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ENERGY SAVING LOW NOISE OIL-FREE

INTELLIGENCE MAINTENANCE-FREE LONG LIFE

National Maglev Power Technology Foundation and Application Standardization Working Group Secretariat Unit

Phase I of Maglev Industrial Park

PRODUCT MANUAL OF THE MAGLEV ENERGY SAVING EQUIPMENT

山东天瑞重工有限公司
Shandong Tianrui Heavy Industry Co., Ltd.

How do you find us?

公司微信服务号

Address: No.5201 Yingqian Street, High-tech industrial development zone, Weifang, Shandong, China.

Aftersales hotline: +86400-800-8605
Domestic business: +8617616738512

Tel.: +860536-7519229
International Business:+8618453672063

Website: www.tianrui99.com
Email: tr0905366@126.com

Shandong Tianrui Heavy Industry Co., Ltd.

Maglev Industrial Park Phase II

CATALOGUE

COMPANY INTRODUCTION

The Secretariat of “Basis and Application of Maglev Power Technology”

Tianrui Heavy Industry Co., Ltd., a high-tech enterprise specialize in R&D and manufacture of maglev power equipment, is the the National Enterprise Technology Center, the National Industrial Design Center, the National Maglev Power Technology Foundation and Application Standardization Working Group Secretariat Unit, the Chain Leader of energy saving and environmental protection equipment industry chain in Shandong Province, China leading enterprise in maglev power technology, successfully breaks through a series of "bottleneck" key technologies and develops a series of high-efficiency and energy-saving maglev power equipment such as maglev turbo blower, maglev turbo vacuum pump, maglev air compressor, maglev centrifugal water chiller (heat pump), maglev low-temperature waste heat generators, maglev flywheel energy storage, maglev steam compressor and other efficient energy-saving equipment widely used in cement, paper, chemical, steel and other industries with average energy-saving 30% and the noise decreased from 120 to 80 decibels. It has become an important technical support for the national strategy of carbon peaking and carbon neutrality goals.

We have won 14 scientific and technological awards of provincial and ministerial level such as the First Prize for Technological Invention in Shandong Province, the First prize of China National Light Industry Federation Science and Technology Progress and more than 500 intellectual properties. Tianrui is selected as the winning project (the highest award) of the National Disruptive Technology Innovation Competition and selected into the national product catalog of "Energy Efficiency Star", National recommended catalog of industrial energy saving technology and equipment, National Green Technology Promotion Catalogue. Advocating the establishment of a national working group on the standardization of maglev power technology, and promoting the state to include the maglev power equipment in the Guiding Catalogue for Product Structure Adjustment (encouraged category).

Tianrui has become a leading enterprise of maglev power industry in China with relevant technologies and equipment entered the world's advanced ranks to build a well-known brand of maglev energy saving equipment and become a respected world-renowned enterprise.

INNOVATIVE PLATFORM

[National Innovation Platform]

National Maglev Power Technology Foundation and
Application Standardization Working Group Secretariat Unit

National Enterprise Technology Center
National Industrial Design Center

[Provincial Innovation Platform]

Shandong Maglev Industry Technology Research Institute

Shandong Maglev Power Equipment (green) Technology Innovation Center

Shandong Maglev Technology Research and Development Center

Shandong Engineering Laboratory

Shandong Ocean Engineering Technology Collaborative Innovation Center

Industrial Design Center of Shandong Province

Shandong Engineering Technology Research Center

Academician Workstation of Shandong Province

HONORS AND AWARDS

500 Intellectual Property Rights

14 Ministerial and Provincial-Level Science and Technology Awards

Presided over or participated in the revision of a series of standards,
such as national standards, industry standards,
local standards and team standards.

[Achievements]

The Final Winner of the National Disruptive Technology Innovation Competition (the highest award)

The National Guiding Catalogue for Product Structure Adjustment (encouraged category)

National "Energy Efficiency Star" Product Catalog (2020,2021)

Green Technology Promotion Catalogue (2020)

Recommended Catalogue of National Industrial Energy-saving Technology and Equipment (2021)

Typical Cases of Key Energy-saving Technology Application of National Energy Conservation Center

2021 "Sci-Tech China" Pioneer Technology List

Shandong "Top Ten Scientific and Technological Achievements"

