Airedale
APPLIED THERMAL INNOVATION

Chiller | Air cooled / Free-cooling



OptiChill™ & OptiChill™ FreeCool

500 - 1330kW

+ EER up to 3.19
+ ESEER up to 4.21
+ OPC 500 – 1140kW
+ OFC 750 – 1330kW

HFC R134a — HFC R134a
SCREW COMPRESSOR
FREE COOL — FREE-COOLING
EC FAN

www.airedale.com

BRITISH MANUFACTURER
ENERGY EFFICIENCY
CONTROLS
24/7 SERVICE
TRAINING

Optimum control

Advanced chiller technology at its best

Developed and optimised for R134a, the OptiChill™ range offers a large capacity, low energy and low sound cooling solution designed to minimise environmental impact.

Boasting a small footprint, the OptiChill™ is a high efficiency, air-cooled screw chiller with a raft of flexible options making it suitable for a wide range of applications. The OptiChill™ range is ideal for precision air conditioning and process or comfort cooling involving substantial and diverse cooling loads.

Extensive choice

The extensive OptiChill™ range provides exceptional flexibility, enabling you to select a chiller which best accommodates your site requirements.

The OptiChill™ (500 – 1140kW)

- A choice of seven different case sizes ranging from 8 to 20 fans
- 52 models are available
- Two efficiency options – High Efficiency and High Efficiency Plus

The OptiChill™ FreeCool (750 – 1330kW)

- A choice of four different case sizes ranging from 16 to 22 fans
- More than 200 models are available
- Two sound level modes – Quiet and Extra Quiet

Inverter controlled pump

Speeds up and down to maintain the design flow rate and offers flow protection.

EC fans

Up to 80% more efficient.* Electronically commutated fans provide increased performance for reduced power input (option).

*than AC fans at part load

Grooved water connections

Ensure simple and quick installation.

Electronic expansion valves

Typically provide an EER increase of 30% by reducing the need for high head pressure.

Ultimate energy efficiency

Reduces operating costs

Smart controls for optimal performance

Smart controls ensure optimum operating conditions and allow sequencing of up to eight chillers, intelligent head pressure control, automatic rescheduling of chilled water set points and energy monitoring. All of which make the OptiChill™ range increasingly energy efficient, enabling it to benefit from a European Seasonal Energy Efficiency Ratio (ESEER) of up to 4.21.

ESEER of up to

4.21

Free-cooling

The OptiChill™ FreeCool offers up to 95% concurrent free-cooling over a year (cumulative hours, London, UK), which can save more than 50% of the energy consumed by a conventional chiller, therefore greatly reducing operational costs.

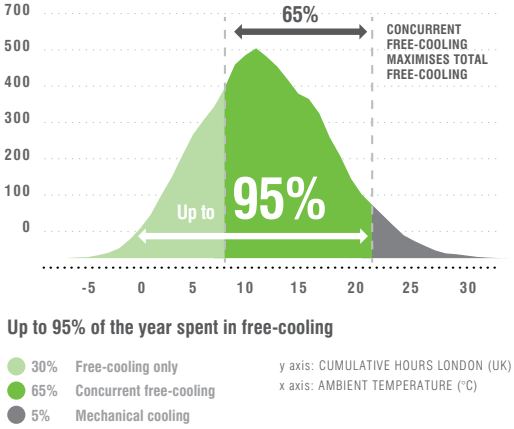
For up to 30% of the year, the OptiChill™ FreeCool can operate in free-cooling mode only. This enables free-cooling EER's* of up to 80 to be achieved. During mechanical cooling, excellent part load efficiencies ensure an ESEER of up to 3.52.

