT

Turbowin's WH-i Series is a premium multi-stage turbo compressor that is the result of years of R&D and innovation. Turbowin's WH Series supplies from less than 2kgf/cm² ~ 4kgf/cm² to 100HP ~ 800HP and the internal structure is simple because there is no separate oil system or cooling system, so the product size is small and light in weight. A simple user-centered design can be easily used and maintained in any working environment, and compact size can reduce the burden on the installation space.

	A	TURBOWIN'S WH-i SERIES
COMPRESSOR TYPE	Screw compressor	Zero-Oil direct type turbo compressor
MOTOR + INVERTER EFFICIENCY	Relatively low : 85.5%(+Inverter)	Relatively high : 90% (+Inverter)
COMPRESSION EFFICIENCY	Low compression efficiency (63%)	High compression efficiency (78%)
PRODUCT SIZE	Space consumption (4000*2100*2350)	Minimum space (2500*1900*2000)



100% AIR-COOLING SYSTEM WITH ZERO-OIL

Turbowin's air lubrication air foil bearing provides a completely different lubrication system from conventional Oil-less products. WH-i Series doesn't need any type of lubricant chemicals.

It is a complete oil free equipment, so there's no need to attach additional lubrication devices such as oil separator. Also, no treatments or facilities for separating oil and water from condensed water from compression process.

The air foil bearing method with a simple structure can greatly reduce the maintenance cost of users. It is the biggest advantage of reducing all costs of maintenance and environmental costs of lubricants and lubricators, and it is the pride of user-centered technology.

100% ZERO =

Lubricant

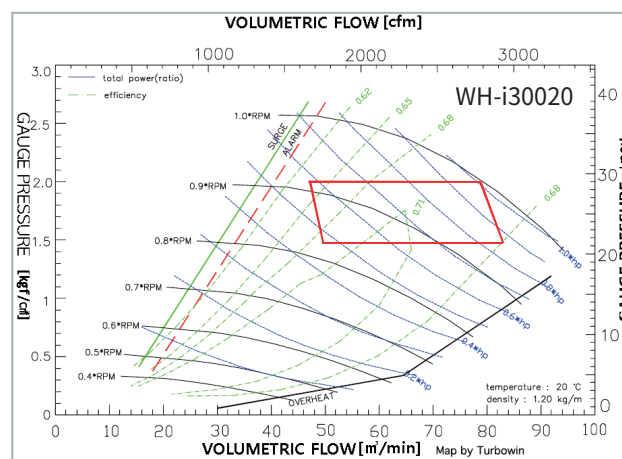
Lubricator

Maintenance cost

WIDE WORKING AREA

Turbowin's WH-i Series has a two-stage compression structure and flow control by VFD is possible, along with a wider range of applications.

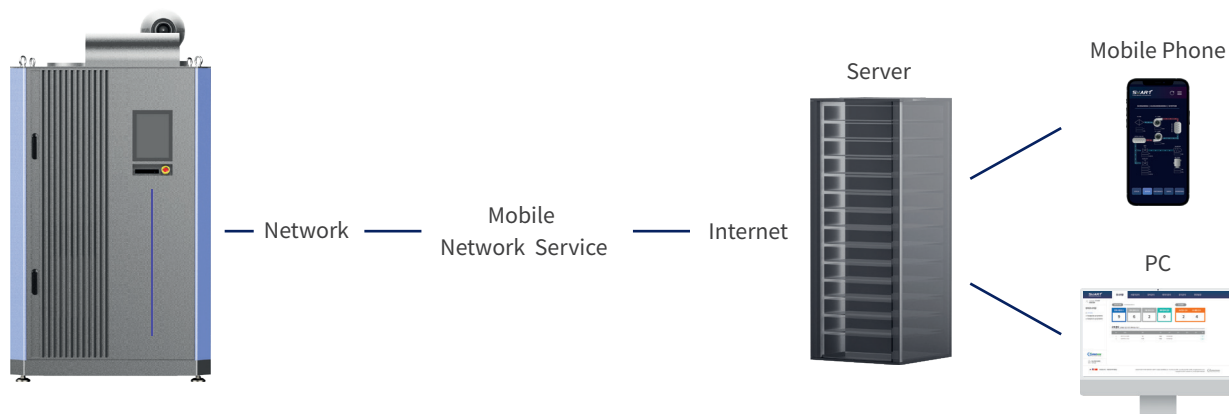
Compared to competitors, the area is at least 30% wide, so energy savings due to partial load can be greatly reduced, while increasing user convenience, reducing costs and to achieving efficiency and convenience.



WORLD'S FIRST SMART IOT

IOT BASED REMOTE CONTROL SYSTEM

Operation of the equipment can be controlled and monitored remotely via any connected device including smart phones and tablet PC. Real-time performance is analyzed and statistically maintained on the server. Notifications will be sent out in terms of any alarms or errors, thereby allowing quick response to unexpected situations.

