



BLUE STAR



Water-Cooled  
VRF Systems

EFFICIENT COOLING SOLUTIONS  
POWERED BY WATER.



Blue Star is India's largest air conditioning company with the widest range of HVAC solutions in the country. With expertise that spans across all industry segments, and experience that spreads over 75 years, Blue Star is a market leader in all aspects of cooling, purification, preservation and storage of the three essentials of life – air, food and water.

Blue Star's range of HVAC products and solutions includes Room ACs, Packaged ACs, VRF Systems and very large capacity Chillers. Blue Star also offers a wide range of refrigeration products such as Water Coolers, Deep Freezers, Cold Rooms and a range of Water Purifiers.

Apart from world-class manufacturing of its products at five state-of-the-art factories across India, Blue Star is also a market leader in MEP Projects.

Blue Star is now proud to bring you the latest addition to its already comprehensive range of VRF systems: Water-Cooled VRF Systems which combine the efficiency of water-cooled systems with the sophistication of VRF technology.

## WATER-COOLED VRF SYSTEMS

Blue Star's Water-Cooled VRF System uses a Water-Cooled condensing unit or units connected to multiple indoor units via refrigerant piping. The Water-Cooled VRF System thus combines the efficiency of Water-Cooled Systems with the many benefits of VRF technology, such as a wide choice from a variety of indoor units, flexible installation, and sophisticated control systems.

Water-Cooled VRF Systems condense the refrigerant by circulating water through a closed-loop cooling tower. Water is a much more efficient heat transfer medium than air and therefore the use of water results in much higher efficiency even when ambient temperatures are high. Unlike an air-cooled system, there is no deration in capacity at higher ambient temperatures.

The COP and IPLV of Blue Star's Water-Cooled VRF Systems are much higher than that of air-cooled systems. This results in high power savings as much as 30%.

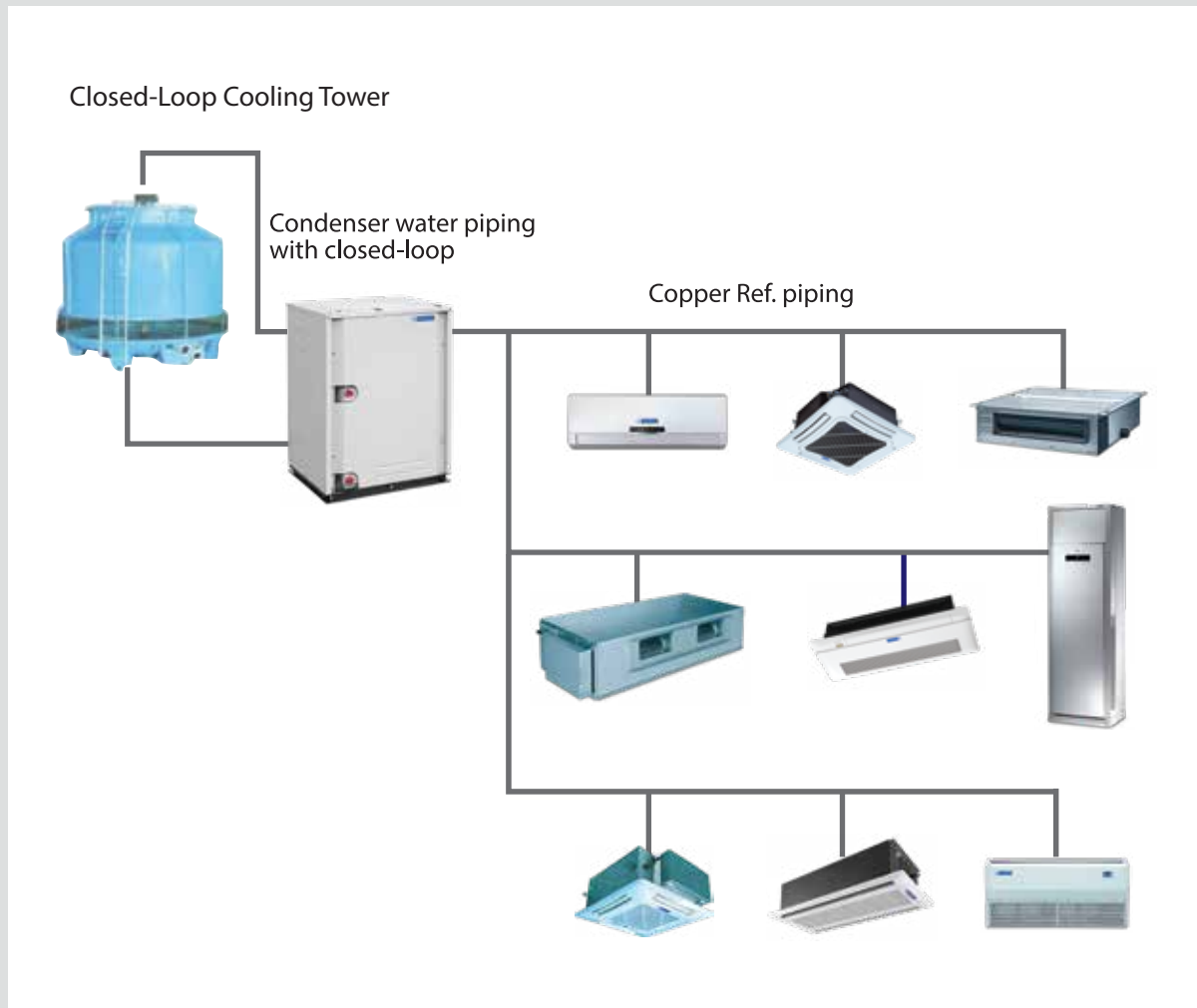
If clean water is available on-site, Blue Star's Water-Cooled VRF Systems are the best choice for higher performance at lower operational costs.