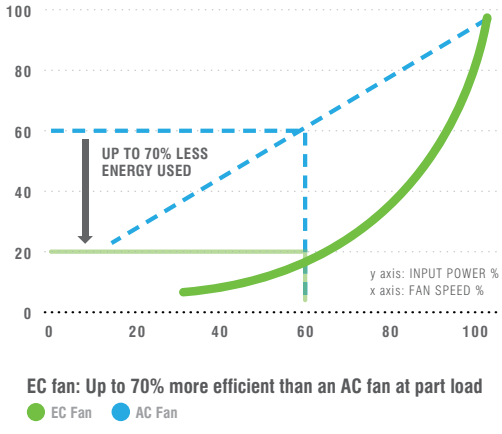
* Free-cooling EER at 15°C return water; 20% ethylene glycol; 3°C ambient temperature

EC fans

The OptiChill™ range uses the latest EC fan technology to provide even greater control. EC fans offer one of the most effective solutions for reducing cooling system energy consumption and can potentially reduce energy usage by up to 70%.

EC fans automatically respond to load fluctuations enabling fan efficiency to be significantly improved and cooling system performance to be optimised. Low air flow resistance also increases fan performance at reduced power input.





Enhanced performance

Increased system reliability and efficiency

Modulating screw compressors

Twin screw compressors increase reliability, efficiency and improve overall chiller performance, whilst also reducing sound levels and vibration.

The compressors adapt to match cooling load and are complemented by economisers to increase cooling capacity.

Reduced sound

Sound levels were a key consideration during the design of the OptiChill™ range. Vibrations have been minimised and contained at the source to prevent transfer through the unit and reduce noise levels for end users.

Efficient heat exchangers

The large surface area of the condenser coils provide greater heat exchange and improved air flow configuration to increase system efficiency.

Cleverly designed sickle bladed axial fans offer a new blade design for optimum aerodynamic performance, reduced power input and lower noise levels. High air velocity is achieved without an increase in noise and pipe work is designed to maximise the heat exchanger benefits.

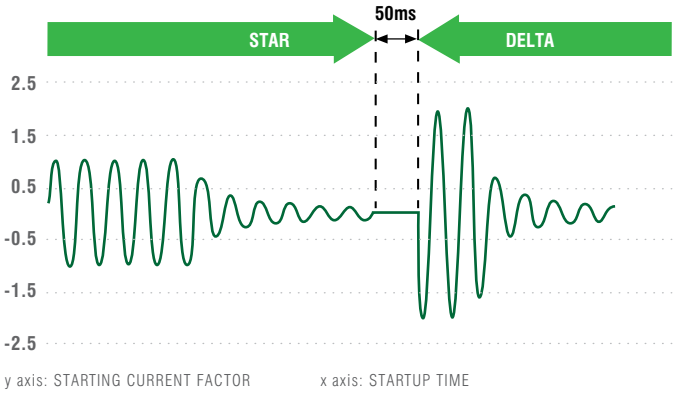
Intelligent head pressure control

Interactive head pressure set point management allows greater energy and system optimisation, particularly where EC fans are used. The controls strategy for the OptiChill™ FreeCool modulates the fans to achieve a peak EER for the unit at any ambient temperature.

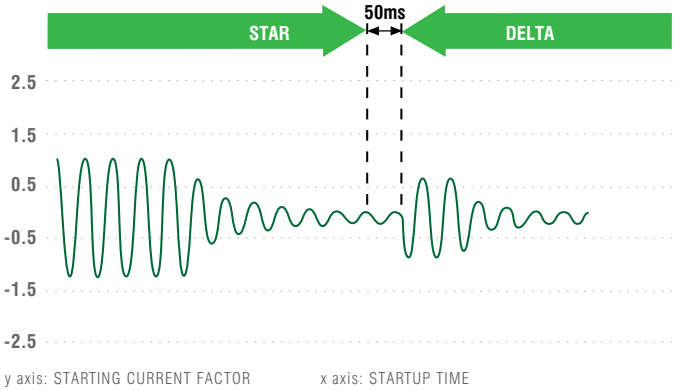
Chiller sequencer

The intelligent control system enables chillers to be sequenced to provide one seamless, integrated operating system which maximises efficiency and ensures even wear of components. When sequenced, chillers are automatically balanced and are optimised to run in their most efficient state.