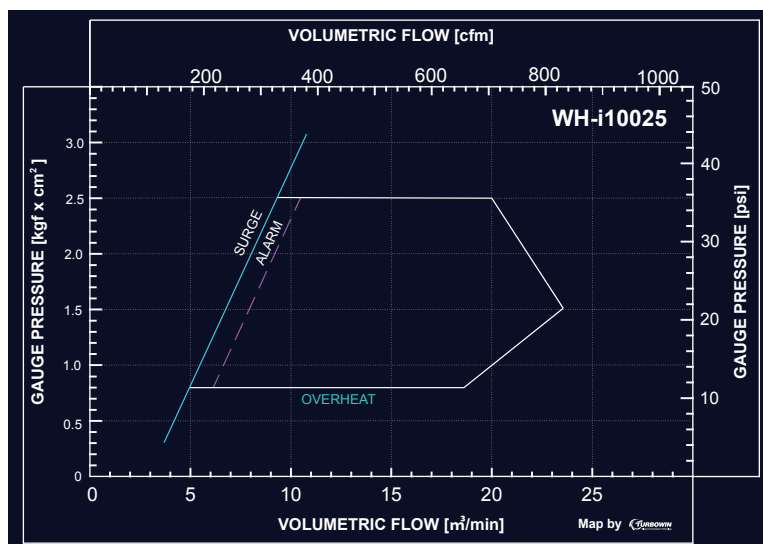


THE AGE OF THE INTERNET OF THINGS ISN'T APPROACHING – IT'S ALREADY HERE.

As IoT pivots from centralized cloud storage to an edge computing architecture, mobility and remote access has taken center place as the most important asset, highlighting the importance of smart integration and smart interface in storage devices. Turbowin is here to help you overcome the challenges of controlling your machines from a physical location, performance tracking, and taking advantage of smart automation through IoT integration in its products.

WHAT'S SMART ABOUT PAIRING A MACHINE TO YOUR DEVICE?

This enables maintenance and service engineers to remotely track indicators such as specific energy and compressed air pressure calculations to make immediate improvements when necessary. With real-time data monitoring, this gives easy access and control to make quick decisions, in turn saving costs and increasing efficiency.



NEW GENERATION



HUMAN MACHINE INTERFACE (HMI)

WH-i high performance HMI features clear visibility and efficiency that ensure connectivity, security, and reliability across the entire operation. Customers can leverage performance curves and historic data through the interface that allows them to reduce cost, save time and ultimately save energy.

USER INTERFACE INDICATOR

Visibility of system status is one of the most important rules of product design. Turbowin's WH-i Series has a status indicator on front cover where the status of the compressor is displayed with LED so that customers can easily monitor their products.

READY: BLUE – RUN: GREEN – WARNING: ORANGE – STOP: RED



READY



RUN



STOP



WARNING

SIMPLIFIED STRUCTURE

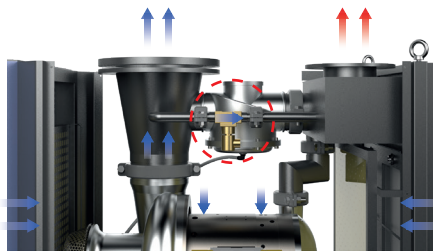
INNOVATIVE TECHNOLOGY WITH PATENTS AND CERTIFICATES

To make the products smaller and lighter, we put so much efforts to develop optimized structure. With our patented technologies, we could obtain both simplicity and efficiency.



COOLING JET SILENCER

Turbowin's cooling discharge silencer has a compact size which is hardly affected by the installation site. With the help of Cooling Jet Silencer, noise can be reduced by 3~5dB compared to other brands.



