



# TurboChill™ & TurboChill™ FreeCool

## 200 – 1100kW

- + ESEER up to 6.16
- + Near silent centrifugal compressor
- + 200 – 950kW FreeCool models
- + 200 – 1100kW air cooled models



Authorised User No. 00007



HFC R134a



CENTRIFUGAL COMPRESSOR



MICROCHANNEL COIL



FREE-COOLING



EC FAN



BRITISH MANUFACTURER



ENERGY EFFICIENCY



CONTROLS



SERVICE



TRAINING

# Unparalleled efficiency

## Ultimate in advanced chiller technology

The TurboChill™ is an air-cooled, single/dual circuit R134a chiller engineered with near silent, oil-free centrifugal compressors and the very best in chiller technology.

Offering exceptional ESEER values, the TurboChill™ is available in a total of 84 models, including 28 free-cooling variants. The TurboChill™ (TCC) and TurboChill™ FreeCool (TCF) are designed with microchannel coils and a modular V-frame coil design, further increasing efficiency whilst minimising space claim.

The TurboChill™ matches load requirements exactly and enables selection of the optimum model, in terms of efficiency, sound level, footprint and price, for each individual application.

# ESEER up to 6.16

ESEER: European Seasonal Energy Efficiency Ratio



**Centrifugal compressor**

25 - 100% variable speed control for tighter setpoint management and substantial energy savings at part load



**Flooded evaporator**

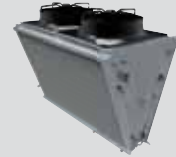
Enhanced optimum heat exchange and system efficiency give 15% energy savings in compressor operation particularly at part load



**Microchannel heat exchanger\***

High surface area provides increased heat transfer and lower airside pressure drop giving lower fan powers; the slim, light profile reduces weight / space claim

\* polymer-coated as standard for longevity on selected models



**Modular V-frame\***

Vastly improves heat exchange, resulting in better performance and control particularly at part load; also facilitates easier maintenance

\* on selected models



**EC fans**

Electronically commutated axial fans give increased performance for reduced power input

\* than an AC fan at part load

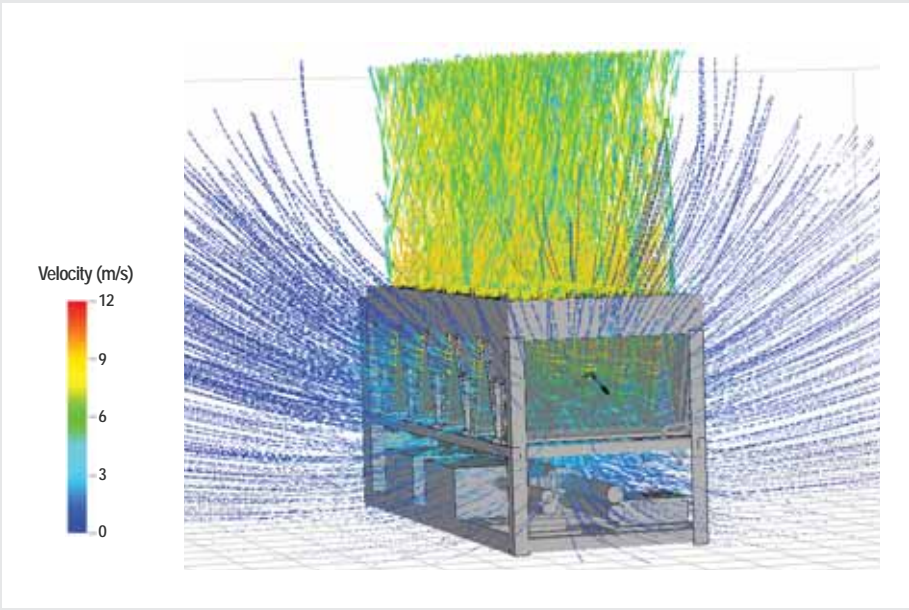


Authorised User No. 00007

### Carbon Trust Enhanced Capital Allowance scheme:

All models in the TurboChill™ range meet the criteria set out by the Energy Technology List. Selected models are included on the list offering the potential for investors to claim 100% first-year capital allowance. Remaining models are pending.

For details see [www.eca.gov.uk](http://www.eca.gov.uk)



# Class A EER up to 4.37

**EER: Energy Efficiency Ratio at 7/13°C water and 35°C ambient**

CFD analysis was used to determine the optimum fan and heat exchanger size and the best distribution and total airflow through the V - block to minimise power consumption.

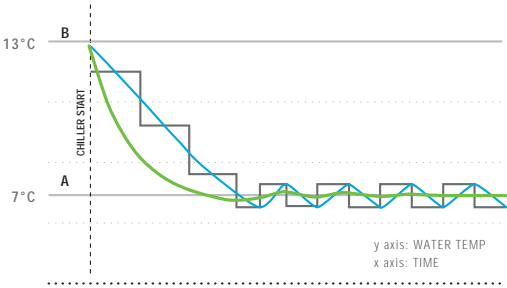
## Efficient flooded evaporator

The flooded evaporator results in **15% energy savings** in compressor operation particularly at part load. The compressor runs at 20°C condensing temperature when evaporating at 5°C as opposed to around 35°C condensing for a conventional screw compressor. The addition of an integral heat exchanger within the evaporator extends cooling capacity and increases the efficiency of the system whilst keeping the evaporator footprint to a minimum.



## Exact capacity match

Variable speed compressor control ranging from 25 - 100%, allows the TurboChill™ to save substantial amounts of energy when operating at part load. Variable speed control facilitates accurate supply water setpoint control. It enables the TurboChill™ to react to system load fluctuations and exactly match the cooling demand.