Normal star delta start



Closed transition star delta start

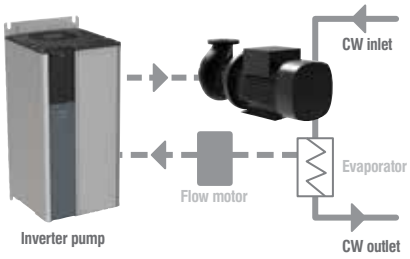


Closed transition star/delta starting

The OptiChill™ offers closed transition or electronic soft starting to minimise starting current. During normal star delta starting of a motor, a disconnection occurs between the star and delta steps which can cause currents to spike when the delta step is initiated. Closed transition star delta fills this gap with a resistive load to reduce the current peak, which can also help to increase the lifecycle of the compressor motor.

Inverter controlled pump

An optional inverter controlled pump, combined with flow monitoring provides effective water management enabling significant energy savings to be made. The pump is able to speed up and down to maintain the desired flow rate and also enables low flow rate protection.



Electronic expansion valves

The use of electronic expansion valves (EEVs) within the OptiChill™ reduce the need for high head pressure, resulting in an energy efficiency ratio increase of 30%, which allows operating costs to be dramatically reduced.

Using an EEV enables good refrigeration control whilst operating at part load and lower ambient conditions with a reduced condensing pressure.

30%

increase in EER

Intelligent controls

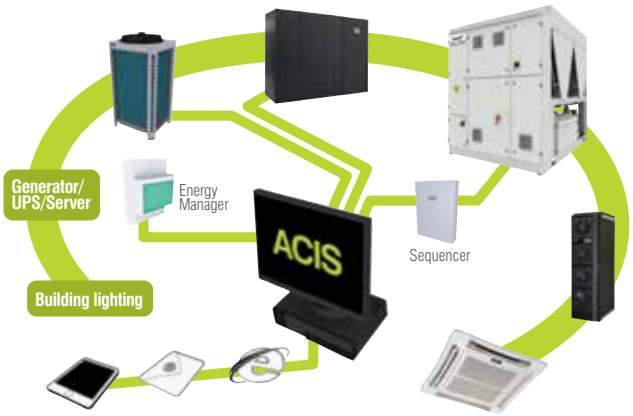
Seamlessly managing your system

The control centre of each of our cooling systems is a sophisticated, electronic microprocessor specially developed by Airedale. The intelligent microprocessor uses sensors which allow active components to interact. By integrating and sequencing components, the controller manages and optimises the system's performance, availability and power draw, giving the operator complete system control.