SURGE PROTECTION SYSTEM

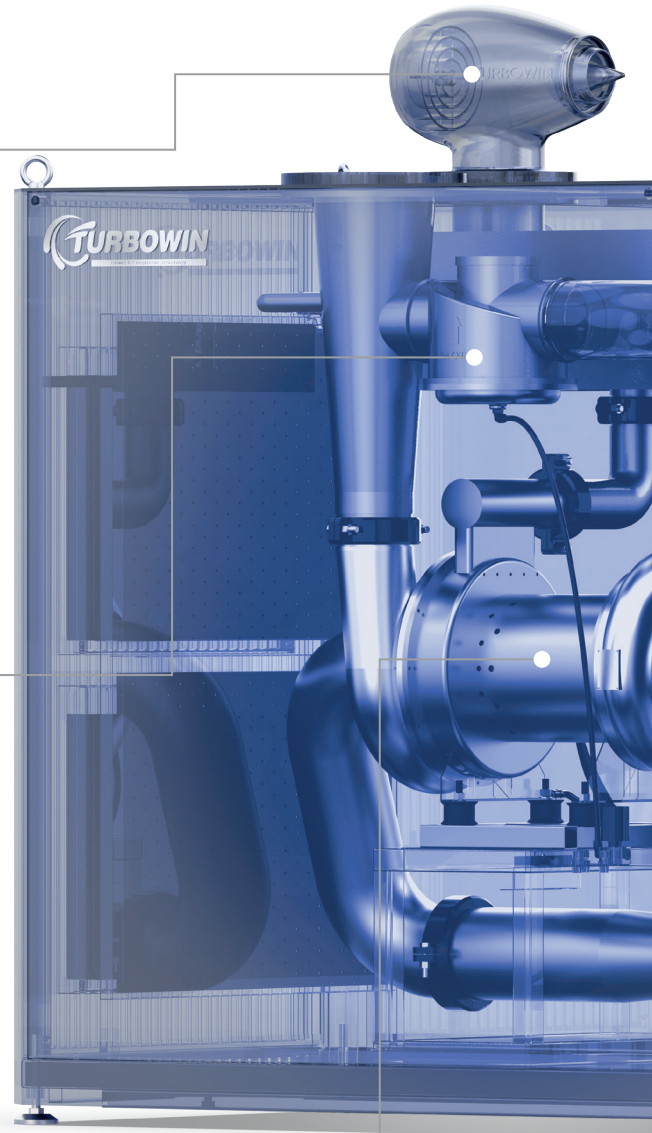
Turbowin's sub solenoid valve added enabling subtle control for protecting the equipment near surge area.

Patent # : 10-1580877 / 10-1607492



MULTI STAGE

Now available up to 8 bar, our customers are able to work with centrifugal air foil bearing turbo compressor in bigger plants.



Continuous R&D of turbo technology is the key for Turbowin to become the market leader in the world of compressor technology. Everything we do here has innovation in its core. Turbowin has more than 54 certificates with over 56 domestic and international patents proving excellence in quality.



HUMAN MACHINE INTERFACE (HMI)

High quality displays and components integrated with IoT technology.



EXPLOSION PROTECTION

Turbowin is proud to announce the latest addition of IECEx certification, marking its compressors as safe to use under explosive environments.



ROTOR LOCKING DEVICE

Turbowin's rotor locking device prevents the damage of air foil bearing inside the motor from any external shocks during transportation or installation.

Patent # : 10-1791977

WATER RESISTANT ENCLOSURE

Patented water resistant enclosure for outdoor applications, a simple overhead canopy and covers on inlet louvers are often all that is required.

Patent # : 10-1616274

MULTI-STAGE COMPRESSION

HIGH PRESSURE UP TO 8 BAR

Turbowin's compressors offer high efficiency and outstanding savings in both energy and maintenance. The WH-i Series is designed and manufactured by the extensive research and experience done by our team of in-house engineers, in turn offering packaging solutions across 2 bar, 4 bar and 8 bar pressure ranges. With 2 bar compressors of 1 motor, 4 bar compressors of 1 motor and 2 Coolers, and 8 bar compressors of 2 motors and 4 Coolers, the WH-i packaging comes with slight structural differences as shown below.

WH 2BAR SERIES

(1.5 kgf/cm²~2.0 kgf/cm²)

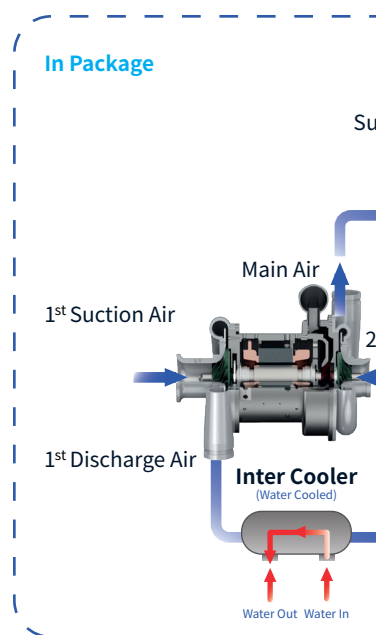
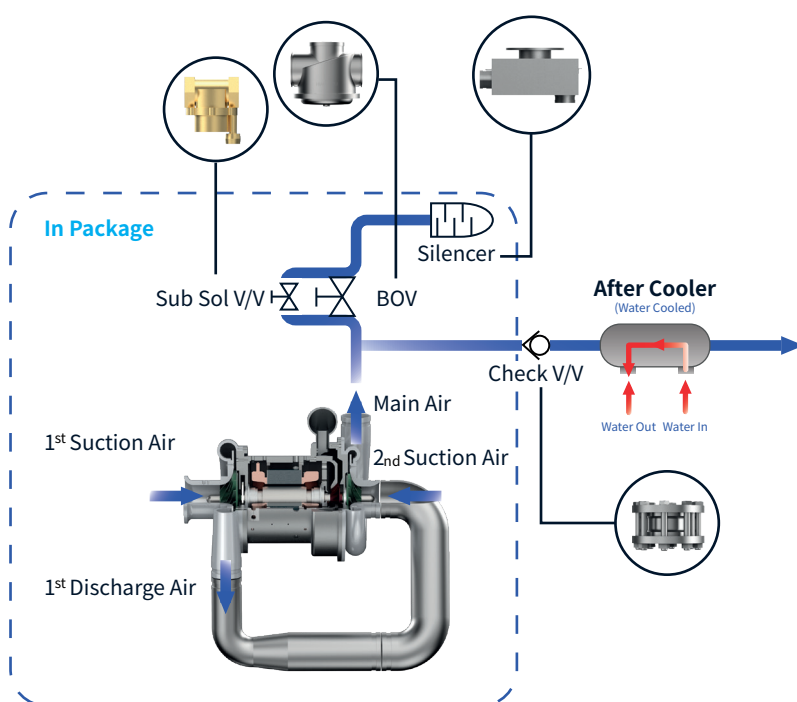
Simple design without cooling system nor any heat exchanger.

