



BLUE STAR

BLUE STAR SCROLL CHILLERS FIRST IN INDIA WITH STAR RATING.



Next Generation Air Cooled Scroll Chiller



Next Generation Water Cooled Scroll Chiller

INDIA'S FIRST
STAR-RATED
SCROLL CHILLERS.

From Blue Star.

Blue Star is India's leading Air Conditioning and Refrigeration solutions company, with an experience spanning nearly eight decades in the industry. Its product range includes the entire gamut of air conditioning products from Room ACs, through VRFs, to a wide range of Chillers, and cooling solutions such as water coolers, deep freezers, industrial freezers, cold rooms, and even mortuary chambers.

Not only is the Company a leader in various categories of products and services, but it is also known for its innovation and R&D. This helps improve existing products, introduce the latest technologies into the country, make systems more efficient, more eco-friendly and sustainable, and overall, perform better while consuming less power.

Blue Star has many firsts to its credit over the years: the introduction of the Scroll Chillers, energy efficient Screw Chillers, Oil free centrifugal chillers, Screw Chillers with VFD, a range of innovative VRF systems; and more recently Inverter Scroll Chillers; being some examples.



AIR-COOLED



WATER-COOLED



INDIA'S FIRST STAR-RATED SCROLL CHILLERS

Blue Star now brings you another first in the industry: Star-rated Scroll Chillers!

Already the market leader in scroll chiller systems in India, Blue Star has now gone a step further by introducing a new range of scroll chillers that comply with the 3 Star efficiency norms of the Chiller labelling program launched in India.

In keeping with Blue Star's leadership status in the scroll chiller markets, this new star-rated scroll chiller range has been announced well ahead of the mandatory compliance date for this labelling program, which is January 1, 2023.

3-STAR RATED SCROLL CHILLERS NOW IN INDIA FROM BLUE STAR!

Blue Star's scroll chillers are already leaders in the Indian marketplace and are well known for their high performance, reliability and efficiency.

Now, Blue Star has taken these chillers one further step ahead. Manufactured using world-class processes and equipment at Blue Star's ISO9001-certified factory at Wada, Mumbai, and available in a wide range of capacities from 10 to 70TR, these machines have now been designed to deliver the desired capacity and efficiency under the stringent ambient conditions prescribed by the Government's Star Labelling Program.

Blue Star has taken this initiative of designing these chillers to meet the new standards and be certified as **3 Star Rated Scroll Chillers** more than a year ahead of schedule, without waiting for these standards to become mandatory on January 1, 2023.

The 3 Star rating essentially means that these chillers are now the ideal choice for all industrial and process cooling and comfort air conditioning.

Star Rating Efficiency Norms for < 75TR Capacity

CHILLER TYPE	COP	ISEER COP				
		1 STAR	2 STAR	3 STAR	4 STAR	5 STAR
AIR COOLED	2.4	3.0	3.3	3.6	4.0	4.4
WATER COOLED	4.2	4.8	5.2	5.6	6.1	6.6

- Above efficiencies required at stringent Indian ambient conditions
- Mandatory compliance starts from January 1, 2023



CHILLERS THAT PAY FOR THEMSELVES IN A YEAR OR LESS!

Blue Star's new range of 3 Star rated scroll chillers use high-efficiency scroll compressors with IDV technology (Intermediate Discharge Valve) that provides variable compression ratios which minimise losses due to over- and under-compression.

The high-efficiency compressor, together with the redesigned coil that presents an enhanced face area, and the advanced controller used, make this new range of chillers one of the most energy-efficient ones available in the country today. Put together, these 3 Star rated scroll chillers save about 20% power as compared to conventional scroll chillers.

This power saving makes these chillers pay for themselves in less than a year in regular commercial applications that use them for just 8 to 10 hours each day. And in applications that use the chillers for longer hours each day, the return of capital invested on these chillers would be in just a matter of months!



CHILLER TYPE	AIR COOLED		WATER COOLED	
	NON STAR COMPLIANT CHILLER	BLUE STAR'S NEW 3 STAR RATED CHILLER	NON STAR COMPLIANT CHILLER	BLUE STAR'S NEW 3 STAR RATED CHILLER
ISEER (kW/TR)	1.2	0.975	0.8	0.626
EFFICIENCY IMPROVEMENT (%)		20		20

Air cooled - 60TR; Water cooled - 52TR

Entire range AHRI Certified

The complete range of both Air-Cooled and Water-Cooled Scroll Chillers are AHRI Certified.