In many applications, such as hotels, malls, hostels, and residences, water is utilised for various purposes on a routine basis. The same water can be recycled using a Sewage Water Treatment Plant (SWTP), which is a commonplace in such applications these days, and used for the air conditioning system too. Hence, water-cooled systems are feasible even without the availability of a separate source of fresh water.



## WATER-COOLED VRF SYSTEMS – THE CONCEPT

Like in any air-cooled VRF system, a water-cooled VRF system too, accommodates multiple indoor unit connections to the condensing unit. These condensing units can be placed even inside the building. Condensation of refrigerant takes place by circulating the cooled water through a closed-loop cooling tower.



The Water-Cooled System is far more efficient than an air-cooled one, since the cooling media 'water' is not influenced by ambient temperature.

Water-Cooled VRF Systems offer all sophisticated controllers available for air-cooled VRF systems.

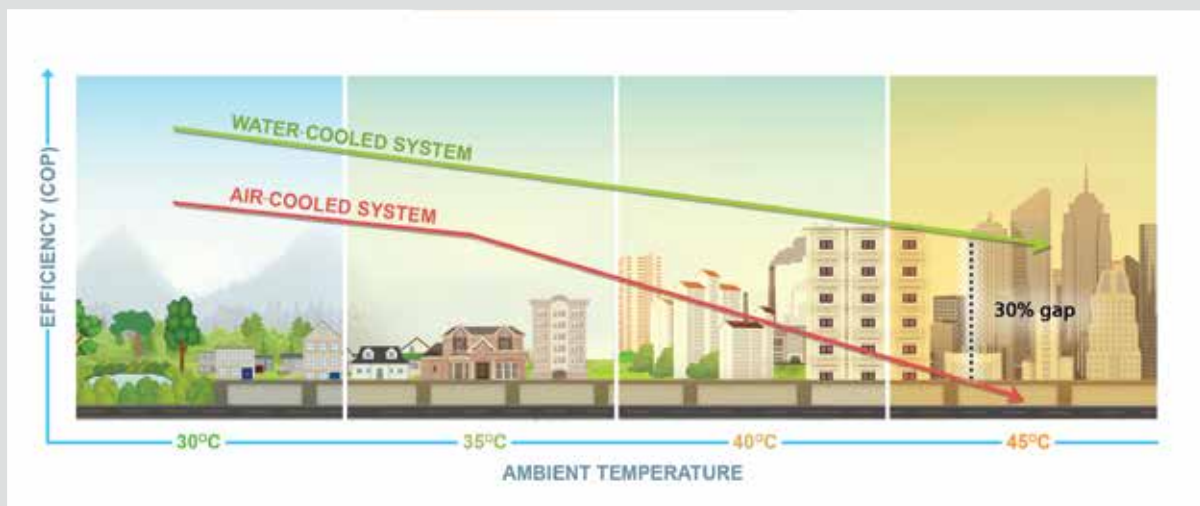
## ADVANTAGES OF WATER-COOLED VRF SYSTEMS

### Better Performance at High Ambients

The performance of a Water-Cooled VRF System is not affected by ambient air temperature since the cooling water is maintained at a constant temperature irrespective of a rise in ambients. Hence, there is very little deration in capacity of the system.