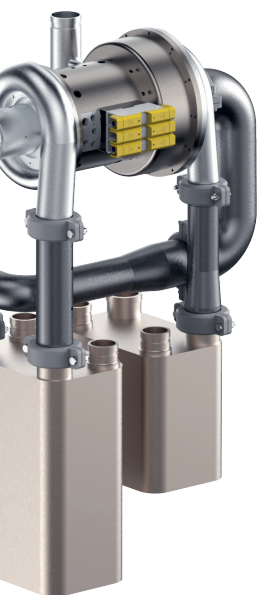


WH 4BAR SERIES

(4.0 kgf/cm²)

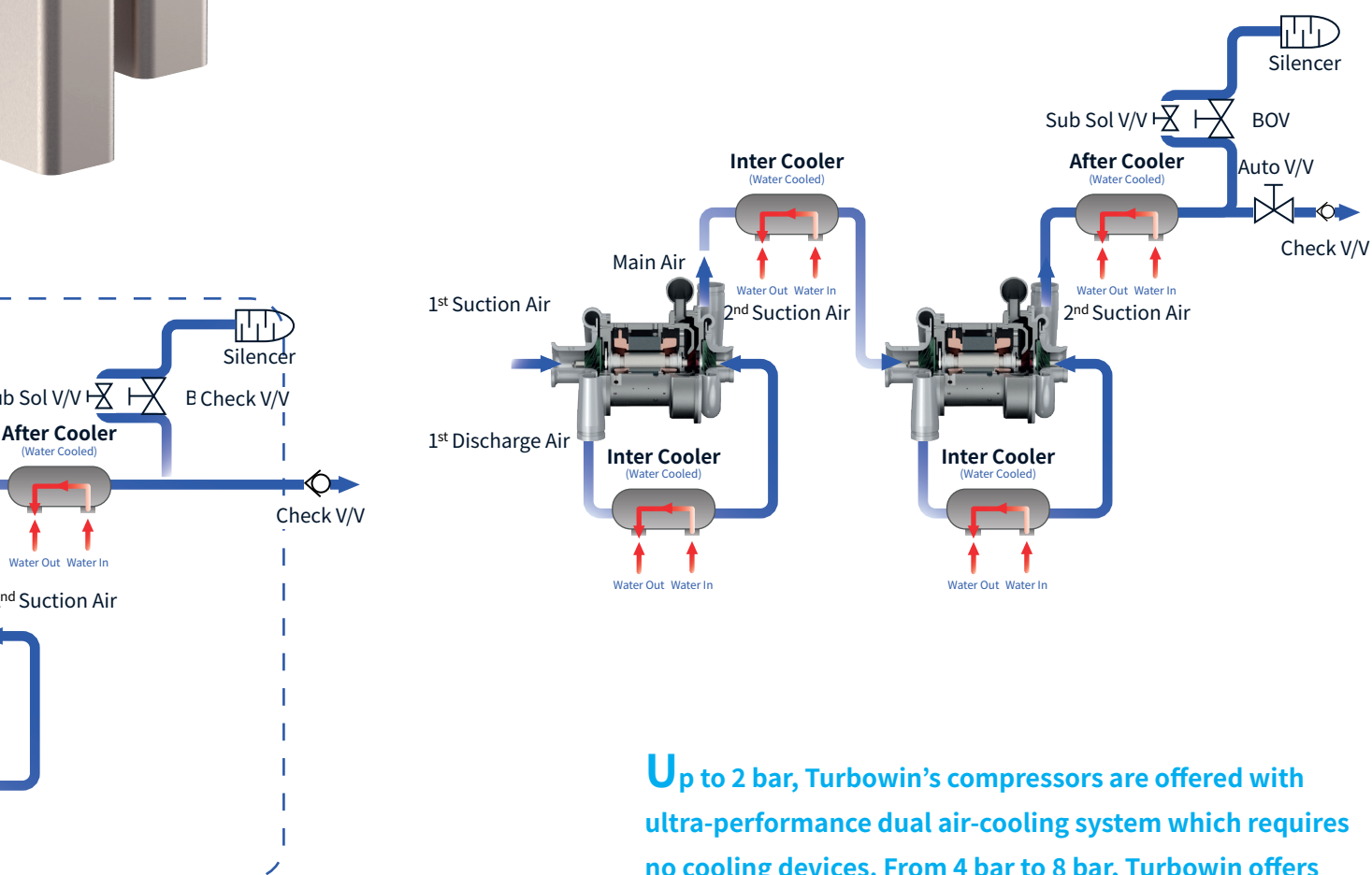
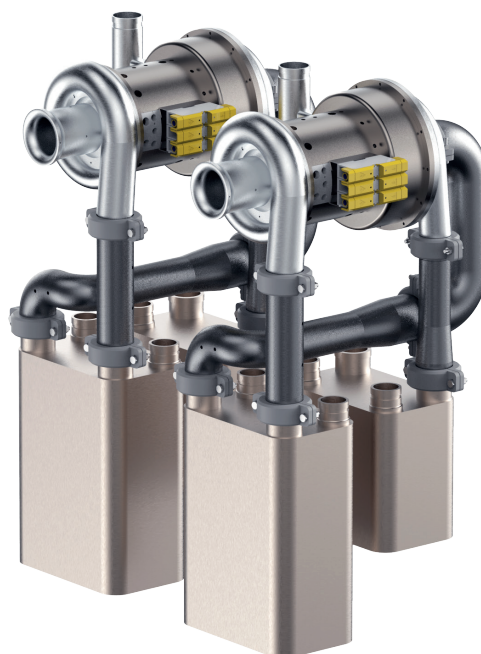
Utilizing plate-type heat exchanger resulting in high thermal efficiency and minimized performance degradation.