ADVANCED FEATURES

Apart from the star rating and the power saving design of these chillers, this new range of scroll chillers comes packed with many other advanced features too.



Rapid cooling mode:

Scroll chillers are widely used for process cooling, pharmaceutical and critical industrial applications. The load in these applications can vary significantly and on each load change, conventional chillers take approximately 10 minutes to reach 100% capacity for the changed load. This delay can significantly impact process cooling requirements.

Blue Star's new scroll chillers are designed with a unique rapid cooling mode. In-built logic senses chilled water temperature and compares it to the set point, and accordingly enables faster loading of compressors. This ensures the achievement of 100% cooling within just 2 minutes.



Precise temperature control:

Conventional scroll chillers use manual controllers that allow setting of chilled water temperature only to the nearest degree Centigrade.

The new microprocessor-based controller used in Blue Star's new 3 star rated scroll chillers uses smart PID (Proportional Integral Derivative) logic. PID control logic provides precise and continuous feedback which allows the chilled water temperature to be set to the nearest 0.3 degree Centigrade, enabling more precise maintenance of process cooling temperature, besides achieving substantial power savings as well.



High reliability:

Based on historic data of compressor on-off cycles, the advanced control logic built into the controller predicts the chilled water differential between the water entering and leaving temperature of the cooler, and accordingly delays the start or stop of the compressor, thereby ensuring minimum compressor cycling and increase in the reliability of the chiller.



Non-stop cooling even at 54°C ambient:

Conventional scroll chillers are designed to operate only up to 45°C ambients and trip if the ambient crosses 45°C. Keeping in mind the ever-increasing ambient temperatures in India, the new 3 Star rated scroll chiller range is designed to work even at ambient temperatures upto 54°C. These chillers can run at unloaded conditions without tripping right up to 54°C ambients, providing partial cooling.





Wide operating range*:

Scroll chillers are installed in many industries for both air conditioning and process cooling requirements. The chilled water temperature demand varies based on process cooling requirements. These next generation scroll chillers are designed to operate over a wide band of chiller leaving temperatures from +15°C to -5°C. The switching over to < +4°C will need a replacement of only the cooler and LP switch, besides a modification in controller settings, all of which are possible at site itself. With these small modifications, the same chillers can be made to operate over an even wider range

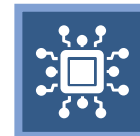


Condenser health prediction*:

Periodic de-scaling is required at installations using water cooled scroll chillers, which is not carried out at many sites, leading to loss of performance and reduced life of heat exchangers. The sophisticated controller in the new scroll chiller range continuously monitors critical parameters such as the discharge pressure of the refrigerant, and predicts the cleanliness of the condenser tubes. Based on this input, the controller indicates when de-scaling is required, thus ensuring proper maintenance and longevity.



*Optional features



BMS compatibility:

The new Blue Star range of 3 Star rated scroll chillers comes equipped with BMS-compatible microprocessor control which allows the chiller to be operated through centralised Building Management Systems.



Advanced Touch Screen*:

The new controller has an elegant looking touch screen with a backlight which helps in easy operation of unit and also provides a user-friendly graphical display of various parameters.



*Optional features



Easy and quick installation:

These next-generation scroll chillers are fully charged, pre-wired and comprehensively run-tested at factory prior to despatch. This reduces installation time at site and enables speedy commissioning. It also avoids any impact in performance that occurs when refrigerant is charged manually at site as is the case in most conventional chillers.



Protection mechanisms:

The new range of scroll chillers is equipped with all the important protection mechanisms that can prevent larger failure by sensing errors and either switching off components or warning about them for action by operators. Protection is in-built for the following errors:

- Anti-freeze
- HP/LP
- Single phase
- Phase loss
- Overload
- Over-current
- Under-current
- Reverse rotation
- High discharge temperature trip
- Low flow trip



Anti-corrosion condenser fin coating:

Specially treated blue fins are available as an option for air cooled condensers to enhance the life of the chillers. This is especially useful in systems being used in corrosive environments.



Eco-friendly:

Blue Star always lays emphasis on the eco-friendliness and sustainability of its new products and this 3 Star series is no different. Hence, these inverter scroll chillers come with 'zero ODP' R-410A refrigerant.

