

500 - 1100kW



> **OptiChill range**

For optimum control and flexibility

Typical applications

- > Precision Air Conditioning cooling
- > Comfort cooling
- > Process cooling



Authorised User No. 00007

www.airedale.com

NEW! R134a
Plus EC fan technology

OptiChill range

Specifications

OptiChill

OptiChill meets large, diverse cooling loads with a low energy, low sound cooling solution designed to minimise environmental impact. A high efficiency, large capacity, air-cooled screw chiller, OptiChill boasts a small footprint and a raft of flexible options suitable for a wide range of applications. OptiChill is ideal for Precision Air Conditioning, process and comfort cooling involving large, diverse cooling loads.

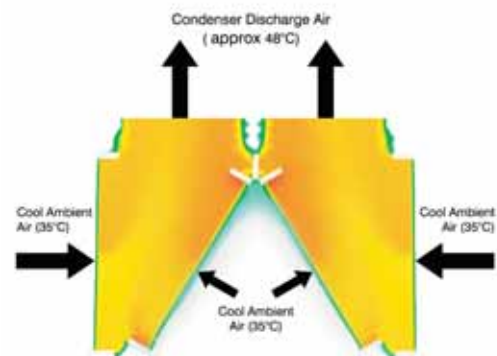
Intelligent controls optimise efficiency

Managed by sophisticated AireTronix controls, the very best components have been selected for optimum operating efficiency and combine to give an Energy Efficiency Ratio (EER) of as much as 3.0 at Eurovent conditions and a European Seasonal Energy Efficiency Ratio (ESEER) up to 4.01.

Due to its superior energy efficiency, OptiChill is included on the Energy Technology List. Under the Enhanced Capital Allowance scheme, businesses investing in energy saving products published in the approved list can claim 100% first-year capital allowances on their spending. For more information see www.eca.gov.uk.

Key technical data

- > 500 to 1100kW nominal cooling capacities
- > Designed and optimised for R134a
- > 13 capacity sizes each offer a High Efficiency (HE) and a High Efficiency Plus (HE+) range and two sound level variants in each range, presenting a choice of 52 model permutations
- > ESEER up to 4.01
- > Electronic expansion valves
- > Dual independent refrigeration circuits
- > Advanced AireTronix controls technology
- > Intelligent head pressure control
- > EC fans as standard for ultimate efficiency (option on HED range)
- > Two modulating screw compressors for optimum efficiency
- > Shell and tube evaporator
- > Large surface area condenser coils
- > Latest fan technology for reduced sound and power input



Extensive computational fluid dynamics has been employed to optimise the condenser fan and coil arrangement. Colour gradient indicates heat distribution.

Typical applications



Data centre cooling



Comfort cooling



Process cooling

Energy saving features and options



EER 3.0 ESEER up to 4.01

- > Economisers, each with dedicated EEV, to enhance compressor performance at full and part load operation
- > Electronic expansion valves (EEVs) increase ESEER*
- > High efficiency shell and tube evaporator with freeze protection offers high evaporating temperature
- > Large surface area condenser coil with enhanced tube and fin for improved efficiency and low noise
- > EC fan as standard for ultimate condenser efficiency (option on HED range)
- > Intelligent head pressure control to optimise performance
- > Closed transition or electronic soft starting to minimise starting current (option)
- > Power factor correction to 0.95 (option)
- > Inverter-controlled pump with electronic flow metering system and water filter for optimum water flow control (option)
- > Energy Manager for monitoring energy consumption (option)
- > Automatic rescheduling of chilled water setpoint

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

More features

- > Two twin screw compressors for high reliability, efficiency and performance
- > AireTronix control system for intelligent system control and full communication with BMS systems
- > Dual independent refrigeration circuits
- > Full operating charge of R134a
- > Latest technology sickle-bladed fans with long bellmouth for low noise and maximised airflow
- > Filter drier, sight glass and liquid and discharge ball valves for full refrigeration system integrity
- > Victaulic water connections for simple, quick installation (see illustration below)
- > Dedicated control panel accessible while unit is in Operation
- > Separate busbar chamber with optional positioning of cable entry allows for on-line maintenance
- > Maintainable dual pressure relief valve assembly
- > Electrical supply phase rotation protection
- > Control scheme option for constant or variable supply water temperature
- > Operation up to 40°C ambient at full load, 45°C at reduced load

More options

- > Intelligent sequence control of up to 8 chillers
- > Modem link for remote monitoring
- > 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
- > Commissioning
- > ChillerGuard®



Victaulic water connections for simple, quick installation

OptiChill range

Features

Key feature: Modulating screw compressors

Top-of-the-range twin screw compressors offer high performance coupled with low sound and vibration levels. The compressors modulate to accurately meet cooling load and are complemented by economisers to produce a significant increase in cooling capacity.

