

Azanefreezer 2.0

The natural choice for low temperature cooling and food processing
Low charge, air-cooled packaged units, from 100 to 650kW



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Combining exceptional efficiency, ultimate flexibility and market leading quality, Azanefreezer 2.0 is the natural solution for low temperature storage and food processing applications.

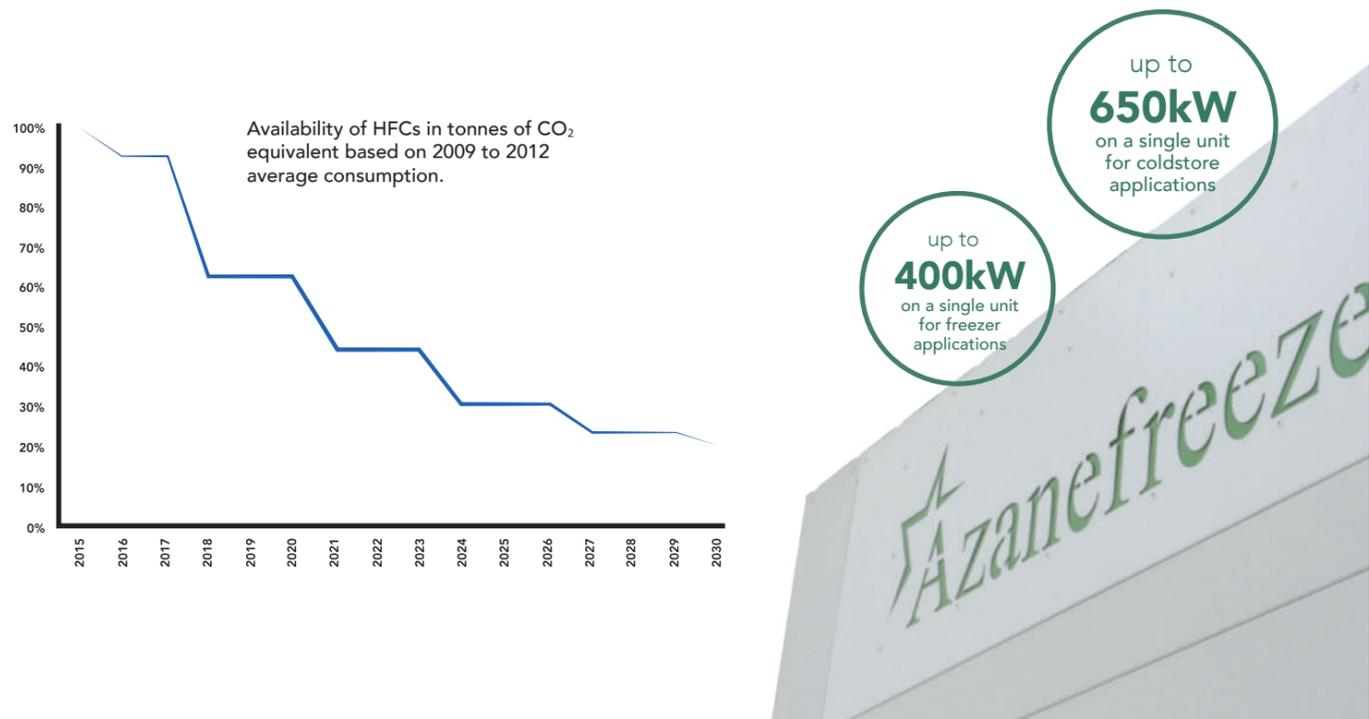
Azanefreezer 2.0 is manufactured in the United Kingdom by Star Refrigeration, the UK's leading industrial refrigeration solutions provider.



The natural alternative to F-gases

The phase down of high Global Warming Potential (GWP) refrigerants under the F-gas Regulation has seen traditional HFC refrigerants become less viable and considerably more expensive in recent years; a trend which looks set to continue as HFC availability is further restricted under the Regulation.

Rather than HFCs, Azanefreezer 2.0 uses natural refrigerant ammonia, which is not affected by the F-gas Regulation. Ammonia is cost effective, widely available and contributes to neither global warming nor depletion of the ozone layer (GWP=0, ODP=0), thereby representing an environmentally responsible and future proof refrigerant choice.



