

# Azanechiller 2.0

The natural chiller choice

Cooling capacities from 200 to 1200 kW  
and fluid temperatures from -20°C to +10°C



**Azanechiller** 2.0



Azanechiller 2.0 is the natural choice chiller for temperature controlled storage, food production, process cooling and HVAC. Combining exceptional efficiency, quality components and condition monitoring, Azanechiller 2.0 ensures the lowest total cost of ownership.

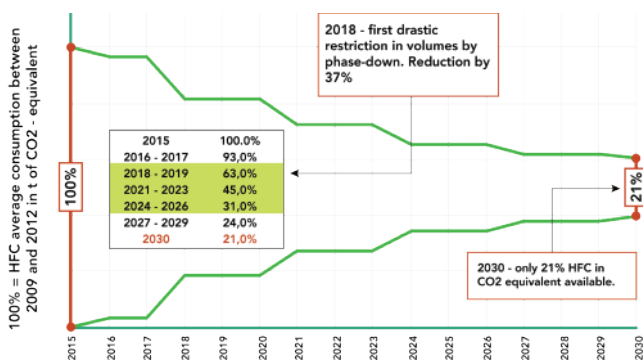
Azanechiller 2.0 is manufactured in the UK by Star Refrigeration, the UK's leading industrial refrigeration solutions provider.



## The Need For Evolution

### F-gas & low charge ammonia

The Azanechiller 2.0 has been developed specifically as a result of stringent new legislation to improve plant efficiency and minimise the environmental impact of chiller operation.



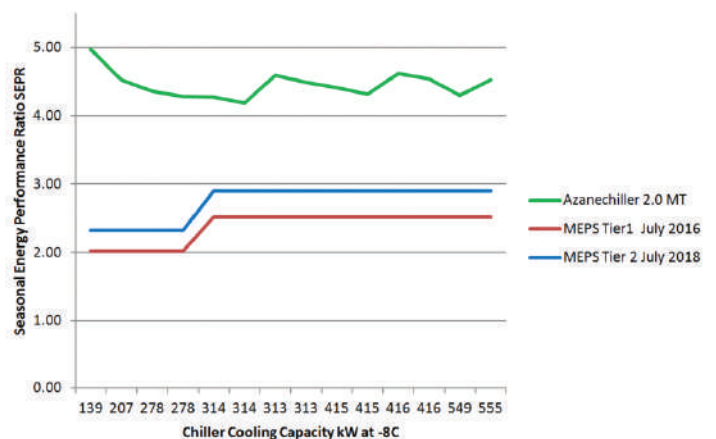
Tightening of F-gas regulations will result in a 79% phase down of average HFC consumption (CO<sub>2</sub> equivalent) between 2015 and 2030. This will affect almost all standard chillers on the market and will result in reduced availability of F-gases, increased costs and early withdrawal of units from service.

Azanechiller 2.0 uses ammonia refrigerant which has zero global warming potential (GWP), and is not subject to the F-gas regulation.

### Ecodesign Directive

The European Ecodesign Directive has been introduced to improve the efficiency of energy consuming goods being placed on the market. Chillers need to meet Minimum Energy Performance Standards (MEPS) if they are to be sold in Europe. The first tier of MEPS came into effect from July 2016 for medium temperature process chillers and January 2018 for high temperature process and comfort cooling. The second, more stringent, tier of MEPS applies from July 2018 and January 2021 respectively.

Azanechiller 2.0 exceeds the first tier MEPS benchmarks by up to 146% for medium temperature, 74% for high temperature and 66% for comfort cooling chillers, whilst second tier MEPS benchmarks are exceeded by up to 114%, 57% and 48% respectively. This means users will benefit from full compliance with the directive and lower running costs than benchmark products.



Azanechiller 2.0 Medium Temperature Process Chiller Ecodesign Directive

# Core benefits

## Exceptional Efficiency

The Azanechiller 2.0 range has set a new benchmark in chiller efficiency. Integrating variable speed reciprocating compressor technology with EC fans, close approach evaporator design and in-house PLC software, Azanechiller 2.0 delivers an efficiency that is 20% higher than competing F-gas chiller technology.