25-100% modulating TurboChill™ vs. staged screw chiller

- TurboChill modulating supply water temperature
  - Conventional screw chiller water temperature
  - Step control conventional screw chiller - 4 stages of cooling
- A = Supply temperature setpoint    B = Actual water temperature

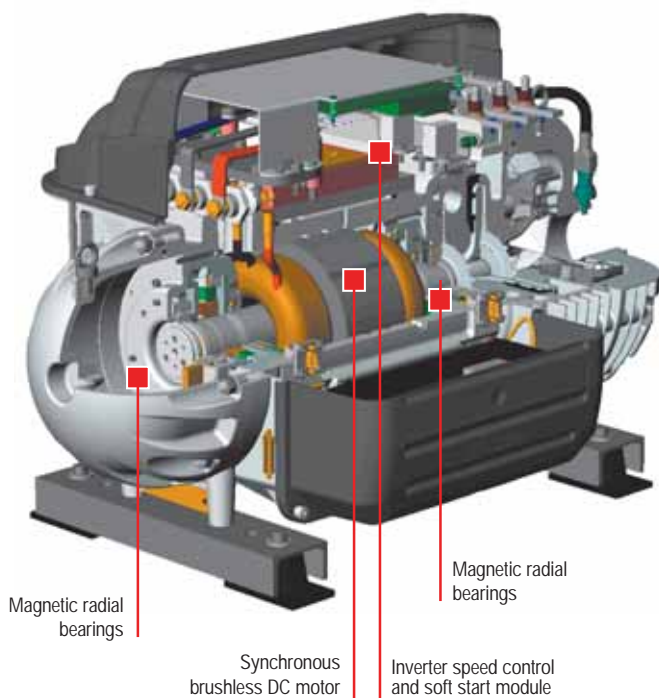
# Next generation

## Oil-free compressor technology

Magnetic bearings within the centrifugal compressor levitate the compressor shaft and with no mechanical contact nor friction between mating surfaces, the need for lubrication of the compressor is eliminated. The intelligent, self-optimising compressor allows variable speed control, minimum input power and near silent compressor operation.

### Excellent reliability: No operational 'wear and tear'

With virtually no vibration and fewer moving parts within the compressor, there is no operational 'wear and tear', costly bearing replacement is avoided and equipment life extended. In the event of a power failure the compressor acts as a generator and powers itself down in a controlled manner.



### EER over 10.0 at part load

A compressor EER of up to 4.65 at full load and more than 10.0 at part load, represents an increase in efficiency of 25% and over 100% respectively.\*

\* compared with conventional screw compressors

ESEER up to  
**50%**

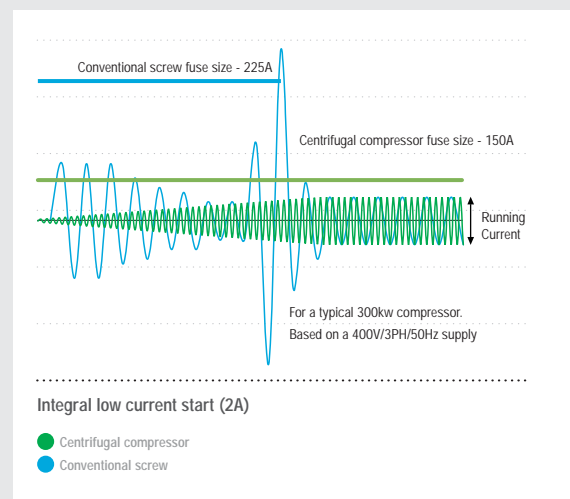
higher than  
a traditional  
screw chiller

### TurboChill vs screw chiller



### Current start

By removing the transient starting 'spikes' normally associated with screw chillers of this capacity, electrical supply components need not be oversized on site.



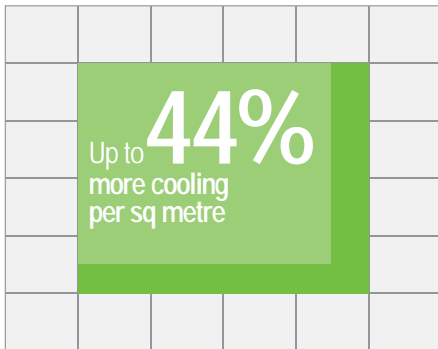
# Brilliantly engineered and applied technology

Supported by intelligent control logic, the TurboChill™ ensures ultimate efficiency by using advanced technologies including microchannel heat exchangers, 'V' frame coil design and EC fans, which work together, enabling an ESEER of up to 6.16 to be achieved.

**Microchannel heat exchangers\*** reduce airside pressure drop and allow more airflow to pass through the coil, therefore increasing the total heat rejection and fan efficiency at both full and part load.

\* polymer coated as standard for longevity on selected models

**Modular 'V' frame coil design:** With a slim and light profile, the microchannel heat exchangers reduce the overall weight and space claim of the chiller. Incorporated in a modular v-frame configuration and together with the small footprint of

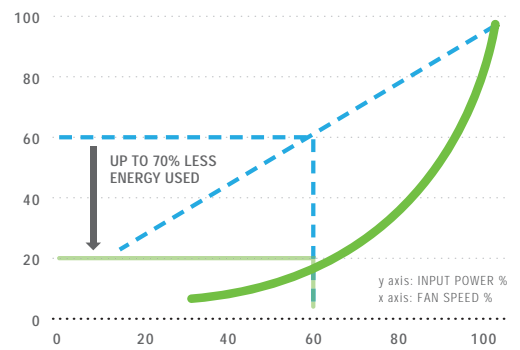


the compressors, the compact microchannel heat exchangers enable the TurboChill™ FreeCool to achieve up to 44% more cooling per square metre than Airedale's previous generation of free-cooling chillers.

## EC fans



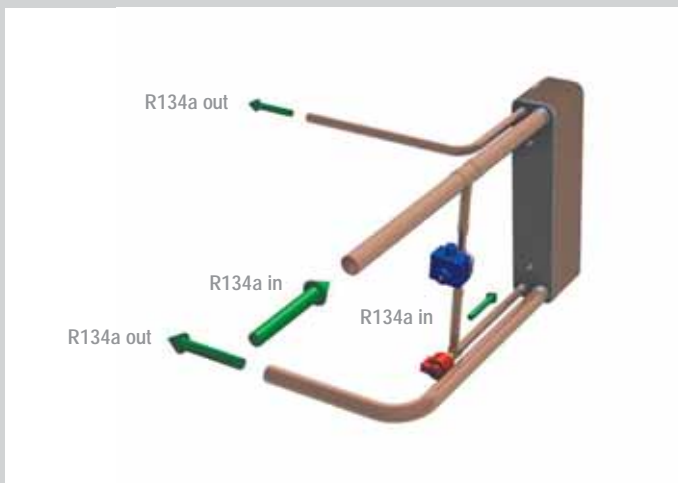
Speed controlled EC (electronically commutated) axial fans have very low air flow resistance and respond seamlessly to load fluctuations.



EC fan: Up to 70% more efficient than an AC fan at part load  
● EC Fan ● AC Fan



The microchannel coil (right) has a more compact, slimmer profile than a conventional round tube plate fin coil and gives increased cooling capacity for a smaller footprint.



## Economiser circuit for increased part load efficiency

Sub cooling of the liquid entering the system EEV is increased, which improves evaporator performance and at the same time the suction pressure within the compressor body is lifted, improving compressor efficiency.

# Free-cooling

## For over 95% of the year

Free-cooling saves vast amounts of energy, particularly when room temperatures are high. For free-cooling to operate, the temperature difference between the ambient air and hot return water can be as little as 1°C.