Core Benefits

Efficiency

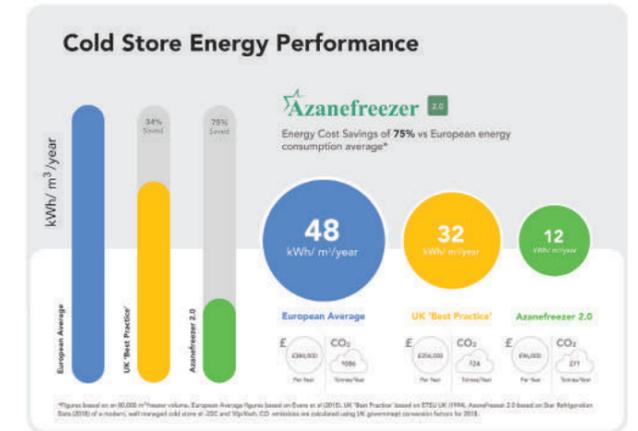
- Proven energy savings versus synthetic refrigerants and traditional pumped recirculation ammonia systems
- Integrated reverse cycle defrost system melts frost directly from the inside out; ensuring fast, effective and efficient defrost*
- Low pressure receiver allows fully wetted evaporators; eliminating wasteful superheat and optimising heat transfer
- EC condenser fans and automatic floating head pressure control for improved efficiency
- In-house controls for optimised system performance
- Additional efficiency enhancing measures include economiser, variable Vi and EC evaporator fans
- Award winning ETHOS energy management platform ready

Simplicity

- Straightforward installation with no plant room required. The fully housed unit requires just two pipe connections to the evaporators, a concrete plinth and a power supply
- The integrated air cooled condenser eliminates the considerations around water, chemicals and effluent associated with evaporative and adiabatic condensers
- Easy maintenance access. All components which require regular maintenance are located within the package
- No need for refrigerant pumps
- Refrigerant charge as low as 0.52 kg/KW; up to 96% lower than equivalent pumped recirculation

Reliability

Utilising proven technology and high quality components, Star products are manufactured in the UK and have an expected life span of over twenty years.



Azanefreezer 2.0 installation demonstrating energy savings of up to 75%.



Flexibility

- Extended operating range ensures suitability for a wide variety of low temperature applications
- 16 standard models with capacities from 100 to over 650kW
- Options include heat recovery package for water or underfloor heating
- The unit can be located at ground level or on the building roof, and can be positioned either locally or remote to the refrigerated space
- Packaged configuration allows the unit to be easily relocated if needed

*Units can also be supplied without reverse cycle defrost if required. Reliability kWh/ m³/year 3

Features & Components

AzaneFreezer 2.0 packaged refrigeration units are specially designed to deliver flexible and efficient cooling. Both installation and maintenance are quick and easy, whilst a robust, high quality construction ensures maximum system longevity.



Packaged configuration

The self-contained packaged unit is designed for outdoor installation, eliminating the need for a plant room.



Reverse cycle defrost

Four-way valve for fast, effective reverse cycle defrost. (Optional)

Insulation

Robust PUR insulation with high quality alu-zinc cladding as standard.



Twin compressors

Economised twin screw compressors with high efficiency rotors and variable Vi, providing optimised performance as well as redundancy.



Low Pressure Receiver

Star's LPR system delivers efficient, overfeed operation without the need for pumps.



AzaneFreezer

EC fans
EC fans for low fan power and improved efficiency.

EC fans

Air-cooled condenser
An integrated air-cooled condenser eliminates the need for water usage and associated chemical treatments.



Efficient controls
Star's optimised controls system includes integrated PLC and panel-mounted touchscreen HMI. A remote connectivity option allows off-site analysis and alarm monitoring.

Efficient controls

Electrical panel
The on-skid stainless steel electrical panel includes starters for both the package and coolers (where required), avoiding the need for multiple power supplies.

Electrical panel

Steel base frame
Fully welded steel base frame, for rigid construction and long life.