Airedale's long experience in combining this technology with other performance-enhancing features such as electronic expansion valves and intelligent head pressure control means that system design is fully integrated and efficiency maximised.



Key feature: EC (electronically commutated) fans

For ultimate condenser efficiency at full and part load, the cleverly-designed axial fans use the latest electronically commutated (EC) motor technology, fitted as standard in the OptiChill (an option in the OptiChill HED range). EC technology combines AC and DC voltages to bring the best of both technologies and give increased performance at reduced power input. At certain conditions an EC fan gives energy savings of more than 80% compared with an AC fan.

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 new design of shell and tube evaporator offers an extremely high evaporating temperature for a given supply water temperature. The larger surface area of the condenser coils provides greater heat exchange and improved air flow configuration.

Cleverly-designed sickle-bladed axial fans present a revolutionary new blade design for optimum aerodynamic performance, reduced power input and lower noise levels. Higher air velocity is achieved without increase in sound and pipe work is optimised to avoid throwing away all these heat exchanger benefits.

All these factors combine to enhance compressor performance and improve system efficiency.



Key feature: Low sound levels

Low sound levels have been a prime consideration throughout the design process of OptiChill and the selection of components. Vibration has been minimised and contained at source to prevent transfer through the system.

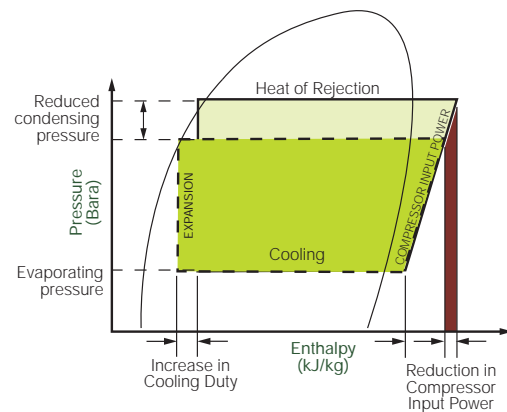
OptiChill offers two sound ranges - Standard (D) and Quiet (DQ). The DQ models feature acoustically-lined compressor enclosures (pictured) and slower fans, with enhanced condenser coils to match the capacity needs of each specific application.



Key feature: Electronic expansion valves

By reducing the need for artificially high head pressure, an electronic expansion valve (EEV) typically provides an increase of up to 30% in the system energy efficiency ratio (EER), cutting operating costs accordingly.

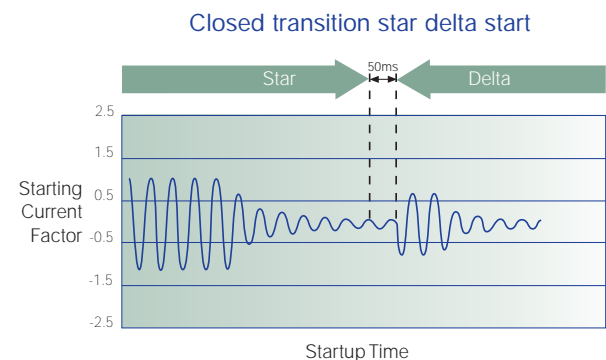
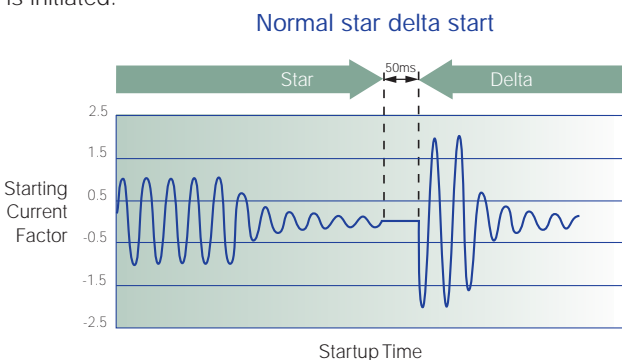
The Mollier diagram shown right helps to illustrate how this increase in efficiency is achieved.