WH 8BAR SERIES (8.0 kgf/cm²)

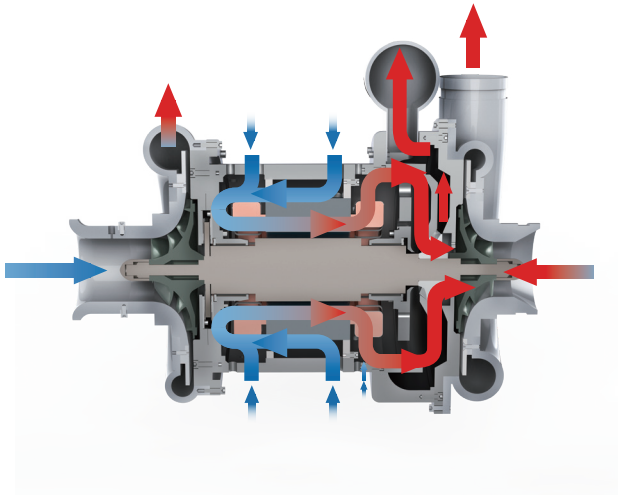
Introducing world's best 4-stage centrifugal turbo compressor with customized solution for global customers.



Up to 2 bar, Turbowin's compressors are offered with ultra-performance dual air-cooling system which requires no cooling devices. From 4 bar to 8 bar, Turbowin offers its package with a water cooling system that will help to reduce the motor temperature by 10 °C compared to other products with similar pressure.

CORE OF EXCELLENCE

MAXIMIZED EFFICIENCY FROM PROVEN TECHNOLOGY



DUAL AIR-COOLING SYSTEM

Patent # : 10-1580877 / 10-1607492

Turbowin can lower motor temperature by at least 10 degrees compared to other brands through its dual cooling system. This patented technology is composed of motor and inverter with no separate cooling device such as an external cooling fan or sinus filter.