### Efficient Operation at Higher Ambients

Both performance and efficiency are better at higher ambients, as compared to air-cooled systems, due to minimum deration and lower operating costs. The COP of water-cooled VRF units is very high. Considering a VRF system is very efficient at part load operation, water-cooled condensers, increase part-load efficiency even further despite higher ambient temperatures.



### Better Aesthetics

There are no units exposed on the sides of the building in case of Water-Cooled Systems, resulting in better aesthetics.



### Quieter Operation:

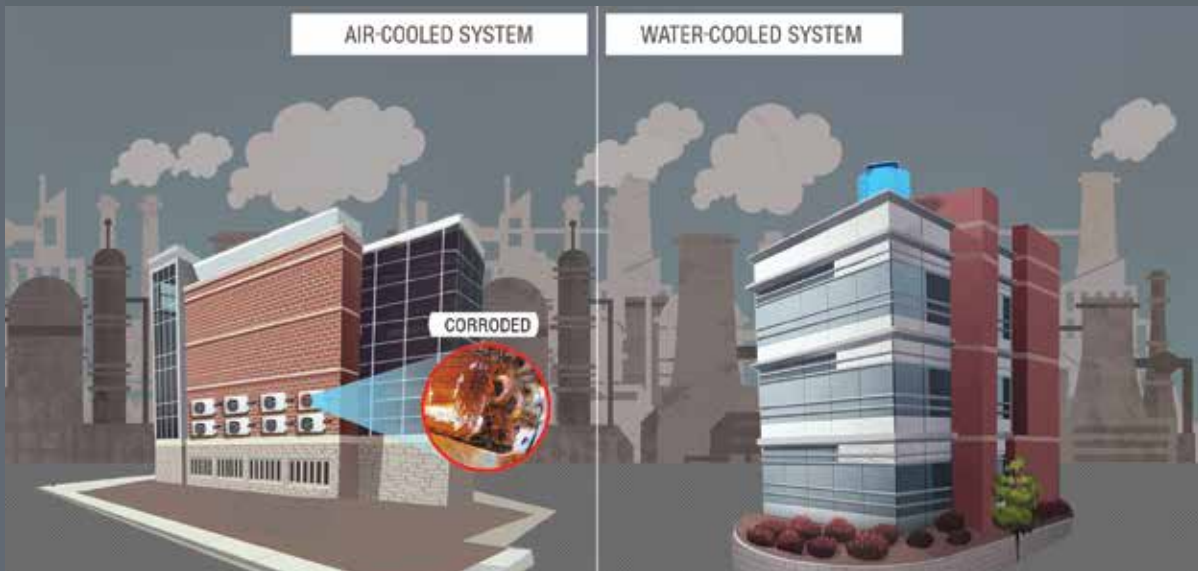
Unlike in a conventional system, no hot air is discharged from a water-cooled unit. Emission of hot air is always a disturbance for people around, both in terms of the heat as well as the sound generated by the air blown. Moreover, there are no fans running to blow hot air out. This ensures quiet relatively cooler surroundings.

### Flexible Location of Units

Water Cooled VRF condensing units can be located in a small shaft or balcony even without ventilation. They can also be located in basements since air circulation is not required for water-cooled condensers.

### Safe in Chemical Environments

Water-Cooled systems are ideal in chemically corrosive atmospheres since there is no exposed heat exchanger that may get corroded due to chemicals in the air.



## ADVANTAGES OF BLUE STAR WATER-COOLED VRF SYSTEMS

### DC Inverter Compressor

The DC Inverter Compressor used in this system is very efficient and uses a concentrated motor winding. The suction, which happens directly into the scroll chamber prevents heat transfer from the motor winding to the refrigerant. This further improves efficiency, which is why the COP of Blue Star Water-Cooled VRF Systems is as high as 5.7.



