

Integrated Core Components Solution Suppliers for Heat Pumps

GMCC&Welling are integrated core component solution suppliers for HVACR appliances. We design and produce rotary compressor, scroll compressor, reciprocating compressor, electronic expansion valve, motor, fan and water pump for various applications in the field of heat pump including heat pump space heating, heat pump water heater, heat pump dryer, and swimming pool heat pump. GMCC&Welling aim to provide core components and package solutions with lower noise, smaller size, higher efficiency, and stronger reliability.



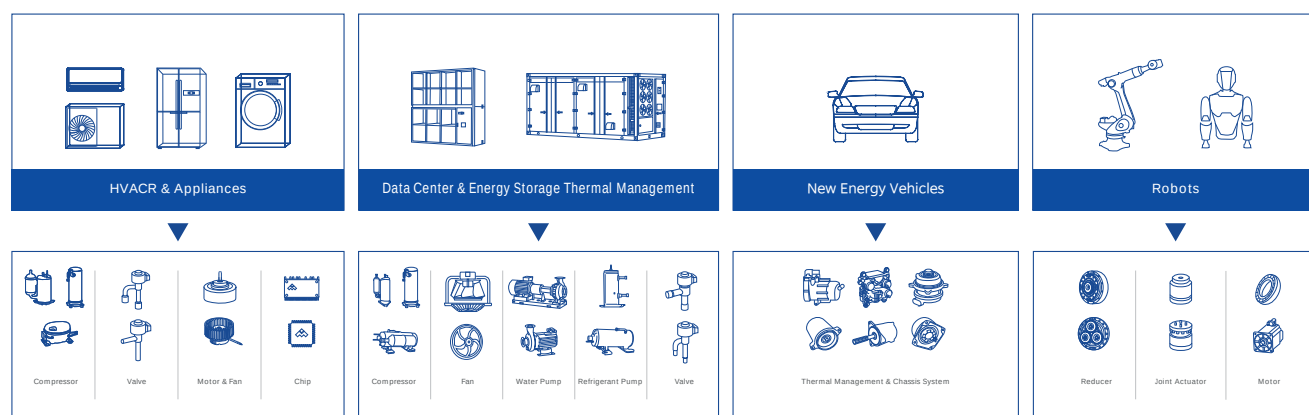
Company Profile

GMCC&Welling is a world-leading supplier of core components for HVACR appliances, DC&ESS Thermal Management, NEV, and Robotics. We are dedicated to offering our customers leading technology, quality, and service while building a better industry together through green, efficient, and intelligent products and solutions.

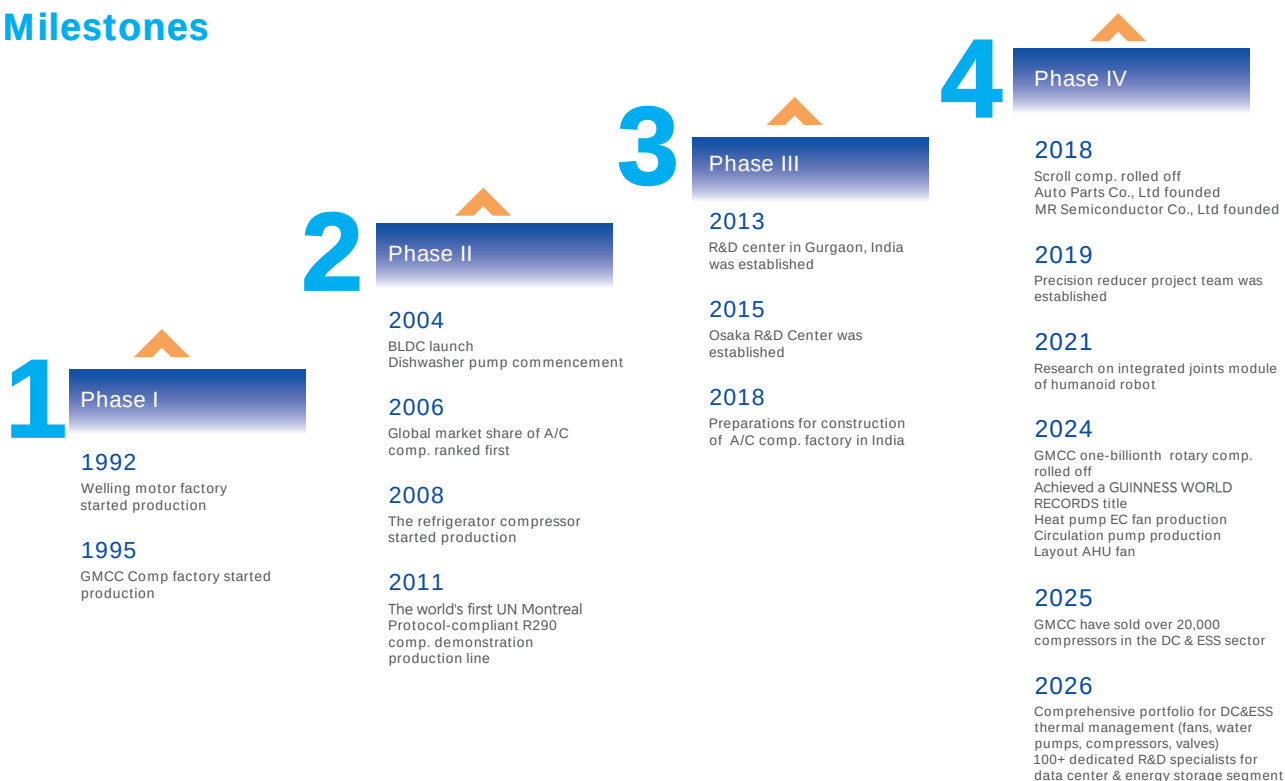
At present, GMCC&Welling operates 24 advanced smart factories and has established 23 R&D and testing centers around the world. We own over 8,800 licensed patents and offer a comprehensive portfolio of high precision core components such as compressors, motors, chips, valves, pumps, and new energy vehicles and robotic components for different kinds of A/C, washing machine, refrigerator and freezer, heat pump, water heater, dehumidifier, dryer, car freezer, new energy cars, industrial robots, and humanoid robots.