The First Batch of "Good Quality Shandong" High-end Brand List

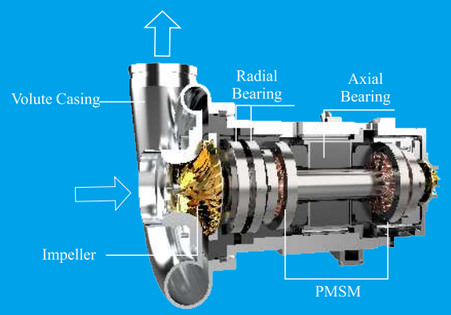
MAGLEV POWER EQUIPMENT

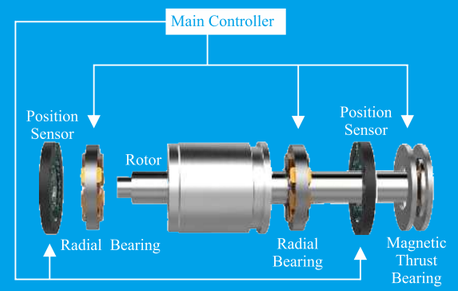
The maglev power equipment is a new generation of energy-efficient and eco-friendly equipment based on five core technologies such as active maglev bearing (AMB), high-speed permanent magnet synchronous motor(PMSM), 3d-flowimpeller, high-efficiency converter and intelligent control systems, which are independently developed by Tianrui. Compared with traditional equipment, the energy saving rate is more than 30%, noise reduction under 80dB, design life of up to 20 years, with "energy saving, low noise, oil-free, intelligent, maintenance-free, long life" and other characteristics, widely used in cement, paper, sewage treatment, chemical, thermal power, glass products, steel, pharmaceutical, food, textile and other energy-intensive industries. It has become an important technical support for the national strategy of carbon peaking and carbon neutrality goals.

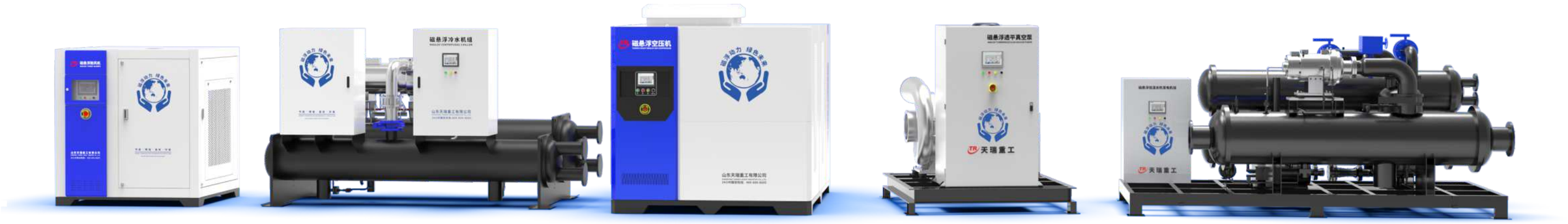
ENERGY SAVING	LOW NOISE	OIL-FREE	INTELLIGENT	MAINTENANCE -FREE	LONG LIFE
≥30%	≤80dB	100% oil-free lubrication	PLC/HMI	No oil pollution	Design life of 20 years

Working Principle

Active magnetic bearing system is the core system. The motor rotor is fixed between two radial bearings and two axial ones. The position of the rotor is detected by position sensor, conveying the position signal to the actuator controller in real time. If the rotor is offset, the controller will adjust the magnetic force of the degree of freedom of the magnetic bearing according to the offset of the rotor, so that the rotor can return to the correct position.







MAGLEV TURBO BLOW

MAGLEV CENTRIFUGAL WATER CHILLER UNIT

MAGLEV AIR COMPRESSOR

MAGLEV VACUUM PUMP

MAGLEV LOW-TEMPERATURE WASTE HEAT GENERATOR SET

MAGLEV TURBO BLOWER

The maglev turbo blower is high-tech product of energy conservation and environmental protection. Compared with traditional roots blower, it can save energy more than 30%, with noise low to below 80 decibels and lifetime up to 20 years, which can reduce the overall cost of sewage treatment plant by 20%, widely used in various industries such as cement, paper making, sewage treatment, chemical industry, thermal electricity as well as other energy-intensive industries.

Performance Comparison

Item	Roots Blower	Single Stage Centrifugal Blower	Air Suspension Blower	Maglev Turbo Blower
Air volume	Adjustable if frequency converter is added	50-100%	65-100%	30-100%
Friction	Yes	Yes	Yes	No
Frequent start-up	Yes	Yes	No	Yes
Noise	⩾100 dB	90-100 dB	75-85 dB	75-85 dB
Vibration	Very large	Medium and small	Very small	Very small
Lubrication	Yes	Complex lubrication systems are required	No	No
Maintenance Mode	Regular Maintenance	Regular Maintenance by Special Personnel	Regular Replacement of Filters	Regular Replacement of Filters
Service Life	5-8 years	10years	10 years(2 years later, frequent faults)	≥20 years
Size	Larger	Larger	Small	Small
Installation Requirements	Fixed to the ground and sound insulation measures required	Fixed to the ground and sound insulation measures required	No need of fixation and sound insulation measures	No need of fixation and sound insulation measures
Efficiency	Low	High		