Smart networking solutions

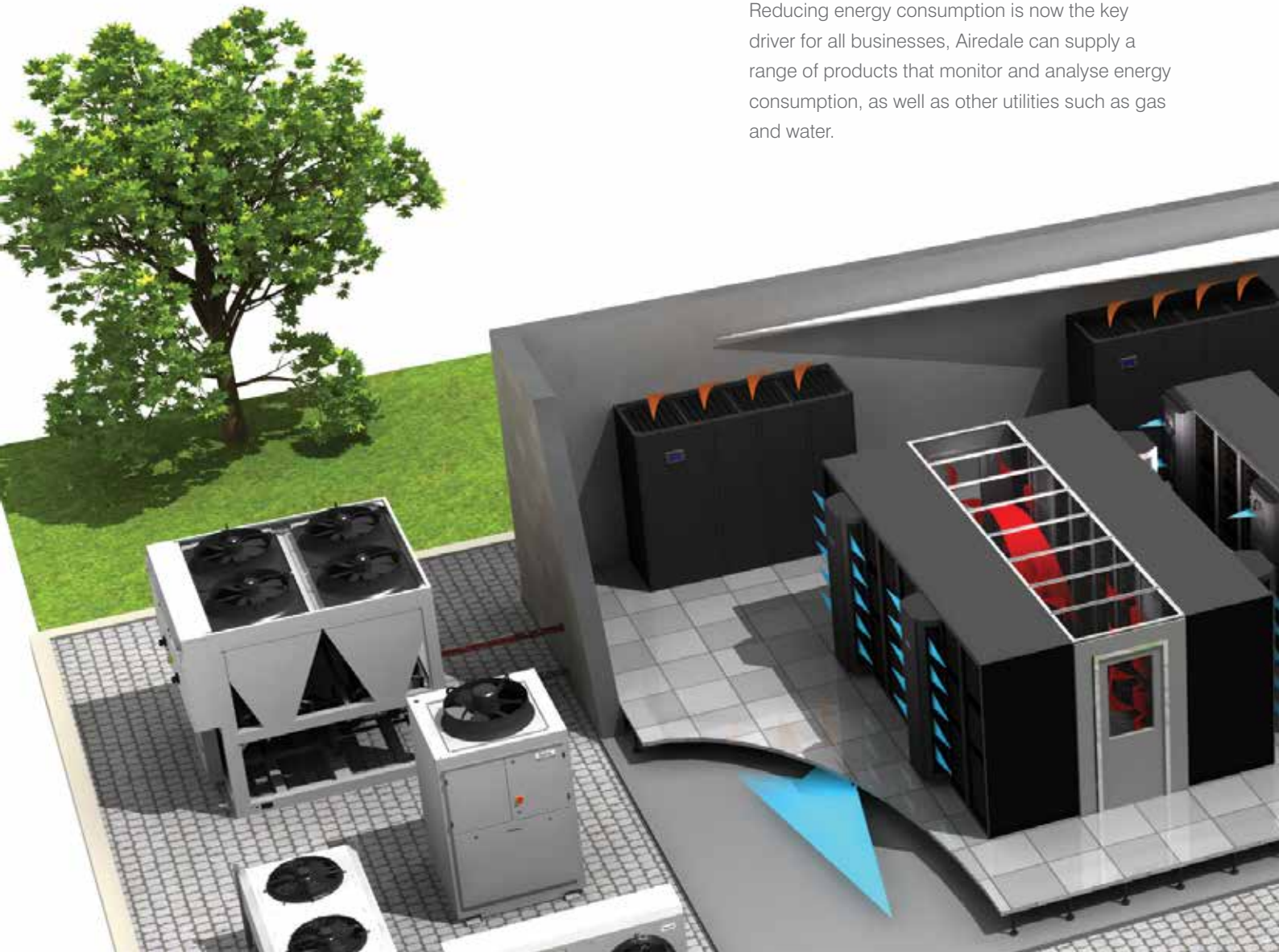
Fully-programmable via the control panel's user-friendly display, the microprocessor can be linked with all standard BMS protocols to:

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



Energy saving

Airedale provides an extensive range of control solutions that deliver intelligent component optimisation for existing plant, as well as a variety of upgrades designed to reduce lifecycle costs. Reducing energy consumption is now the key driver for all businesses, Airedale can supply a range of products that monitor and analyse energy consumption, as well as other utilities such as gas and water.



Building management

Smart, efficient, integrated solutions

ACIS™, Airedale's exclusive Building Energy Management System is an innovative, scalable and future-proof solution which has been specifically designed to enhance system performance, drive down operational costs and aid decision making for a wide range of building services.

With its simplistic and intuitive interface, ACIS™ allows you to manage smart cooling and other building services from any manufacturer, across multiple sites, through a single integrated system. ACIS™ offers a wide range of monitoring, reporting and diagnostic tools which enable total system efficiency to be evaluated, putting the user in complete control.

ACIS™ can be used to highlight where potential improvements or energy savings can be made and targeted cost savings can be implemented. ACIS™ products can be retrofitted and wholly integrated into existing BMS or can be customised for specific sites. An extensive range of ACIS™ products are available, with each offering a different level of support and functionality to provide increased flexibility and choice for the customer.

ACIS™ products include:

- ACIS™ Lite
- ACIS™ Plus
- ACIS™ Advanced
- ACIS™ Energy
- ACIS™ Utilities
- ACIS™ Cloud

Specifications at a glance

Energy-saving

- Electronic expansion valves
- Free-cooling versions enable EER's of up to 80 to be achieved

Optional

- EC fans reduce sound levels and energy consumption

Electrical and Controls

- Advanced controls technology to manage and optimise performance
- Intelligent head pressure control (OFC only)
- HP / LP Transducers and switches
- Compressor envelopes built into controller (OFC only)

