



BLUE STAR

# INVERTER

DUCTED SYSTEM

Inverter Ducted  
Splits & Packaged ACs  
**Lower Energy Consumption.  
Higher Comfort.**





Blue Star, the market leader in ducted air conditioning systems in India is proud to introduce an innovative new product, the Inverter Ducted system. With over 7 decades of market experience, more than a million tons of installation base, thousands of happy customers and with more than 250 trained, dedicated dealers across the country, Blue Star has once again proved its expertise in HVAC Products with this new innovative product that offers huge power savings and high ROI.

It is suitable for various applications like offices, IT spaces, restaurants, showrooms, educational institutions, hospitals, banquet and marriage halls, control rooms, factories, warehouses and so on. As the power saving is enormous, it will be more advantageous for applications where air conditioning is required for longer hours.

## Inverter Compressor Technology

An inverter compressor is equipped with a variable frequency drive motor. The VFD drive controls the speed of the motor by changing the frequency. As speed is proportionate to frequency, it can be controlled to the desired level by varying the frequency. As the compressor speed changes, the refrigerant flow rate also varies thereby modulating the compressor capacity.

The compressor speed is higher when the cooling demand is more and is lower when the demand is less.

The combination of the two devices - Compressor & Drive - gives a continuous cooling modulation.



# Advantages of Inverter Scroll Compressors

## Lower running costs

The inverter compressor matches power input with cooling capacity requirement, resulting in reduced energy consumption.

## Accurate temperature control

The inverter compressor copes effectively with changes in temperature by altering the speed to match the cooling demand. This provides a stable temperature control and greater comfort to the occupants of the air conditioned area.

## High reliability

Due to lower compressor on/off cycles, reliability of the inverter scroll compressor is higher.

## Low starting current

Low in-rush current helps in avoiding torque surges. This prevents high mechanical stress on the compressor and results in lower wear and tear. This also helps in saving fixed costs charged by utilities (peak current calculation) and reduces mains and power back up loads. Low starting current also improves EER.

## Quick initial cooling

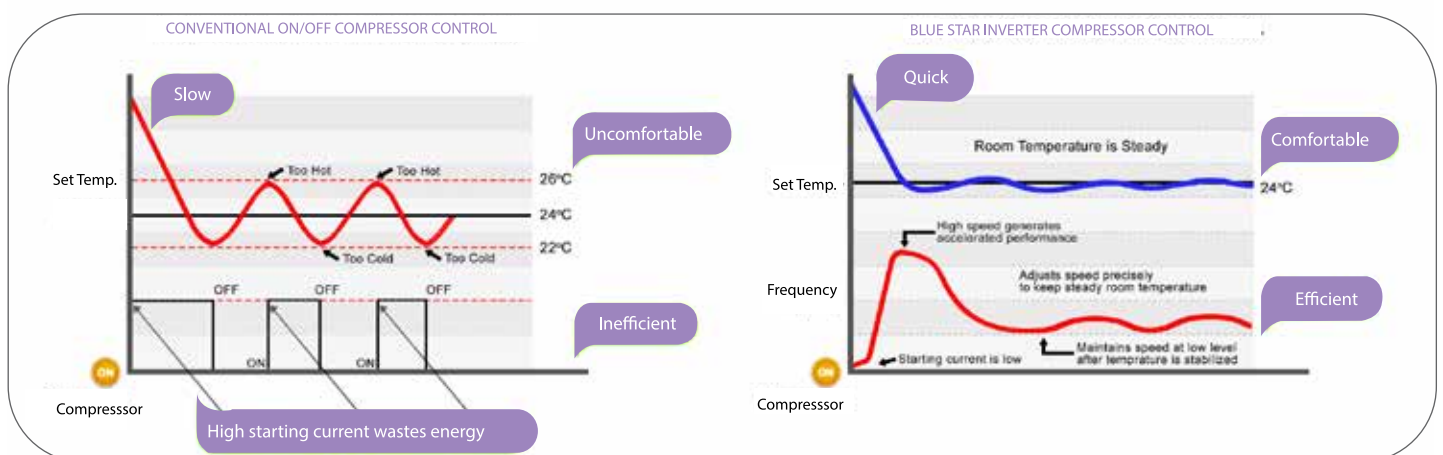
The variable frequency drive ensures that the compressor motor runs at a higher speed to produce more cooling that is required initially.