Specification Types

Model	PRODUCT SPECIFICATION			
	Flow (m^3/min)	Pressure (kPa)	Motor Power (kW)	Type of cooling
TR037 SERIES	15~55	20~80	37	AC
TR055 SERIES	25~70	20~80	55	AC
TR075 SERIES	25~75	20~80	75	AC
TR090 SERIES	25~100	20~80	90	AC
TR110 SERIES	40~100	20~80	110	AC
TR150 SERIES	30~180	20~80	150	AC
TR185 SERIES	30~190	20~80	185	AC
TR220 SERIES	70~200	20~80	220	AC
TR300 SERIES	150~300	20~80	300	AC
TR350 SERIES	175~355	20~80	350	AC
TR400 SERIES	190~410	20~80	400	AC
Remarks	1. Model meaning: Brand-Power (kW). Example: TR055 series, TR is brand, power 55kW. 2. The pressure is in the range of 90 ~ 140KPa, which is an unconventional model, and the delivery cycle is extended.			

MAGLEV TURBO VACUUM PUMP

Maglev turbo vacuum pump is a high-tech product with the characteristics of "energy saving, low noise, oil-free, intelligent, maintenance-free and long life", widely used in paper making, electric power, chemical industry, food, pharmaceutical and other energy-intensive industries. Compared with traditional equipment, maglev turbo vacuum pump can save 40%-70% energy, oil-free and water-free. With noise less than 80 dB, it can provide important technical support for the quality and efficiency improvement and green development of enterprises.

Performance Comparison

Item	Water Ring Vacuum Pump	Roots Vacuum Pump	Domestic Turbo Vacuum Pump	Maglev Turbo Vacuum Pump
Bearing	Domestic Ball Bearing	Domestic Ball Bearing	Tilting Pad Bearing	Maglev Bearing
Startup Friction	Have Friction	Have Friction	Have Friction	Frictionless
Impeller Form	Welded Impeller	Type 8 Impeller	Open/closed Impeller	Three-dimensional Flow Impeller
Impeller Efficiency	Low	Low	Higher	High
Type of Motor	Low Speed Induction	Low Speed Induction	Asynchronous Ac	PMSM
Overall Efficiency	45%	52%	62%	⩾79%
Monitoring Mode	No	No	No	24 hour monitoring
Lubricating Oil	Add Regularly	Add Regularly	Add Regularly	No lubrication
Maintenance Cost	High	high	Low	Maintenance-free
After-sales Maintenance	High cost, high failure rate	High cost, high failure rate	Long cycle, high cost,high frequency	Short cycle, free maintenance.low cost

Specification Types

Model	PRODUCT SPECIFICATION		
	Flow (m^3/min)	Vacuum Degree (kPa)	Motor Power (kW)
TRV055 SERIES	90~60	10~70	55
TRV075 SERIES	120~85	10~70	75
TRV132 SERIES	210~140	10~70	132
TRV150 SERIES	245~165	10~70	150
TRV200 SERIES	330~225	10~70	200
TRV300 SERIES	490~335	10~70	300
TRV400 SERIES	660~435	10~70	400
TRV500 SERIES	780~525	10~70	500
TRV600 SERIES	980~650	10~70	600
Remarks	The data in this table are the standard parameters and the main scope of work, the specific selection of professional consultation personnel.		

MAGLEV AIR COMPRESSOR

The maglev air compressor is a new type of energy saving and high-efficiency oil-free air compressor, which has the characteristics of "energy-saving, low noise, oil-free, intelligent, maintenance-free and long life" compared with the traditional air compressor, and can be widely used in the fields of glass, textile, fermentation, chemical industry, mining, electric power, food, pharmaceutical, paper making and automobile.