### Plate Type Condenser:

The Plate Type Condenser used is very efficient and compact. It results in overall reduction in size of the unit.

Very little space is required to mount Blue Star's Water-Cooled VRF Condensing Units. They can be mounted even in tight spaces such as balconies and shafts. The height of the unit is just 1m. These units can also be installed at multiple levels, increasing flexibility.



### AHU Kits

The condensing units of Blue Star Water-Cooled VRF Systems can be integrated with air handling units through the use of special AHU Kits. This enables the Water-Cooled VRF System to cater to non-standard requirements such as hospitals, industrial applications, banquet halls in hotels, etc.

Available capacities: 1TR, 2TR, 4TR, 8TR and 16TR



## Quieter Operation

Noise levels are as low as 52dBA. And as the unit can be mounted inside an enclosed space, noise levels outside can be further reduced.

## Precise Cooling

Since 2000 pulse electronic expansion valves are used in these IDUs, very precise cooling is possible.

## Auto Back-Up

In case of failure of one unit in a modular system, other unit(s) take over resulting in uninterrupted operation of the AC system.

## Fire Alarm

The condensing unit has the provision to integrate a central fire alarm system. This unit can be powered off automatically in case of fire by providing a suitable input signal.

## Condensing Unit Range

Single units of 8HP, 10HP and 12HP capacities, and up to 4 condensing units can be combined to build systems up to a maximum capacity of 48HP.





CONDENSING UNIT COMBINATIONS: 8HP – 48HP			
	IVRF-08W	IVRF-10W	IVRF-12W
8HP	*		
10HP		*	
12HP			*
16HP	**		
18HP	*	*	
20HP		**	
22HP		*	*
24HP			**
26HP	**	*	
28HP	*	**	
30HP		***	
32HP		**	*
34HP		*	**
36HP			***
38HP	*	***	
40HP		****	
42HP		***	*
44HP		**	**
46HP		*	***
48HP			****



# WATER-COOLED VRF CONDENSING UNITS - TECHNICAL DATA

Description	Unit	IVRF-08W	IVRF-10W	IVRF-12W
Cooling Capacity	HP	8	10	12
	kW	22.4	28	33.5
Heating Capacity	kW	25	31.5	37.5
Power Supply		380-420V,50Hz, 3 Phase		
Sound Pressure Level	dB(A)	50	52	52
Water Flow Rate	LPM	80	100	120
Water Pressure Drop	KPa	16	24	45
Refrigerant Pipe-Gas (ø)	mm	22.2		25.4
Refrigerant Pipe-Liquid(ø)	mm	9.52		12.7
Condenser Water Pipe- In(ø)	mm	32		
Condenser Water Pipe- Out(ø)	mm	32		
Dimensions (WDXH)	mm	780X550X1000		
New Weight	kg	108		

## SOPHISTICATED CONTROLLERS














Smart Zone Controller



Central Controller

# INDOOR UNITS PRODUCT LINE-UP

Appearance	Type	0.6	0.8	1	1.3	1.5	1.6	1.8	2	2.3	2.6	2.8	3.2	3.6	4	5	6.5	8
	Hi-Wall Units	•	•	•	•		•	•	•									
	Compact Cassettes	•	•	•	•	•	•											
	One-Way Cassettes	•	•	•	•	•												
	Two-Way Cassettes		•	•	•	•	•	•	•									
	Four-Way Cassettes			•	•	•		•	•	•	•		•	•	•	•		
	Floor-cum-Ceiling Mounted Units					•		•		•		•		•				
	Verticools											•			•			
	High Static Ductable IDUs						•		•	•		•	•	•	•	•	•	•
	Low Static Ductable IDUs		•	•	•	•	•	•	•	•	•		•		•			
	Slim Ductable IDUs	•	•	•	•		•	•	•									

Appearance	Type	Air-Flow Volume ( M3/h)						
	Heat Recovery Ventilation System	350	500	800	1000	1500	2000	3000



BMS Modbus



Key Card Control



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Blue Star products comply with RoHS regulations as per E-Waste (Management & Handling) Rules, 2016. For disposal of E-Waste, kindly visit our website [www.bluestarindia.com](http://www.bluestarindia.com) or call our customer care on 1800 209 1177 (Toll Free) or 1860 266 6666.