This allows the units to deliver immediate reductions in energy costs for end users after installation.

## Low refrigerant charge

The use of low refrigerant charge evaporator technology ensures optimum efficiency and eliminates the need for a separate suction vessel. This results in refrigerant charges as little as 0.18kg/kW.

## 20+ year operation

The combination of using quality equipment with robust industrial construction means a 20+ years chiller life expectancy.



Further benefits include:

- › Future proof solution which is exempt from the F-gas regulation
- › Fully compliant and exceeds the European Eco-Design directive
- › Life cycle costs 24% lower than HFC competitors
- › Design COPs up to 3.63 at 35°C, 7°C fluid off and 11.88 at part load
- › 16% reduction in chiller weight \*
- › 15% reduction in footprint \*
- › Compressor service intervals extended by a minimum of 25%\*
- › No plant room required
- › Over 20 years life expectancy
- › Quick installation

\* Compared to previous Azanechiller design



## Market Flexibility

The family of pre-engineered chillers is suitable for a wide variety of end user markets, including temperature controlled storage, food processing, beverage production, process cooling, HVAC, data centres, ice rinks, pharmaceutical and petrochemical industries.

## Manufactured in the UK

Each chiller package is manufactured, charged, commissioned and run-tested at Star Refrigeration's production facilities in Glasgow, prior to dispatch to customer sites.



**"When setting out to develop the next generation of Azanechiller, we focussed on increased efficiency, lower charge and lower capital cost.**

**The Azanechiller 2.0 technology represents a new era for package ammonia systems in the industry."**

*Alan Walkinshaw - Process Cooling Market Manager*

# Features & Components

All system components have been selected to give an integrated package with low cost of ownership that is easy to install and flexible in operation.

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.



