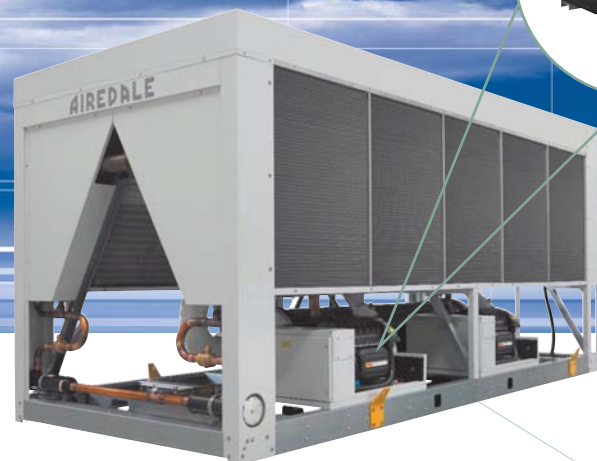


500 - 1100kW



Authorised User No. 00007

> TurboChill range

New generation chiller technology

- > Unparalleled high efficiency
- > Variable control and load flexibility
- > Low current start
- > Super Quiet option

Typical applications

- > Close control
- > Data centre cooling
- > Comfort cooling
- > Process cooling

www.airedale.com

**TURBOCOR TECHNOLOGY
NEW!**

TurboChill range

Technology

TurboChill

The TurboChill air-cooled, high capacity chiller is designed from the ground up with revolutionary centrifugal Turbocor compressors integrated with cutting-edge components. Brilliantly engineered, using Airedale's vast expertise in cooling technology, the TurboChill minimises environmental impact by lifting efficiency to new heights and pushing back sound levels. The intelligent, self-optimising compressors present near silent, oil-free operation and allow ultra efficient variable speed control.

Key technical data

- > Modular capacity range 500 – 1100kW
- > Ultra efficient
- > EC fans standard
- > Optimised for R134a
- > Quiet and Super Quiet options

Unparalleled efficiency

The TurboChill's 'seasonal efficiency' ESEER values are virtually 50% higher than those of a traditional screw chiller and unparalleled for an air cooled chiller, greatly reducing operational costs and carbon emissions.

Due to its superior energy efficient performance, the TurboChill meets the criteria of Class A Eurovent rating and is included on the Energy Technology List thereby qualifying for the Carbon Trust ECA (Enhanced Capital Allowance) scheme. Log onto www.eca.gov.uk for more details.

Variable control and load flexibility

Energy is wasted whenever a compressor is operating at full speed in less than full load conditions, particularly as the majority of operating hours occur at part load conditions. The TurboChill compressor's variable speed control uses substantially less power at part load and gives accurate setpoint control and exact capacity match.

Super Quiet operation

The Turbochill compressor's rotor shaft and impellers levitate on a magnetic cushion eliminating friction and most vibration. This enables the compressor to run in a smooth sound spectrum and as much as 5 -7 dBA quieter than a similar sized screw compressor.

Offering two sound ranges – Quiet (SQ) and Super Quiet (SSQ), the TurboChill also has the very latest low speed sickle-bladed fans with EC motors. Enclosures surrounding the compressors feature profiled, acoustic lining (pictured).

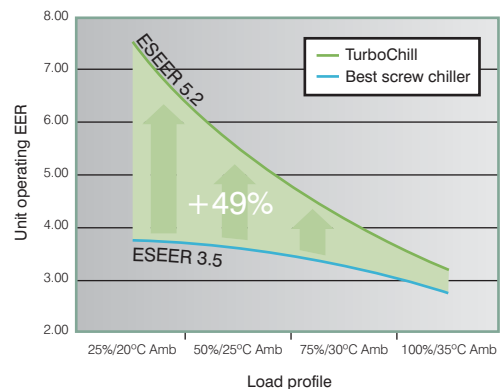
Integral, low current start (2A)

The ultimate in low current start up, electronic 'soft start' is built into the TurboChill compressor's variable speed control giving a very low starting current of just 2A.