GMCC&Welling leverages core technologies to empower an efficient and energy-saving world for sustainable human development.

Business Units

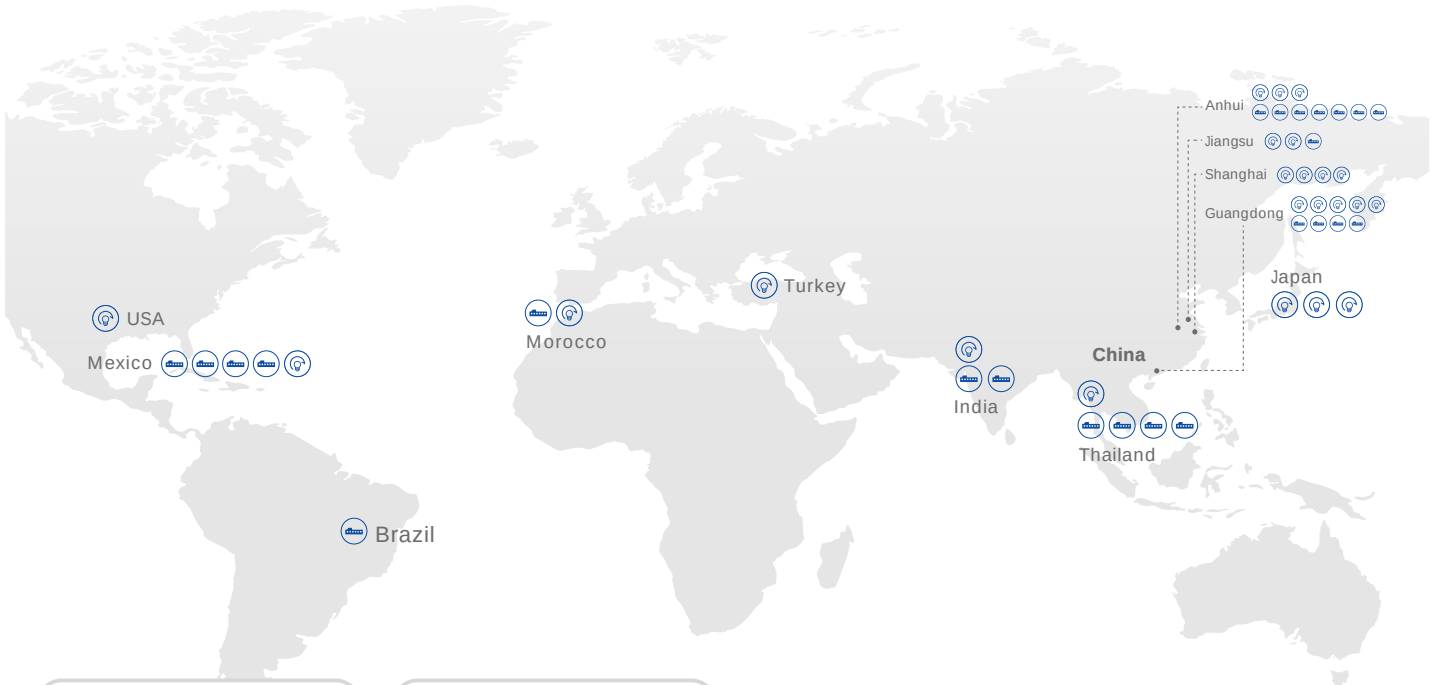


Milestones



Global Footprint

Complementary domestic and international production capacities for an optimized global industrial chain



12 in China
12 overseas

Smart Factories

14 in China
9 overseas

R&D and Testing Centers

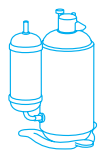
 Factory  R&D Center

Certification

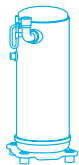
International authoritative product certifications: CNAS, UL, TUV, Intertek, CSA, CCC, etc.



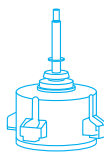
Core Components of Heat Pump



Rotary compressor



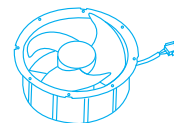
Scroll compressor



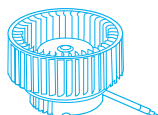
Motor for heat pump space heating



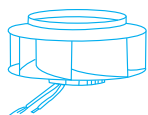
Motor for heat pump water heater



Axial fan for heat pump water heater



Forward-centrifugal fan for heat pump water heater



Backward-centrifugal fan for heat pump water heater



BLDC fan



EC fan



Electronic expansion valve

GMCC R290 Compressor Footprint

2007

Started R290 compressor project

2013

Firstly mass produced R290 RAC compressor globally

2015

R290 HPWH compressor in mass production for EU market

2019

GMCC cumulative sales of R290 compressors over 1 million units

2022

GMCC cumulative sales of R290 compressors over 10 million units
R290 ATW compressor in mass production