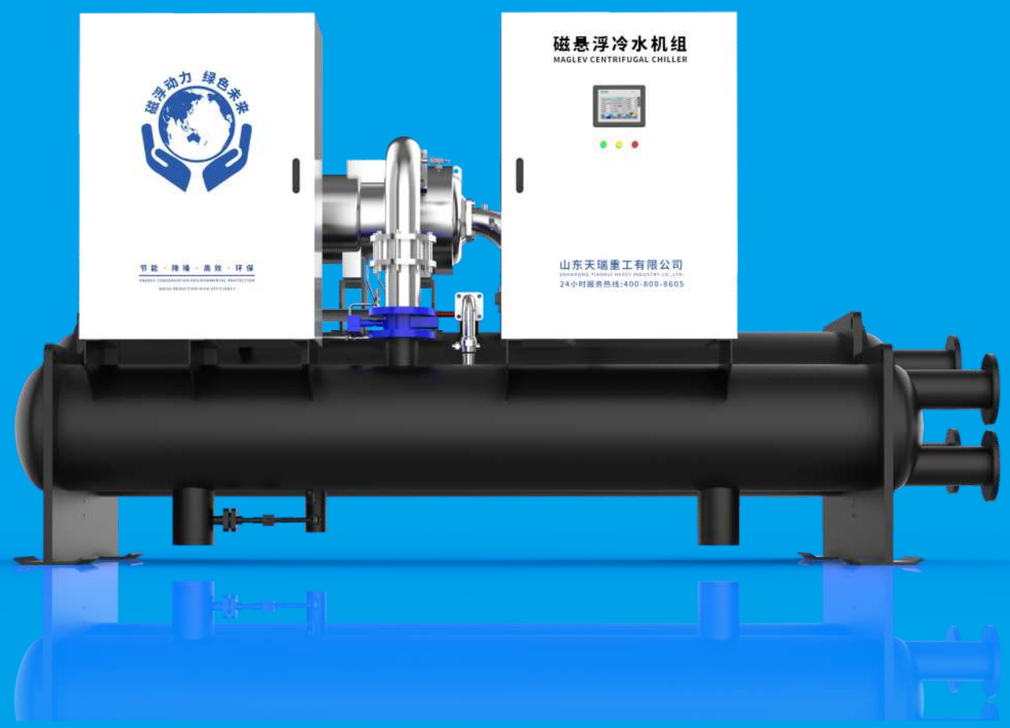
Performance Comparison

Items	Piston Air compressor	Screw Air Compressor	Maglev Air Compressor
Compress Mode	Volumetric	Volumetric	Centrifugal
Bearing Life	Short	50000-100000 hours	Over 20 years
Reliability	Quick wearing	Rotor need lubricants	No friction, no lubricants
Product Performance	Attenuation due to piston wear	Attenuation due to screw wear	No attenuation in full life
Motor	Power frequency, Start-delta starting	Variable Frequency Starting	High speed permanent motor, Variable Frequency Starting
Energy Consumption	High	Medium	Low
Noise	100-120dB	80-100dB	⩽75dB
Air Quality	Many	less-oil	No lubricantion oil, achieve ISO8753-1 class 0
Rotate Speed	⩽2000rpm	⩽3000rpm	25000-50000rpm
Lubrication	Change lubricants regularly	Change lubricants regularly	No lubricantion oil
Vibration	Heavy	Heavy	Light

Specifications and Models

Model	PRODUCTS SPECIFICATION		
	Flow Rate(m^3/min)	Pressure(bar)	Power(kW)
TRA110 SERIES	23~42	2~5	110
TRA150 SERIES	44~58	2~3	150
TRA200 SERIES	60~78	2~3	200
TRA250 SERIES	75~98	2~3	250
TRA300 SERIES	90~120	2~3	300
TRA350 SERIES	105~140	2~3	350
TRA400 SERIES	120~158	2~3	400
Remarks	Remark Model meaning: Brand- abbreviation of equipment-power(kW). For example: Set-TRA110, Brand-TR, A-air compressor, 110-power 110 kW		

MAGLEV CENTRIFUGAL WATER CHILLER UNIT



The maglev centrifugal water chiller (heat pump) is one high-tech product of energy saving and environmental protection. Compared with traditional water chiller, maglev centrifugal water chiller (heat pump) is of higher energy efficiency ratio to 30-50% , low noise to less than 80 dB, 100% no oil, with advantages of small volume, light weight, big energy density etc., which could supply stable, high efficiency, energy saving and environmental protection power heart for cooling (heat pump), which is iteratively upgrade product in industry of central air conditioning, industrial cooling and HVAC etc.

Product Presentation

Maglev Water Chiller			TRC-100	TRC-200	TRC-300	TRC-400	TRC-500	TRC-600	TRC-700	TRC-800
Basic Parameters	Rated Refrigeration Volume	kW	380	780	1060	1405	1750	2100	2450	2810
	Interiorinput Power	kW	64	125	170	216	269	318	371	400
	COP	kW/kW	5.93	6.24	6.24	6.5	6.5	6.6	6.6	7.03
Compression Engine	Form	/	Maglev Compressor							
	Drive Way	/	Variable Frequency Start							
	Energy Regulation Mode	/	Stepless Regulation							
Evaporator	Type	/	Falling Film Shell and Tube Heat Exchanger							
	Water Inlet Temperature	℃	12							
	Outlet Temperature	℃	7							
	Circulating Water Flow	m^3/h	66	135	182	242	301	362	422	483
	Pressure Drop	kPa	≤60							
	Frozen Water Pipe Pipe Diameter	mm	DN125	DN150	DN200	DN200	DN250	DN250	DN250	DN300
Condenser	Type	/	Shell and Tube Heat Exchanger							
	Water Inlet Temperature	℃	30							
	Outlet Temperature	℃	–							
	Circulating Water Flow	m^3/h	82	167	228	302	376	451	526	604
	Pressure Drop	kPa	≤80							
	Frozen Water Pipe Pipe Diameter	mm	DN125	DN150	DN200	DN200	DN250	DN250	DN250	DN300
Electrical Parameters	Source	/	Three-phase 380V 50Hz							
	Security Guard	/	High and low voltage, overload, phase loss, water flow protection, antifreeze protection, and low temperature protection							
Refrigerant	Refrigerant Name	/	R134a							
	Refrigerant Injection Volume	kg	135	225	360	440	520	640	750	860
	The Throttling Form	/	Electronic Expansion Valve							
Weight	Hauled Weight	kg	3000	4000	5100	5800	6500	7300	7800	8800
	Running Weight	kg	3600	4800	6100	6900	7500	8100	8600	9900
Overall Dimensions	Length	mm	3500	3900	4600	5200	5300	5800	6000	6500
	Width	mm	1600	1780	1800	1980	1980	1980	2000	2000
	Altitude	mm	2150	2260	2270	2390	2390	2430	2430	2500

