



WORKS FOR NATURE.

WORKS FOR YOU.



**ECO-FRIENDLY GREEN PANELS WITH
CYCLOPENTANE PUF INSULATION**







The Perfect Cold Room

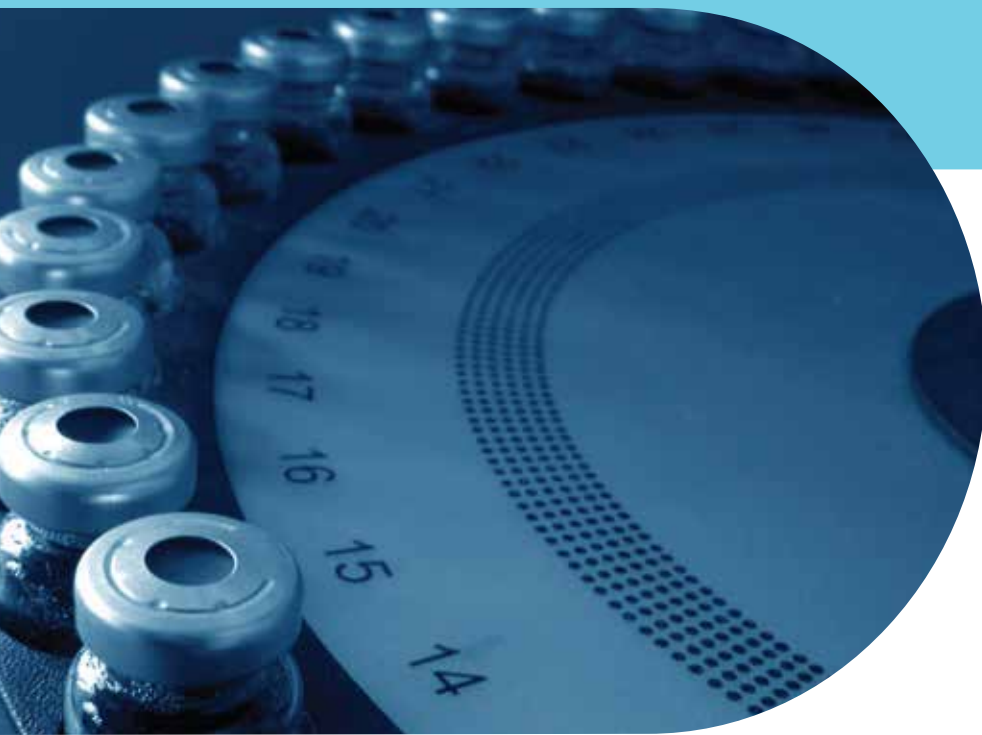
A cold storage is a critical piece of infrastructure for any industry. The quality of stored produce and raw materials depend upon the reliable and precise functioning of the cold storage.

Blue Star's experience in creating cold storages that offer different storage conditions in terms of temperature, humidity, fresh air, air flow, etc., to suit different industry requirements has made them the leaders in this domain too.

The Company's engineers plan and design cold rooms based on advanced heat load calculations using internationally acclaimed softwares thus building your desired cold room with precision.

The domain expertise of Blue Star's Cold Storage Division extends across a wide spectrum of industries that includes:

FMCG	Food Processing	Research & Development Labs
Floriculture	Meat Processing	Healthcare
Horticulture	Fisheries	Mortuaries
Agro Industry	Pharmaceuticals	Cold Chains
Hotels & Restaurants	Ripening Chambers	Auto Industry



Pre-fabricated from Blue Star

Panels

Blue Star's new range of pre-fabricated insulation panel systems are easy-to-use interlocking panels that can be used to create cold rooms of any size at the site.

Since the insulation material in these panels is foamed between two metal skins, they offer highly effective insulation for cold rooms.

What's more, these panels are designed to ensure precision interlocking and hence they form leak-free walls ideal for cold rooms.

Manufactured in a wide range of profiles, thicknesses and finishes, these systems can be used to create cold stores at the site and of any size – from small walk-ins to very large cold rooms.

Doors

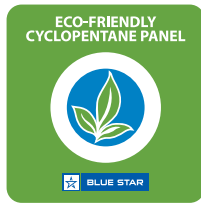
Blue Star offers a complete range of insulated doors to complement its world-class environment-friendly PUF panels.

The polyurethane foam insulation sandwiched between GI sheets makes the doors perfect for high-performance cold rooms.

- Self-closing: Ensures that the door remains closed without any human interaction
- Safety release: Doors can be opened from inside
- View port: Helps view products stored inside without opening the door, which is not just for convenience but for power saving too.

- Posi-Seal: Provides perfect alignment of frames and ensures perfect closing movement
- Sweep gasket: Air-tight heavy-duty sealing gasket below the door remains flexible at any temperature
- Thermal break: Eliminates thermal conductivity which otherwise leads to condensation and ice formation

An Eco-friendly DNA



Panel Systems

Blue Star's new range of pre-fabricated insulation panels are eco-friendly from the ground-up since even the manufacturing process is green.

