



# iChill

**Screw Chiller and Multi Function Heat Pump**

R1234ze or R513A



iChill

# Connect with comfort

**With an increased focus on health and wellness in society, more attention is being given to thermal comfort and its relationship to productivity, general wellbeing, and staff and customer retention.**

From the workplace to leisure venues such as gyms, cinemas, and retail outlets, end-user expectations are much more sophisticated and competition is high, meaning factors such as air quality, air temperature and low background noise are no longer seen a benefit, they are a must-have.

In urban areas where demand for space is tight and plant equipment can be cumbersome, consultants and contractors are tasked to provide energy-efficient thermal comfort solutions that meet the brief of the end-user, whilst adhering to legislation like Ecodesign and Part L building regulations.

Meeting the needs of end-users whilst complying with regulations and budgets can be a headache for the supply chain. Airedale understands these market dynamics and has developed a range of flexible solutions for comfort applications.



**In industries where cooling is critical, you need a critical cooling specialist. Airedale is a world leader in the delivery of innovative thermal management solutions in mission critical environments like data centres, healthcare and telecoms. As part of the US-based Modine group, our global organisation aims to engineer a cleaner, healthier world.**



At Airedale, we believe that air conditioning has a critical role to play in an ever-changing world. We also passionately believe that air conditioning manufacturers must play a responsible role in an era where sustainability is key to the preservation of our planet.

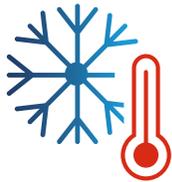
Airedale's success is testament to its long standing history of providing flexible, innovative, and efficient cooling solutions.

Our systems approach and ability to combine hardware and software ensure that HVAC systems work smarter, not harder, to deliver more cooling for less power and ensure a stable environment with 24/7 availability.

Airedale's product pedigree is backed up with significant software capabilities, providing complete visibility, harmony and autonomy of our installations.

# iChill

**iChill™ is Airedale's inverter screw compressor chiller and multifunction heat pump solution. It is part of our more sustainable range of cooling and heating solutions, offering efficient performance with low and lower GWP refrigerant options, with the option of partial heat recovery.**



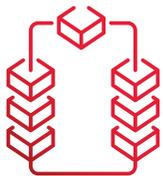
Optimised for low GWP refrigerant R1234ze (GWP 7) and lower GWP refrigerant R513A (GWP 631), iChill delivers excellent efficiency, versatility and performance.

iChill is suitable for both comfort and process applications and is available as a cooling only chiller or multi-function heat pump, offering simultaneous heating and cooling operation.

iChill offers reduced sound levels; at partial load the sound level of a unit with variable speed screw compressors is reduced by -5 dB(A) compared to units with fixed speed screw compressors.

iChill operates with an in-built sequencer allows for up to 6 units to be added to the master unit, delivering flexibility and scalability to our customers.

iChill delivers SEER of up to 5.42 on our most sustainable R1234ze range, and an EER of up to 3.16, with an SEER of up to 5.39 on our R513A range, and an EER of up to 3.32 making this a sensible, sustainable option.



Cooling capacity:  
204–1423kW  
Heating capacity:  
503–907kW



Heat recovery:  
Partial – 12%



SEER up to 5.42  
EER up to 3.32



In built sequencer  
Up to 7 units



Inverter driven screw  
compressors:  
R1234ze – GWP of 7  
R513A – GWP of 631



Water  
Production:  
– 12°C to 55°C

# iChill Chiller and Multifunction Heat Pump Features and Benefits explained

## Controls

The inbuilt, pre-programmed controller offers:

- Automatic compressor capacity adjustment to match heat load.
- Compressor rotation for equal run hours.
- Constant superheat via EEV control.
- Optimised compressor and fan power to minimise overall power consumption across the whole ambient year.
- Variable supply water temperature control. In comfort applications, the design setpoint increases at lower ambient temperatures to offset additional building heat loss.
- Variable Flow - pump speed is managed to maintain Delta T and provide energy savings.



## Enhanced features

- Multiple acoustic configurations.
- Refrigerant leak detection.
- Integrated hydronic assembly, system tank, partial heat recovery.