2023

GMCC annual sales of R290 compressors over 5 million units



National Science and Technology Progress Award for GMCC R290 Compressor

2011

GMCC signed the World's First UN Demonstration Project of R290 production line

2014

R290 Demo.project passed the acceptance of UN

2017

R290 HP dryer compressor in mass production

2020

R290 refrigerated cabinet compressor in mass production

2024

GMCC released New Generation R290 Compressors with patented Swing-Block technology



HPE2024 China Heat Pump Exhibition "Innovative Product Award"

2024 China Refrigeration Exhibition "Gold Product Award"



Product Series Lineup

Rotary Compressor

Type		Compressor Capacity Range																										Certificate	
Refrigerant	Power source	kW	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0		26.0
		kBtu/H	3.4	6.8	10.2	13.6	17.1	20.5	23.9	27.3	30.7	34.1	37.5	40.9	44.3	47.7	51.2	54.6	58.0	61.4	64.8	68.2	71.6	75.0	78.4	81.8	85.2		88.6
R290	50Hz 220/240V	0.5-6kW																										CQC TUV PED UL UKCA (optional)	
	DC Inverter	2-22kW																											
R454C	DC Inverter	2-18kW																											

Scroll Compressor

Type	Variable Speed Compressor Capacity Range															Certificate
Product application	kW	8.0	12.0	16.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	60.0	70.0	80.0	100.0	CQC TUV PED UL
	kBtu/H	27.3	40.9	54.6	68.2	85.3	102.4	119.4	136.5	153.5	170.6	204.7	238.8	273.0	341.2	
Commercial A/C R410A / R32	(12-60 kW)															
Heat pump heating R410A / R290 / R32	(20-80 kW)															
Computer room A/C R410A	(20-80 kW)															
R290 series	(8-45 kW)															
R32 series	(15-100kW)															

Type			Fixed Speed Compressor Capacity Range													Certificate
Product application	Refrigerant	Power source	kW	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0		
			kBtu/H	6.8	13.6	20.5	27.3	34.1	40.9	47.8	54.6	61.4	68.2	75.1		
A/C - T1	R410A	1Φ-60Hz 208 ~ 230V														UL CUL
	R454B															UL CUL
	R32															UL CUL
A/C - T3	R410A	1Φ-50Hz 220 ~ 240V														TUV
Industrial Air Conditioner	R410A	3Φ-50Hz 380 ~ 415V														CCC
HP Water Heating & Cooling	R410A	3Φ-50Hz 380 ~ 415V														CCC
Industrial Water Heating & Cooling	R22	3Φ-50Hz 380 ~ 415V														CCC
Freezing and Refrigeration	R404A	3Φ-50Hz 380 ~ 415V														CCC

Product Series Lineup

HP Water Heater EC Fan

Series	Airflow Range (m ³ /h)									Input power (W)	Voltage (V)	Control
	1	100	200	400	600	800	1000	2000	5000			
φ 133 Axial fan	 (0~168)									4	DC12~24V	0~10V / PWM
φ 149 Forward-centrifugal fan	 (0~220)									13	AC 220~240, 50/60Hz	0~10V / PWM
φ 190 Backward-centrifugal fan	 (0~700)									60	AC 196~253, 50/60Hz	Dual Speed / PWM
φ 200 Axial fan	 (0~690)									12	AC 207~253, 50/60Hz	Dual Speed / PWM
φ 225 Backward-centrifugal fan	 (0~600)									20	AC 196~253, 50/60Hz	0~10V / PWM

HP Water Heater BLDC Fan

Series	Airflow Range (m ³ /h)									Output power (W)	Voltage (V)	Control
	1	1000	2000	4000	6000	8000	10000	12000	15000			
φ 200 Axial fan	 (0~500)									25	DC263~400	Vsp 0~6.5V / without control
φ 225 Backward-centrifugal fan	 (0~770)									35	DC160~400	Vsp 0~6.5V / without control