## Better humidity control

Since the inverter scroll compressor is able to continuously adapt to the cooling demand, there is better control of the evaporating temperature and hence the relative humidity.

## Quiet operation

The inverter scroll compressor generates less noise during part load operation as compared to conventional on-off systems.





## Blue Star Inverter Ducted System An innovative approach



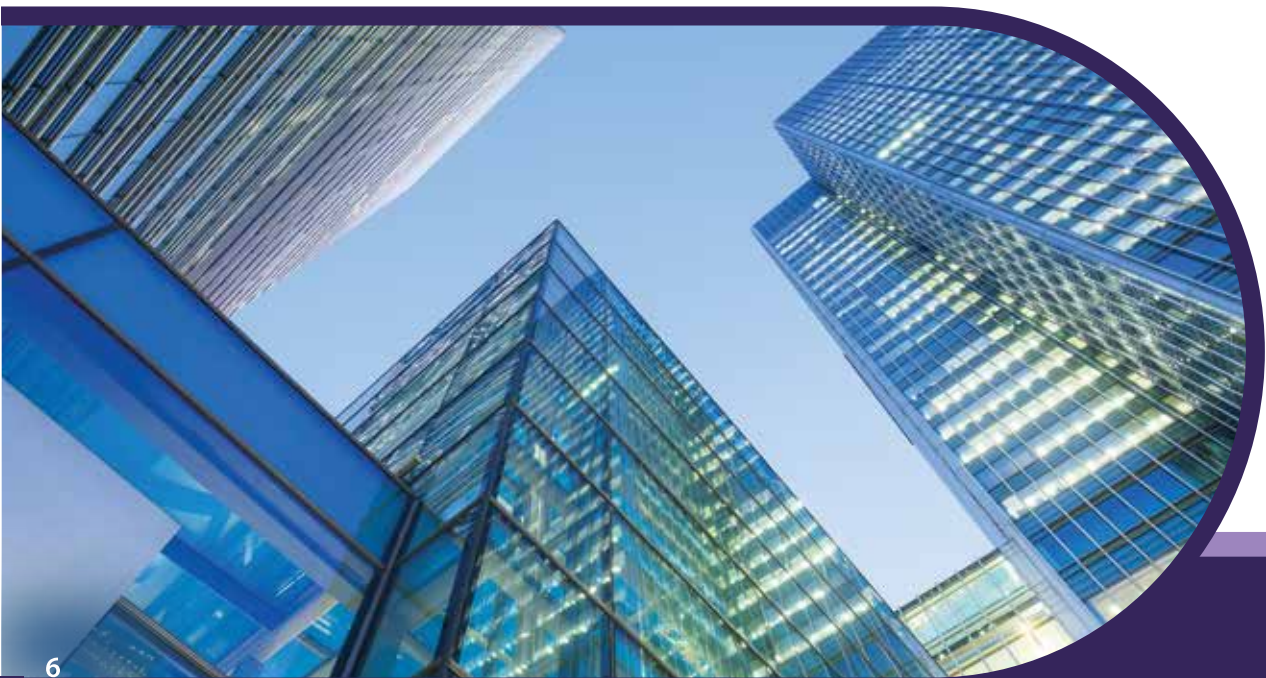
This is a hybrid system designed with a variable capacity inverter scroll compressor in combination with one or two fixed scroll compressors. The inverter compressor always takes care of modulations in the loads. Innovative control logic takes care of the operation of compressor(s) at various load conditions.

As the inverter compressor always runs, modulation in load is taken care of and uniform cooling is always achieved, resulting in enhanced comfort for the occupants.

As there is ducting for uniform air distribution, the inside temperature is uniform throughout the air conditioned space. During part load conditions, the efficiency of the system improves further on account of higher evaporator and condenser size available for the lower load.