### Concurrent free-cooling

The system controls constantly monitor the temperature differences and will only switch on the mechanically-driven compressor when extra cooling is needed, introducing concurrent free-cooling - a mixture of free-cooling and mechanical cooling. Concurrent free-cooling enables free-cooling to be captured whenever the ambient is below the return water temperature. The TurboChill™ FreeCool offers twice as much free-cooling as a standard free-cooling system.

### Up to 116% of nominal capacity in free-cooling

By matching compact microchannel heat exchangers with free-cooling coils, Airedale has achieved up to 116% of nominal cooling in free-cooling in the highest efficiency models, significantly reducing operating costs throughout the chiller's lifetime (see design conditions, pg11).

# 50%

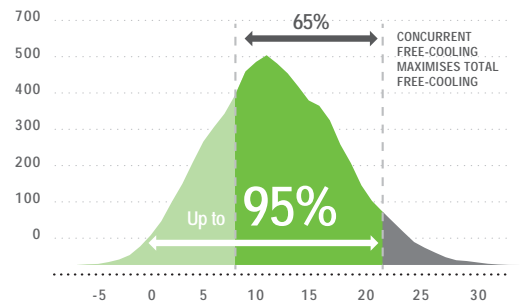
## energy savings

with concurrent free-cooling compared with a conventional chiller



### Using heat to increase free-cooling

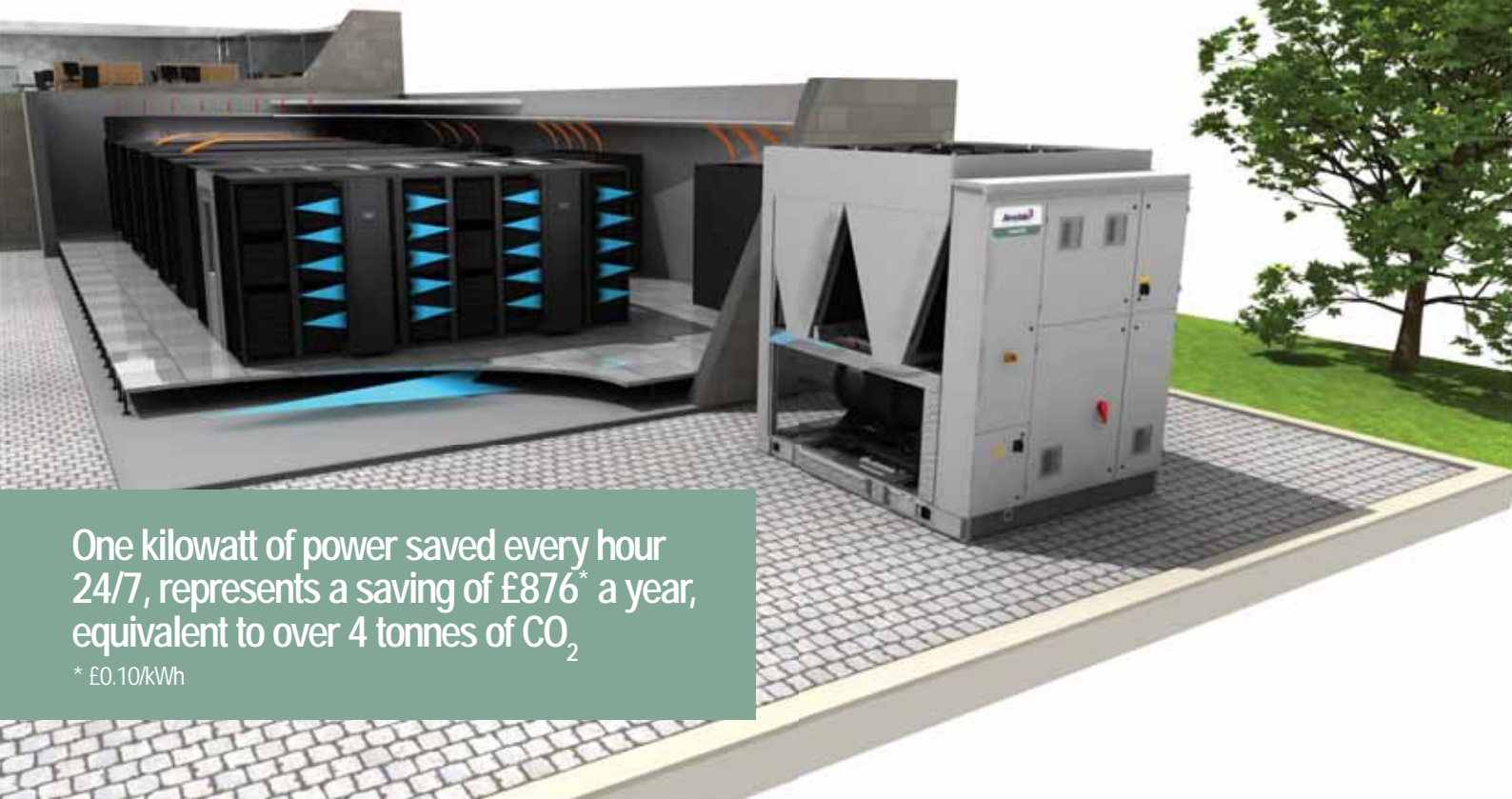
A high water temperature capability of up to 18°C supply water temperature, raises the free-cooling threshold of all free-cooling models including the more compact variants. When linked with an air handling unit or rack-mounted unit in a 24/7 data centre with a typical room temperature of 24°C, up to 95% of the year can be spent with free-cooling active (cumulative hours, London, UK).



#### Up to 95% of the year spent in free-cooling

- 30% Free-cooling only
- 65% Concurrent free-cooling
- 5% Mechanical cooling

y axis: CUMULATIVE HOURS LONDON (UK)  
x axis: AMBIENT TEMPERATURE (°C)



One kilowatt of power saved every hour 24/7, represents a saving of £876\* a year, equivalent to over 4 tonnes of CO<sub>2</sub>

\* £0.10/kWh

# Best performance

## For efficient building application

The cutting edge technology applied to the TurboChill™, driven by smart control algorithms, enables the chiller to give the best energy balance for all operating conditions, whether it is sending chilled water into clean rooms, data centres, process plants or comfort applications such as office, retail or leisure environments.

