



# Azanechiller<sup>3.0</sup>

Cooling capacities from  
**140 to 1200 kW** and  
fluid temperatures from  
**-20°C to +10°C**



*The natural chiller choice*





Azanechiller 3.0 is an industrial, air-cooled chiller utilising the best performing natural refrigerant, ammonia. The chiller range boasts unparalleled, industry-leading efficiencies as well as being fully exempt from the F-gas phase-down programme. It helps businesses align with environmental, Net Zero and ISO 14001 targets for the future.

Azanechiller 3.0 has a design life of +25 years and is designed, built and tested in the United Kingdom by Star Refrigeration Ltd. Azanechiller 3.0 is the most successful air-cooled, low-charge ammonia package on the market with over 120 chillers installed in the UK, Europe and America. Its best-in-class efficiency and reliability have helped give the Azanefreezer 3.0 its award winning status.



up to **1.2MW<sub>HT</sub>** up to **1.1MW<sub>MT</sub>** up to **+40°C<sub>ambient</sub>**

## Designed & Built in the UK

### Typical applications:

- › Breweries
- › Chemical
- › Dairy
- › Data centres
- › Food production
- › Ice rinks
- › HVAC systems
- › Leisure (ski slopes)
- › Pharmaceutical
- › Temperature controlled storage
- › Test chambers

Exceeds EcoDesign SERP & SSCEE efficiency requirements by:

up to **26%**  
Better than  
HT SSCEE  
(comfort cooling)

up to **110%**  
Better than  
MT SEPR

up to **52%**  
Better than  
HT SEPR





## Features & Benefits

### Standard features:

- › Industrial standard PLC and colour touchscreen HMI with remote connectivity and interface options
- › High-reliability and long service interval reciprocating compressors
- › All compressors inverter driven
- › All condenser fans EC type and individually serviceable
- › Stainless steel condenser refrigerant coil
- › Epoxy coated aluminium condenser fins with option for AIMg
- › Twin industrial style float operated expansion valves on most models
- › Industrial standard rigid foam insulation with Aluzinc cladding
- › All uninsulated pipework is stainless steel
- › Stainless steel control panel with rain hood
- › Fully galvanised steel baseframe
- › EN378 & DSEAR compliant
- › Fully ATEX compliant compressor enclosures with ventilation fans and gas detection as standard

### Further benefits include:

- › Critical refrigerant charge design (minimum quantity of NH<sub>3</sub>)
- › Future proof solution which is exempt from the F-gas regulation
- › Fully compliant and exceeds the European Eco-Design directive
- › Operates at +40°C ambient temperatures
- › 20%+ life cycle savings compared to HFC, HC and CO<sub>2</sub> chillers
- › Design COP of up to 3.63 and part load of 11.88 for +7°C fluid off in a +35°C ambient
- › Intelligent compressor service intervals based on chiller loading
- › Compressor service intervals extended by a minimum of 25%
- › No plant room required
- › Over 25 years life expectancy
- › Quick installation
- › Bespoke 'Quality Dossier' including certification and test & commissioning data for every chiller



**Star Refrigeration were entrusted to provide the refrigeration system for Fowler Welch's state of the art, new build facility in Kent. Recognising the significance of this project, we sought to procure a market-leading, efficient system that would demonstrate Fowler Welch's long-term commitment to sustainability, throughout both our transport fleet and within our warehouse operations.**

**From start to finish, the Star Refrigeration team delivered an exceptional service. We were involved throughout the process; we worked collaboratively during the Azanechiller design phase and the end result is everything we were promised and more. The new system has redefined standards of reliability, efficiency, and sustainability across our estate and the broader industry. This serves as a testament to Star's expertise in sustainable refrigeration. ”**