Remarks: 1. Model meaning: Brand-Equipment abbreviation-Cooling Capacity, TRC-100 as example, TR represents Tianrui, CC represents centrifugal chiller, cooling capacity is 100RT.
2. Maglev water chiller design and manufacturing standards refer to GB/T18430.1 "Steam compression cycle cold water (heat pump) units - Part 1: Cold water (heat pump) units for industrial or commercial and similar purposes".
3. The above content is subject to change due to product improvement and other reasons, and is subject to change without prior notice.

Product Presentation

Maglev Ground Source Heat Pump Unit				TRRG-100	TRRG-200	TRRG-400	TRRG-800
Basic Parameters	Rated Refrigeration Volume		kW	368	745	1350	2710
	Refrigeration Input Power		kW	46.8	94.5	171	342
	Rated Heat		kW	450	910	1645	3290
	Thermal Input Power		kW	89	180	322	644
Compression Engine	form		/	Maglev Compressor			
	Drive Way		/	Variable Frequency Start			
	Energy Regulation Mode		/	Stepless Regulation			
Evaporator	form		/	Falling Film Shell and Tube Heat Exchanger			
	Heating	Water Temperature in and out	℃	The inlet temperature of chilled water is 12 ℃, and the outlet temperature is 7 ℃			
		Water Flow	m^3/h	63	128	233	467
	Refrigeration	Water Temperature in and out	℃	Heat source water inlet temperature 10 ℃, outlet temperature 6.1 ℃			
		Water Flow	m^3/h	79	160	291	583
	Pressure Drop		kPa	⩽80			
	Frozen Water Pipe Pipe Diameter		mm	DN125	DN200	DN200	DN300
Condenser	Type		/	Shell and Tube Heat Exchanger			
	Refrigeration	Water Temperature in and out	℃	Cooling Water: inlet temperature 25 ℃, outlet temperature 29.5 ℃			
		Circulating Water Flow	m^3/h	79	160	291	583
	Heating	Water Temperature in and out	℃	Hot Water: inlet temperature 38.9 ℃, outlet temperature 45 ℃			
		Circulating Water Flow	m^3/h	63	128	233	467
	Pressure Drop		kPa	⩽80			
	Refrigerant Injection Volume		mm	DN125	DN200	DN200	DN300
Electrical Parameters	Source		/	Three-phase 380V 50Hz			
	Security Guard		/	High and low voltage, overload, phase loss, water flow protection, antifreeze protection, and low temperature protection			
Refrigerant	Refrigerant Name		/	R134a			
	Refrigerant Injection Volume		kg	120	210	440	880
	The Throttling Form		/	Electronic Expansion Valve		Electronic Expansion Valve	
Weight	Hauled Weigh		kg	3000	4100	5800	7800
	Running Weight		kg	3600	5000	6900	9000
Overall Dimensions	Length		mm	3500	3900	6000	6500
	Width		mm	1500	1780	1800	2000
	Altitude		mm	2000	2360	2390	2500