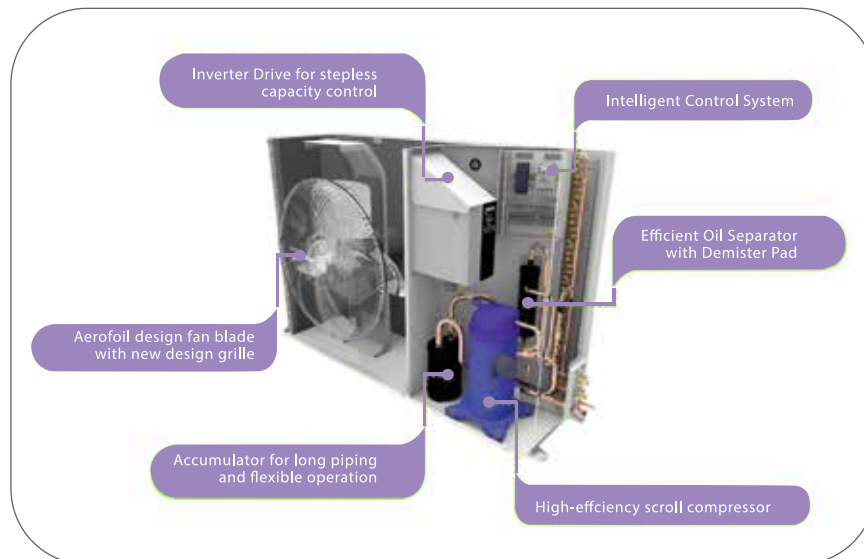
## Product Range



## High energy-efficiency and reliability

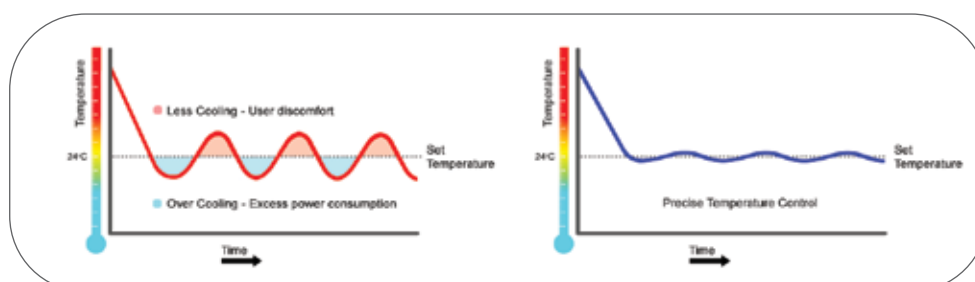
Various components have been carefully selected and used in this system to deliver comfortable cooling, maximum efficiency and high system reliability.

- Inverter Scroll Compressors
- Inverter Drives
- Efficient Oil Separator with Demister Pad
- PCBs / Intelligent Controllers
- Accumulator to handle refrigerant during fluctuating loads and for longer refrigerant piping
- Aerofoil design fan blade is used along with new design grille resulting in efficient condenser performance
- Laminar airflow arrangement in the outdoor unit to cool the drives



## Precise Temperature Control

PID type innovative control logic is used in this system which results in precise temperature control. It is a dynamic control based on feedback every 10 seconds. This system saves power by preventing over cooling.



Conventional system

Inverter system

## Long Refrigerant Piping

Long refrigerant piping length of up to 50m including 20m vertical length is possible.



This feature allows the outdoor units to be located 20m above the indoor unit thanks to the efficient and innovative oil management system and liquid handling capability of the Blue Star Inverter Ducted System.

## Stepless Capacity Control

This system achieves stepless capacity control and is suitable for applications with varying load conditions. Irrespective of any load inside, the set temperature can be achieved.