**Jon Holland**  
Engineering Projects Manager at Fowler Welch

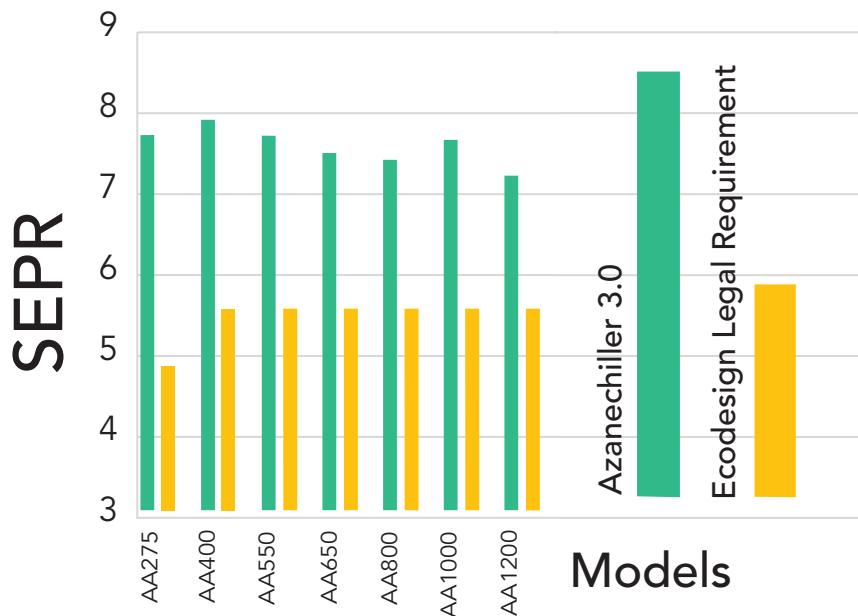


Ecodesign Directive

Introduced in the EU and enacted in UK law via the Ecodesign for Energy Related Products Regulations 2021, the directive sets requirements for chiller Minimum Efficiency Performance Standards (MEPS), enabling end-users to easily compare chiller efficiency performance through the Seasonal Energy Performance Ratio (SEPR) for industrial process chillers and the Seasonal Space Cooling Energy Efficiency (SSCEE) for comfort cooling chillers.

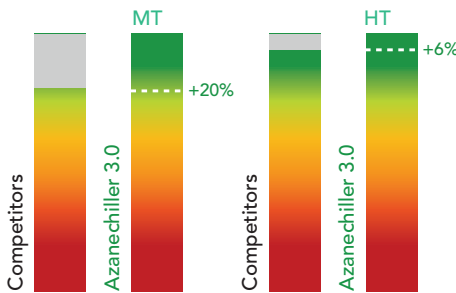
The Azanechiller 3.0 range achieves far lower operating costs than the SEPR minimum requirements:

- › Azanechiller 3.0 MT consumes up to 52% less electricity than an Ecodesign standard SERP rated chiller to achieve the same cooling performance
- › Azanechiller 3.0 HT consumes up to 33% less electricity than an Ecodesign standard SERP rated chiller to achieve the same cooling performance



Ecodesign SERP: Azanechiller 3.0 vs Best Competitors

The Azanechiller 3.0's superior efficiency outperforms UK industry competitors





## Manufactured in the UK

Each Azanechiller 3.0 package is manufactured, charged, commissioned and run tested at Star Refrigeration's 4,000m<sup>2</sup> production facilities in Glasgow.

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

**Azanechiller** 3.0



Azanechillers in production at  
ISO 9001, 14001 and 45001  
compliant factory in Westway, Glasgow

Since the installation of the Azanechiller, we have seen a reduction of over 1 million kW/yr in our energy consumption at our Hemel site. This represents a significant improvement in operating costs.

Additionally, the building's carbon emissions have been reduced by 300 tons per year, accelerating progress towards our Net Zero targets.

”

**Lionel Thripland**  
Head of Property, GIST

**STAR**  
REFRIGERATION



## Features & Components

All system components have been selected to give an integrated package that gives the lowest cost of ownership, is easy to install and can be relocated in the future.

Plug and play design allows the chiller to be moved from one site to another with Ammonia Hazard Assessment (AHA) advisory services available to ensure location is safe.