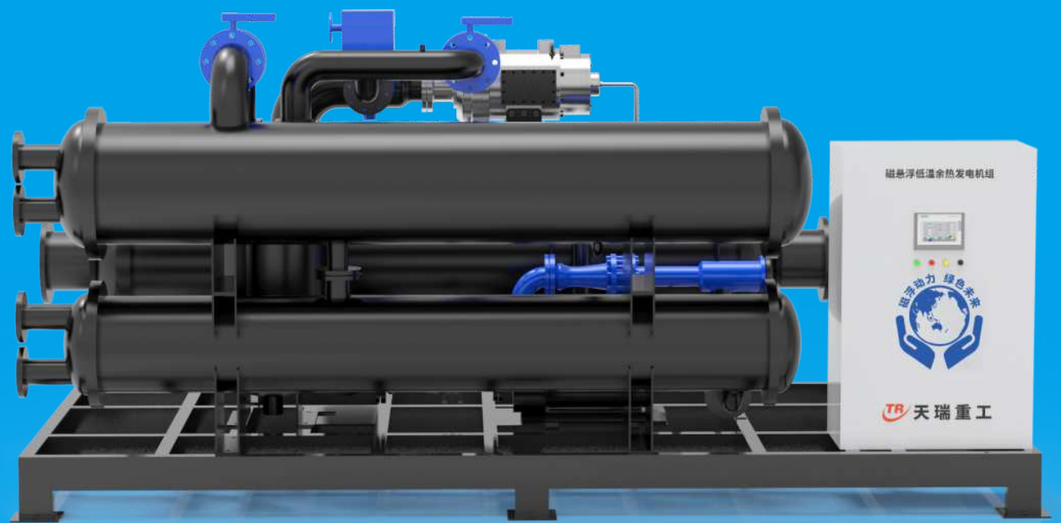
Remarks: 1.Model meaning：Brand-Equipment abbreviation-Cooling Capacity, TRRG-100 as example, TR represents Tianrui, RG represent resource of ground heat pump, cooling capacity is 100RT.
2. Maglev water source heat pump unit design and manufacturing standards refer to GB/T19409 "Water (ground) source heat pump Unit".
3. The above content is subject to change due to product improvement and other reasons, and is subject to change without prior notice.

Product Presentation

Maglev Water Source Heat Pump Unit				TRRW-100	TRRW-200	TRRW-400	TRRW-800
Basic parameters	Rated Refrigeration Volume		kW	360	729	1315	2635
	Refrigeration Input Power		kW	44.5	90	162	324
	Rated Heat		kW	462	935	1685	3380
	Thermal Input Power		kW	86	174	312	622
Compression Engine	Form		/	Maglev Compressor			
	Drive Way		/	Variable Frequency Start			
	Energy Regulation Mode		/	Stepless Regulation			
Evaporator	Form		/	Falling Film Shell and Tube Heat Exchanger			
	Heating	Water Temperature in and out	℃	The inlet temperature of chilled water is 12 ℃, and the outlet temperature is 7 ℃			
		Water Flow	m^3/h	62	126	226	453
	Refrigeration	Water Temperature in and out	℃	Heat source water inlet temperature 15 ℃, outlet temperature 6.3 ℃			
		Water Flow	m^3/h	37	75	136	272
	Pressure Drop		kPa	⩽80			
	Frozen Water Pipe Pipe Diameter		mm	DN125	DN150	DN200	DN250
Condenser	Type		/	Shell and Tube Heat Exchanger			
	Refrigeration	Water Temperature in and out	℃	Cooling Water : inlet temperature 18 ℃, outlet temperature 27.4 ℃			
		Circulating Water Flow	m^3/h	37	75	136	272
	Heating	Water Temperature in and out	℃	Hot Water : inlet temperature 38.6 ℃, outlet temperature 45 ℃			
		Circulating Water Flow	m^3/h	62	126	226	453
	Pressure Drop		kPa	⩽80			
	Refrigerant Injection Volume		mm	DN125	DN150	DN200	DN250
Electrical Parameters	Source		/	Three-phase 380V 50Hz			
	Security Guard		/	High and low voltage, overload, phase loss, water flow protection, antifreeze protection, and low temperature protection			
Refrigerant	Refrigerant Name		/	R134a			
	Refrigerant Injection Volume		kg	120	210	440	880
	The Throttling Form		/	Electronic Expansion Valve		Electronic Expansion Valve	
Weight	Hauled Weigh		kg	3000	4100	5800	7800
	Running Weight		kg	3600	5000	6900	9000
Overall Dimensions	Length		mm	3500	3900	6000	6500
	Width		mm	1500	1780	1800	2000
	Altitude		mm	2000	2360	2390	2500

Remarks: 1.Model meaning：Brand-Equipment abbreviation-Cooling Capacity, TRRW-100 as example, TR represents Tianrui, RW represents resource of water heat pump, cooling capacity is 100RT.
2. Maglev water source heat pump unit design and manufacturing standards refer to GB/T19409 "Water (ground) source heat pump Unit".
3. The above content is subject to change due to product improvement and other reasons, and is subject to change without prior notice.

MAGLEV LOW-TEMPERATURE WASTE HEAT GENERATOR SET



The maglev low-temperature waste heat generator set can convert over 80℃ of heat source energy into electric energy, realizing the recovery of industrial low-temperature waste heat, and effectively improving the comprehensive utilization rate of energy. Compared with the traditional equipment, it has lots of advantages such as efficiency increased by 25%, 30% lower weight, volume decreased by 40%, design service life up to 20 years. It can be widely used in cement building materials, iron and steel smelting, petrochemical, chemical fertilizer, alumina, titanium dioxide, glass, ocean temperature difference, solar energy, geothermal and biomass energy, ships, and other fields. It is an iterative upgrade equipment leading the industrial waste heat power generation industry to the direction of industrialization, green and intelligent development.