Optional

- Power factor correction
- Power monitoring
- Control panel with rain hood and in built light (OFC only)
- Back-up power for safe controls shut down in event of power failure (OFC only)

Environment

- Two sound level variants

Optional

- Anti-vibration mounts

Hydronics

- Evaporator immersion heater
- Evaporator differential pressure control
- Trace heating (OPC only)
- Grooved and clamped type connections

Optional

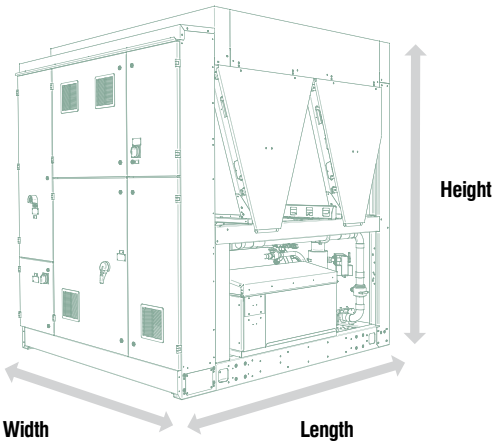
- Inverter pump options
- Inlet and outlet shut off valves
- Water filter
- Pump interlock
- Flow switch

Mechanical

- Two product ranges, air cooled and free-cooled
- Two efficiency options, High Efficiency and High Efficiency Plus
- OptiChill™ (OPC) 500 – 1140kW
- OptiChill™ Free-Cool (OFC) 750 – 1330kW
- 52 standard models
- 200+ Free-Cooling models
- 11 case sizes
- Designed and optimised for R134a refrigerant
- Twin screw compressors
- Dual circuit
- Interlaced coil design (OFC only)
- High efficiency shell and tube evaporator
- Leak detection (model dependant)
- Optimised for two water temperatures – medium and high (OFC only)
- Economiser (option for OFC models)
- Larger surface area free-cooling coil (OFC only)

Optional

- Epoxy coated coils
- Closed transition starting
- Power factor correction
- Coil guards
- Two height plenums
- Three fan variants, AC fans, EC fans or high air flow EC fans
- Two or three row coil arrangement (OFC only)



Nomenclature explained

OPC	1000	HE+	DQ
OPC	OptiChill™ screw chiller		
500 - 1140kW	Nominal capacity (kW) @ 7/12ºC, 35ºC ambient		
HE / HE+	High Efficiency / High Efficiency PLUS		
D /DQ	Dual Circuit, Standard Noise / Dual Circuit, Quiet		

Nomenclature explained

OFC	100	R	20	-	9	9	H	S3
OFC	OptiChill™ FreeCool							
750 - 1330kW	Nominal Capacity (x10 kW, i.e. 1000kW)							
R / X	Noise Variant - Regular Quiet / Extra Quiet							
16 - 22	Number of Fans							
6,7,8,9,0,1	Circuit One Compressor Code							
6,7,8,9,0,1	Circuit Two Compressor Code							
M / H	Suitable for Medium / High Water Temperatures							
Airedale use	Evaporator Code							