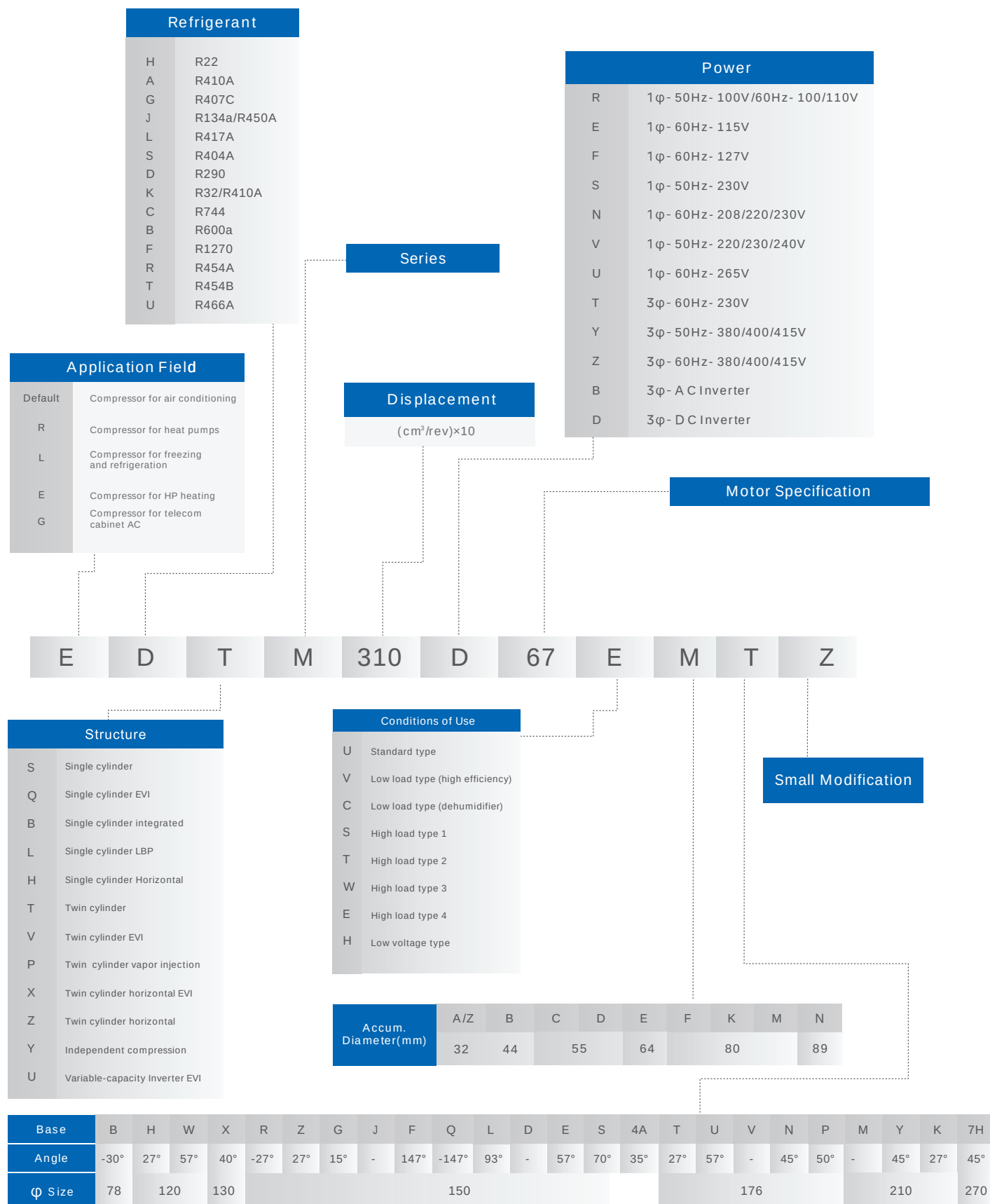
HP Heating EC Fan

Series	Airflow Range (m ³ /h)									Input power (W)	Voltage (V)	Control
	1	1000	2000	4000	6000	8000	10000	12000	15000			
φ 450 Axial fan	 (0~5300)									170	AC 220~240, 50/60Hz	0~10V/PWM / RS485
φ 500 Axial fan	 (0~5090)									160	AC 220~240, 50/60Hz	0~10V/PWM / RS485
φ 630 Axial fan	 (0~9450)									300	AC 220~240, 50/60Hz	0~10V/PWM / RS485

HP Heating BLDC Fan

Series	Airflow Range (m ³ /h)									Output power (W)	Voltage (V)	Control
	1	1000	2000	4000	6000	8000	10000	12000	15000			
φ 450	 (0~3300)									80	DC280~340	Vsp 0~6.5V / without control
φ 500	 (0~5500)									170	DC280~340	Vsp 0~6.5V / without control
φ 560	 (0~8500)									170	DC280~340	Vsp 0~6.5V / without control
φ 630	 (0~11500)									450	DC280~340	without control

Compressor Naming Rules



Heat Pump Rotary Compressor for Space Heating



Wide operating envelope

Maximum 17 pressure ratio, 83°C condensing and minimum -35°C evaporating temperature



Smaller size and high efficiency

High efficiency and reliability in smaller size and helps to reduce refrigerant charge amount



Noise & vibration optimization

Optimized compressor acoustic result, and system pipeline optimization service is optional for customers



Enhanced safety

Internal ceramic ring terminal and external IP54 or IP67 terminal covers are optional