### TurboChill™ - optimising the key drivers in efficient building operation:

- Excellent part load performance
- Regular Quiet (R) or Extra Quiet (X)
- Minimum space claim
- Quality and reliability
- Easy maintenance

### Sound levels reduced by:

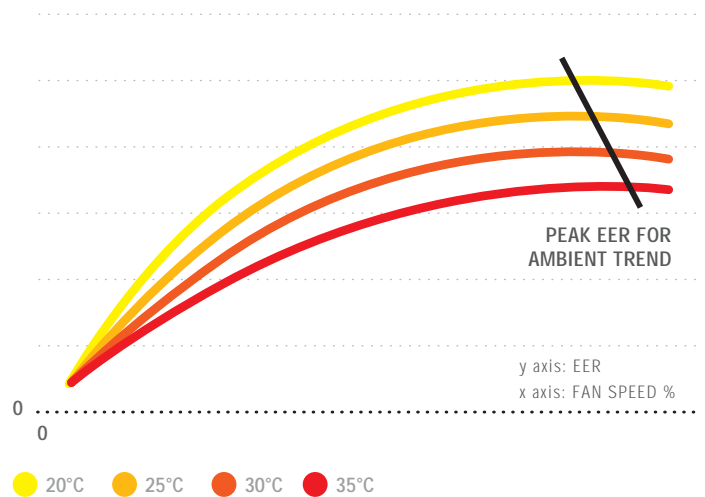
- Optimised setpoint management through fan modulation
- Magnetically-levitated compressor: 5 – 7 dBA quieter than a similar-sized screw compressor
- Low speed, sickle-bladed fans with EC motors
- Compressor enclosures

Easy maintenance facilitated by microchannel coils and V-frame fan-coil module allowing easy access to all components; the 'V' frame configuration, enables the pumps to be located below the condensers and to be maintained while the system is running without the need to shut off the unit



### Optimised setpoint management

Fans are modulated to achieve the optimum efficiency (peak EER) for the unit at any ambient temperature, as well as reducing sound. Where EC fans are featured, the optimum efficiency is greater.



## BREEAM

BREEAM\* aims to reduce life cycle impacts of new buildings on the environment by awarding points. The TCC and TCF will contribute to a building achieving an additional 2 points:

### 1 point: Direct Effect Life Cycle (DEL) CO<sub>2</sub> equivalent emissions of ≤1000 kgCO<sub>2</sub>e/kW cooling capacity

Airedale is constantly developing its chiller technology to reduce the level of refrigerant or GWP in the system. Microchannel coils significantly reduce refrigerant charge – a critical factor in the DELC calculation.

### 1 point: Leak detection plus automatic shutdown and pump down of refrigerant

Leak detection and refrigerant pump down are available as a combined option on the TCC and TCF range. With automatic pump down option selected, the performance of the unit is entirely unaffected.

\*BREEAM's New Construction Scheme Section 12 POL01

# Intelligent controls





## Seamlessly managing your system

The control centre of each of our cooling systems is a sophisticated electronic microprocessor with control logic specially developed by Airedale.

The microprocessor uses sensors to send and receive messages to and from active components such as compressors, fans and pumps so they interact with each other, balancing cooling duty, temperature, air flow and pressure to exactly match the application. By integrating intelligent components, the controller manages and optimises the system's performance and reduces power draw.

### Smart networking solutions:

Fully-programmable via the control panel's user-friendly display, the microprocessor can be linked with all standard BMS protocols to:

-  Trigger alarm messages
-  Operate time scheduling
-  Send alarm/service messages via email or SMS using an interface
-  Allow adjustment of temperature setpoints

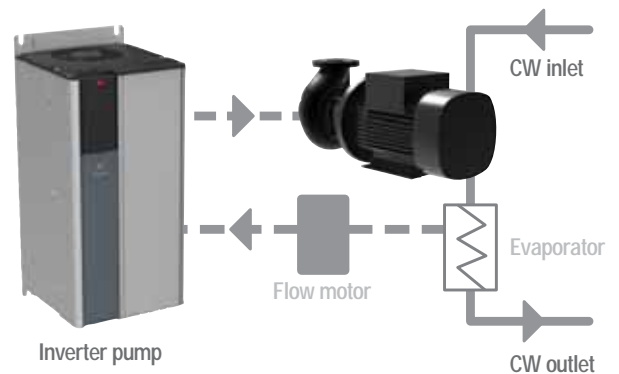
### Integration protocols



### Smart water flow control

An inverter controlled pump\* speeds up and down to maintain the design flow rate and offers flow protection.

\*optional



### Sequencing chillers for more free-cooling

The sequencer integrates between two and six chillers into a single, seamless operating system pre-programmed to run as master/slave or run/standby. On sites with an air cooled and a free-

cooling chiller, the sequencer optimises the units according to ambient temperature so when the ambient is low, the free-cooling chiller is the first to start up.