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	HE+	HE	HE+	HE	HE+	HE	HE+
Standard (D)												
OPC500 (HE / HE+) D	539	558	2.96	3.05	3.93	4.02	68	68	2600 x 2200 x 4675	2600 x 2200 x 4675	5570	6010
OPC525 (HE / HE+) D	565	601	2.91	3.19	3.76	4.01	66	66	2600 x 2200 x 4675	2600 x 2200 x 5675	5610	6500
OPC550 (HE / HE+) D	591	631	2.85	3.14	3.62	3.89	63	63	2600 x 2200 x 4675	2600 x 2200 x 5675	5620	6510
OPC600 (HE / HE+) D	635	662	3.06	3.14	3.82	3.93	64	64	2600 x 2200 x 5675	2600 x 2200 x 5675	6140	6550
OPC650 (HE / HE+) D	691	701	3.14	3.17	3.96	4.01	65	65	2600 x 2200 x 5675	2600 x 2200 x 5675	6540	6830
OPC700 (HE / HE+) D	756	770	3.15	3.19	3.95	3.99	65	65	2600 x 2200 x 7100	2600 x 2200 x 7100	7500	7820
OPC750 (HE / HE+) D	805	824	3.00	3.05	3.86	3.93	64	64	2600 x 2200 x 7100	2600 x 2200 x 7100	7970	8300
OPC800 (HE / HE+) D	849	883	2.91	3.12	3.85	4.02	64	64	2600 x 2200 x 7100	2600 x 2200 x 8100	7990	8800
OPC850 (HE / HE+) D	909	929	2.87	3.06	3.92	4.04	64	64	2600 x 2200 x 7100	2600 x 2200 x 8100	8300	8810
OPC900 (HE / HE+) D	969	986	2.96	3.10	3.82	3.92	65	65	2600 x 2200 x 8100	2600 x 2200 x 9100	8870	9390
OPC950 (HE / HE+) D	1009	1043	2.88	3.12	3.65	3.82	66	67	2600 x 2200 x 8100	2600 x 2200 x 10100	8960	9940
OPC1000 (HE / HE+) D	1075	1090	3.01	3.13	3.78	3.86	66	66	2600 x 2200 x 9100	2600 x 2200 x 10100	9460	9970
OPC1100 (HE / HE+) D	1121	1137	3.01	3.13	3.81	3.90	66	66	2600 x 2200 x 9100	2600 x 2200 x 10100	9460	10000
Quiet (DQ)												
OPC500 (HE / HE+) DQ	534	565	2.89	3.16	3.98	4.21	61	61	2600 x 2200 x 5675	2600 x 2200 x 7100	6500	7360
OPC525 (HE / HE+) DQ	560	595	2.82	3.10	3.81	4.03	60	60	2600 x 2200 x 5675	2600 x 2200 x 7100	6530	7440
OPC550 (HE / HE+) DQ	585	625	2.76	3.05	3.66	3.90	57	57	2600 x 2200 x 5675	2600 x 2200 x 7100	6570	7460
OPC600 (HE / HE+) DQ	611	653	2.74	3.03	3.70	3.94	58	58	2600 x 2200 x 5675	2600 x 2200 x 7100	6570	7460
OPC650 (HE / HE+) DQ	637	683	2.71	3.03	3.72	3.97	59	59	2600 x 2200 x 5675	2600 x 2200 x 7100	6580	7460
OPC700 (HE / HE+) DQ	744	758	3.01	3.06	3.94	3.98	59	59	2600 x 2200 x 8100	2600 x 2200 x 8100	8420	8710
OPC750 (HE / HE+) DQ	793	823	2.87	3.06	3.84	4.01	59	59	2600 x 2200 x 8100	2600 x 2200 x 9100	8910	9680
OPC800 (HE / HE+) DQ	851	867	2.80	2.96	3.87	3.99	59	59	2600 x 2200 x 8100	2600 x 2200 x 9100	9210	9680
OPC850 (HE / HE+) DQ	895	926	2.72	3.01	3.89	4.11	58	58	2600 x 2200 x 8100	2600 x 2200 x 10100	9220	10180
OPC900 (HE / HE+) DQ	950	978	2.79	3.02	3.79	3.97	60	60	2600 x 2200 x 9100	2600 x 2200 x 11100	9780	10750
OPC950 (HE / HE+) DQ	987	1020	2.71	2.94	3.62	3.80	61	61	2600 x 2200 x 9100	2600 x 2200 x 11100	9860	10850
OPC1000 (HE / HE+) DQ	1049	1065	2.82	2.94	3.75	3.83	61	61	2600 x 2200 x 10100	2600 x 2200 x 11100	10390	10870
OPC1100 (HE / HE+) DQ	1094	1111	2.80	2.93	3.78	3.86	61	61	2600 x 2200 x 10100	2600 x 2200 x 11100	10420	10880

1) Nominal cooling capacity at 7/12°C water and 35°C ambient temperature.
2) EER (Energy Efficiency Ratio) at 7/12°C water and 35°C ambient temperature
3) ESEER (European Seasonal Energy Efficiency Ratio) based on Eurovent standard calculation method at 7/12°C water.
4) 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.