Cyclopentane: The eco-friendly blowing agent

Cyclopentane is increasingly becoming an industry standard, the world over, as an eco-friendly blowing agent. Blue Star has also invested in using cyclopentane as the blowing agent in the manufacture of its new series of insulation panels. This makes the panels 'green' even in their manufacturing process, and further underlines Blue Star's commitment to a greener tomorrow.

This ensures zero Ozone Depleting Potential (ODP) and reduces Global Warming Potential (GWP) as compared to the more generally used HCFC-141b which is not environment-friendly.



Why cyclopentane

- ODP (Ozone Depletion Potential): 0
- GWP (Global Warming Potential): Negligible (11)
- Panel foaming process complies with TUV standards

Blue Star's commitment to a healthy environment is thus further reinforced by this investment in a cyclopentane process, which not only ensures superior yet environmentally-friendly products, but also supports the obligations under the Montreal Protocol on 'Substances that Deplete the Ozone Layer'.

Cyclopentane vs Conventional HCFC-141b :

S.N	Particulars	HCFC 141b	Cyclopentane
1	Density (Kg/m ³)	35-37	37-40
2	Compressive Strength (Kg/cm ²)	1.5-1.8	1.6-1.9
3	Closed Cell Content (%)	> 90	> 90
4	K- value (w/m °K)	0.0195	0.022
5	GWP (Global Warming Potential)	630	11
6	ODP (Ozone Depletion Potential)	0.1	0
7	Fire retardant property	Self-extinguishing	Self-extinguishing

CFC and HCFC-free polyurethane

The insulation material used within Blue Star's new range of pre-fab panel systems is also eco-friendly, being made of CFC/HCFC-free polyurethane.

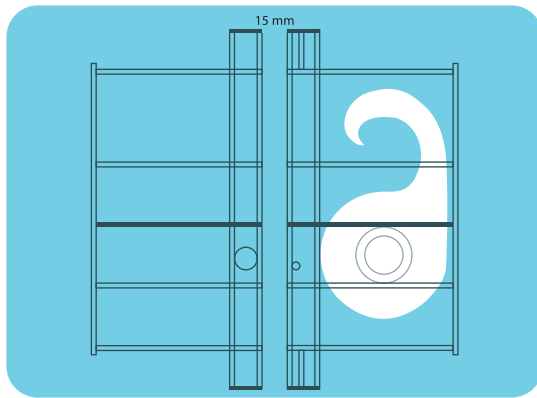
This is in accordance with the obligations under the Montreal Protocol on 'Substances that Deplete the Ozone Layer' and 'HCFC Phase Out Management Plan (HPMP) Stage 1B'.

Facilities aiming to become green buildings will find these panels ideal for their LEED certification process.

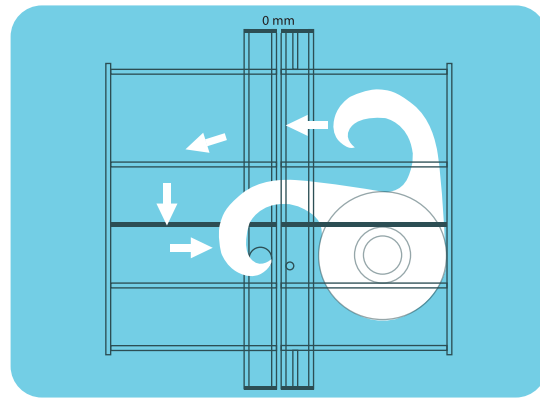
Precision Locking Mechanism

Each Blue Star pre-fab insulation panel has cam-action locking devices precisely positioned and firmly anchored within it. All cam-locks have integral rear flanges to permanently anchor their position during the manufacture of the PUF panels. Cam-locks are also placed at exact matching locations on the tongue and groove side to ensure perfect locking.

All cam-locks are accessible from the inside by means of a hex wrench furnished with the panels. Access ports for cam-locks are covered with snap-in cap plugs that must be snapped out before accessing the cam-locks thus making them tamper-proof.



BEFORE LOCKING THE PANELS



AFTER LOCKING THE PANELS

Technical Specification

Sl.No	Description	General Specifications
1	PUF Panel Thickness	60/80/100/127/150mm
2	PUF Panel Cover	PP or SS
3	Sheet Metal Thickness	0.4/0.5mm
4	Temperature Range	-30°C to 80°C
5	PUF Blowing Agent	Cyclopentane (C5) - (CFC & HCFC free)
6	Lock Arrangement	Cam-Lock with metal plunger
7	PUF Density	40Kg/m ³
8	Panel Length	Any lengths up to 11m on request
9	Panel Width	11.5/ 23/ 34.5 / 46 inches
10	Panel Joint	Tongue & Groove joint

Features & Benefits



PUF insulation core ensures excellent K factor



High density polyurethane offers better strength



Perfect joints eliminate air leakages



Effective thermal insulation results in negligible thermal conductivity



Suitable for a wide temperature range of -30°C to $+80^{\circ}\text{C}$



In case of fire, stops burning when source of fire is removed



Occupies less space due to efficient insulation



Eco-friendly blowing agent cyclopentane used



Modular construction resulting in faster installation



Easily expandable to larger sizes



Available in stainless steel and pre-painted GI



Thickness range from 60mm to 150mm



90° corner panels to ensure stability

Wide Range of Refrigeration Units

Blue Star offers a wide range of both evaporating and condensing units. It includes both air-cooled and water-cooled condensers, with technology from the world leaders.