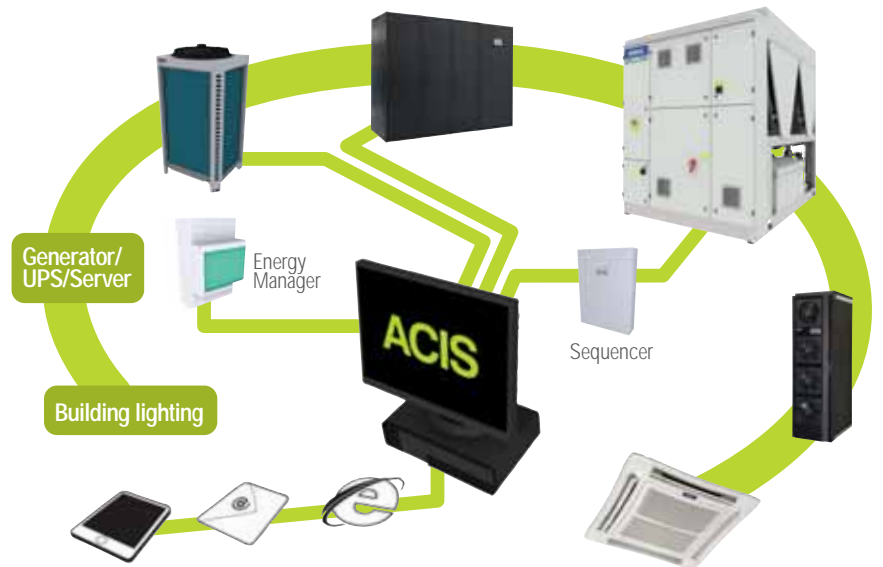


# Building management

## Taken to another level

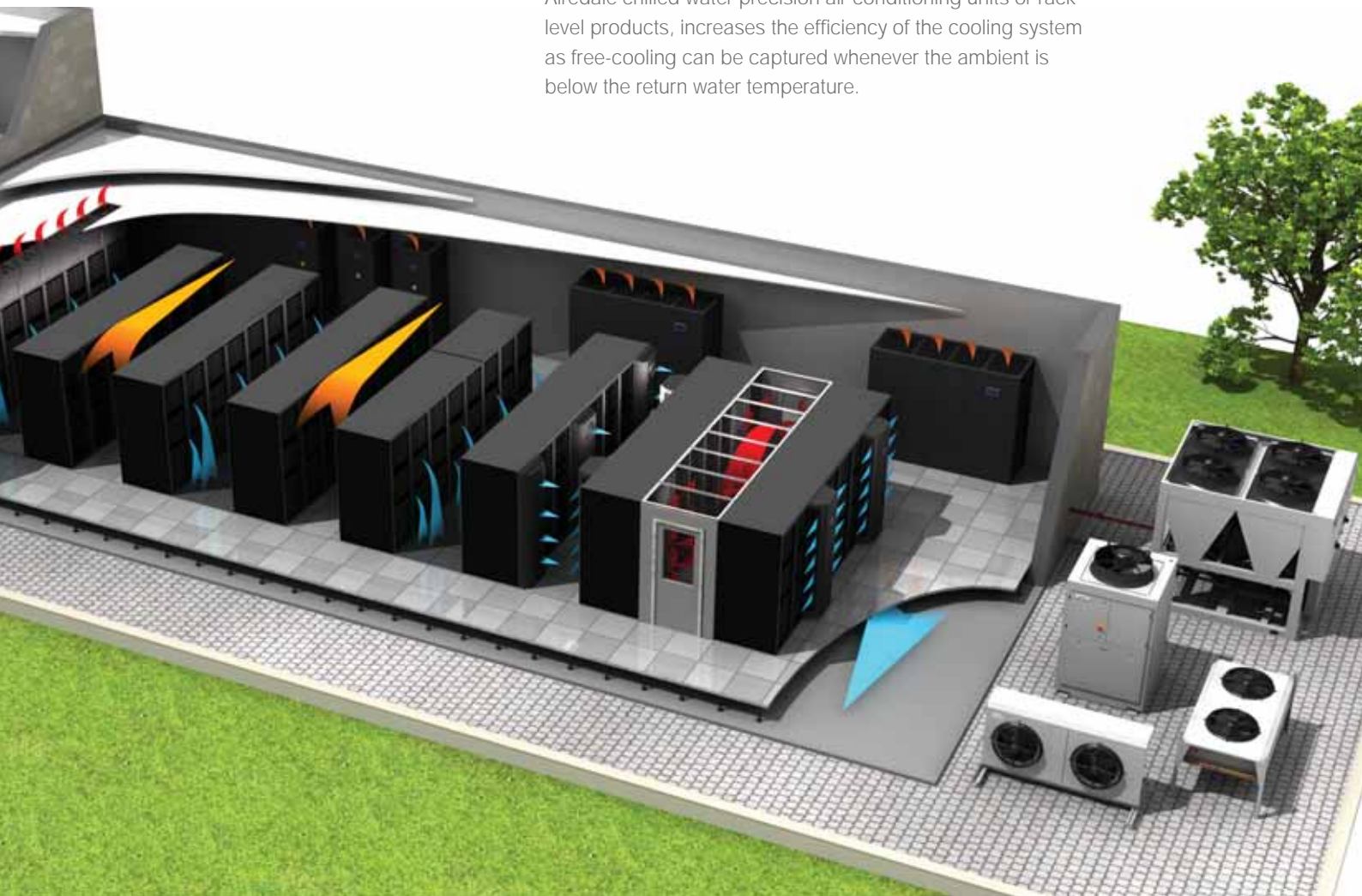
ACIS™ building management system developed by Airedale, enables you to manage smart cooling and other building services, from any manufacturer, in a single, integrated system across multiple sites and communication protocols. ACIS™ sits at the front end of a building system, putting you in control of reducing operating costs.

With the click of a button on a PC, tablet or phone, valuable and intelligent information can be pulled back automatically for remote 24/7 monitoring and maintenance; enhanced system operation and improved decisions.



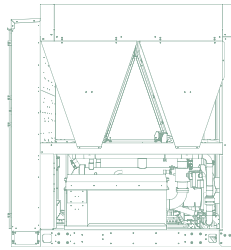
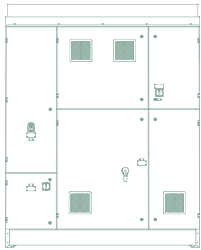
### Integrating the TurboChill™ chiller with indoor units

Integrating a TurboChill™ free-cooling chiller with one or more Airedale chilled water precision air conditioning units or rack-level products, increases the efficiency of the cooling system as free-cooling can be captured whenever the ambient is below the return water temperature.



# Specifications at a glance

The ultra-efficient, variable speed control of the TurboChill™ enables it to match load requirements exactly and enables selection of the optimum model, in terms of efficiency, sound level, footprint and price, for each individual application.



## Environment

- Free-cooling at up to 116% of nominal capacity for reduced operating costs and carbon footprint (TCF)
- High supply water temperature capability; up to 18°C
- Centrifugal compressor technology offers near silent compressor operation
- Low sound ranges: Regular Quiet (R) and Extra Quiet (X)
- Latest axial fan technology for reduced sound and power input
- Polymer-coated microchannel coils for reduced life cycle costs and reduced footprint (all TCC models and TCF 200 – 950kW models)

### Optional

- Leak detection system for F Gas compliance
- Automatic refrigerant pump down in the event of a refrigerant leak, which together with leak detection, qualifies the TurboChill™ for one BREEAM point
- Compressor acoustic enclosures minimising sound emission
- Extended plenum to minimise sound
- Anti-vibration mounts minimise sound levels

## Mechanical

- Single circuit 200 – 900kW (TCC): 200 – 950kW (TCF) nominal cooling capacities
- Dual circuit 200 – 1100kW (TTC)
- 84 models
- Operation up to 35°C ambient at full load, 40°C at reduced load
- Modular 'V' frame coil-fan arrangement for improved part load performance and control
- Up to 44% more cooling/m<sup>2</sup> than previous generation of Airedale free-cool chillers
- Large surface area, corrosion-resistant condenser coils for enhanced heat exchange
- Flooded evaporator improves part load efficiencies giving 15% energy savings in compressor operation
- Full operating charge of R134a
- Redundancy back-up and quicker compressor start up to full load capacity on dual circuit models
- Filter drier, sight glass and liquid, discharge and suction ball valves allowing each compressor to be individually isolated
- Easy access to components
- Condensers can be isolated, facilitating maintenance