Type	Typical Model	Displ. (cc)	Power Source	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
R290 New Generation (DC inverter twin-cylinder)	EDTM310D67EMTZ	30.6	1 or 3-phase	6810	1345	5.06	SEER @60Hz
	EDTM400D67EMTZ	40.0	1 or 3-phase	8900	1760	5.06	
	EDTF420D64EMTZ	41.5	1 or 3-phase	9260	1850	5.01	
	EDTF420D67EMTZ	41.5	3-phase	9260	1835	5.05	
	EDTF550D64EMTZ	55.0	1 or 3-phase	12400	2480	5.00	
	EDTF550D67EMTZ	55.0	3-phase	12450	2460	5.06	
R290 Standard Model (DC inverter twin-cylinder)	EDTN180D32EFZ	18.0	1 or 3-phase	3890	785	4.96	
	EDTN210D32EFZ	20.9	1 or 3-phase	4500	910	4.95	
	EDTM280D85EMT	28.0	1 or 3-phase	6230	1265	4.92	
	EDTM310D85EMT	30.6	1 or 3-phase	6810	1385	4.92	
	EDTF420D64EMT	41.5	1 or 3-phase	9200	1880	4.89	
	EDTF420D62EMT	41.5	3-phase	9200	1870	4.92	
	EDTF550D64EMT	55.0	1 or 3-phase	12300	2520	4.88	
	EDTF550D62EMT	55.0	3-phase	12350	2505	4.93	
	EDTQ580D2ENT	58.0	1 or 3-phase	13000	2660	4.89	
	EDTQ650D44ENT	65.0	1 or 3-phase	14530	2980	4.88	
	EDTQ650D66ENT	65.0	3-phase	14690	3025	4.86	
	EDTQ750D1ENT	75.0	1 or 3-phase	17200	3555	4.84	
	EDTQ750D66ENT	75.0	3-phase	17220	3530	4.88	
	EDTQ850D66ENT	85.0	3-phase	19516	4010	4.87	
R290 Smaller Size (DC inverter twin-cylinder)	EDTN150D32EEZ	15.0	1 or 3-phase	3220	660	4.88	
	EDTN180D32EEZ	18.0	1 or 3-phase	3890	785	4.96	
	EDTN210D32EEZ	20.9	1 or 3-phase	4500	910	4.95	
	EDTM280D85EFTF	28.0	1 or 3-phase	6220	1265	4.92	
	EDTM310D85EFTF	30.6	1 or 3-phase	6800	1385	4.91	
R454C DC inverter one-cylinder	ERSN140D43TFZ31	14.0	1 or 3-phase	3245	645	5.03	
R454C DC inverter twin-cylinder	ERTN210D53TFZ3	21.0	1 or 3-phase	4910	970	5.06	
	ERTM310D53TFTF	31.0	1 or 3-phase	7160	1460	4.90	
	ERTF420D64TMT	42.0	1 or 3-phase	10100	2080	4.86	
	ERTF550D64TMT	55.0	1 or 3-phase	13750	2850	4.82	
	ERTQ580D20ENT	58.0	3-phase	14350	2990	4.80	

SEER60 condition: Te=2.8°C, Tc=42.3°C, Tsh=10K, Tsc=8K, Speed 60rps

Heat Pump Rotary Compressor for Domestic Water Heater



Good performance

Optimized motor and structure design to enhance performance and acoustic result for DWH system



High reliability

Long lifetime design and comprehensive reliability evaluation to meet DWH application requirements



Wide range

Reliable operation under high load conditions in summer and high pressure ratio conditions in winter



Enhanced safety

Internal ceramic ring terminal to enhance insulation and smaller size design to reduce the refrigerant charge amount

Type	Typical Model	Displ. (cc)	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
R290 Fixed Speed (1-phase/220V-240V/50Hz)	RDSK34V11TAH3	3.4	638	171	3.73	ASH @220V
	RDSK46V12TAG3	4.6	907	235	3.86	
	RDSN50V12TZG3	5.0	970	245	3.96	
	RDSN58V11TZL	5.8	1135	275	4.13	
	RDSN58V12TZL3	5.8	1120	268	4.18	
	RDSN58V12TZGX3	5.8	1115	268	4.16	
	RDSN89V11TZZ	8.9	1700	408	4.17	
	RDSN89V12TZZ3	8.9	1720	400	4.30	
	RDSN89V11TBZ3	8.9	1720	415	4.14	
	RDSN108V11TBZ	10.8	2150	522	4.12	
	RDSM140V11TDZ	14.0	2693	618	4.36	
	RDSM170V11TKZ	17.0	3250	755	4.30	
R290 DC inverter one-cylinder	RDSM215V2TDZ	21.5	4165	965	4.32	SEER @60Hz
	RDSF230V11TKT	23.0	4595	1045	4.40	
	RDSK46D15TZR3	4.6	1010	212	4.76	
	RDSK75D35WBZ3	7.5	1580	335	4.72	
	RDSK89D35WBZ3	8.9	1900	400	4.75	
R290 DC inverter twin-cylinder	RDSN98D66TBE3	9.8	2100	425	4.94	
	RDSN140D57UFZ33	14.0	2940	592	4.97	
	RDTN150D21TEZ31	15.0	3140	650	4.83	

ASH @220V condition: Te=7.2°C, Tc=54.4°C, Tsh=27.8K, Tsc=8.3K, 220V power source
SEER @60Hz condition: Te=2.8°C, Tc=42.3°C, Tsh=10K, Tsc=8.9K, Speed 60rps

Heat Pump Scroll Compressor for Space Heating



High-efficiency operation

High efficient compressing pump design and optimized motor design



High reliability design

Improved structure design, oil and oil management optimization and IP67 terminal cover technologies, etc.



Low noise and vibration

Enhanced structure strength, dynamic balancing optimization and motor electromagnetic harmonic improvement



Optional EVI function

The EVI (Enhanced Vapor Injection) function of the compressors is optional for customers

Type	Typical Model	Displ. (cc)	Heating Capacity (W)	Power (W)	Heating COP (W/W)	Test Condition
R290 DC Scroll Compressors for Heat Pumps	SEDGA042D23ELK	42	10000	2000	5.00	SEER60
	SEDGA055D23ELK	55	13095	2620	5.00	
	SEDGC060D17WLK	60	14300	2830	5.05	
	SEDGC070D17WLK	70	16700	3300	5.06	
	SEDGC084D41WLK	84	20020	3962	5.05	
	SEDGC096D41ELK	96	22900	4550	5.03	
	SEDGC110D73ELR	110	26240	5215	5.03	
	SEDGC120D73ELR	120	28600	5700	5.02	
	SEDGE135D11TLG	135	32000	6400	5.00	
	SEDVA042D23ELK	42	10000	2000	5.00	
	SEDVA055D23ELK	55	13095	2620	5.00	
	SEDVC060D17WLK	60	14300	2830	5.05	
	SEDVC070D17WLK	70	16700	3300	5.06	
	SEDVC084D41WLK	84	20020	3962	5.05	
	SEDVC096D41ELK	96	22900	4550	5.03	
	SEDVC110D73ELR	110	26240	5215	5.03	
	SEDVC120D73ELR	120	28600	5700	5.02	
	SEDVE135D11TLG	135	32000	6400	5.00	