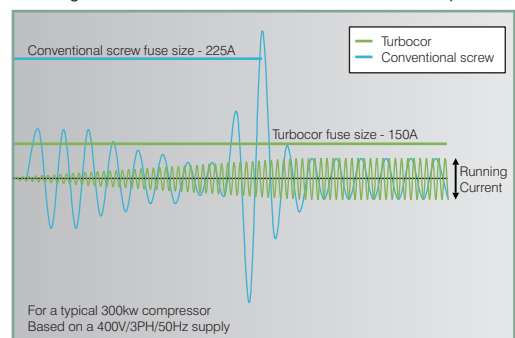
This removes the transient starting 'spikes' of high peak currents normally associated with screw chillers of this capacity and means that electrical supply components need not be oversized on site.



Typical seasonal efficiency:
TurboChill v 'best in class' screw chiller



Starting characteristics: Turbocor v conventional screw compressor



Energy saving features and options



Class A EERs up to 3.4 and ESEERs up to 5.7

- > Turbocor centrifugal compressor technology:
 - Variable speed control for super efficiency, tighter setpoint control and exact capacity match
 - In-built low current start (2A)
 - Oil-free operation enhances heat exchanger efficiency
 - Intelligent onboard 'brain'
- > Up to four Turbocor compressors across a single circuit for reduced energy consumption at part load
- > Electronic expansion valves can typically double efficiency at low load/ambient
- > Intelligent compressor management by network-capable AireTronix controls
- > Single pass evaporator offers same performance as flooded evaporator but with much lower refrigerant charge
- > Large surface area condenser coils with latest fan technology
- > EC fans as standard for ultimate efficiency
- > ETL listed thereby qualifying for Carbon Trust ECA scheme
- > Chiller Sequence Manager (option)
- > Automatic rescheduling of chilled water setpoint

*ESEER (European Seasonal Energy Efficiency Ratio) is based on the part load efficiency of TurboChill over the course of a year and is a better indicator of real energy draw and running costs

More features

- > Compressor acoustic enclosures
- > Latest technology sickle-bladed fans with long bellmouth for low noise and maximised airflow
- > Full operating charge of R134a
- > Filter drier, sight glass and liquid, discharge and suction ball valves; each compressor can be individually isolated
- > Grooved water connections for simple, quick installation
- > Operation up to 40°C ambient at full load, 45°C at reduced load
- > Alternative water connection positions available

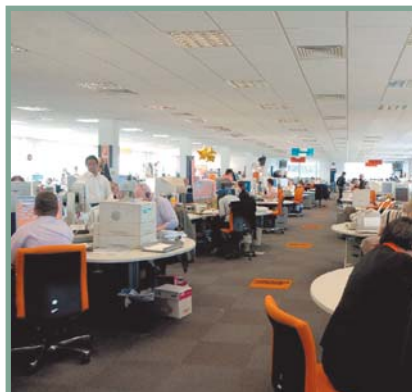
More options

- > Leak detection system for F-gas compliance
- > Corrosion-resistant condenser coils for aggressive atmospheres
- > Coil guards to help prevent fin damage
- > Condenser fan air discharge plenum
- > Anti-vibration mounts minimise sound levels
- > ChillerGuard® maintenance package to sustain optimal efficiency of TurboChill and recoup real savings in energy (see back page for more details)

Typical applications



Data centre cooling



Comfort cooling



Process cooling

TurboChill range

Features and options

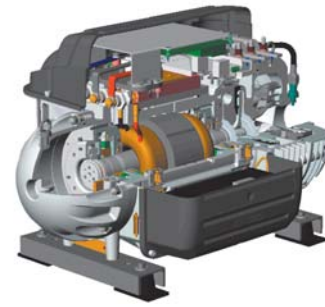
Key feature: New generation Turbocor compressors

The Turbocor centrifugal compressor heralds a new era in compressor technology and efficiency. Magnetic bearings levitate the compressor shaft and with no mechanical contact between mating surfaces, the need for lubrication of the compressor is eliminated allowing variable speed control, more efficient heat exchange and near silent compressor operation.