### Optional:

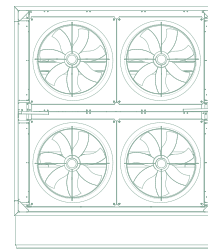
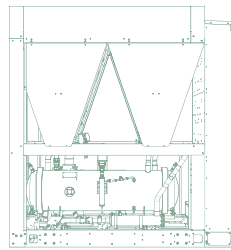
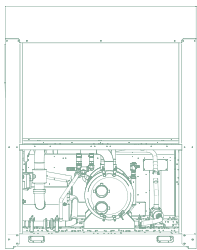
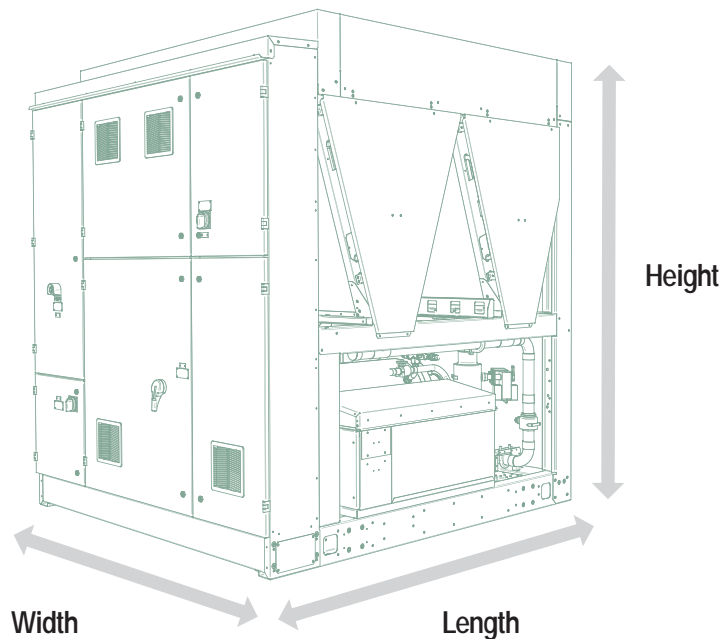
- Corrosion-resistant condenser coils for aggressive atmospheres (selected models only)
- Actuated suction ball valves

**Single Circuit TurboChill™**

No. of Fans	Height (mm)	Width (mm)	Length (mm)
4	2785	2200	2626
6	2785	2200	3758
8	2785	2200	4890
10	2785	2200	6022
12	2785	2200	7154
14	2785	2200	8286
16	2785	2200	9418
18	2785	2200	10550
20	2785	2200	11682

**Dual Circuit TurboChill™**

No. of Fans	Height (mm)	Width (mm)	Length (mm)
8	2600	2200	4675
10	2600	2200	5675
12	2600	2200	6675
14	2600	2200	8100
16	2600	2200	9100
18	2600	2200	10100
20	2600	2200	11100



## Hydronics

- Latest technology end suction pumps offer excellent flow rate control whilst having low vibrational characteristics
- Differential pressure transducer to indicate water flow
- Grooved water connections for simple installation

**Optional:**

- Selection of hydronic options include extended pipework; bypass or no bypass; single pump and run and standby (selected models only)
- Inverter-driven pumps enabling exact water flow control for the application
- Regulating or flushing bypass for enhanced resilience and maintenance
- Flow switch
- Water filter safeguarding performance (standard on TCF)

## Electrical & Controls

- Intelligent compressor management by network-capable AireTronix controls
- Electrical supply phase rotation protection
- Accessible control panel, even when unit is operational
- Single point of isolation for ease of maintenance (TCC&TCF)
- Control panel mounted isolator for single phase permanent power supply (TCC & TCF Only)
- Control panel lighting for maintenance in low light conditions
- Panel thermostatically controlled ventilation (TCC & TCF Only)

**Optional:**

- Individual mains isolators for fans and optional pump(s)
- Ultracap power backup for the controllers and valve drivers

## Energy-saving

- Variable speed for super efficiency, tighter setpoint control and exact capacity match
- In-built low current start (2A)
- Oil-free operation enhances heat exchanger efficiency
- Up to two compressors across a single circuit for reduced energy consumption at part load
- EC fans increasing ESEER to 6.16
- Automatic rescheduling of chilled water setpoint
- Head pressure set point management achieving optimum EER

**Optional**

- Variable supply water temperature control to save power and raise the free-cooling threshold
- Chiller Sequence Manager integrates 2 to 6 chillers into a single, efficient operating system
- Energy Manager is a compact, space-saving analyser which enables monitoring of the TurboChill™'s energy consumption locally and remotely via BMS connections
- Economiser circuit for increased capacity and efficiency