**Stainless Steel Control Panel**  
For extended life in outdoor operation.

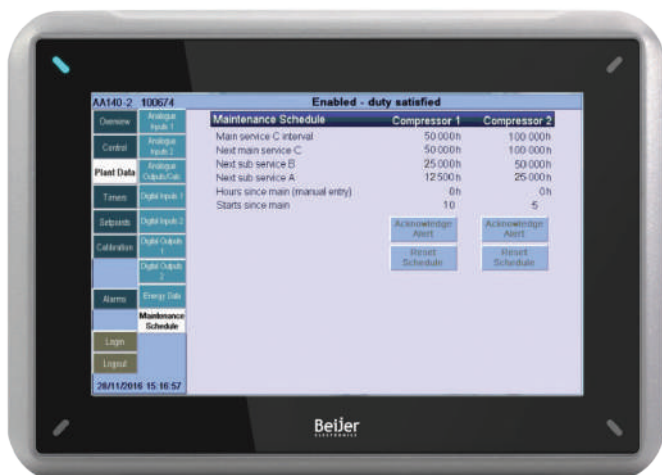
### Efficient Control

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

### Compressor

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

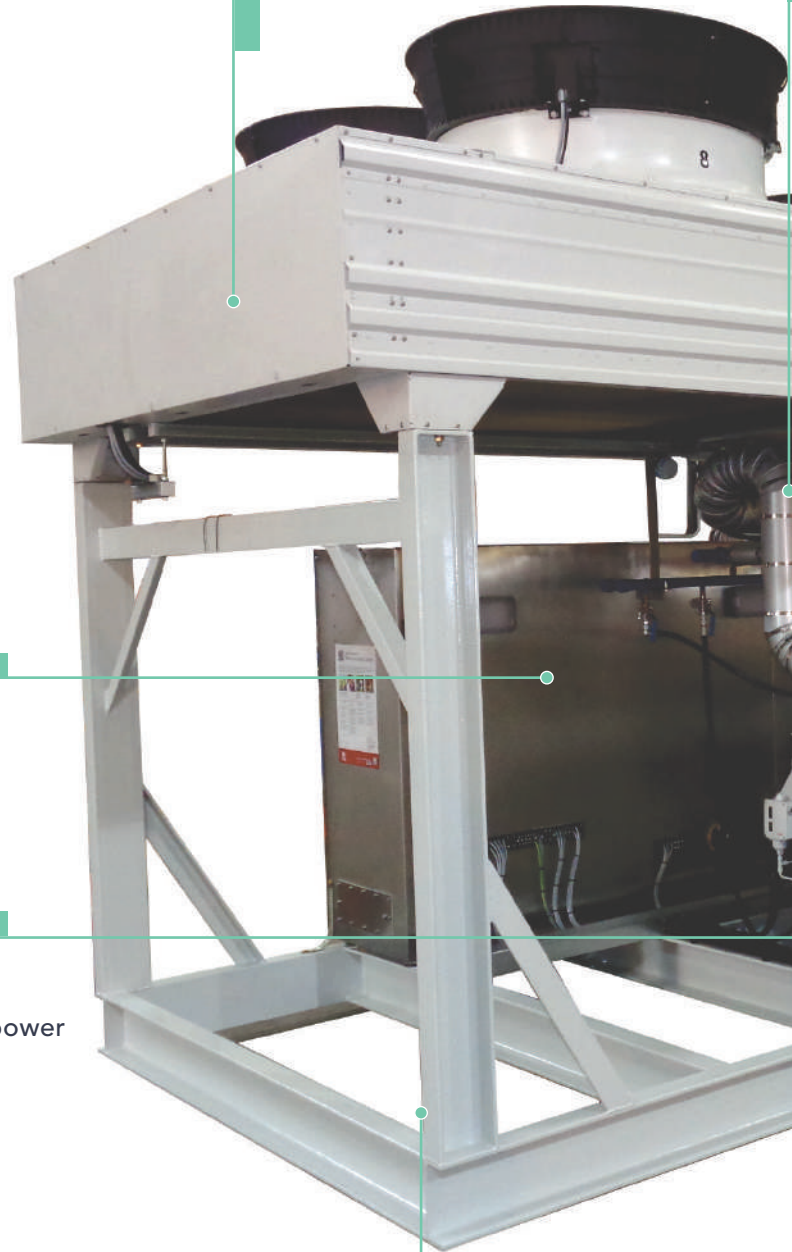
Single or twin compressor options available.



Enhanced compressor technology delivers 25% longer service intervals. Intelligent overhaul scheduling via plc reduces maintenance costs for part load operation.

### Flatbed Condenser

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



### Steel Baseframe

Channel section steel frame gives rigid construction and long life.

### Steel Pipework

Fully welded steel piping for long life and leak tight operation.



### Variable Speed fans

EC variable speed fans with Axitop diffusers for low fan power and improved air flow.



### Heat Exchanger

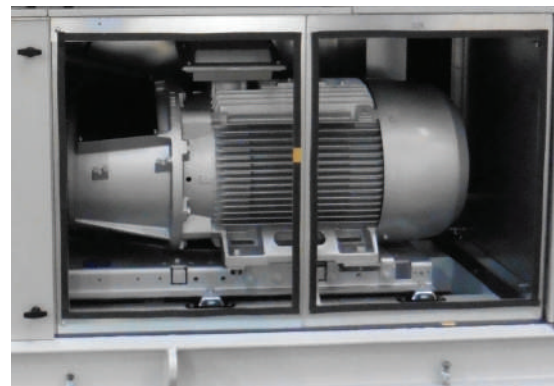
Fully welded plate and shell heat exchanger. High integrity design, giving low refrigerant charge and minimises risk of leakage.

### Chiller Pumps

Optional on-skid pumpset.