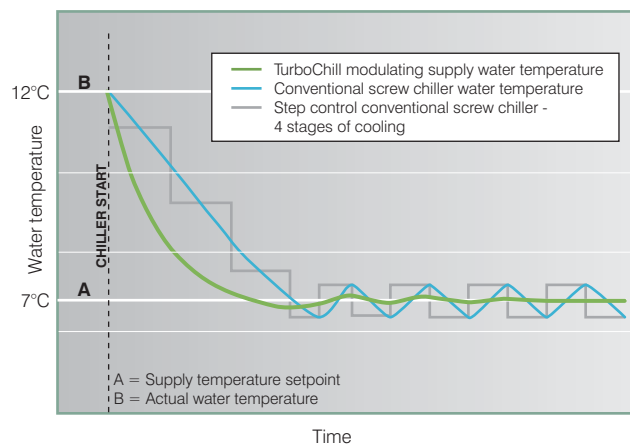
Variable speed compressor control ranging from 25 - 100%, allows the TurboChill to save substantial amounts of energy when operating at part load. Variable speed control also facilitates accurate setpoint control and enables the TurboChill to react to system load fluctuations and exactly match cooling capacity to application. It also presents a negligible compressor starting current of just 2A, removing the transient starting 'spikes' normally associated with screw chillers of this capacity.

The Turbocor compressor has an EER of up to 4.0 at full load and more than 8.0 at part load, representing an increase in efficiency of 10% and over 100% respectively compared with conventional screw compressors.

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



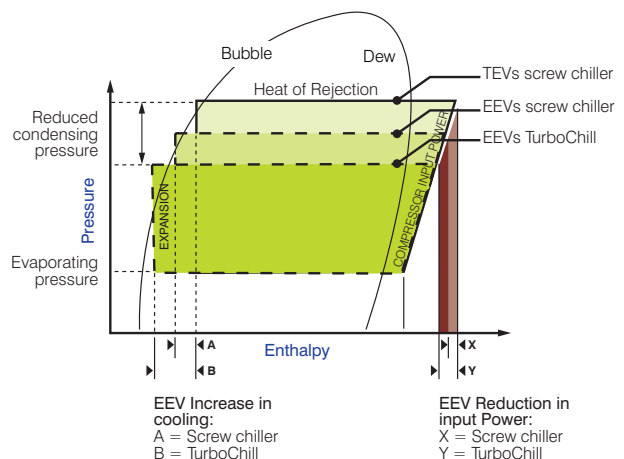
Supply water temperature control:
Modulating TurboChill v staged screw chiller



Key feature: Electronic expansion valves double EER

When used in conjunction with the Turbocor compressor, an electronic expansion valve (EEV) can increase part load EER by up to 100%. The EEV reduces the need for unnecessarily high head pressures and results in significant compressor energy savings whenever the ambient temperature and / or cooling requirement are below design conditions. The Turbocor compressor can run at a much lower compression ratio than conventional screw compressors - as low as 20°C condensing temperature when evaporating at 5°C as opposed to around 35°C condensing for a screw compressor.

The Mollier diagram shown right helps to illustrate how this exceptional increase in efficiency is achieved.



Key feature: Multiple compressors on single circuit design

The compressor's reliable, oil-free technology enables the TurboChill to operate up to four compressors on a single circuit, intelligently managed by AireTronix controls to significantly increase part load efficiencies and system efficiency. Common condenser and evaporator coils are sized for the maximum cooling required and the full area of the heat exchanger is used to enable more efficient heat exchange. For 99% of the chiller's operation the mass flow of refrigerant and the head pressure are reduced.



Key feature: EC (electronically commutated) fans

Fitted as standard for ultimate condenser efficiency at full and part load, the cleverly-designed axial fans use the latest electronically commutated (EC) motor technology which combines AC and DC voltages to bring the best of both technologies and give increased performance at reduced power input.

Featuring low motor temperature, the EC fan has a longer life than AC equivalent; electronic and power transformation are completely integrated within the motor and fan control is simple and precise, based on exact feedback from the motor.