# TurboChill™ technical specifications

Model no.	Nominal cooling (kW)	EER	ESEER	Free-Cooling (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
<b>Regular Quiet - Single Circuit - Air Cooled</b>							
TCC11R04S-01	252	3.72	5.15	-	-	54.7	2785 x 2200 x 2626
TCC11R06S-01	278	4.03	5.83	-	-	52.9	2785 x 2200 x 3758
TCC11R08S-01	289	4.24	6.15	-	-	52.1	2785 x 2200 x 4890
TCC11R06L-02	410	3.50	5.05	-	-	56.7	2785 x 2200 x 3758
TCC11R08L-03	446	3.69	5.45	-	-	55.3	2785 x 2200 x 4890
TCC11R10L-03	473	3.73	5.69	-	-	54.5	2785 x 2200 x 6022
TCC12R08S-04	494	3.73	5.61	-	-	57.1	2785 x 2200 x 4890
TCC12R10S-04	525	3.92	5.81	-	-	55.9	2785 x 2200 x 6022
TCC12R12S-04	557	4.03	5.92	-	-	55.2	2785 x 2200 x 7154
TCC12R14S-04	588	4.10	6.01	-	-	55.0	2785 x 2200 x 8286
TCC12R10L-05	630	3.49	5.44	-	-	58.6	2785 x 2200 x 6022
TCC12R12L-06	704	3.68	5.54	-	-	57.9	2785 x 2200 x 7154
TCC12R14L-06	788	3.76	5.66	-	-	57.5	2785 x 2200 x 8286
TCC12R16L-06	840	3.80	5.75	-	-	57.1	2785 x 2200 x 9418
TCC12R18L-06	893	3.81	5.80	-	-	56.6	2785 x 2200 x 10550
TCC12R20L-06	945	3.74	5.80	-	-	56.4	2785 x 2200 x 11682
<b>Extra Quiet - Single Circuit - Air Cooled</b>							
TCC11X04S-01	210	3.65	5.43	-	-	52.4	2785 x 2200 x 2626
TCC11X06S-01	236	4.14	5.86	-	-	52.5	2785 x 2200 x 3758
TCC11X08S-01	247	4.37	6.16	-	-	51.8	2785 x 2200 x 4890
TCC11X06L-02	368	3.41	5.04	-	-	53.4	2785 x 2200 x 3758
TCC11X08L-03	404	3.78	5.48	-	-	53.4	2785 x 2200 x 4890
TCC11X10L-03	431	3.94	5.69	-	-	53.4	2785 x 2200 x 6022
TCC12X08S-04	452	3.62	5.67	-	-	54.9	2785 x 2200 x 4890
TCC12X10S-04	483	3.92	5.87	-	-	54.9	2785 x 2200 x 6022
TCC12X12S-04	515	4.10	6.03	-	-	54.8	2785 x 2200 x 7154
TCC12X14S-04	546	4.19	6.10	-	-	54.7	2785 x 2200 x 8286
TCC12X10L-05	588	3.31	5.50	-	-	55.8	2785 x 2200 x 6022
TCC12X12L-06	662	3.56	5.59	-	-	55.7	2785 x 2200 x 7154
TCC12X14L-06	746	3.71	5.70	-	-	55.6	2785 x 2200 x 8286
TCC12X16L-06	798	3.81	5.80	-	-	55.5	2785 x 2200 x 9418
TCC12X18L-06	851	3.85	5.87	-	-	55.5	2785 x 2200 x 10550
TCC12X20L-06	903	3.84	5.88	-	-	55.4	2785 x 2200 x 11682
<b>Regular Quiet - Single Circuit - FreeCool</b>							
TCF11R06S-07	305	3.89	5.63	294	21.01	53.5	2785 x 2200 x 3758
TCF11R08S-07	315	4.11	5.97	353	18.91	52.6	2785 x 2200 x 4890
TCF11R06L-11	410	3.49	4.97	324	23.18	56.7	2785 x 2200 x 3758
TCF11R08L-08	446	3.64	5.25	406	21.76	55.5	2785 x 2200 x 4890
TCF11R10L-10	473	3.85	5.54	476	20.43	54.4	2785 x 2200 x 6022
TCF12R08S-09	494	3.56	5.37	419	22.49	57.4	2785 x 2200 x 4890
TCF12R10S-05	525	3.85	5.67	496	21.28	56.2	2785 x 2200 x 6022
TCF12R12S-05	557	3.99	5.79	567	20.28	55.4	2785 x 2200 x 7154
TCF12R14S-05	588	4.08	5.88	635	19.46	54.8	2785 x 2200 x 8286
TCF12R12L-12	704	3.60	5.39	619	22.12	58.2	2785 x 2200 x 7154
TCF12R14L-12	788	3.73	5.51	712	21.82	57.7	2785 x 2200 x 8286
TCF12R16L-12	840	3.81	5.61	793	21.28	57.2	2785 x 2200 x 9418
TCF12R18L-13	893	3.81	5.63	873	20.82	56.8	2785 x 2200 x 10550
TCF12R20L-13	945	3.80	5.64	952	20.43	56.5	2785 x 2200 x 11682

- Nominal cooling capacity and EER for air cooled units is at 7/13°C water and 35°C ambient temperature\*
  - Nominal cooling capacity and EER for Free Cooling units is at 10/16°C water and 35°C ambient temperature\*
  - ESEER based on Eurovent standard calculation method
  - Nominal free-cooling capacity at 16°C Return, 20% ethylene glycol, flow rate based on the nominal duty and a 2°C ambient temperature
  - Free-cooling EER at 16°C return water: 20% ethylene glycol; 2°C ambient temperature and based on TOTAL input power of fans
- \* Based on TOTAL input power of compressors and fans

All performance data is based on an optional economiser being fitted – for application specific data please contact Airedale  
Performance data calculated in accordance with BSEN 14511-2011 and Eurovent 6/6

## Nomenclature explained

	TCF	1	2	R	14	L	-	12
AC/FC	TurboChill AC and TurboChill FC (TCC and TCF respectively)							
1 or 2	Number of Circuits (1 or 2)							
1 - 4	Number of Compressors (1 to 4)							
R / X	Noise Variant (Regular Quiet R or Extra Quiet X)							
4 to 24	Number of Fans (4 to 24)							
S / L	Compressors Code (S= TT300 or L= TT350)							
	Evaporator Code							

As the TurboChill™ product range can exactly match cooling capacity to application, the conventional chiller selection process and capacity breakdown of the chiller range no longer applies. Instead, the unit nomenclature reflects the physical make-up of the product rather than the actual specified performance.

Model no.	Nominal cooling (kW)	EER	ESEER	Free-Cooling (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
<b>Extra Quiet - Single Circuit - FreeCool</b>							
TCF11X06S-07	263	4.01	5.60	235	47.91	52.4	2785 x 2200 x 3758
TCF11X08S-07	273	4.27	6.02	289	44.17	52.1	2785 x 2200 x 4890
TCF11X06L-11	368	3.30	4.82	257	52.54	53.3	2785 x 2200 x 3758
TCF11X08L-08	404	3.65	5.26	327	50.00	53.2	2785 x 2200 x 4890
TCF11X10L-10	431	3.98	5.57	389	47.67	53.2	2785 x 2200 x 6022
TCF12X08S-09	452	3.40	5.48	336	51.51	54.8	2785 x 2200 x 4890
TCF12X10S-05	483	3.81	5.73	403	49.36	54.7	2785 x 2200 x 6022
TCF12X12S-05	515	4.02	5.89	466	47.61	54.7	2785 x 2200 x 7154
TCF12X14S-05	546	4.16	5.97	528	46.19	54.6	2785 x 2200 x 8286
TCF12X12L-12	662	3.40	5.44	502	51.20	55.6	2785 x 2200 x 7154
TCF12X14L-12	746	3.60	5.54	580	50.73	55.5	2785 x 2200 x 8286
TCF12X16L-12	798	3.76	5.65	651	49.81	55.4	2785 x 2200 x 9418
TCF12X18L-13	851	3.81	5.70	721	49.05	55.3	2785 x 2200 x 10550
TCF12X20L-13	903	3.84	5.72	790	48.37	55.2	2785 x 2200 x 11682