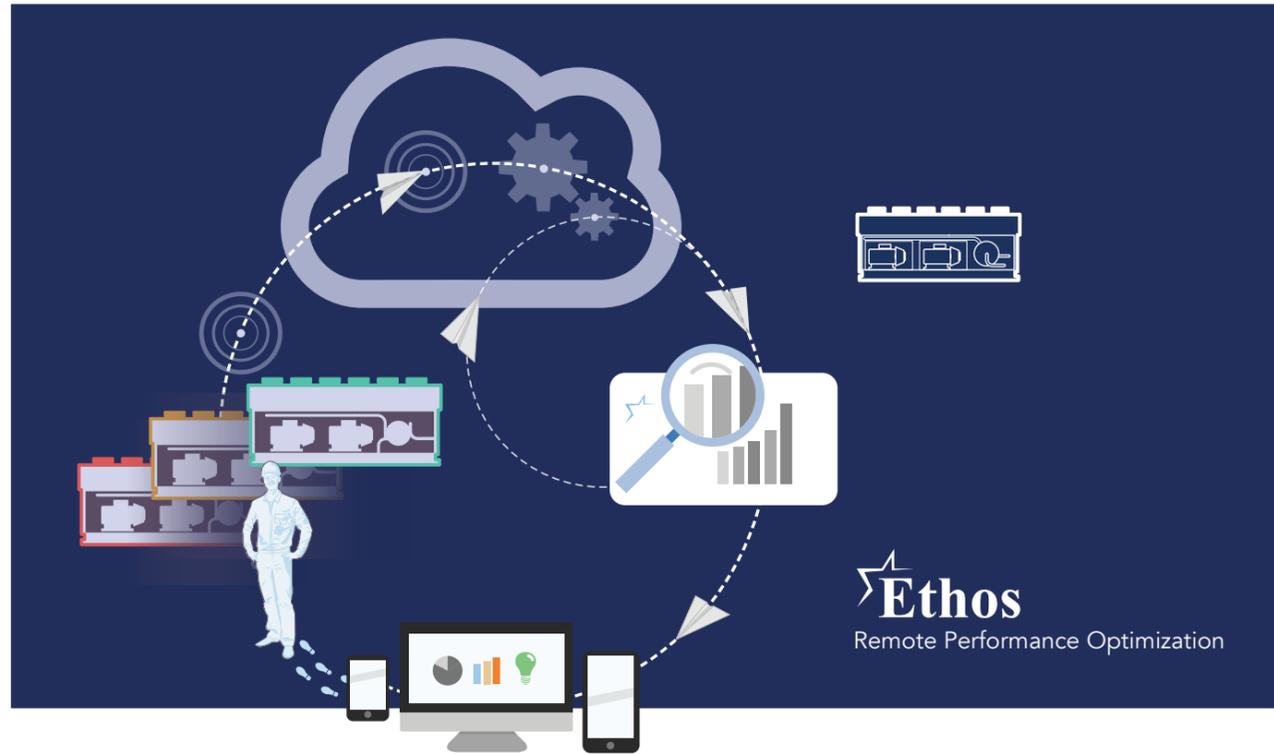
Steel base frame

Removable panels
For easy maintenance access around the unit.



Ethos Energy Management

The Azanefreezer 2.0 comes **Ethos** ready to help plant owners achieve energy and carbon reduction targets. The award-winning data monitoring and plant performance optimisation system can be activated at any time for optimum efficiency throughout the plant's life.



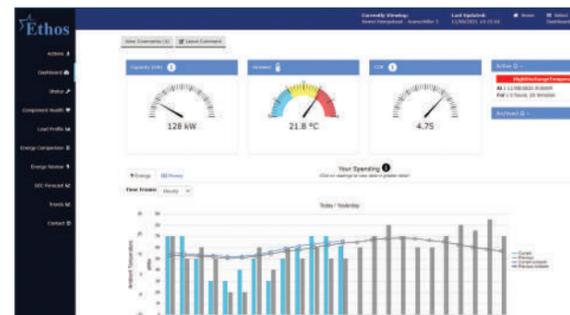
Ethos uses data led digital twin technology to optimise the efficiency of the refrigeration plant. It collects operational data from the PLC and analyses the gap between the ideal and the actual operating conditions to identify inefficiencies. The data is then displayed on a dashboard which contains lots of useful information for plant operators and owners.

Ethos can identify whether an increase in energy use is due to:

- › An increased cooling duty: as a result of an increase in ambient temperature, throughput or poor door control.
- › Inefficient operation: by determining the reasons for inefficiency, **Ethos** can recommend corrective actions and highlight any savings.