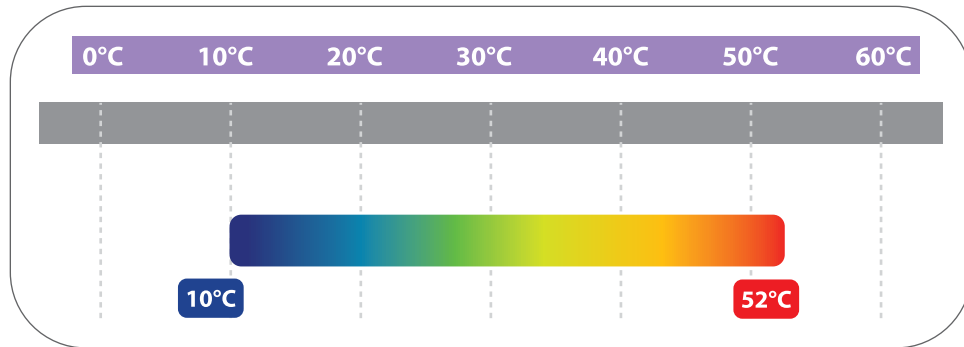




## High Ambient Temperature Range

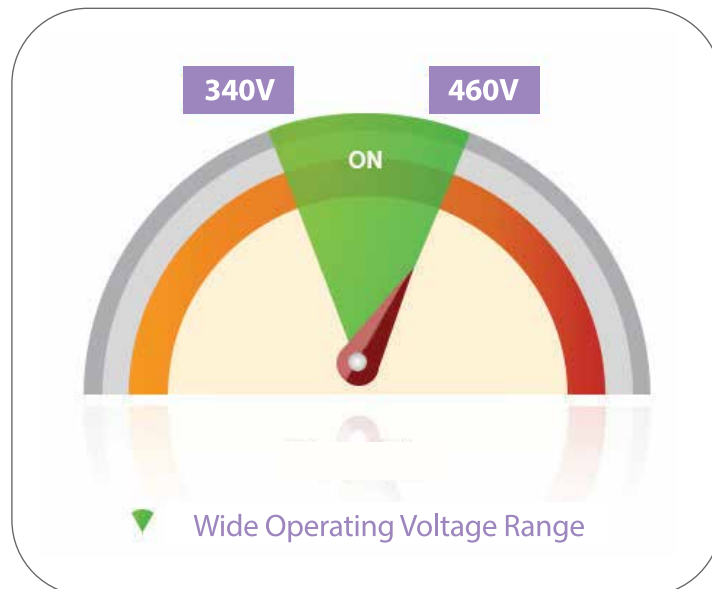
The inverter system can operate at ambient temperatures as high as 52°C. Non-stop cooling is ensured even during peak summer.

### RANGE OF OPERATION



## Wide Voltage Range

This system is suitable for operation in a voltage range of 340V to 460V.



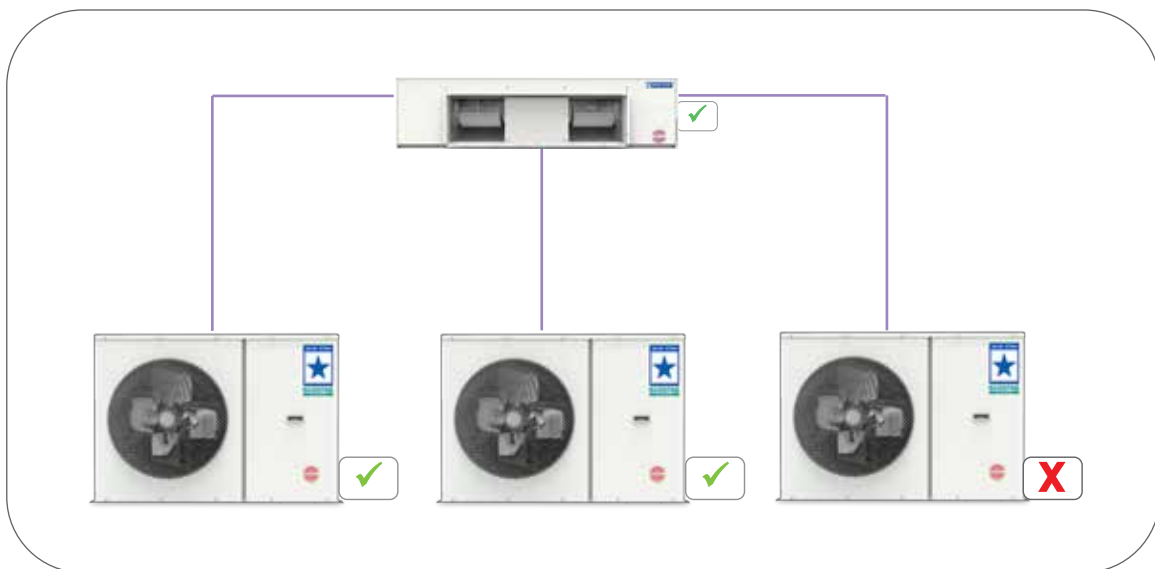
## Protection Devices

There are various protection devices to ensure safe running of the system:

- Protection against DLT rise
- Oil shortage
- HP/LP
- Single phasing/Phase loss
- Over Voltage/Under Voltage
- Overload/Overcurrent
- Thermal Protection for ODU fan motor
- Reverse Rotation protection for inverter compressor