### Drive Motor

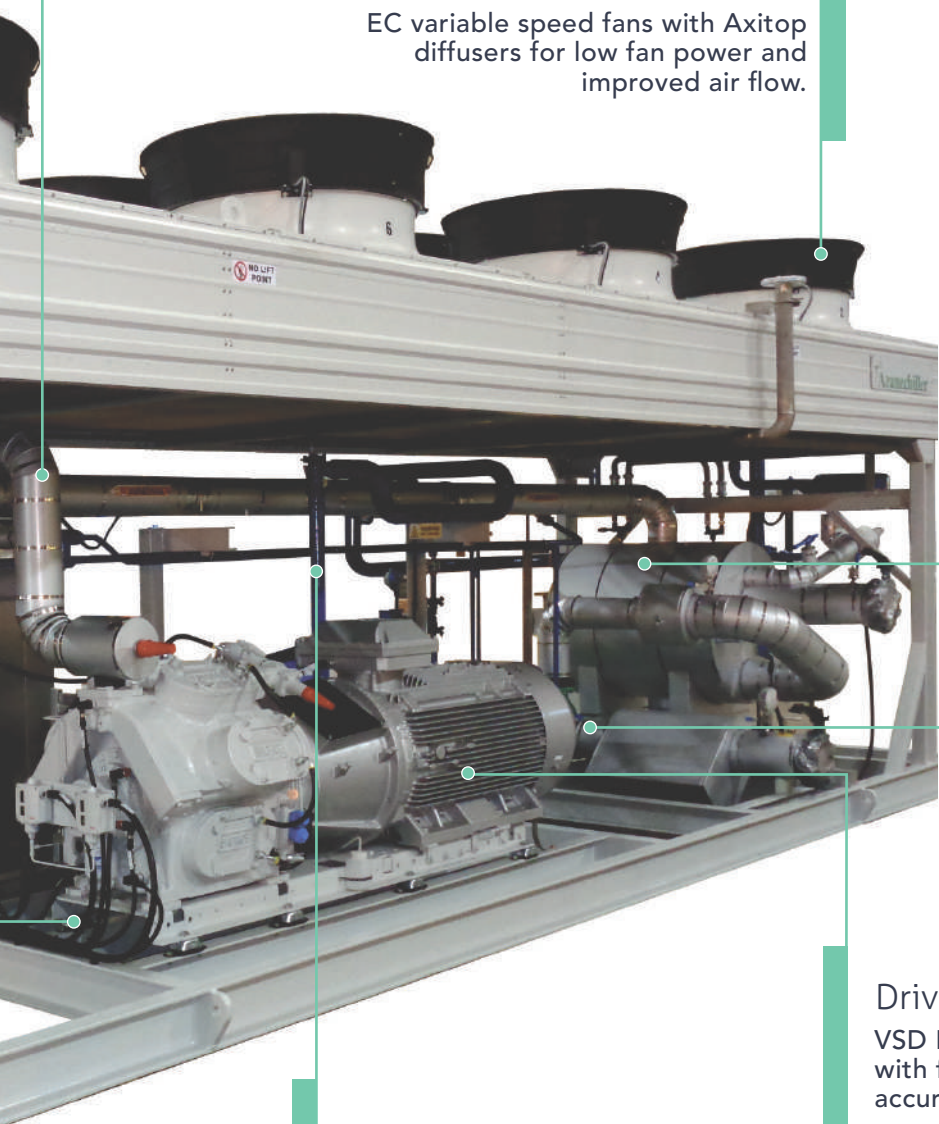
VSD High efficiency IE3 drive motor with flange mounting to ensure accurate alignment.



Optional acoustic housing for compressor set

### Heat Recovery

Optional heat recovery from ammonia hot gas system.



# Technical Schedules

## 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)	273.0		407.3		407.2		540.0		541.9		636.5		
Minimum Compressor Capacity (%)	34		34		34		17		17		17		
Design Dry Bulb Temperature (°C)	35.0		35.0		35.0		35.0		35.0		35.0		
Power Supply	400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		
Full Load Current (A)*	163.4		237.6		237.6		343.8		325.8		419.8		383.8
Sound Pressure Level (dB(A) @ 10m)	68		69		69		71		71		71		71
Dimension (m) (L x W x H)	5.1 x 2.3 x 3.0		6.2 x 2.3 x 3.0		7.4 x 2.3 x 3.0		8.1 x 2.3 x 3.0		9.7 x 2.3 x 3.0		9.7 x 2.3 x 3.0		
Approximate Operating Weight (kg)**	6698		7907		8260		9464		11110		9916		11558
Approximate Refrigerant Charge (kg)	47		66		68		87		90		97		
Chiller COSP (at full load in 35°C ambient)	3.56		3.47		3.65		3.44		3.38		3.62		3.56
Water Connection Size (NB)	100		125		125		125		125		125		
Water Side Pressure Drop (kPa)	60		60		60		75		75		74		
Compressor Quantity	1		1		1		1		2		1		2
Compressor Type	Reciprocating		Reciprocating		Reciprocating		Reciprocating		Reciprocating		Reciprocating		
Water On/Water Off Temperature (°C)	12/7		12/7		12/7		12/7		12/7		12/7		
Condenser Fan Quantity	4		6		6		8		8		8		
Axitop fitted	Option		Standard		Option		Standard		Option		Standard		