Benefits

- › Easy access to engineers reports on maintenance activities
- › Action centre which tracks the energy saving advice and resultant actions taken by maintenance team
- › Access to data such as chamber temperatures
- › Benchmarking energy performance if any changes are made to operating parameters of the plant
- › Can identify spare capacity of the plant



Star Refrigeration were able to respond to the most stringent requests for quality and efficiency and provided a solution that exceeded the technical requirements specified to satisfy the facility's cooling need.

We are impressed with the advantages offered by Star's Azanefreezer and the smooth delivery of the project.

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Jonathan Baker
Executive Director of Lineage Logistics, UK



STAR
REFRIGERATION

Manufactured in the UK

Each Azanefreezer 2.0 package is manufactured, charged, commissioned and run tested at Star Refrigeration's 4,000 m² production facilities in Glasgow.

When delivered to site, installation and commissioning time is reduced to a matter of days based on the chillers' plug and play design.



Azanefreezers in production
Westway facility, Glasgow



In March 2020, we made an important investment to switch our cold store refrigeration system from an R404a plant to an Azanefreezer unit. The previous system accounted for around 24% of our annual Electricity consumption in 2018. Comparatively, the Azanefreezer unit is much more energy efficient, consequentially having lower electricity consumption and lower CO₂e emissions. Being one of our biggest energy uses on site, we expect to see significant savings on our CO₂e emissions for years to come.

We have taken a big step in reducing the volume of environmentally detrimental substances on site. On top of this, we are currently working with Star on the next stage of our site refrigeration upgrade.

Phil Blakeman
Managing Director at Blakemans

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Air Coolers

AzaneFreezer 2.0 operates with aluminium evaporators. The use of aluminium offers a number of benefits:

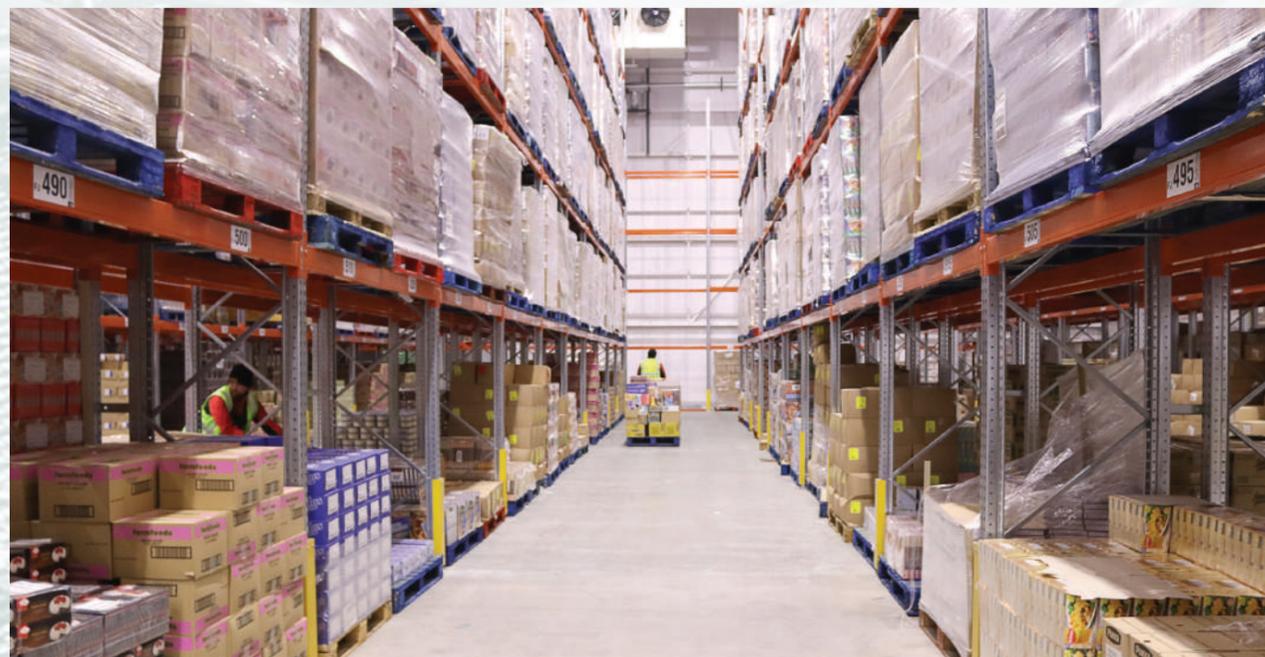
- › Lighter and more efficient at transferring heat than equivalent zinc galvanised or stainless steel
- › Corrosion resistant
- › Easy to clean
- › Optimum efficiency with low charge ammonia