SEDV* means EVI models;

Medium temperature heat pump @60Hz condition: Te=-7°C, Tc=50°C, Tsh=5K, Tsc=8.3K, Speed 60rps

SEER @60Hz condition: Te=2.8°C, Tc=42.3°C, Tsh=10K, Tsc=8.9K, Speed 60rps

Heat Pump Rotary Compressor for Dryer



Good performance

New platform products include copper and aluminum compressors have enhanced performance and acoustic result for HP dryer system



Wide operating envelope

Maximum 90°C condensing temperature range is optional for R290 HPD compressors



Enhanced safety

Internal ceramic ring terminal to enhance insulation and smaller size design to reduce the refrigerant charge amount



Full-range product

Single and twin cylinder DC inverter compressors, copper and aluminum or hybrid fix speed compressors cover the new A to E energy efficiency applications

Type	Typical Model	Displ. (cc)	Cooling Capacity (W)	Power (W)	COP (W/W)	Test Condition
R290 DC	RDSK75D36E**3	7.5	2037	543	3.75	HPD @60Hz
	RDSN75D33E**32	7.5	2050	565	3.63	
	RDTK82D32EZE3	7.5	2070	588	3.52	
	RDSN75D40E**32	7.5	2035	580	3.51	
R290 Fixed-speed (1ph/220V-240V/50Hz)	RDSK57V01T**31	5.7	1125	373	3.02	HPD @230V
	RDSK57V01T**3	5.7	1138	390	2.92	
	RDSN62V11T**3	6.2	1330	378	3.52	
	RDSN62V01E**31	6.2	1320	382	3.46	
	RDSN65V01E**3	6.5	1338	418	3.20	
	RDSN68V13E**3	6.8	1378	405	3.40	
	RDSN68V01T**3	6.8	1410	438	3.22	
	RDSN71V12E**3	7.1	1460	425	3.44	
	RDSN82V11T**3	8.2	1680	503	3.34	
R290 Fixed-speed (1ph/208V-230V/60Hz)	RDSN65N01T**3	6.5	1625	505	3.22	HPD @230V
	RDSN82N01T**3	8.2	2094	696	3.01	

HPD @60Hz condition: Te=25°C, Tc=70°C, Tsh=10K, Tsc=9K, Speed 60rps

HPD @230V condition: Te=25°C, Tc=70°C, Tsh=10K, Tsc=9K, 230V power source

Test Conditions

Condition	SEER60	ASH	ARI	HPD	Medium Temp. HP
Condensing Temp. °C	43.2	54.4	54.5	70	50
Evaporating Temp. °C	2.8	7.2	7.2	25	-7
Suction Temp. °C	12.8	35	18.3	35	-2
Liquid Temp. °C	34.3	46.1	46.1	61	41.7
Ambient Temp. °C	35	35	35	35	35
Compressor Cooling	Natural Air	Natural Air	Natural Air	Natural Air	Natural Air

SEER60: Inverter operated at 60rps; Input power includes the inverter power



BLDC Fan for Heat Pump Space Heating



High efficiency

- High efficiency motor with optimized electromagnetic design
- Customized fan design based on specific working condition
- Able to fulfill ERP 2026 Regulation



Low noise

- Able to reach 1~3dB(A) lower than EC fan
- Excellent impeller and silent motor design
- Both impeller and motor rotor fulfill G6.3 balancing grade



High reliability

- IP54, 720h anti-corrosion capability
- Long durability test and various robustness tests



Typical Model	Impeller Type	Impeller Size (OD-H, mm)	Voltage Range (V)	Power (W)	Speed (rpm)	Max. Airflow (m³/h)	Max. Static Pressure (Pa)	Ingress Protection	Speed Regulation
ZKSN-80-10-XX	Axial	Z450-152	DC280~340	80	900	3300	130	IP54	Vsp 0~6.5V / without control
ZKSN-170-10-XX	Axial	Z500-145	DC280~340	170	950	5500	60	IP54	Vsp 0~6.5V / without control
ZKSN-170-10-XX	Axial	Z560-169	DC280~340	170	950	8500	120	IP54	Vsp 0~6.5V / without control
AFR630DC-N-450-10-1	Axial	Z630-183	DC280~340	450	950	11500	90	IP54	without control

BLDC Fan for Heat Pump Water Heater



Low noise

- Able to reach 1~3dB(A) lower than EC fan
- Excellent impeller and silent motor design



High reliability

Long durability and complete robustness evaluation



Flexible combination

Multiple choices with flexible combination between motor and impeller for different performance requirements

Typical Model	Impeller Type	Impeller Size (OD-H, mm)	Voltage Range (V)	Power (W)	Speed (rpm)	Max. Airflow (m³/h)	Max. Static Pressure (Pa)	Ingress Protection	Speed Regulation
ZKFP-25-10-XX	axial	Z200-67	DC263~400	25	2150	500	100	IP24	Vsp 0~6.5V / without control
ZKFP-35-10-XX	backward centrifugal	Z225-89	DC160~400	35	2070	770	400	IP24	Vsp 0~6.5V / without control