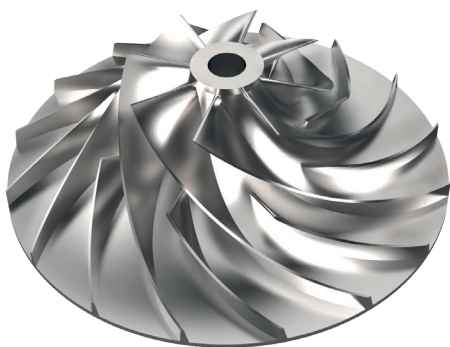
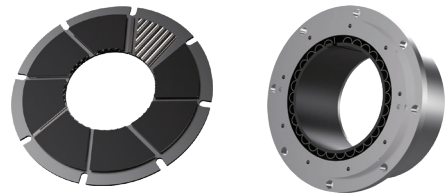


NBW AIR FOIL BEARING

Patent # : 10-1632356 / 30-0858674

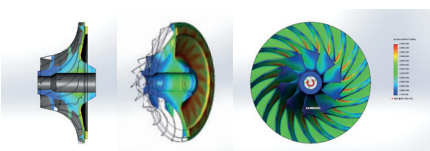
Turbowin's air foil bearing is never bended nor welded. This is based on Turbowin's innovative technology to ensure our bearing to be extremely durable and reliable. Our bearing has passed on/off testing of over 150,000 cycles.

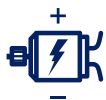
NBW air foil bearing does not require any welding process with no holding bars. This patented technology makes the bearing durable, and it is not easily deformed even at high temperatures.



SUPERSONIC IMPELLER

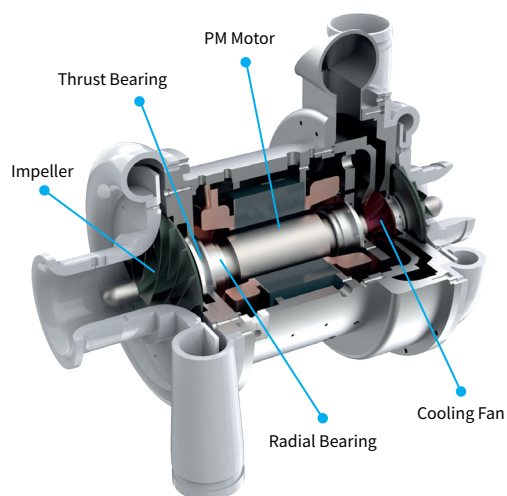
Turbowin's Supersonic Impeller is in-house designed and manufactured which can be made of aluminum alloy (AL7075-T651), stainless steel or titanium depending on customer's requirement. Turbowin does not allow 0.001mm of error in machining and processing. Our Supersonic Impeller is specially coated with hard anodizing on the surface providing excellent corrosion and chemical resistance.





ULTRA HIGH EFFICIENT PERMANENT MAGNET MOTOR

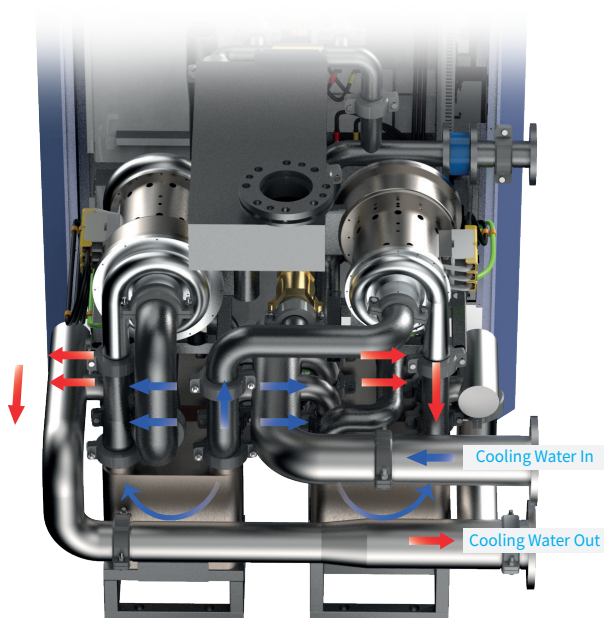
Turbowin's ultra high efficiency permanent magnet motor guarantees more than 97% high efficiency in the range from 20,000 to 220,000 RPM.



EFFECTIVE COOLING SYSTEM

Patent # : 10-1607492

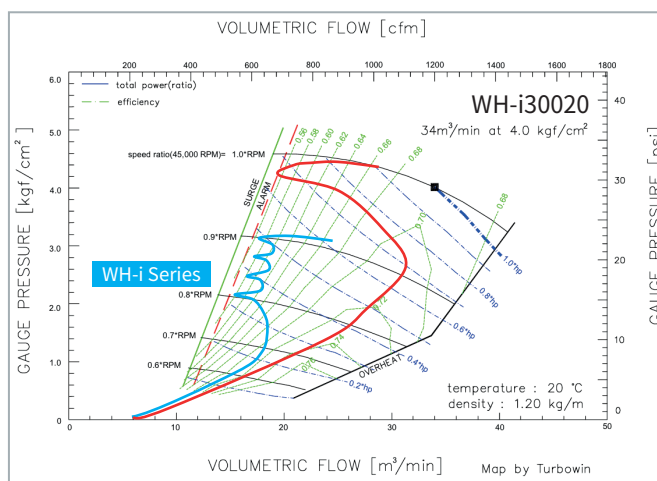
Based on Turbowin's patented dual cooling system, no additional cooling system is required, and the inverter is also air-cooled. High-pressure compressors more than 4bar is installed with inter/after cooling system.