Aluminium evaporator

Applications

The AzaneFreezer range is suitable for both cold storage and food processing applications, including spiral and in-line freezing.



Technical schedule

The AzaneFreezer 2.0 range comprises 8 standard models, each with a high efficiency 'E' version. Performance at cold store and freezer conditions is detailed below.

	AF150		AF150E		AF185		AF185E		AF220		AF220E		AF290		AF290E	
Application	Cold Store	Freezer														
Capacity (kW) @ 32°C ambient	158.0	97.0	158.0	98.0	189.0	115.2	189.0	117.6	224.0	134.2	224.0	138.4	289.2	176.2	289.2	180.2
Room Temperature (°C)	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32
Power Supply (V/ph/Hz)	400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		400/3/50	
Full Load Current (A)*	294	294	294	294	300	300	300	300	358	358	358	358	437	437	437	437
Dimension (m) (L x W x H)	6.5 x 2.8 x 3.5	7.6 x 2.8 x 3.3	8.7 x 2.8 x 3.3													
Approximate Operating Weight (kg)	10558	10558	10906	10906	10766	10766	10922	10922	12256	12256	12442	12442	13920	14475	14572	15127
Approximate Refrigerant Charge (kg)	131	131	131	131	136	136	136	136	150	150	150	150	194	220	194	220
COSP (at full load in 32°C ambient)	1.387	1.077	1.411	1.152	1.381	1.059	1.393	1.100	1.460	1.116	1.499	1.225	1.477	1.138	1.515	1.188
Condenser Fan Quantity	6	6	6	6	6	6	8	8	8	8	8	8	8	8	10	10

	AF330		AF330E		AF440		AF440E		AF540		AF540E		AF650		AF650E	
Application	Cold Store	Freezer	Cold Store	Freezer	Cold Store	Freezer	Cold Store	Freezer	Cold Store	Freezer	Cold Store	Freezer	Cold Store	Freezer	Cold Store	Freezer
Capacity (kW) @ 32°C ambient	334.2	203.6	334.2	208.0	439.0	267.6	439.0	273.2	540.0	329.0	540.0	336.2	653.2	397.8	653.2	406.6
Room Temperature (°C)	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32	-22	-32
Power Supply (V/ph/Hz)	400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		440/3/60		440/3/60	
Full Load Current (A)*	521	521	521	521	639	639	639	639	785	785	785	785	1064	1064	1064	1064
Dimension (m) (L x W x H)	8.7 x 2.8 x 3.3	10.0 x 2.8 x 3.3	11.2 x 2.8 x 3.3	11.8 x 2.8 x 3.3	11.8 x 2.8 x 3.3											
Approximate Operating Weight (kg)	16516	16516	17726	17726	19013	19013	20323	20323	21199	21994	21868	23396	22980	23747	23960	24527
Approximate Refrigerant Charge (kg)	224	224	224	224	253	253	253	253	317	379	317	379	340	403	340	403
COSP (at full load in 32°C ambient)	1.516	1.077	1.547	1.244	1.537	1.165	1.554	1.255	1.527	1.159	1.538	1.241	1.504	1.145	1.551	1.242
Condenser Fan Quantity	10	10	14	14	14	14	16	16	16	16	18	18	18	18	18	18

* Information in these tables is subject to change.

Please contact Star Refrigeration for current technical specification.

** Dimensions relate to unit footprint, excluding rain hood and connections.

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Star Refrigeration's network of offices across the UK provide services including maintenance, service, spares, new equipment/installations, retrofits and consultancy. We specialise in industrial refrigeration including temperature controlled storage & distribution, food production, beverage, process, pharmaceutical, petrochemical, leisure & ice, data centres and HVAC. Contact your local office for more details.

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