Key feature: Efficient heat exchangers

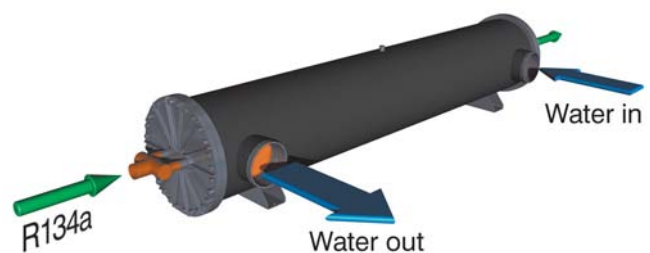
The larger surface area and improved fin profile of the condenser coils provides greater heat exchange and improved air flow.

Latest technology, sickle-bladed axial fans present an innovative new blade design for optimum aerodynamic performance, reduced power input and lower noise levels. Higher air velocity is achieved without increasing sound and pipe work is optimised to avoid losing heat exchanger benefits. All these factors combine to enhance compressor performance and improve system efficiency. Oil-free operation also means that all pipework has been oversized to ensure pressure drop is kept to an absolute minimum.



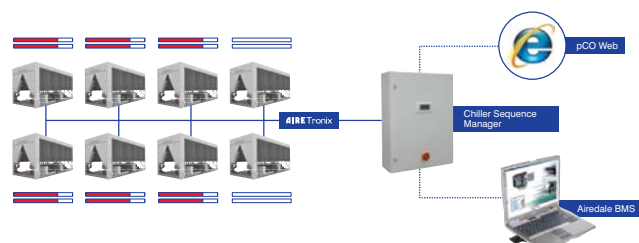
Key feature: Single pass evaporator

The single pass evaporator offers the same excellent performance and efficiencies as a flooded evaporator but with much lower refrigerant charge, making it easier to comply with the F Gas Regulation. A contraflow configuration allows optimum heat exchange along the whole length of the evaporator (pictured). This enables the compressor to work at a reduced compression ratio and hence more efficiently, with evaporating temperatures typically above 5°C for a 12/7°C water system and nominal EERs increased by up to 10% as a result. Constant superheat offers system stability and reliability and an optimised baffle arrangement enhances heat exchange whilst keeping pressure drop to a minimum.



Key option: Chiller Sequence Manager

A super-intelligent control system, the Chiller Sequence Manager can integrate up to eight TurboChill units into a single operating system pre-programmed to run as master/slave or run/standby. The master controller will manage the cooling system for the most energy-efficient solution ensuring equal wear on compressors. It allows remote or time zone set point adjustment across the sequence and will react immediately to critical alarms and network failure.



AIRETronix intelligent, efficient control

The TurboChill is equipped with the very latest intelligent, network-capable AireTronix microprocessor specially developed by Airedale to facilitate automation and optimisation of the system.

The AireTronix microprocessor builds on the compressor's own sophisticated on-board electronics which can manage the compressor operation within safe limits at optimum operating points.

Linked with key components within the cooling system, the fully programmable AireTronix microprocessor allows sophisticated, modulating and self-optimising control for increased energy efficiency.

User-friendly display

The AireTronix controller's in-built display allows viewing of the TurboChill's operating status and a multi-button keypad allows adjustment to control parameters by allowing the operator easy access to a menu system.



Standard microprocessor features

- > 4 x 20 LCD backlit display
- > 14 MHz 16 bit CPU
- > 2 MB FLASH program memory
- > 256 KB RAM data memory
- > Remote on / off capability
- > Compressor anti-cycle control
- > Compressor rotation
- > Compressor hours run log and reset
- > Visual alarm display
- > Password protection

Remote supervision/integration

Airedale BMS

Airedale BMS is an intelligent, latest technology BMS software programme which links multi-unit systems managed by AireTronix controllers and located on one or more sites, into a single, proactive control platform. With the click of a button, information can be pulled back automatically and used for remote monitoring and control, including 24/7 alarm indication, time scheduling and adjustment of temperature setpoints for increased energy efficiency.

pCOWeb Ethernet solution

pCOWeb supervisory plug-in cards make communicating with the TurboChill purely a matter of logging onto the office Intranet or the web. Based on Ethernet TCP/IP secure technology and SNMP features, pCOWeb requires no proprietary cabling or monitoring software, little or no set-up on site and is pre-programmed with an IP address.