# Azanechiller

3.0

### Stainless Steel Control Panel With Rain Hood

For extended life in outdoor operation. PLC control provides optimised performance, based on ambient temperature and cooling load. Touchscreen HMI. Remote access and condition based monitoring are available through broadband.

### Variable Speed Fans

EC variable speed fans for low fan power and improved air flow. Axitop diffusers available as an optional enhancement.

### Flatbed Condenser

Stainless steel tube condenser for long life. Full perimeter maintenance access.

### Stainless Steel Pipework

Stainless steel piping for long life and leak tight operation.

### Condenser Cleaning Hatches

Improves serviceability.

### Heat Recovery

Optional heat recovery system from ammonia hot gas for fluid heating and enhanced chiller efficiency.

### Dual Pressure Relief Valves

EN13136 compliant with changeover assembly.

### Mechanical Expansion Device

Twin industrial float operated expansion valves.

### Combined Evaporator

Fully welded plate and shell heat exchanger. High integrity design, giving low refrigerant charge and minimising risk of leakage.

### Gas Detection & Ventilation

Rated to EN378-3 with sounder beacon on panel and site alarm relays.

### Weatherproof Compressor Enclosure with Removable Panels

Standard Aluzinc compressor enclosures with optional enhanced acoustic treatment.

### Reciprocating Compressors

Variable speed, reciprocating compressor ensuring lowest power consumption across 100 to 30% capacity range.

Single or twin compressor options available.

### Drive Motor

VSD high efficiency IE3 or IE4 drive motor with flange mounting to ensure accurate alignment and reduce maintenance costs.

### Insulation

Rigid section insulation for all low temperature pipework and vessels.

Robust metal cladding finish as standard.

### Optional Chiller Pumps

Optional on board cold and warm fluid pumps.