Model no.	Nominal cooling (kW) [1]	EER [2]	ESEER [3]	Free-cooling [4] (kW)	Free-Cooling EER	Sound pressure @ 10m (dBA)	Dimensions (H x W x L)(mm)
OFC076R16-66HS1	788	3.05	3.32	612	47.23	68.1	2600 x 2200 x 9850
OFC081R16-76MS2	851	3.03	3.36	627	31.32	68.8	2600 x 2200 x 9850
OFC087R18-77HS2	896	3.00	3.28	705	41.27	68.6	2600 x 2200 x 10850
OFC091R18-87MS4	962	2.98	3.40	721	33.64	69.6	2600 x 2200 x 10850
OFC095R18-88HS4	1007	2.96	3.47	732	34.67	70	2600 x 2200 x 11850
OFC099R20-88MS6	1048	3.00	3.38	811	39.20	69.7	2600 x 2200 x 11850
OFC104R22-99HS5	1127	2.94	3.47	900	39.57	68.8	2600 x 2200 x 12850
OFC108R22-99HS6	1171	3.00	3.42	910	39.31	68.9	2600 x 2200 x 12850
OFC119R22-00MS7	1233	2.70	3.03	923	31.24	71	2600 x 2200 x 12850
OFC126R22-11MS8	1330	2.66	3.27	940	28.81	73.1	2600 x 2200 x 12850
OFC076R16-66MS1	788	2.99	3.35	686	45.58	68.2	2600 x 2200 x 9850
OFC082R18-76HS2	846	3.01	3.24	779	39.43	68.4	2600 x 2200 x 10850
OFC087R18-77MS2	904	3.03	3.37	799	40.12	68.7	2600 x 2200 x 10850
OFC092R20-87HS4	956	2.98	3.40	893	41.17	69.2	2600 x 2200 x 11850
OFC095R20-87MS6	994	3.05	3.32	906	40.68	69.3	2600 x 2200 x 11850
OFC099R20-88HS6	1043	3.02	3.39	922	41.82	69.8	2600 x 2200 x 11850
OFC104R22-99HS5	1122	2.90	3.41	1026	41.72	68.9	2600 x 2200 x 12850
OFC108R22-99HS6	1167	2.96	3.36	1039	41.60	69	2600 x 2200 x 12850
OFC119R22-00MS7	1229	2.66	2.98	1056	33.30	71.1	2600 x 2200 x 12850
OFC126R22-11MS8	1325	2.61	3.21	1077	30.73	73.2	2600 x 2200 x 12850
OFC073X16-66HS1	758	2.93	3.29	513	47.23	64	2600 x 2200 x 9850
OFC076X20-66MS1	786	3.12	3.52	631	69.08	63.9	2600 x 2200 x 11850
OFC081X20-76HS2	832	3.07	3.33	640	49.58	63.7	2600 x 2200 x 11850
OFC085X20-77MS2	888	3.07	3.47	651	49.27	63.6	2600 x 2200 x 11850
OFC091X22-87HS4	940	3.02	3.49	718	78.24	62.9	2600 x 2200 x 12850
OFC093X22-87MS6	973	3.08	3.39	725	47.74	62.9	2600 x 2200 x 12850
OFC101X22-99HS5	1089	2.82	3.44	744	48.36	63.6	2600 x 2200 x 12850
OFC104X22-99HS7	1125	2.89	3.48	750	48.64	63.6	2600 x 2200 x 12850
OFC073X16-66HS1	751	2.87	3.22	563	50.35	64	2600 x 2200 x 9850
OFC080X18-76MS2	818	2.95	3.34	641	50.81	63.8	2600 x 2200 x 10850
OFC084X18-77HS2	856	2.85	3.20	649	51.24	63.6	2600 x 2200 x 10850
OFC085X20-77MS2	880	3.01	3.40	718	50.95	63.6	2600 x 2200 x 11850
OFC092X20-87HS6	945	2.94	3.28	733	51.96	62.9	2600 x 2200 x 11850
OFC098X22-88HS6	1013	2.98	3.41	813	52.09	62.1	2600 x 2200 x 12850
OFC101X22-99HS5	1079	2.77	3.38	827	52.37	63.6	2600 x 2200 x 12850
OFC104X22-99HS7	1115	2.82	3.41	833	52.66	63.6	2600 x 2200 x 12850

All data relates to units fitted with EC fans.