The network-capable AireTronix controller can be integrated with a wide range of BMS protocols.

Modbus®

ECHELON
THE LONWORKS COMPANY

BACnet™

PlantVisorPRO

TREND

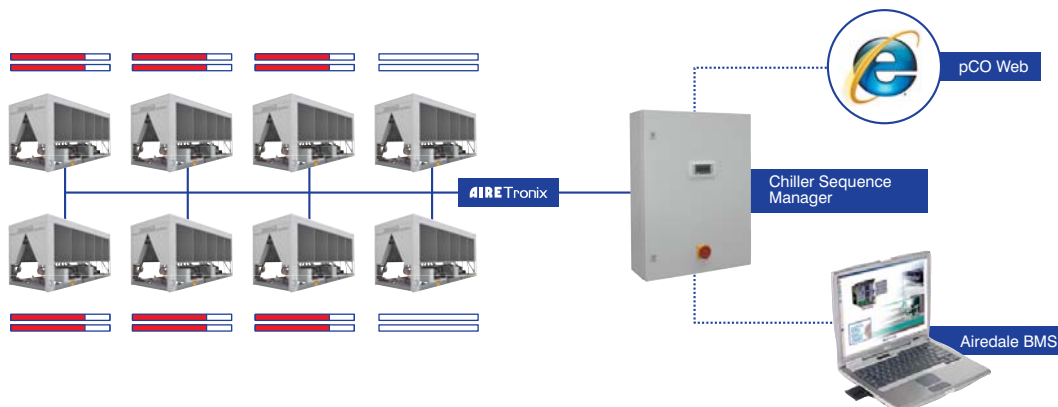
MEASYS
COMPATIBLE

GSM

For very simple remote alarm indication on an individual TurboChill, the AireTronix controller can be fitted with a modem serial card which allows connection to "dual band" type or GSM modem. A recipient's mobile telephone number can be entered into the controller, allowing alarms to be sent to any required personnel.

Airedale Controls - additional services

- > Software program design that will manage everything in the air conditioning system, fine-tuning it for energy efficiency
- > Remote Monitoring Centre – an internet-based bureau service for customers with critical sites
- > After-Sales including chiller sequencing, network setup and integration
- > Live Demonstration and Training Centre



The optional Chiller Sequence Manager integrates up to eight TurboChill units into one seamless system, managing the load for the most efficient operation

TurboChill unit identification

Example **TTC 1000 HE+ SQ 18**

TTC	TurboChill centrifugal chiller
500 - 1100	Nominal capacity (kW) @ 7/12°C, 35°C ambient
HE+	High Efficiency Plus
SQ / SSQ	Single circuit, Quiet / Single circuit, Super Quiet
8 - 20	Number of fans