## 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)	139.7		208.3		278.2		316.0			
Minimum Compressor Capacity (%)	34		34		17		17			
Design Dry Bulb Temperature (°C)	35.0		35.0		35.0		35.0			
Power Supply	400/3/50		400/3/50		400/3/50		400/3/50			
Full Load Current (A)*	138.4		202.6		277.6		265.6		287.8	325.8
Sound Pressure Level (dB(A) @ 10m)	67		69		71		71		71	
Dimension (m) (L x W x H)	5.1 x 2.3 x 3.0		5.1 x 2.3 x 3.0		6.9 x 2.3 x 3.0		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			
Chiller COSP (at full load in 35°C ambient)	2.58		2.43		2.38		2.33		2.37	2.32
Glycol Connection Size (NB)	80		100		100		100			
Glycol Side Pressure Drop (kPa)	42		35		40		43			
Compressor Quantity	1		1		1		2		1	2
Compressor Type	Reciprocating		Reciprocating		Reciprocating		Reciprocating		Reciprocating	
Fluid	30% Ethylene Glycol		30% Ethylene Glycol		30% Ethylene Glycol		30% Ethylene Glycol			
Glycol On/Glycol Off Temperature (°C)	-2/-8		-2/-8		-2/-8		-2/-8			
Condenser Fan Quantity	4		4		6		6			
Axitop fitted	Option		Option		Standard		Standard			

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

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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
632.5		795.1		793.3		1000.2		1001.4		1198.0
17		24	17	24	17	12	17	12	17	9
35.0		35.0		35.0		35.0		35.0		35.0
400/3/50		400/3/50		400/3/50		400/3/50		400/3/50		400/3/50
430.0	394.0	456.0	544.0	466.2	474.2	612.2	666.2	612.2	666.2	818.2
71	71	72	72	72	72	74	73	74	73	73
10.0 x 2.3 x 3.0		10.0 x 2.3 x 3.0		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
3.54	3.49	3.27	3.26	3.45	3.43	3.46	3.44	3.57	3.54	3.36
125		150		150		150		150		200
74		79		79		15		15		17
1	2	1	2	1	2	1	2	1	2	2
Reciprocating		Reciprocating		Reciprocating		Reciprocating		Reciprocating		Reciprocating
12/7		12/7		12/7		12/7		12/7		12/7
10		10		12		12		14		14
Option		Standard		Option		Standard		Option		Standard

AA315MTE		AA415MT		AA415MTE		AA550MT	AA550MTE
AA315MTE-1	AA315MTE-2	AA415MT-1	AA415MT-2	AA415MTE-1	AA415MTE-2	AA550MT-2	AA550MTE-2
315.6		417.6		418.6		556.5	557.2
17		17		17		9	
35.0		35.0		35.0		35.0	
400/3/50		400/3/50		400/3/50		400/3/50	
287.8	325.8	343.8	383.8	354.0	394.0	544.0	554.2
70	71	72	73	72	72	73	73
7.4 x 2.3 x 3.0		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
9000	10661	10055	12180	10531	12584	13827	14617
73		80		83		134	
2.48	2.42	2.39	2.36	2.47	2.44	2.40	2.46
100		100		100		125	
43		52		52		77	
1	2	1	2	1	2	2	2
Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating	Reciprocating
30% Ethylene Glycol		30% Ethylene Glycol		30% Ethylene Glycol		30% Ethylene Glycol	
-2/-8		-2/-8		-2/-8		-2/-8	
6		8		8		10	12
Option		Standard		Option		Standard	Option

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

\* Compressor motors are inverter driven, starting current never exceeds full load current.

\*\* 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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