Product Parameters

Model	Generated Power(kW)	Speed(r/min)	Self Consumption	External Dimensions(mm)	Condenser Cooling Mode
TROG-100	20-100	30000-40000	5%-10%	4150×2055×2150	Water Cooling
					Air Cooling
TROG-200	100-200	18000-22000	4%-9%	5200×2300×2350	Water Cooling
					Air Cooling
TROG-350	200-350	18000-22000	4%-9%	6000×2300×2550	Water Cooling
					Air Cooling
TROG-500	350-500	15000-18000	3%-7%	8000×2450×2750	Water Cooling
					Air Cooling
Remarks:	Model Meaning: Brand-Equipment Abbreviation-Power(kW). TROG100W as example, TR is the brand, OG represents the low-temperature waste heat generator set, 100kw represents the power.				

Heat Source Type	Heat Source Type	Heat Source Conditions	Application Industry
Hydrotherm	Condensate Water, Wastewater, Materiel Liquid	Temperature> 95 ℃ Flow > 15t / h	Petrochemical, Chemical, Chemical Fiber Textile Printing and Dyeing, Chemical Fertilizer, Salt Chemical Coal Chemical Industry, Paper, Thermal Electricity
Hot Air	Saturated Steam, Drained and Wet Steam	Temperature> 95 ℃ Flow > 2t / h	Petrochemical, Chemical, Chemical Fiber Textile Printing and Dyeing, Chemical Fertilizer, Salt Chemical Coal Chemical Industry, Paper, Thermal Electricity
Flue Gas, Hot Air	Flue Gas and Hot Air Produced in Various Combustion and Production Processes	Temperature> 170 ℃ Volume flow> 40000 m3/h (STP)	Steel Making, Cement, Glass Lime, Ceramics, Internal Combustion Engine, Gas Engine and Other Industries or Equipment

1、The maglev generator set adopts integrated skid structure, compact layout, small space, easy for local installation and saving building space.

2、The evaporator, preheater and condenser are arranged in horizontal layout with simple pipe connection .

3、Large Capacity Gas-liquid Separation Device to Ensure the Dry Intake Air.

4、Wide Control Range, 30-110% Load Continuous Long-term Stable Operation.

5、With the high-speed direct connection design of generator and expander, high-speed operation mode and frequency conversion control, it greatly reduces the weight of the core machine and facilitates equipment installation and transfer.

SCREW COMPRESSOR

The permanent magnet variable frequency twin-screw air compressor developed by Tianrui Heavy Industry is an efficient and energy-saving product, which adopts the new permanent magnet variable frequency technology to improve the starting and running mode of the motor to reduce equipment wear and energy loss. Compared with traditional air compressor, it has the characteristics of energy saving, low noise and intelligent control. It can be widely used in automobile manufacturing, machinery manufacturing, electronic manufacturing, chemical industry, textile, cement, sewage treatment, food processing and other energy-intensive industries.

Specification and Model

Series	Model	Discharge Pressure (bar)	Discharge Volume (m^3/min)	Power (kW)
TRS90V	TRS90V-3	3	27.9	90
	TRS90V-4	4	25.6	
	TRS90V-6	6	21.5	
	TRS90V-8	8	20	
TRS110V	TRS110V-3	3	34.1	110
	TRS110V-4	4	29.7	
	TRS110V-6	6	23.4	
	TRS110V-8	8	23	
TRS132V	TRS132V-3	3	40.9	132
	TRS132V-4	4	38.5	
	TRS132V-6	6	28	
	TRS132V-8	8	25	
TRS160V	TRS160V-3	3	49.6	160
	TRS160V-4	4	44.1	
	TRS160V-6	6	34	
	TRS160V-8	8	32	
TRS185V	TRS185V-3	3	57.3	185
	TRS185V-4	4	48.3	
	TRS185V-6	6	39.3	
	TRS185V-8	8	33.5	
TRS200V	TRS200V-3	3	62	200
	TRS200V-4	4	54	
	TRS200V-6	6	42.5	
	TRS200V-8	8	40	
TRS250V	TRS250V-3	3	65	250
	TRS250V-4	4	64	
	TRS250V-6	6	53	
	TRS250V-8	8	46	
Remarks	Taking TRS250V-8 as an example, the rated power is 250kW and the pressure is 8 kg. For other pressure selection, please consult technical personnel.			