Technical specifications							
Model no.	Nominal cooling (kW) ¹	EER ²	Eurovent EER classification	ESEER ³	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)	Operating weight (kg)
Quiet (SQ)							
TTC500HE+SQ8	500	3.19	A	4.79	56	2600 x 2200 x 4675	5370
TTC550HE+SQ10	550	3.29	A	5.34	56	2600 x 2200 x 5675	5610
TTC600HE+SQ12	600	3.20	A	4.59	57	2600 x 2200 x 7100	6410
TTC650HE+SQ12	650	3.15	A	4.67	57	2600 x 2200 x 7100	6410
TTC700HE+SQ12	700	3.13	A	4.74	57	2600 x 2200 x 7100	6480
TTC750HE+SQ12	750	3.13	A	4.78	57	2600 x 2200 x 7100	6480
TTC800HE+SQ14	800	3.19	A	4.98	57	2600 x 2200 x 8100	6850
TTC850HE+SQ16	850	3.12	A	4.47	58	2600 x 2200 x 9100	7420
TTC900HE+SQ16	900	3.14	A	4.52	58	2600 x 2200 x 9100	7420
TTC950HE+SQ18	950	3.20	A	4.72	58	2600 x 2200 x 10100	7780
TTC1000HE+SQ18	1000	3.16	A	4.73	58	2600 x 2200 x 10100	7780
TTC1050HE+SQ18	1050	3.10	A	4.84	58	2600 x 2200 x 10100	7840
TTC1100HE+SQ20	1100	3.14	A	5.06	59	2600 x 2200 x 11100	8190
Super Quiet (SSQ)							
TTC500HE+SSQ10	500	3.25	A	5.41	53	2600 x 2200 x 5675	5740
TTC550HE+SSQ12	550	3.34	A	5.74	53	2600 x 2200 x 7100	6210
TTC600HE+SSQ14	600	3.19	A	4.91	54	2600 x 2200 x 8100	6780
TTC650HE+SSQ14	650	3.14	A	4.97	54	2600 x 2200 x 8100	6780
TTC700HE+SSQ14	700	3.10	A	5.06	54	2600 x 2200 x 8100	6850
TTC750HE+SSQ14	750	3.10	A	5.06	54	2600 x 2200 x 8100	6850
TTC800HE+SSQ16	800	3.14	A	5.32	54	2600 x 2200 x 9100	7210
TTC850HE+SSQ18	850	3.08	A	4.93	55	2600 x 2200 x 10100	7830
TTC900HE+SSQ20	900	3.20	A	5.07	55	2600 x 2200 x 11100	8150
TTC950HE+SSQ20	950	3.14	A	5.07	55	2600 x 2200 x 11100	8150
TTC1000HE+SSQ20	1000	3.10	A	5.07	55	2600 x 2200 x 11100	8150
TTC1050HE+SSQ20	1050	3.16	A	5.20	56	2600 x 2200 x 11100	8190

1. Nominal cooling capacity at 7/12°C water and 35°C ambient temperature
2. EER at 7/12°C water and 35°C ambient temperature, based on TOTAL input power of compressors and fans
3. ESEER based on Eurovent standard calculation method

To follow: TurboChill FreeCool

Offering the ultimate in high efficiency chillers.

Pending the release of the TurboChill FreeCool chiller, the Ultima FreeCool chiller is still available. Please contact Airedale on **+44 (0) 113 239 1000** or **enquiries@airedale.com** for more information.

TurboChill range

Corporate information

Airedale energy efficiency



At Airedale we work with our customers to deliver quality, reliable, energy-efficient cooling solutions that are right for each application and the environment. Dedicated research and innovative design combined with a vast pool of knowledge and a state-of-the-art Test Centre mean that Airedale technology never stands still and is continually moving forward. Our committed team of engineers are constantly developing new products for improved performance balanced with even better energy efficiency.



ChillerGuard Service Plan – maintaining your chiller's efficiency

The TurboChill is a highly efficient chiller. To make sure its full efficiency is realised after leaving our factory, we provide as standard, a first year ChillerGuard Service Plan with every TurboChill. An Airedale commissioning engineer will set the chiller to work on site and optimise the control settings in order to meet the user's original specification and the environment into which the unit has been installed.

Once commissioned the ChillerGuard Service Plan provides a planned, preventative maintenance package to sustain the optimum efficiency of the TurboChill and enable the user to see real savings in energy costs and reduced carbon emissions.

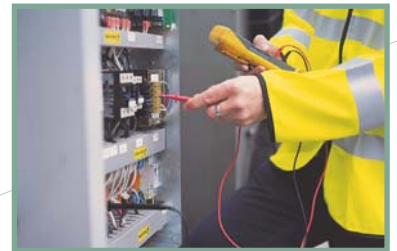
A priority, 24/7 emergency helpline; professional support and call-out service is on hand throughout the year with guaranteed response by a fully qualified Airedale engineer. ChillerGuard also ensures you are F Gas compliant and incorporates a full parts and labour warranty for the first 12 months.



For more information visit www.airedale.com



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



- > For the latest information on our chiller products please visit : www.airedale.com
- > Please refer to the technical manuals for more detailed information
- > Airedale participates in the Eurovent Certification programme as a founder member. The performance data of certified products is independently verified and identified within the relevant sales literature.

Your nearest Airedale distributor is:



air conditioning for every environment

**Airedale International
Air Conditioning Limited**

Leeds Road, Rawdon
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W : www.airedale.com

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All specifications are subject to change without prior notice
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