EC Fan for Heat Pump Space Heating



Intelligent control

- Modbus communication
- High-precision sensorless and fast stop technology
- PFC (Power Factor Correction) technology



Low noise

Excellent impeller and silent motor design

Typical Model	Impeller Type	Impeller Size (OD-H, mm)	Voltage Range (V)	Power (W)	Speed (rpm)	Max. Airflow (m³/h)	Max. Static Pressure (Pa)	Ingress Protection	Speed Regulation
AF450EC-KI-170-10-1	Axial	Z450-143	AC 220~240, 50/60Hz	170	1050	5300	75	IP54	0~10V/PWM/RS485
AF500EC-KI-160-10-1	Axial	Z500-161.5	AC 220~240, 50/60Hz	160	890	5090	105	IP54	0~10V/PWM/RS485
AFR630EC-KI-300-10-1	Axial	Z630-176	AC 220~240, 50/60Hz	300	700	9450	100	IP54	0~10V/PWM/RS485

EC Fan for Heat Pump Water Heater



High efficiency

Max. 3.2W at maximum speed with PWM speed control



Low noise

Ultra-thin impeller design with maximum 37dB(A) at maximum speed 1800rpm



High reliability

IP55 and long durability of 80000h



High efficiency

High winding coefficient motor and large airflow impeller design, improved by 4% compared with industry highest level



Low noise

Low friction flow channel design and high-precision dual-plane dynamic balancing calibration technology, decreased by 3.5dB(A) compared with industry highest level



High reliability

Highly integrated FOC control technology with multi-protection functions; IP44; lifetime exceeds 50K hours

Typical Model	Impeller Type	Impeller Size (OD-H, mm)	Voltage Range (V)	Power (W)	Speed (rpm)	Max. Airflow (m³/h)	Max. Static Pressure (Pa)	Ingress Protection	Speed Regulation
AFR133EC-KI-4-4-1	Axial	Z140-26.5	DC12~24	4	1800	168	34	IP55	0~10V/PWM
ZSFS-13-10-X	forward centrifugal	Z149-106	AC 220~240, 50/60Hz	13	1200	220	190	IP44	0~10V/PWM

EC Fan for Heat Pump Water Heater



Large airflow

Reach larger airflow with three-blade design at same volume



Low noise

Optimized impeller and silent motor design



High efficiency

Backward centrifugal blade design, applicable in high-efficiency condition



Low noise

Optimized impeller and silent motor design



High reliability

IP54 with plastic-coated stator structure

Typical Model	Impeller Type	Impeller Size (OD-H, mm)	Voltage Range (V)	Power (W)	Speed (rpm)	Max. Airflow (m³/h)	Max. Static Pressure (Pa)	Ingress Protection	Speed Regulation
AF200EC-KI-12-10-1	Axial	Z250-100	AC 207-253, 50/60Hz	12	2480	690	130	IP44	Dual Speed/PWM
BCF190EC-KI-60-10-1	backward centrifugal	Z190-68.5	AC 196-253, 50/60Hz	60	2950	700	450	IP54	Dual Speed/PWM
BCF225EC-KI-20-10-1	backward centrifugal	Z225-100	AC 196-253, 50/60Hz	20	1680	600	200	IP54	0~10V/PWM

EC Fan for Air Handling Unit



High efficiency

Optimized electromagnetic design to reach less heat loss



High performance

New blade design to expand high efficiency area in P-Q curve



High reliability

IP55, applicable in commercial and energy storage industry



High efficiency

mixed-flow impeller with inclined hub and centrifugal blade tip to reach less airflow loss and high pressure



Super low noise

Low pulsation impeller+high rigidity impeller and supporter



High efficiency

Optimized electrical parameter with innovative electromagnetic topology



High reliability

Industry first-class magnets supporter to support high-reliability applications

Typical Model	Impeller Type	Impeller Size (OD-H, mm)	Voltage Range (V)	Power (W)	Speed (rpm)	Max. Airflow (m ³ /h)	Max. Static Pressure (Pa)	Ingress Protection	Speed Regulation
BCFR630EC-KE-4000-10-1	backward centrifugal	Z630-319	AC 380~480V, 50/60Hz	4000	1600	22000	1100	IP55	0~10V/4~20mA /PWM/RS485
BCFR560EC-KE-2500-10-1	backward centrifugal	Z560-305	AC 380~480V, 50/60Hz	2500	1680	11500	880	IP55	0~10V/4~20mA /PWM/RS485
BCFR390EC-KW-560-10-1	mixed flow	Z390-260.7	AC208-240V	560	2200	5200	780	IP20	multi-speed control
BCFR370EC-KW-250-10-1	mixed flow	Z370-237.5	AC208-240V	250	2200	3800	590	IP20	multi-speed control
FCFH318DC-N-1000-10-1	forward centrifugal	Z318-325	DC280~340	1000	1300	3200	250	IP20	without control
FCFH318DC-N-600-10-1	forward centrifugal	Z318-234	DC280~340	600	1300	3500	450	IP20	without control
FCFH318DC-N-300-10-1	forward centrifugal	Z318-183	DC280~340	300	1300	1850	300	IP20	without control

Technical Support



Full-chain Service

From product selection to development support and to the analysis and resolution of after-sales issues, with a worry-free service system featuring professional teams before, during and after sales



Systematic Support

From technical support for compressors and motors to system testing and design optimization, we possess professional service capabilities