- 1 Optional inverter-controlled pump(s)**  
Smart water flow control; automatically adjusts its speed to maintain the design flow rate and offer low flow rate protection.
- 2 Energy Meter**  
The energy meter displays the main unit's electrical parameters on the unit display and transmits them via the serial connection. The unit can be remotely managed by an optional remote control that replicates the on board user interface.

- 3 In Built Sequencer**  
All iChill models come with an in-built sequencer, allowing for up to an additional 6 units to be connected together without the need for additional equipment, delivering a scalable and cost effect controls solution.

- 4 Electronic Expansion Valves (EEVs)**  
EEVs are included on all units as standard. An EEV's ability to maintain control of the suction superheat at reduced head pressures provides significant energy savings. This can result in an EER\* increase of up to 30%.  
\* Energy Efficiency Ratio

- 5 Inverter Screw Compressors**  
Inverter screw compressors for improved operational flexibility and very high efficiency in all load conditions. The capacity load ranges from 100% to 15% and the operating range extends from +50°C (full load) to -10°C of external air temperature.

- 6 EC Fans**  
EC fans are up to 80% more efficient than AC fan equivalent. Electronically commutated axial fans give increased performance for reduced power input.

- 7 Various condenser coils solutions available:**
  - Microchannel (cooling only)
  - Round tube plate fin (heat pump, not shown)
  - Epoxy coatings for coastal or aggressive environments
  - Finned protection grills

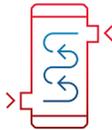
# Sustainable as standard

At Airedale, we believe that energy efficiency should be driven, not only by legislation, but by a genuine will to reduce air conditioning's cost to our customers and the environment. As part of this commitment, the iChill range includes the following energy saving technologies as standard:



## Lower GWP Refrigerants:

iChill operates using sustainable alternatives to traditional refrigerants; either the low GWP refrigerant R1234ze, which has a GWP of 6, or lower GWP refrigerant R513A with a GWP of 631. Both these options can deliver a solution to meet performance and environmental objectives.



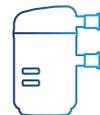
## Heat Exchanger:

iChill comes with a plate heat exchanger as standard, with higher efficiency shell and tube arrangement available as an option. Whilst plate heat exchangers are extremely effective, shell and tube offers increased efficiency, reduced water pressure drop and ease of maintenance in the event of a fault.



## Superior as Standard:

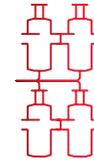
Our high efficiency models offer the most energy efficient selection and are offered as standard. We also offer a solution for those where efficiency targets are not required to be as high. This is only available with the R513A refrigerant range, and is known as our Premium range. Temperatures and maximum EER ratings are listed on pages 10 to 12. (These may be reduced when compressor sound proofing is included.)



## Inverter compressors for exact capacity matching:

Inverter screw compressor has a turndown capability of 15% of its nominal capacity, allowing very precise load control and a smooth, gradual transition from very low to high capacity, avoiding mechanical stress and energy surges.

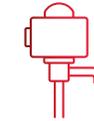
This variable capacity control enables the unit to perfectly match the cooling load of the plant, optimising energy output, with sound levels reduced at part load.



## Pump Options:

iChill operates with either a single, or multiple running pumps. Multiple running pump mode offers limited redundancy protection in the event of a breakdown.

The pumps selected are available as inverter pumps for increased efficiency and reduced energy use.



## Electronic Expansion Valve:

EEVs are included on all units as standard. An EEV's ability to maintain control of the suction superheat at reduced head pressures provides significant energy savings. This can result in an EER\* increase of up to 30%.



## Heat Recovery:

iChill chiller only and multifunction heat pump (when in cooling mode) offer partial heat recovery as an option, delivering free hot water production that can be used for domestic hot water, to re-heat the hot water coil, or for industrial purposes. With partial heat recovery, the system recovers around 12% of the available heat rejection using a user-activated control system.

\*Energy Efficiency Ratio

# iChill

## Optional Accessories

### Acoustic Performance

We offer selections on acoustic performance, using compressor casings and air flow reduction techniques to deliver a near silent and super-silent offer.

Standard sound levels Chiller	No casing on the compressors
-3dB(A)	Casing used for compressor sound proofing
-7dB(A)	Casing used for compressor sound proofing and air flow reduction is applied
Standard sound levels MF	With casing on the compressors
-8dB(A)	Silenced model
-12dB(A)	Super-silenced model

### In Built Sequencer

All iChill models come with an in-built system that operates in the style of an in-built sequencer, allowing for up to an additional 6 iChill units to be connected to the same controller circuit without the need for additional equipment, delivering a scalable solution using a master/ slave control panel arrangement.