Key option: Closed transition star/delta starting

During normal star delta starting of a motor, a split-second disconnection occurs between the star and delta steps which can cause high peak currents when the delta step is initiated.

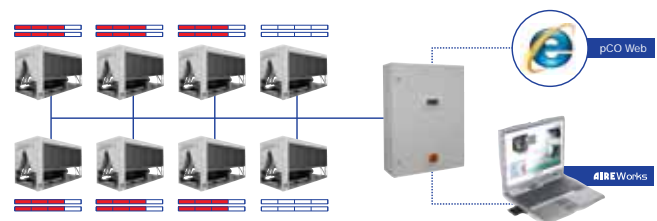
Closed transition star delta starting fills the gap with a resistive load thereby vastly reducing delta current peak.



For ultimate low current start up, electronic soft start can be added as an option.

Key option: Chiller Sequence Manager

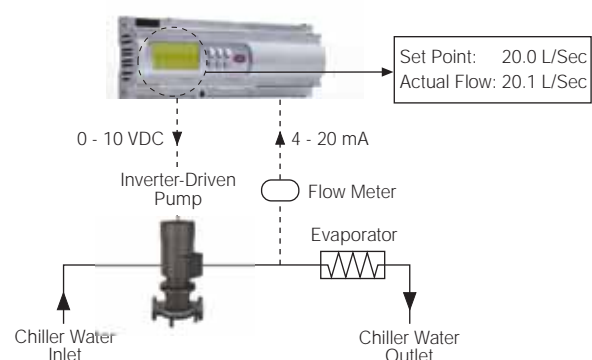
A superintelligent control system, the Chiller Sequence Manager can integrate up to eight OptiChill units into a single operating system pre-programmed to run as master/slave or run/standby. The master controller will 'play' the cooling system for the most energy-efficient solution ensuring equal wear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



Key option: Inverter-controlled pump with electronic flow meter

An inverter-driven pump coupled with an electronic flow meter with no moving parts, offers the ultimate in water flow control. Based on a signal from the on-board flow meter, the inverter-driven pump will speed up and down to maintain the desired flow rate and in addition, offer low flow protection.

Significant energy savings can be made by running the pump to achieve exactly the right flow for the application. The desired flow rate is simply entered into the microprocessor and the system will maintain that flow rate, simplifying commissioning and allowing the chiller flow rate to be continually monitored.



AIRETronix microprocessor for intelligent, energy efficient control

OptiChill units are equipped with intelligent Airetronix microprocessors specially developed by Airedale to facilitate automation and optimisation of the system. The fully programmable microprocessors are linked with key components within the cooling system, allowing sophisticated, modulating and self-optimising control for increased energy efficiency.

User-friendly display

The controller's in-built display allows viewing of the unit's operating status and its 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

Optional Energy Manager

A compact, space-saving power analyser with easily readable LCD display, the Energy Manager enables you to monitor OptiChill's energy consumption locally and remotely via BMS connections.

Supervision

AireWorks

AireWorks 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.

GSM

For very simple remote alarm indication on an individual OptiChill, 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.

Integration

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

pCOWeb

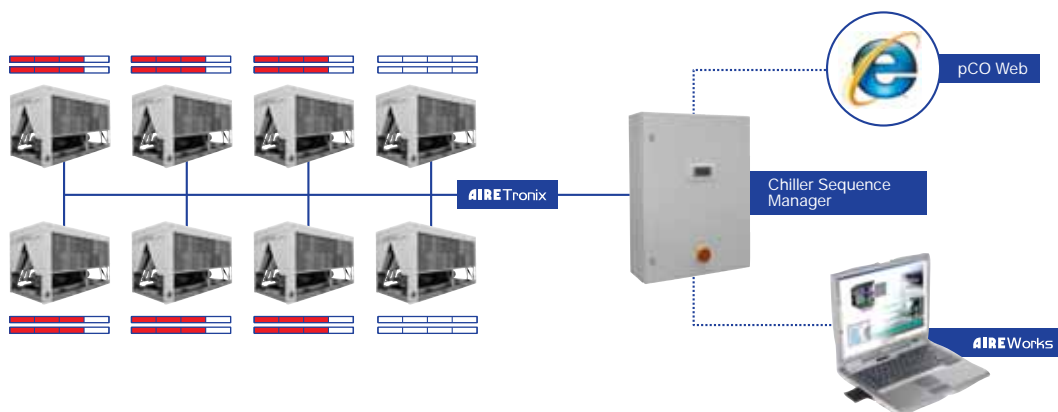
pCOWeb supervisory plug-in cards make communicating with an Airedale unit purely a matter of logging onto the office Intranet or the web. Based on Ethernet TCP/IP secure technology and SNMP features, pCOWeb requires no proprietary cabling or monitoring software, little or no set-up on site and is pre-programmed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