SURGE PROTECTION SYSTEM

Patent # : 10-1989588

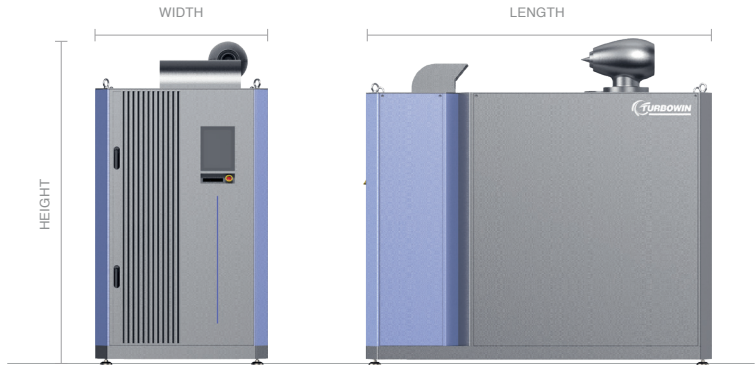
In the event of entering into surge area, Turbowin's products do not stop immediately as sub-solenoid valve is activated 3 to 4 times to enable smooth operation in surge areas. This protects the products from sudden stops to minimize the damage of the motor.



SPECIFICATION

MATERIALS INFORMATION

CASING	Aluminum Alloy
IMPELLER	A7075-T6
CASING SEAL - AIR	Labyrinth Seal
SHAFT	Titanium Alloy
BEARING TYPE	Hydro Dynamic Air Foil
BEARING LUBRICATION	Air (Zero-Oil)



***METRIC**

SPECIFICATION

WH-i50 WH-i75 WH-i100 WH-i150 WH-i200 WH-i300 WH-i400 WH-i500 WH-i600 WH-i800

DISCHARGE PRESSURE (kg/cm ²)				2 STAGE Air Flow (m ³ /min) : 1atm, 20°C, 65%RH, density =1.2kg/m ³ , Tolerance=±5%						2 STAGE *2		
AIR FLOW RATE (m ³ /min)	AIR COOLING	1.5	16	24	32	48	65	96	127	161	196	254
	WATER COOLING	2.0	12	18	25	37	50	75	100	125	150	200
		4.0	-	-	18	-	36	55	72	90	-	-
		8.0	-	-	12	-	24	36	48	68	-	-
SHAFT POWER (HP)			50	75	100	150	200	300	400	500	600	800
EXHAUST PIPE (A)		1.5	100	125	150	150	200	250	250	300	350	400
		2.0	100	100	125	150	150	200	250	250	300	350
		4.0	-	-	100	-	125	150	150	200	-	-
		8.0	-	-	65	-	80	100	125	150	-	-
DIMENSION (mm)		W	750	850	850	1050	1050	1600	2000	2000	2200	2200
		L	1700	1850	1800	2100	2100	2600	2800	3000	3200	3500
		H	1250	1450	1450	1700	1700	2800	2000	2000	2100	2100
WEIGHT (kg)			600	750	900	1100	1200	1800	2500	3200	4500	5500
SOL V/V			65	65	65	125	125	125	125	125*2	125*2	125*2
NO FUSE BREAKER			100	150	200	300	350	500	630	350	500	630