PERMANENT MAGNET SYNCHRONOUS DIRECT DRIVE MOTOR

PMSM combines frequency conversion vector, permanent magnet direct drive, microelectronics control technology, removing the traditional deceleration device. Connected with the load rotating shaft, it can drive load directly and simplify the transmission system structure, with the higher efficiency, noise reduction, convenient installation, without manual daily maintenance. Thus we can save a lot of manpower cost and reduce the environmental pollution in the production process, effectively reducing carbon emissions.

Performance Contrast

Performance	Tianrui PMSM	Ordinary Asynchronous Motor
Energy Efficiency Level and Energy Saving Effect	All products meet or exceed the domestic level 1 energy efficiency (IE 5), with a comprehensive efficiency of 90%~97%, or even higher.	At present, most three-phase induction motors are the three-level energy efficiency (IE 1) standard, with a comprehensive efficiency of 65%~95%.
Stability Capacity and Overload Capacity	Strong large load unloading capacity, overload capacity no less than 1.5 times with good stable operation performance.	The instantaneous overload capacity is relatively weak.
Shock Noise	Small Vibration, Low Noise.	High vibration, High Noise.
Maintenance Period	Relative Asynchronous Motor with Speed Reducer System Simple Maintenance, Long Period.	Frequent Maintenance with Short Period,Complex Maintenance and Heavy Work.
Impact on the Grid	High power factor, close to 1, improve the power grid quality factor.	A low power factor, with only 0.85-0.92, Reduce the power grid quality and increase the apparent power.

Product Presentation

	TRYC	TR-YD	TRYG	TR-YDG
Rated Voltage(V)	380		6000/10000	
Rated Frequency(Hz)	50			
Power Range(kW)	5.5~280	50~315	185~8000/280~2800	250~1400
Axis Center Height(mm)	132~355		355~1000	
Maximum Torque Multiple	2.2			
Speed(r/min)	500~3000	50~600	750~1500	60~90
Power Factor	0.97	0.97	0.96	0.96
Insulation Level	F			
Protection Level	IP54			
Operation Mode	S1			
Cooling Method	Air-cooled			
Installation Method	B3/B5/B35			
Usage Conditions	Between -20 °C and 60 °C, when the operating ambient temperature is exceeded, the bearing lubricating grease model should be adjusted			
Model Description	Low Pressure Conventional Direct Drive	Low Pressure, Low Speed, High Torque Direct Drive	High Pressure Conventional Direct Drive	High Pressure, Low Speed, High Torque Direct Drive

APPLICABLE INDUSTRIES

Sewage Treatment

Cement

Paper Making

Spinning and Weaving

Glassware and Ceramics

Pyroelectricity

Chemical Industry

Biological Fermentation

Pharmacy

Iron and Steel, Metallurgy

Calcium Carbide

Electroplating

Hotels/Office Buildings

Rail Transit

Hospital

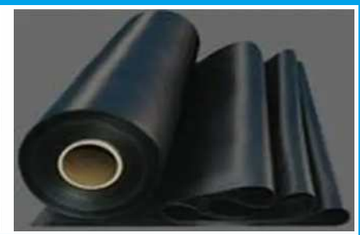
Commercial Center

Cold Store

Data Center

School Residential Community

Industrial Plant



Plastic Rubber

Mechanical Processing

Electroplating

Leather Manufacturing

APPLICATION CASES

Cases of Maglev Turbo Blower Sewage Treatment Plant/Cement Plant

Cases of Maglev Vaccum Pump Paper Mill

Cases of Maglev Air Compressor

Chemical Plant

Galvanizing Plant

Cement Plant

Textile Factory

Textile Factory

Textile Factory

Cases of Maglev Centrifugal Water Chiller Unit

In Chemical Plants

In Chemical Plants

In Workshop

In Office Buildings

Cases of Maglev Low-temperature Waste Heat Generator Set

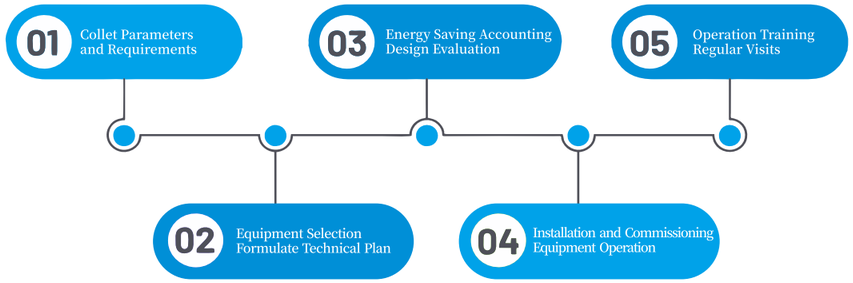
Cement Plant

Steel Plant

Shipyard

PRODUCTION

SERVICE SYSTEM



Tianrui has a professional service team of pre-sale, sale and after-sale, which can provide 24 hours of consulting services and technical support, offer customize technical solutions and solve all the problems in equipment selection and using process.

SERVICE：400-800-8605