The following integration is also available:

LonWorks®, Modbus®, BACnet™, TCP/IP, SNMP, TREND and METASYS®

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 – a tele-monitoring 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 OptiChill units into one seamless system, managing the load for the most efficient operation

OptiChill unit identification

Example OPC 1000 HE + DQ

OPC	OptiChill screw chiller
500 - 1100	Nominal capacity (kW) @ 7/12°C, 35°C ambient
HE / HE +	High Efficiency / High Efficiency PLUS
D / DQ	Dual circuit, Standard Noise / dual circuit, Quiet

OptiChill												
Model no.	Nominal cooling (kW) ¹		EER ²		ESEER ³		Sound pressure @ 10m (dBA)		Dimensions (H x W x L) (mm)		Operating weight (kg)	
	HE	HE+	HE	HE+	HE ⁴	HE+	HE	HE+	HE	HE+	HE	HE+
Standard (D)												
OPC500 (HE / HE+) D	513	531	2.82	2.90	3.74	3.83	68	68	2600 x 2200 x 4675	2600 x 2200 x 4675	5600	6010
OPC525 (HE / HE+) D	538	572	2.77	3.04	3.58	3.82	66	66	2600 x 2200 x 4675	2600 x 2200 x 5675	5640	6500
OPC550 (HE / HE+) D	563	601	2.71	2.99	3.45	3.70	63	63	2600 x 2200 x 4675	2600 x 2200 x 5675	5650	6510
OPC600 (HE / HE+) D	605	630	2.91	2.99	3.64	3.74	64	64	2600 x 2200 x 5675	2600 x 2200 x 5675	6170	6550
OPC650 (HE / HE+) D	658	668	2.99	3.02	3.77	3.82	65	65	2600 x 2200 x 5675	2600 x 2200 x 5675	6570	6830
OPC700 (HE / HE+) D	720	733	3.00	3.04	3.76	3.80	65	65	2600 x 2200 x 7100	2600 x 2200 x 7100	7530	7820
OPC750 (HE / HE+) D	767	785	2.86	2.90	3.68	3.74	64	64	2600 x 2200 x 7100	2600 x 2200 x 7100	8000	8300
OPC800 (HE / HE+) D	809	841	2.77	2.97	3.67	3.83	64	64	2600 x 2200 x 7100	2600 x 2200 x 8100	8020	8800
OPC850 (HE / HE+) D	866	885	2.73	2.91	3.73	3.85	64	64	2600 x 2200 x 7100	2600 x 2200 x 8100	8330	8810
OPC900 (HE / HE+) D	923	939	2.82	2.95	3.64	3.73	65	65	2600 x 2200 x 8100	2600 x 2200 x 9100	8900	9390
OPC950 (HE / HE+) D	961	993	2.74	2.97	3.48	3.64	66	67	2600 x 2200 x 8100	2600 x 2200 x 10100	8990	9940
OPC1000 (HE / HE+) D	1024	1038	2.87	2.98	3.60	3.68	66	66	2600 x 2200 x 9100	2600 x 2200 x 10100	9490	9970
OPC1100 (HE / HE+) D	1068	1083	2.87	2.98	3.63	3.71	66	66	2600 x 2200 x 9100	2600 x 2200 x 10100	9490	10000
Quiet (DQ)												
OPC500 (HE / HE+) DQ	509	538	2.75	3.01	3.79	4.01	61	61	2600 x 2200 x 5675	2600 x 2200 x 7100	6500	7360
OPC525 (HE / HE+) DQ	533	567	2.69	2.95	3.63	3.84	60	60	2600 x 2200 x 5675	2600 x 2200 x 7100	6530	7440
OPC550 (HE / HE+) DQ	557	595	2.63	2.90	3.49	3.71	57	57	2600 x 2200 x 5675	2600 x 2200 x 7100	6570	7460
OPC600 (HE / HE+) DQ	582	622	2.61	2.89	3.52	3.75	58	58	2600 x 2200 x 5675	2600 x 2200 x 7100	6570	7460
OPC650 (HE / HE+) DQ	607	650	2.58	2.89	3.54	3.78	59	59	2600 x 2200 x 5675	2600 x 2200 x 7100	6580	7460
OPC700 (HE / HE+) DQ	709	722	2.87	2.91	3.75	3.79	59	59	2600 x 2200 x 8100	2600 x 2200 x 8100	8420	8710
OPC750 (HE / HE+) DQ	755	784	2.73	2.91	3.66	3.82	59	59	2600 x 2200 x 8100	2600 x 2200 x 9100	8910	9680
OPC800 (HE / HE+) DQ	810	826	2.67	2.82	3.69	3.80	59	59	2600 x 2200 x 8100	2600 x 2200 x 9100	9210	9680
OPC850 (HE / HE+) DQ	852	882	2.59	2.87	3.70	3.91	58	58	2600 x 2200 x 8100	2600 x 2200 x 10100	9220	10180
OPC900 (HE / HE+) DQ	905	931	2.66	2.88	3.61	3.78	60	60	2600 x 2200 x 9100	2600 x 2200 x 11100	9780	10750
OPC950 (HE / HE+) DQ	940	971	2.58	2.80	3.45	3.62	61	61	2600 x 2200 x 9100	2600 x 2200 x 11100	9860	10850
OPC1000 (HE / HE+) DQ	999	1014	2.69	2.80	3.57	3.65	61	61	2600 x 2200 x 10100	2600 x 2200 x 11100	10390	10870
OPC1100 (HE / HE+) DQ	1042	1058	2.67	2.79	3.60	3.68	61	61	2600 x 2200 x 10100	2600 x 2200 x 11100	10420	10880