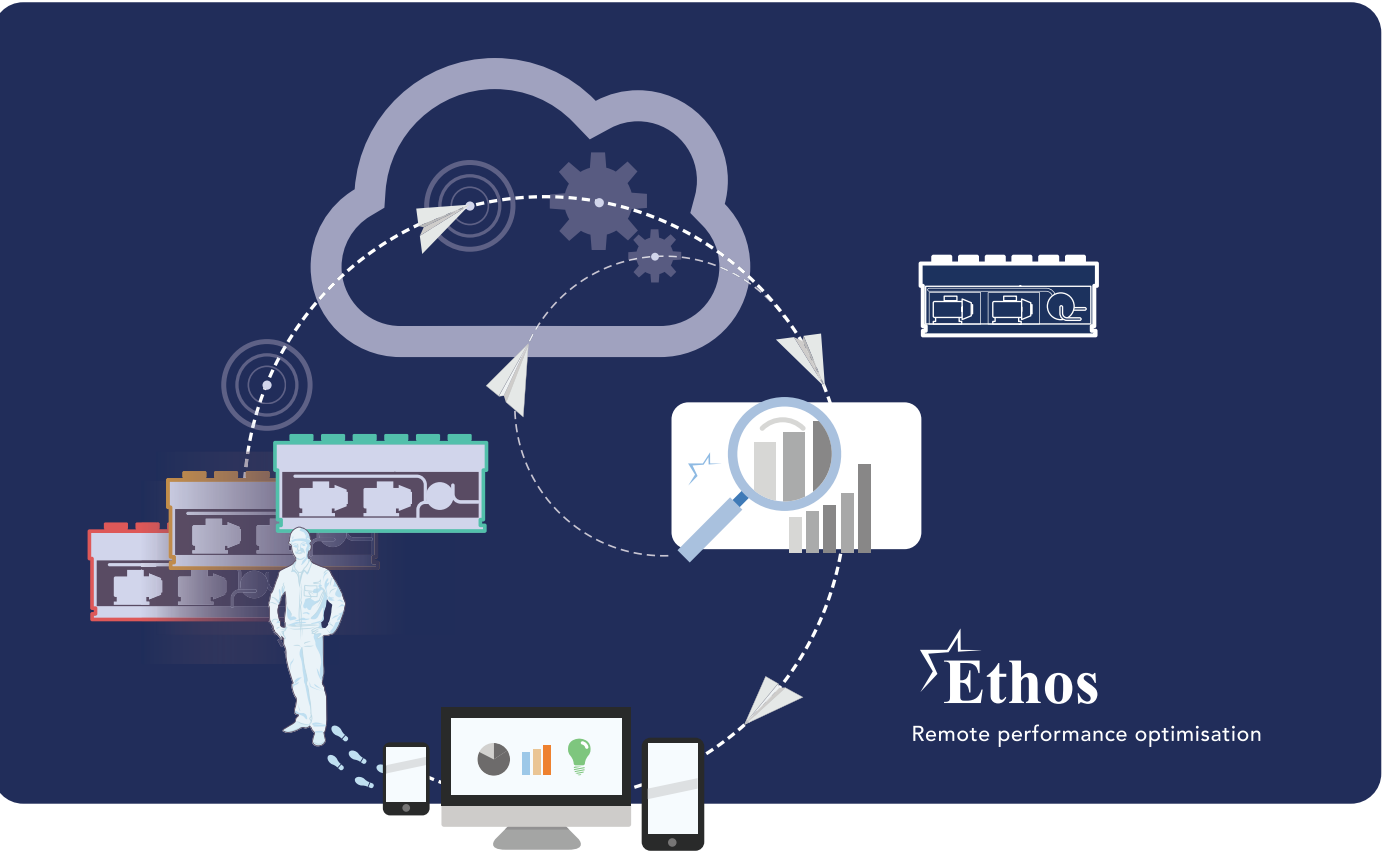
# STAR

REFRIGERATION



# Ethos Energy Management

The Azanechiller 3.0 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.



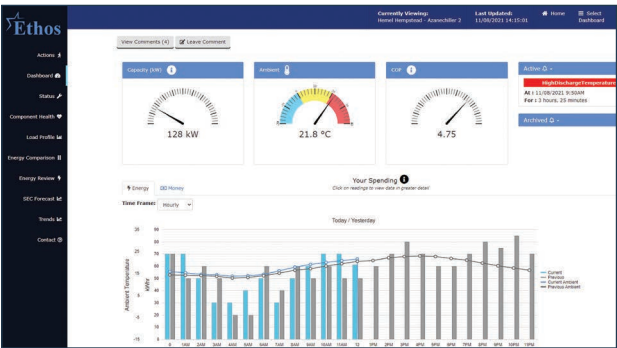
**Ethos** uses data led digital twin technology to optimise the efficiency of the refrigeration plant. It collects operational data from the PLC and analyses the gap between the ideal and the actual operating conditions to identify inefficiencies. The data is then displayed on a dashboard which contains 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 the maintenance team
- › Access to data such as chamber temperatures
- › Benchmarking energy performance if any changes are made to the operating parameters of the plant
- › Can identify spare capacity of the plant



The Azanechiller boosts the capacity of the chill store plant and offers great efficiency by delivering immediate reductions on our energy costs. This development also helps towards our First4Milk Net Zero commitments, delivering more efficient and environmentally friendly refrigeration.

Ian Wilson  
First Milk

”



Technical Schedules

AZANECHILLER MODELS - Medium Temperature MT Chiller Range (-20°C to -4°C)



	AA140MT	AA200MT	AA275MT		AA315MT	
	AA140MT-1	AA200MT-1	AA275MT-1	AA275MT-2	AA315MT-1	AA315MT-2
Capacity (kW)	140	208	278		316	
Dimension (m) (L x W x H)	5.1 x 2.3 x 3.05	5.1 x 2.3 x 3.0	6.9 x 2.3 x 3.06		6.9 x 2.3 x 3.0	
Approximate Operating Weight (kg)*	6400	7060	7676	9726	8646	10306
Approximate Refrigerant Charge (kg)	36	50	64		70	
Azanechiller 3.0 SEPR MT	4.88	4.46	4.31	4.23	4.22	4.14
Ecodesign SEPR REQUIREMENT	2.32	2.32	2.32	2.32	2.90	2.90
COMPARISON: Azanechiller SERP vs Ecodesign SEPR (Percentage Improvement)	110%	92%	86%	82%	46%	43%