Technical Data Sheet for R410A AC Scroll Chiller

	DESCRIPTION	UNIT	XAC2S-010MAR2	XAC2S-020MAR2	XAC1YS-020MAR2	XAC2YS-030MAR2	XAC2YS-035MAR2
1	Estimated Star		2	2	3	3	3
2	Cooling Capacity at AHRI 551 / 591	TR	9.5	19.1	19.1	29.1	34.1
3	Cooling Capacity at IS-16590	TR	8.93	18.0	18.0	27.4	32.1
4	Compressor						
a	Type		SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
b	Quantity	No.	2	2	2	3	3
c	Motor Type		Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor
d	Operating Speed		2900	2900	2900	2900	2900
e	Power Supply		400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz
f	Capacity Control		100%,50%	100%,50%	100%,50%	100%,67%,33%	100%,67%,33%
5	Condenser						
a	Tube Material		Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper
b	Type of Aluminium Fins		Super Slit	Super Slit	Super Slit	Super Slit	Super Slit
6	Fan for Air-Cooled Condensor						
a	Fan Dia.	mm	660	660	660	660	660
b	Quantity	No.	1	2	2	3	3
7	Condenser Fan Motor						
a	Type		Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.
b	Quantity	No.	1	2	2	3	3
c	Speed	RPM	910	910	910	910	910
8	DX-Cooler						
a	No Of Cooler	No.	1	1	1	1	1
b	Tube Type & Material		Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes
c	No of Refrigerant Circuit	No.	2	2	1	2	2
d	Water Connection Size In/Out	Inch.	1-1/2" NB	3" NB	3" NB	3" NB	3" NB
9	Expansion Valve		Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve
10	Overall Dimension						
a	Length (+/- 100mm)	mm	1117	2234	2234	3351	3351
b	Width (+/- 50mm)	mm	1147	1147	1147	1147	1147
c	Height (+/- 50mm)	mm	1685	1685	1685	1685	1685
11	Net Weight (approx.) +/- 20kg	Kg.	630	925	925	1300	1350

XAC2YS-040MAR2	XAC3YS-050MAR2	XAC3YS-055MAR2	XAC4YS-060MAR2	XAC4YS-065MAR2	XAC4YS-070MAR2
3	3	3	3	3	3
38.2	48.2	53.2	58.2	63.2	68.2
35.9	45.3	50.0	54.7	59.4	64.1
SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
4	5	3/2	5	3/3	3/3
Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor	Refrigerant cooled, 3Ph, 2 Pole Squirrel Cage Induction Motor
2900	2900	2900	2900	2900	2900
400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz	400V(+/-10%),3Ph,50Hz
100%,75%,50%,25%	100%,80%,60%,40%,20%	100%,79%,58%,40%,18%	100%,83%,67%,50%,33%,16%	100%,82%,64%,49%,33%,15%	100%,83%,67%,50%,33%,16%
Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper	Inner Grooved Copper
Super Slit	Super Slit	Super Slit	Super Slit	Super Slit	Super Slit
660	660	660	660	660	660
4	5	5	6	6	6
Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.	Totally Enclosed, Pad Mounted.
4	5	5	6	6	6
910	910	910	910	910	910
2	2	2	2	2	2
Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes	Inner Grooved Copper Tubes
2	3	3	4	4	4
3" NB / 3" NB	3" NB / 3" NB	3" NB / 3" NB	3" NB / 3" NB	3" NB / 3" NB	3" NB / 3" NB
Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve	Thermostatic Expansion Valve
4468	5585	5585	6702	6702	6702
1147	1147	1147	1147	1147	1147
1685	1685	1685	1685	1685	1685
1850	2225	2275	2600	2650	2700

Rating Conditions: **As per AHRI 550/591**

(A) AHRI 551/591 Condition

- 1) Entering Cooler Water temp 12 Deg C, Leaving Cooler Water temp. 7 Deg C
- 2) Ambient Condenser Temp 35 Deg C
- 3) Cooler Fouling Factor=m2-K/kW=0.018

(B) IS-16590 Condition

- 1) Entering Cooler Water temp 12 Deg C, Leaving Cooler Water temp. 7 Deg C
- 2) Ambient Condenser Temp 39 Deg C
- 3) Cooler Fouling Factor=m2-K/kW=0.044

Product development is a continuous process in Blue Star. Hence, product specification and technical data are subject to change without prior notice.