Model no.	Nominal cooling (kW)	EER	ESEER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
<b>Regular Quiet - Dual Circuit - Air Cooled</b>					
TTC22E308X95	494	3.51	4.97	58.0	2600 x 2200 x 4675
TTC22E310X95	525	3.69	5.25	58.6	2600 x 2200 x 5675
TTC22E312X95	557	3.83	5.38	59.1	2600 x 2200 x 6675
TTC23E512X95	746	3.54	5.63	59.8	2600 x 2200 x 7100
TTC23E514X95	777	3.66	5.66	60.2	2600 x 2200 x 8100
TTC23E516X95	803	3.77	5.91	60.6	2600 x 2200 x 9100
TTC24E716X95	987	3.55	5.63	61.0	2600 x 2200 x 9100
TTC24E718X95	1019	3.65	5.76	61.3	2600 x 2200 x 10100
TTC24E816X95	1050	3.73	5.84	61.0	2600 x 2200 x 11100
TTC24E720X95	1040	3.55	5.52	61.6	2600 x 2200 x 9100
TTC24E818X95	1071	3.63	5.68	61.3	2600 x 2200 x 10100
TTC24E820X95	1103	3.72	5.78	61.6	2600 x 2200 x 11100
<b>Extra Quiet - Dual Circuit - Air Cooled</b>					
TTC22E308X70	431	3.19	4.98	55.3	2600 x 2200 x 4675
TTC22E310X70	483	3.52	5.28	55.6	2600 x 2200 x 5675
TTC22E312X70	515	3.78	5.48	55.8	2600 x 2200 x 6675
TTC23E512X70	672	3.19	5.61	57.1	2600 x 2200 x 7100
TTC23E514X70	704	3.43	5.62	57.3	2600 x 2200 x 8100
TTC23E516X70	761	3.62	5.91	57.4	2600 x 2200 x 9100
TTC24E716X70	861	3.21	5.70	58.3	2600 x 2200 x 9100
TTC24E718X70	914	3.41	5.83	58.5	2600 x 2200 x 10100
TTC24E720X70	945	3.57	5.92	58.6	2600 x 2200 x 11100
TTC24E816X70	893	3.20	5.69	58.3	2600 x 2200 x 9100
TTC24E818X70	966	3.39	5.75	58.5	2600 x 2200 x 10100
TTC24E820X70	1008	3.55	5.86	58.6	2600 x 2200 x 11100

1) Nominal cooling capacity and EER at 7/12°C water and 35°C ambient temperature, based on TOTAL input power of compressors and fans

2) ESEER based on Eurovent standard calculation method

All performance data is based on an optional economiser being fitted – for application specific data please contact Airedale

Performance data calculated in accordance with BSEN 14511-2011 and Eurovent 6/6

### Nomenclature explained

	TTC	1	2	E2	10X	95
TTC	TurboChill centrifugal chiller					
1 - 2	Number of refrigeration circuits					
1 - 4	Number of compressors					
6 to 20	Number of fans					
X	Internal heat exchanger reference					
70 / 95	Maximum fan speed x10rpm					

### Example selection

We will be pleased to provide you with an individually tailored selection and technical detail that achieves your optimum model in terms of efficiency, sound level, footprint and price, for each application. For instance in the following table, three optimum models, each with the same cooling capacity have been selected for the same application, at the same operating conditions but with different priorities: model a) is selected for maximum efficiency (as reflected in the high EER/ESEER values); b) for best footprint and c) for best sound level.

Optimisation criteria	Model selected	Nominal cooling (kW) <sup>1,4</sup>	EER <sup>2,4</sup>	ESEER <sup>3,4</sup>	Sound pressure @ 3m (dBA)*	Dimensions (H x W x L)(mm)
(a) Most Efficient	TCC12R18L-06	600	3.88	5.80	55.4	2785 x 2200 x 10550
(b) Smallest Footprint	TCC12R10L-05	600	3.32	5.18	58.6	2785 x 2200 x 6022
(c) Lowest Sound Level	TCC12R10L-05	600	3.78	5.62	54.8	2785 x 2200 x 8286

1) Nominal cooling capacity and EER for air cooled units is at 7/13°C water and 35°C ambient temperature\*

2) Nominal cooling capacity and EER for Free Cooling units is at 10/16°C water and 35°C ambient temperature\*

3) ESEER based on Eurovent standard calculation method

4) Nominal free-cooling capacity at 16°C Return, 20% ethylene glycol, flow rate based on the nominal duty and a 2°C ambient temperature

Performance data calculated in accordance with BSEN 14511-2011 and Eurovent 6/6

# Performance tested and proven

Quality is assured by our on-site, world-class testing and production facilities and the application of the latest manufacturing techniques and continuous improvement.



*// A factor influencing selection of Airedale was its transparency and facility to witness test. We prefer working with a UK manufacturer who is carrying out product development work and can give us support and reassurance throughout. //*

**Steve Vandyke, Head of Technical Services, National Gallery**

## TurboChill™ in action:



National Gallery, London



IBM data centre

### // The TurboChill™ is an excellent product

*Airedale ticked all the boxes in terms of footprint, build quality, new technology such as the centrifugal compressor, and high efficiency. The National Gallery is a high user of energy because of its large areas of air conditioned space. The Gallery's goal is to reduce energy consumption and the TurboChill™ assists that.*

**Martin Goswell**  
Project Engineer, Troupe, Bywaters and Anders

### // Exceeding expectations

*I believe we are the first company in the world to install a TurboChill™ FreeCool chiller. When the data centre is operating in free cooling mode, the PUE has been measured at 1.36 and we expect that to reduce further as we install more equipment. //*

**Bob Finn**  
Programme Manager, EDF Energy

# Total support

## Whenever you need it

At Airedale, we don't just manufacture and supply cooling and refrigeration products; we also provide a broad range of supporting services to ensure our customers receive the best possible aftersales care.

With more than 40 years' experience in business critical cooling, investing in an Airedale cooling or refrigeration solution means that you can benefit from our advice, expertise and technical support too. From design and selection, through to commissioning and beyond, we make sure your system reduces your total cost of ownership, whilst providing maximum availability and longevity.

### Service plans

Maximising  
your system's  
effectiveness 24/7



An Airedale service plan provides a planned, preventative maintenance package to sustain the optimum efficiency of your system, enabling the user to see real savings in energy costs and reduced carbon emissions.

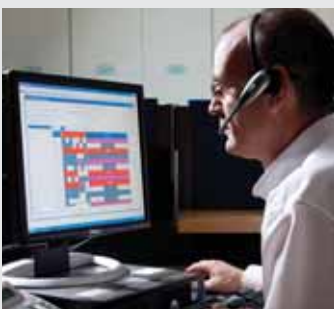
With Airedale, you can rest assured that help is never far away. Our 24/7 emergency helpline and call out service is available 365 days of the year, ensuring that we are always on hand to provide expert advice and immediate help, day or night.

A guaranteed emergency response time means that a qualified Airedale engineer will be with you in no time, therefore maximising your system's uptime. Service plans also ensure F Gas compliance and incorporate a full parts and labour warranty for the first 12 months.

For more information visit

[www.airedale.com](http://www.airedale.com)

\* For customers outside the UK, our international distributors trained by Airedale would be pleased to offer service on Airedale units



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