AA315MTE		AA415MT		AA415MTE		AA550MT	AA550MTE	AA850MT	AA1100MT
AA315MTE-1	AA315MTE-2	AA415MT-1	AA415MT-2	AA415MTE-1	AA415MTE-2	AA550MT-2	AA550MTE-2	AA850MT-2	AA1100MT-2
316		418		419		557	557	866	1100
7.4 x 2.3 x 3.08		8.1 x 2.3 x 3.0		9.7 x 2.3 x 3.0		10.0 x 2.3 x 3.0	11.9 x 2.3 x 3.0	11.3 x 3 x 3.2	12.6 x 4.6 x 3.6
9000	10661	10055	12180	10531	12584	13827	14617	21135	26100
73		80		83		134		210	240
4.53	4.44	4.35	4.27	4.56	4.49	4.23	4.44	4.58	4.58
2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
56%	53%	50%	47%	57%	55%	46%	53%	51%	58%



AZANECHILLER MODELS - High Temperature HT Chiller Range (-4°C to +10°C)

	AA275	AA400	AA400E	AA550		AA550E		AA650	
	AA275-1	AA400-1	AA400E-1	AA550-1	AA550-2	AA550E-1	AA550E-2	AA650-1	AA650-2
Capacity (kW)	273	407	407	540		542		637	
Dimension (m) (L x W x H)	5.1 x 2.3 x 3.06	6.2 x 2.3 x 3.06	7.4 x 2.3 x 3.08	8.1 x 2.3 x 3.0		9.7 x 2.3 x 3.09		9.7 x 2.3 x 3.09	
Approximate Operating Weight (kg)*	6698	7907	8260	9464	11110	9916	11558	11160	13134
Approximate Refrigerant Charge (kg)	47	66	68	87		90		97	
Azanechiller 3.0 SEPR HT	7.60	7.43	7.98	7.29	7.18	7.76	7.67	7.37	7.25
Ecodesign SEPR REQUIREMENT	5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
COMPARISON: Azanechiller SERP vs Ecodesign SEPR (Percentage Improvement)	52%	35%	45%	33%	31%	41%	39%	34%	32%

AA650E		AA800		AA800E		AA1000		AA1000E		AA1200
AA650E-1	AA650E-2	AA800-1	AA800-2	AA800E-1	AA800E-2	AA1000-1	AA1000-2	AA1000E-1	AA1000E-2	AA1200-2
633		795		793		1000		1001		1198
10.0 x 2.3 x 3.0		10.0 x 2.3 x 3.01		11.9 x 2.3 x 3.0		11.9 x 2.3 x 3.0		11.9 x 3.1 x 3.0		11.9 x 3.1 x 3.0
11362	13336	12354	13794	12478	14451	14257	15724	15326	16794	18482
98		114		118		141		149		173
7.62	7.34	7.22	7.12	7.60	7.49	7.30	7.21	7.70	7.62	7.21
5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
39%	33%	31%	29%	38%	36%	33%	31%	40%	39%	31%

Information in these tables is subject to change. Please contact Star Refrigeration for current technical specification.

Chiller capacity and efficiency is quoted according to EN 12900-2005.

Capacity will vary with fluid operating temperature.

Sound data measurement in accordance with 'Eurovent Rating Standard for Liquid Chilling Packages'. A-weighted Sound Power Level tolerance = ±3dB

Condenser Fan Type HT/MT Range (EC)  
Evaporator Type HT/MT Range (Combined PSHE)  
Drive Type HT/MT Range (Variable Speed)

\*Weight includes optional baseplates and acoustic enclosure.

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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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