## Auto Backup

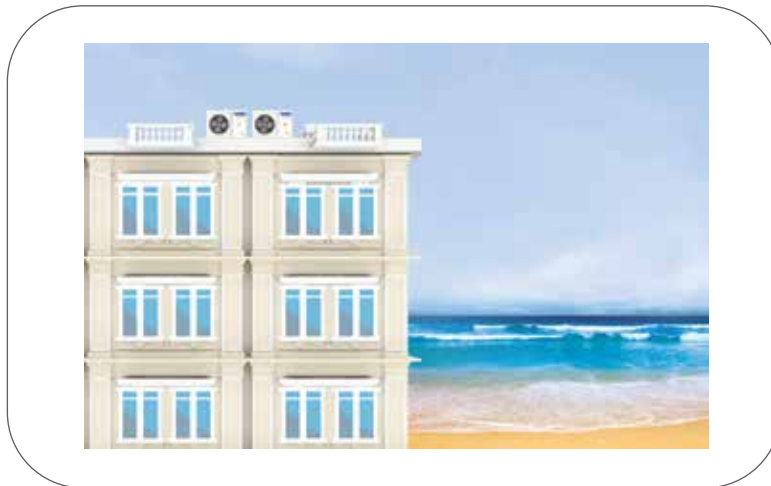
In a multi-outdoor unit system, the system can run uninterruptedly even in case of failure of one or two ODUs or compressors. This is automatic and no manual intervention is required.





### **Anti-Corrosion Condenser Fin Coating**

Specially treated blue fins are used for outdoor units. This makes them corrosion-resistant and gives them longer life.



### **Conformal coating for PCBs**

All PCBs are provided with special conformal coating for protection against dust, humidity and moisture.



## Touch Screen Controller

The new controller has an elegant looking touch screen handset with a blue backlight. It makes for easy operation of the unit and the handset can be wall mounted.



### Salient features of the Controller



Compressor status indication



Room temperature display



Wide temperature range 19 - 32°C



ON-OFF timer



Error indication



Error reset



### High Speed Two-Way Communication

High speed two way communication (RS485) between indoor controller and inverter drive result in faster pull down and quick response to load variations. This ensures the occupants comfort and also offers large power saving.

### BMS System

Inverter Ducted Systems can communicate with the BMS network through 'Modbus RTU' Communication Protocol with optional converter. Upto 60 units can be connected to the MODBUS Master through converters.

Option of converting to other protocols like Bacnet, Lonworks etc. are available through additional converter.

The following parameters can be monitored and controlled:

- ON/OFF of IDU
- Mode
- Set Temperature
- Reset
- ON/OFF Timer Value



### Eco-Friendly Refrigerant

Eco-friendly, zero ODP R410A refrigerant is used in this system.

### Widest Service Network

Blue Star has service facilities located across the country to take care of various service needs.

### Payback Analysis

With properly selected components, computerised design and sophisticated controls, the Blue Star Inverter Ducted System is the most energy efficient air conditioning system. The payback period, as compared to conventional ducted systems, is less than 1.5 years.

## Technical Specification



### Air Cooled Ducted Split Air Conditioners - Inverter type

Description	Units	DSAI-601R3	DSAI-961R3	DSAI-1622R3		DSAI-1922R3		DSAI-2283R3	
Nominal Cooling Capacity	HP	6.25	10	17		20		24	
	Btu/Hr.	60000	96000	162000		192000		228000	
	kCal/Hr.	15120	24190	40820		48380		57460	
Refrigerant		R410A							
Power Supply(AC)		415 V, 3 Phase, 50 Hz							
External Finish		Pure Polyester Power Coated GI Steel							
<b>Indoor Unit</b>									
Dimensions									
Width	mm	1175	1505	1860		2035		2135	
Height	mm	465	465	465		550		690	
Depth	mm	630	630	630		1085		1215	
Weight of indoor unit	kg	55	85	100		150		215	
Power Supply (AC)		230 V, Single Phase, 50 Hz				415V, Three Phase, 50Hz			
Type of Blower		Centrifugal Forward Curved, Double Inlet, Double Width							
Nominal Airflow	CFM	2200	3400	4400		6800		8800	
	CMH	3740	5770	7475		11545		14940	
Capacity Control		Stepless							
Air Filter		Non woven Polyester media enclosed in HDPE mesh							
Controller		Innovative Intelligent Inverter Controller							
<b>Outdoor Unit</b>									
Quantity	No.	1	1	2		2		3	
Dimensions		6.25HP(Inverter)	10HP(Inverter)	10HP(Inverter)	7HP(Fixed)	10HP(Inverter)	10HP(Fixed)	10HP(Inverter)-1no.	7HP(Fixed)-2no.
Width	mm	1320	1320	1320	1020	1320	1320	1320	1020
Height	mm	933	933	933	933	933	933	933	933
Depth	mm	416	416	416	416	416	416	416	416
Compressors		Inverter	Inverter	Inverter(10HP) + Fixed(7HP)		Inverter(10HP) + Fixed(10HP)		Inverter(10HP)-1no. + Fixed(7HP)-2nos.	
Weight of outdoor unit	kg	95	105	105	70	105	85	105	70
Power Supply (AC)		415 V, 3 Phase, 50 Hz							
Condenser Fan Type		Propeller type							