Sustainable Support

From product development services to research project support, as well as planning for the support of the next generation of products, we create a sustainable development co-operation model



Digital Simulation

- Established the system of digital simulation to improve the design reliability, identify design risks in advance and enhance product quality stability
- The function of simulation has evolved from assisting design to promoting R&D, from individual calculation to integration with the R&D system
- The main tasks include full-frequency band vibration simulation of compressors and system pipeline, and full life cycle simulation of compressors, etc

01 Platform Design



Pump Housing
Temperature Distribution



Cylinder Inner Wall
Temperature Distribution

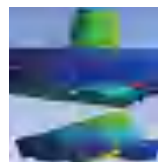
- **High Precision** Compressor Performance Simulation Software, Achieving:
 - ✓ **Product Precision Enhancement** — — Accurately Identifying Loss Sources, Quickly Finding Efficiency Improvement Directions
 - ✓ **Accelerate Development and Reduce Costs** — — Replacing Some Tests, Reducing Prototype Testing Costs and Time
 - ✓ The Average Capacity Tolerance Is 1.6% and The Power Consumption Tolerance Is 1.8%



02 Detailed Design



Gap Noise
Calculation



Operation
Deformation



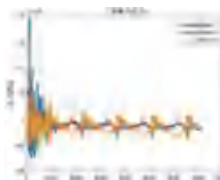
Friction
Lubrication



Discharge Valve
Fatigue



Oil Supply & Oil Level
& OCR



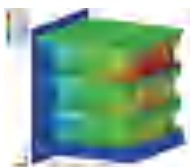
Compression Process
Simulation

Effectively Evaluate the Reliability of Design Schemes, Achieving Rapid Design Iteration

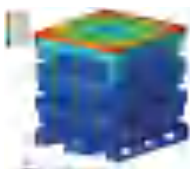


04 Packaging and Transportation

Slope
Impact



Stacking



Random
Vibration



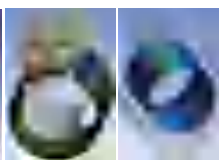
Compressor Packaging Simulation



03 Manufacturing



Vane Slot
Machining



Main Shell Rolling and
Shaping

Study the Impact of Structural Pre-deformation Caused by Forming Process on Reliability



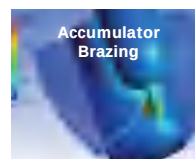
Compressing
Pump Assembly



Motor
Assembly



Three-point
Welding



Accumulator
Brazing

Research structural pre-deformation caused by process assembly on reliability

Testing Support

- > A laboratory with international authoritative certification qualifications can provide products and testing services that meet the requirements of major global certification systems
- > Possessing the ability to test individual compressors and motors, as well as the testing and analysis capabilities for various HVAC systems
- > Provide test data for compressors and motors under specified working conditions, as well as offer system optimization services to customers

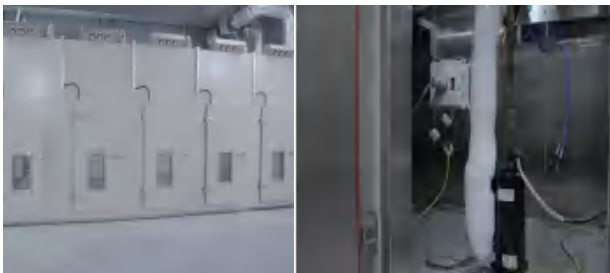
01 Compressor Noise & Vibration Lab:
29 sets of semi-anechoic chambers



02 Performance Lab:
45 sets of calorimeter



03 Durability Lab:
550+ test stations



04 A/C Enthalpy-difference Lab:
17 enthalpy-difference chambers



05 A/C Noise & Vibration Lab:
6 semi-anechoic chambers



06 Component Reliability Lab:
70+ sets of equipment



Leading Technology

01 Better Efficiency

Target

- ✓ Higher COP: 3%+ ↑

Alternative technologies

- Swing block technology
- Hinge joint vane technology
- Improved motor technology



02 Lower Noise

Target

- ✓ Lower Noise: OA 3dB(A)+ ↓

Alternative technologies

- Mechanical noise optimization
- Airflow noise optimization
- Electromagnetic noise optimization



03 More Comfort

Target

- ✓ Enhanced heating technologies

Alternative technologies

- Enhanced EVI technology
- Variable suction volume technology
- Combination of inverter, variable volume and EVI technologies



Leading Product



Continuous EVI Technology

- The heating capacity at -15°C is equivalent to that at room temperature without any attenuation
- The air outlet temperature or water outlet temperature can be sustained above 65°C at -25°C
- The system continues to operate normally at -30°C , maintaining a stable heating effect
- This technology reduces summer cooling energy use and improves winter heating efficiency, both with less electricity than regular systems



Patented Design Swing-block Technology

- Patented swing block technology, innovative vane-roller connection design, change from line contact to surface contact
- Contact stress decreased by 85%, friction coefficient decreased by 87%, resulting in lower noise and higher reliability
- The surface connection of vane-roller leads to less leakage, and the COP of the compressor increases by 7%



BLDC Motor (with Impeller) for ATW HP

- High efficiency: Optimized impeller, BLDC motor efficiency up to 85% customized for specific operating conditions.
- High Reliability: Spark-free certification, satisfy G6.3 dynamic balancing, IP54 protect level and design for 15 years lifetime
- Lower Noise: Customized motor and fan design for optimal acoustics, even more silent than EC fan

GMCC & Welling

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