Depending on the application, different temperature zones need to be maintained:

Low (-23 °C to -5 °C), Medium (-5 °C to +2 °C), High (+2 °C to +15 °C)

Evaporating units

Blue Star's evaporating units are compact, slim and sleek, so they occupy minimum space ensuring maximum storage space. Other features include:



Stainless steel body and excellent corrosion resistance



Inner grooved copper tubes for superior heat transfer



In-built defrost heaters for low-temperature units



External rotor driven fans with low noise levels



Removable side panels for easy service



Drain on same side of refrigeration to avoid making multiple openings in the PUF panels



Condensing Units

These units are characterised by high-efficiency heat transfer and low power consumption. Other features includes:



Energy-efficient scroll and reciprocating compressors



UV and corrosion resistance



Filter drier for moisture and dirt protection



Pre-charged unit with service valves



In-built safety and control devices



Weather-proof polyster powder coated canopy



Microprocessor Controller and Power Panel

Blue Star's refrigeration units come with intelligent microprocessor-powered controllers which are BMS compatible and HACCP provisioned (available in select models).

Ready-to-use power panels which make electrical connections simple, safe, fast and long-lasting are available with every refrigeration unit. Other features of power panels are:

- Powder-coated weather-proof housing
- Protection against common electrical failures
- Interlock of safety features

Perfect Installations

Without carefully executed installations, the efficiency and reliability of a cold room can be compromised. Hence Blue Star's engineers are equipped with latest technology and knowledge thus carrying out precise installations. Example checks considered by them are:

- The location of the evaporator within the cold room for uniform cooling and air distribution
- Level Flooring (0-0 level) to avoid misalignment of walls
- Proper selection of copper parts and pipe sizes
- Minimising bends and unduly long runs

After Sales Support

Blue Star is well known for its excellent service support in the entire industry. Cold room dealers based in different locations will help you with perfect installations and Blue Star will ensure after sales support and availability of genuine parts at all times to avoid down time of your project.



Prestigious Clients

Blue Star is the leading supplier of Modular Cold Rooms in the country. Almost all the important brands and corporates that need walk-in cold storages have Blue Star Cold Rooms installed at their facilities. Check out the following representative list of our prestigious customers from various industries that use Blue Star Cold Rooms in varied applications.

Pharmaceuticals

Biocon
Cipla
Dr. Reddy's Lab
Gland Pharma
Glaxo Smithkline
Johnson & Johnson
Novartis
Ranbaxy
Serum Institute
Sun Pharma

Hotels

Club Mahindra
Grand Hyatt
Hotel Leela
ITC Group of Hotels
Le Meridien
Oberoi
Radisson
Taj Group of Hotels

Hospitals

AIIMS
Apollo Hospital
Bombay Hospital
Breach Candy Hospital
Defence and Railway Hospitals
Ramachandra Medical College
Sankara Nethralaya
Wockhardt

Research Labs

Hindustan Aeronautics
Indian Institute of Science
Indian Institute of Technology
Madras University
Tata Advance Material

Canteens and Kitchens

BHEL
BMW
Coca Cola
Dell
HLL
Infosys
Mangalore Refinery Petrochemicals
Tata Consultancy Services
TISCO
Satyam
Wipro

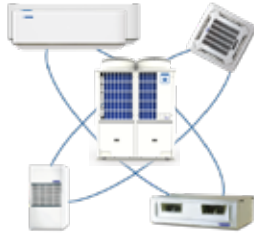
Fast Foods

Dominos
KFC
Mc Donalds
Pizza Corner
Pizza Hut
Reimanns Fine Food
Subway

Dairy and Ice-cream

Amul
Baskin Robbins
Mother Dairy
Hindustan Unilever (Kwality Walls)
Vadilal

Widest Range Of Products



VRF Systems



Packaged ACs & Ducted Splits



Condensing Units



Inverter scroll chillers



Process Chillers



Tank Chillers



Air cooled & Water cooled
VFD Screw Chillers



Air-Cooled Configured Screw
Chiller - High Efficiency Series



Air Cooled and
Water Cooled Scroll Chiller



Water-Cooled Screw Chillers
Configured Series



Turbocor Chillers



Water Cooled Falling Film
Screw Chillers

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