\*Specifications are subject to change due to continuous product improvement.

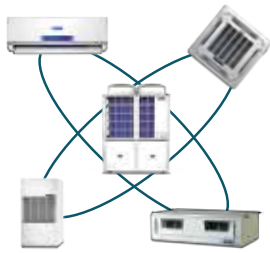


### Air Cooled Packaged Air Conditioners - Inverter type

Description	Units	DPAI-601R3	DPAI-961R3	DPAI-1622R3	DPAI-1922R3	DPAI-2283R3			
Nominal Cooling Capacity	HP	6.25	10	17	20	24			
Capacity	Btu/Hr.	60000	96000	162000	192000	228000			
	kCal/Hr.	15120	24190	40820	48380	57460			
Refrigerant		R410A							
Power Supply(AC)		415 V, 3 Phase, 50 Hz							
External Finish		Pure Polyester Power Coated GI Steel							
<b>Indoor Unit</b>									
Dimensions									
Width	mm	930	930	1260	1500	1500			
Height	mm	1700	1700	1700	1830	1950			
Depth	mm	660	660	760	835	930			
Weight of indoor unit	kg	200	250	300	500	580			
Power Supply (AC)		415V, Three Phase, 50Hz							
Type of Blower		Centrifugal Forward Curved, Double Inlet, Double Width							
Nominal Airflow	CFM	2200	3600	4800	7200	9600			
	CMH	3740	6110	8150	12225	16300			
Capacity Control		Stepless							
Air Filter		Non woven Polyester media enclosed in HDPE mesh							
Controller		Innovative Intelligent Inverter Controller							
Compressors		Inverter	Inverter	Inverter(10HP) + Fixed(7HP)	Inverter(10HP) + Fixed(10HP)	Inverter(10HP)-1no. + Fixed(7HP)-2nos.			
<b>Outdoor Unit</b>									
Quantity	No.	1	1	2	2	3			
Dimensions		6.25HP(Inverter)	10HP(Inverter)	10HP(Inverter)	7HP(Fixed)	10HP(Inverter)	10HP(Fixed)	10HP(Inverter)- 1no.	7HP(Fixed)-2no.
Width	mm	1320	1320	1320	1020	1320	1320	1320	1020
Height	mm	933	933	933	933	933	933	933	933
Depth	mm	416	416	416	416	416	416	416	416
Weight of outdoor unit	kg	60	65	65	55	60	60	65	55
Power Supply (AC)		230V/1 phase/50Hz	415 V, 3 Phase, 50 Hz	230V/1 phase/50Hz	415V,3 Phase,50Hz	230V/1 phase/50Hz	415V,3 Phase,50Hz	230V/1 phase/50Hz	415V,3 Phase,50Hz
Condenser Fan Type		Propeller type							

\*Specifications are subject to change due to continuous product improvement.

## Widest Range Of Products



VRF IV Plus 100% Inverter



VRF Sprint - Pre-piped VRF System



VRF IV S - Side Discharge VRF System



Packaged ACs & Ducted Splits



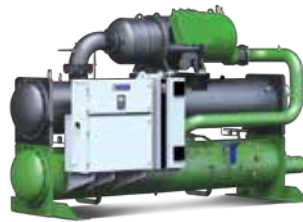
Water Cooled Centrifugal Chillers



Turbocor Chillers



Water Cooled Screw Chillers



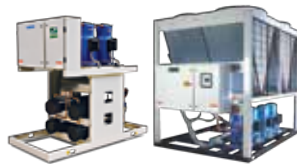
Water Cooled Screw Chillers with VFD



Air Cooled Screw Chillers



Air Cooled and Water Cooled Scroll Chillers



Air Cooled & Water Cooled Condensing Units



Process Chillers



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