***IMPERIAL**

SPECIFICATION

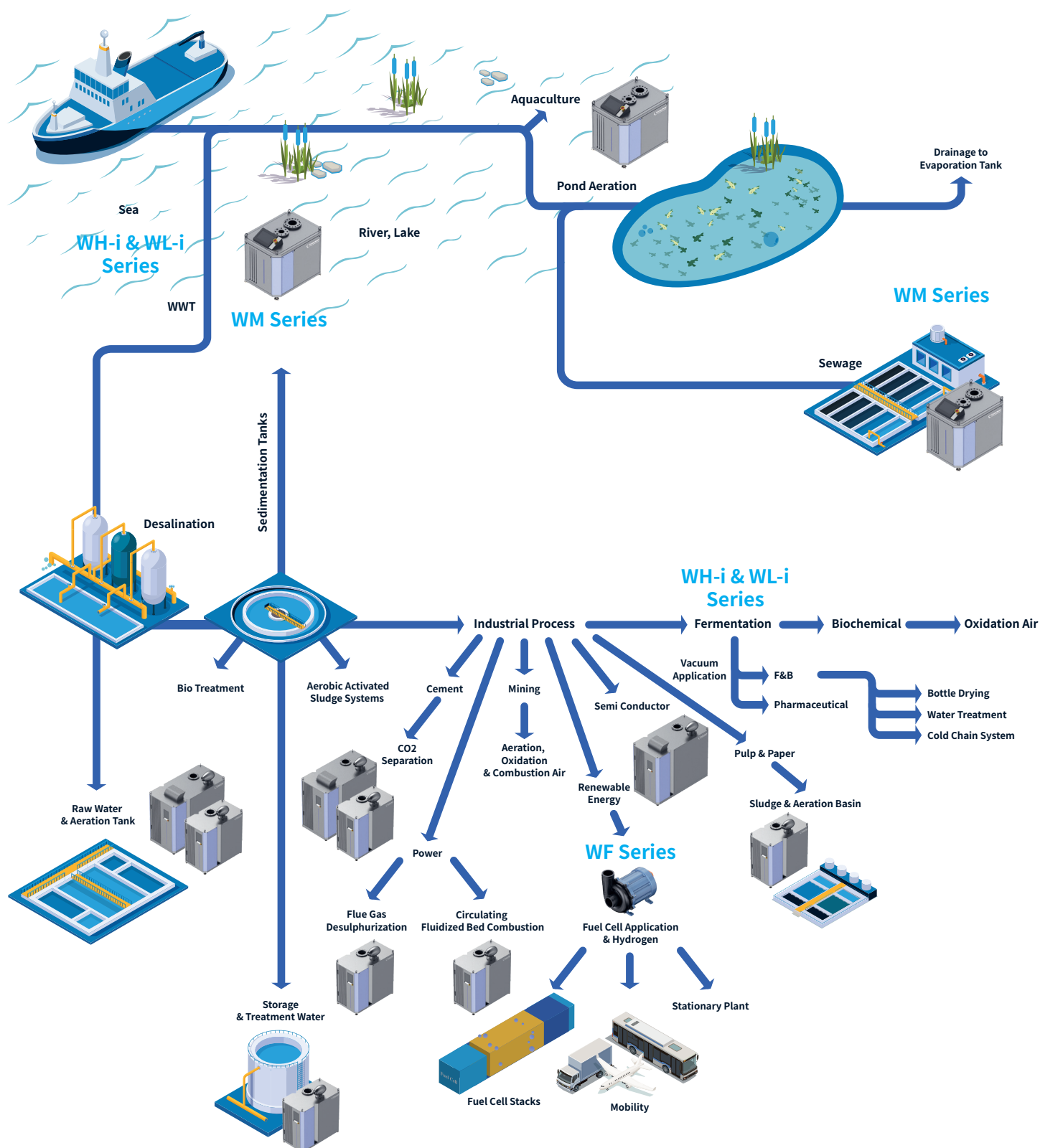
WH-i50 WH-i75 WH-i100 WH-i150 WH-i200 WH-i300 WH-i400 WH-i500 WH-i600 WH-i800

DISCHARGE PRESSURE (psi)				2 STAGE Air Flow (cfm) : 14.696psi, 20°C, 35%RH, Tolerance=±5%							2 STAGE *2	
AIR FLOW RATE (cfm)	AIR COOLING	21.8	565	847	1,130	1,695	2,295	3,390	4,484	5,685	6,921	8,969
		29.0	424	636	883	1,306	1,766	2,648	3,531	4,414	5,297	7,062
	WATER COOLING	58.0	-	-	636	-	1,271	1,942	2,542	3,178	-	-
		116.0	-	-	12	-	24	36	48	68	-	-
SHAFT POWER (HP)			50	75	100	150	200	300	400	500	600	800
EXHAUST PIPE (in)		21.8	4	5	6	6	8	10	10	12	14	16
		29.0	4	4	5	6	6	8	10	10	12	14
		58.0	-	-	4	-	5	5	6	8	-	-
		116.0	-	-	2 1/2	-	3	4	5	6	-	-
DIMENSION (ft)		W	2.46	2.79	2.79	3.44	3.44	5.25	6.56	6.56	7.22	7.22
		L	5.58	6.07	5.90	6.89	6.89	8.53	9.18	9.84	10.50	11.48
		H	4.10	4.76	4.76	5.58	5.58	9.18	6.56	6.56	6.89	6.89
WEIGHT (lbs)			1,323	1,654	1,985	2,426	2,646	3,969	5,513	7,056	9,923	12,128
SOL V/V (in)			2 1/2	2 1/2	2 1/2	5	5	5	5	5*2	5*2	5*2
NO FUSE BREAKER			100	150	200	300	350	500	630	350	500	630

APPLICATION FIELD MAP

OPTIMIZED FOR VARIOUS INDUSTRIES

From wastewater treatment to cement, food, petrochemical, glass, semiconductor, mining, transportation and etc. Turbowin's turbo compressor and turbo blower are the key solution to all these industries.





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