- Nominal cooling capacity at 7/12°C water and 35°C ambient temperature.
- EER (Energy Efficiency Ratio) at 7/12°C water and 35°C ambient temperature, based on TOTAL input power of compressors and fans.
- ESEER (European Seasonal Energy Efficiency Ratio) based on Eurovent standard calculation method at 7/12°C water.
- The ESEER data given in this column applies to the HED range featuring optional EC fan. For ESEER data relating to the HED range with AC fan, please contact Airedale.

Ultima FreeCool chiller

For those seeking to maximise energy efficiency through free-cooling, the Ultima FreeCool chiller is still available. Please contact Airedale on +44 (0) 113 239 1000 or enquiries@airedale.com for more information.

Airedale vision

At Airedale we work with our customers and the environment to deliver quality, reliable cooling solutions that make a difference and are right for the application.

Product strategy focused on energy efficiency

Dedicated research and innovative design combined with a vast pool of knowledge and state-of-the-art Test Centre mean that Airedale technology never stands still but is continually moving forward. Our committed engineers are constantly developing new products for improved performance balanced with better energy efficiency, ahead of environmental regulations.

Easy to use

Designed to be user-friendly, OptiChill is rigorously tested before leaving our 25,000m² factory. Once on site, easy installation means OptiChill is instantly up and running.

Flexible warranty

OptiChill is available with a 12 months parts and labour package, providing that your chiller is properly maintained. An easier and more economical way to ensure you comply for the first year warranty is to protect your investment with Airedale's ChillerGuard. First year maintenance, commissioning and parts are provided at a special discounted rate and you are assured priority, 24/7 emergency helpline, professional support and call-out service throughout the year, with guaranteed response by a fully qualified Airedale engineer. ChillerGuard also ensures you are F-gas compliant.

Maintaining the efficiency of your chiller

OptiChill is a highly efficient chiller. The key is to keep it there throughout its working life. Airedale Service can provide a planned, preventative maintenance package to sustain the optimum efficiency of your machine and help you see real savings in energy, safeguarding your money and the planet.

For more information visit www.airedaleservice.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 Precision Air Conditioning products please visit: www.airedale.com
- > Please refer to the technical manuals for more detailed information

Your nearest Airedale distributor is:



ISO 14001
EM552096



ISO 9001
FM00542

AIREDALE

air conditioning for every environment

**Airedale International
Air Conditioning Limited**

Leeds Road, Rawdon
Leeds, LS19 6JY, England

T : +44 (0) 113 239 1000
F : + 44 (0) 113 250 7219
E : enquiries@airedale.com
W : www.airedale.com

A **MODINE** Company

All specifications are subject to change without prior notice
ENG-CHIL-OPT-04-10