1) Nominal cooling capacity at 10/15°C water 20% ethylene glycol and 35°C ambient temperature
2) EER at 10/15°C water 20% ethylene glycol and 35°C ambient temperature based on TOTAL input power of compressors and fans
3) ESEER based on standard Eurovent calculation method
4) Free-cool capacity at 15°C return water 20% ethylene glycol and 3°C ambient temperature
5) Free-cooling EER at 15°C return water; 20% ethylene glycol; 3°C ambient temperature and based on TOTAL input power of fans. Free-cooling is available for up to 95% of the year

Performance tested

Airedale chillers in action

University of Portsmouth – PUE of 1.14

The University of Portsmouth is ranked amongst the top 400 universities in the world and the leading modern university in the UK, according to the Times Higher Education World University Rankings.

With the addition of a new £2.25m data centre, the University had a requirement for a high density, energy efficient cooling system. Working in conjunction with Sudlows, Airedale delivered a complete, integrated cooling solution with high performance systems and advanced controls, that offers the University total control of its entire data centre, enables significant energy savings and a projected PUE level of 1.14 (load dependent).

Airedale solution:

- 2 x 34kW SmartCool™ CW
- 35 x OnRak™
- 2 x 500kW DeltaChill™ FreeCool
- 1 x chiller sequence manager/secondary pump controller
- ACIS™ Building Energy Management System
- Airedale commissioning and on-going preventative maintenance contract

> The new data centre is built around cutting-edge design with Airedale's systems very much at its core. This is an excellent facility that the University can rely upon to deliver world class academic support and research development.
>
> **James Holland, Network & Security** Services Manager Information Services, University of Portsmouth.

Custodian Data Centre

Working in partnership with Custodian Data Centre, Airedale designed and built an intelligent, energy efficient data centre cooling solution that significantly reduces the need for mechanical cooling and provides fresh air free-cooling for up to 80% of the year.

Airedale was selected for its ability to design and integrate control logic across multiple protocols, hardware and systems and for its pioneering free-cooling technology and high specification chillers. With a system using direct fresh air in a data centre cooling environment, Airedale software is also critical in ensuring temperature set point and humidity are maintained.

Airedale's solution effectively controls the Air Handling Units (AHUs), Airedale free cooling chillers and legacy Building Management System (BMS). PUE figures below 1.15 are regularly achieved, meaning that for every 1kW of power used by equipment hosted in the data centre, 0.15kW of power is required to operate all related areas of infrastructure.

Airedale solution:

- 2 x 30 to 450kW Ultima™ Compact Chillers
- 1 x 75 to 450kW Ultima™ Compact FreeCool Chiller
- ACIS™ Building Energy Management System
- Airedale commissioning and on-going preventative maintenance contract.

> Airedale provided us with a fast, reliable and most importantly bespoke solution. From initial business to present day they have provided us with continuous support.
>
> **Robert Williams** Technical Director

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**

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

Talk directly with an experienced engineer

Find out how we design our systems to reduce your whole life costs. Our highly experienced engineers are adept at tailoring our systems to suit your requirements.

+44 (0)113 239 1000

Have complete control of your site

Customers with critical sites can benefit from our remote monitoring facility. Aftersales services include chiller sequencing, network setup and integration as well as a live demonstration and training centre at our head office.

24/7 support; maintenance and spares

Immediate help on hand to keep your critical cooling system operational. Realise the full potential of your system; improve its longevity and efficiency and be F Gas compliant. Avoid downtime with our fast, efficient spares service.

Develop your skills

Learn more about your cooling system by attending an air conditioning and refrigeration course in our purpose-built training school. Train on high-tech cooling systems and fully operational rigs in our dedicated workshops. Industry recognised courses also available. Email **training@airedale.com** for further details.

Distributed by:

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Airedale
APPLIED THERMAL INNOVATION

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