These can be arranged as cascade, where the unit is activated if the previous one is at full load, or balance load configuration, where units are activated following the group maximum efficiency.

For both distribution technologies, it is possible to have either the pumping group always activated or activated only when at least one compressor of the unit is in operation.

- Protection grills and compressor compartment
- Coil protection grills
- Energy meter
- Serial communication module for Modbus, LonWorks, BACnet-IP supervisor
- Inverter driven variable flow-rate user side control depending on the temperature differential
- Refrigerant leak detector assembled on the casing (available only with SC and EN configuration)
- Spring antivibration mounts (separately supplied accessories)
- Steel mesh strainer on the water side (separately supplied accessories)
- Mains power supply (separately supplied accessories)
- E-coated microchannel coil
- Eco-share function for the automatic management of a group of units
- EMC filtering to reduce conducted compressor emissions
- Double safety valves with changeover valve



# iChill

## Multifunction Heat Pump

iChill multifunction heat pump is a 2 refrigeration circuit, 2 inverter screw compressor unit, suitable for commercial operations that require simultaneous heating and cooling, including offices, hospitals, industrial units and commercial outlets.

Typically, the demand for heating and cooling will fluctuate throughout the year in line with the change in ambient temperatures, building attendance and use.

Removing the need for two independent heating and cooling circuits, the multifunction unit is able

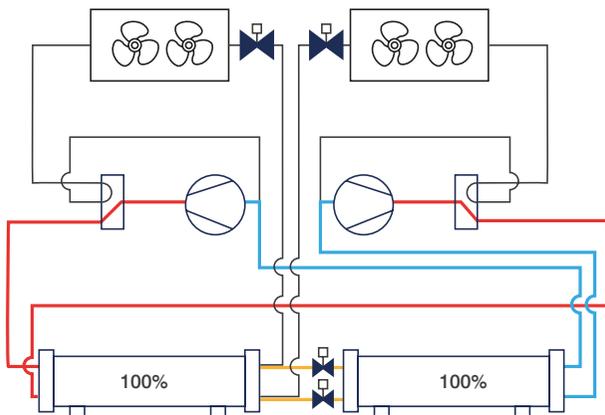
to reduce capital and operational expenditure. There is no requirement for a boiler or gas works, reduced pipework, reduced energy comparative consumption and because it uses heat pump technology, reuse of waste heat, thus increasing overall efficiency of the unit. It is also quicker to install and commission.

iChill multifunction operates using refrigerant R513A and has a capacity range of 450kW to 990kW, with SEER of up to 5.18. Minimum outdoor air temperature is  $-10^{\circ}\text{C}$ ; maximum outdoor air temperature is  $46^{\circ}\text{C}$  and maximum outlet water temperature is  $60^{\circ}\text{C}$ .

	Heating $^{\circ}\text{C}$	Cooling $^{\circ}\text{C}$	Simultaneous heating/cooling $^{\circ}\text{C}$
Maximum cold side outlet water temperature	-	-	-8
Maximum outdoor air temperature	-10	-10	-
Maximum outdoor water temperature	-	-	-
Maximum (hot side) outlet water temperature	60	-	60
Maximum outdoor air temperature	-	46	-

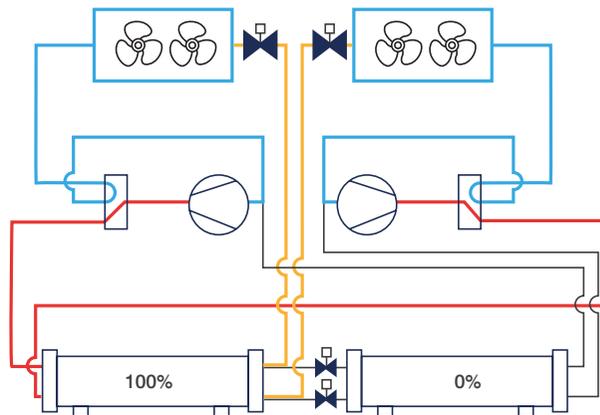
### Mid-season simultaneous load

Total recovery mode  
No energy is rejected



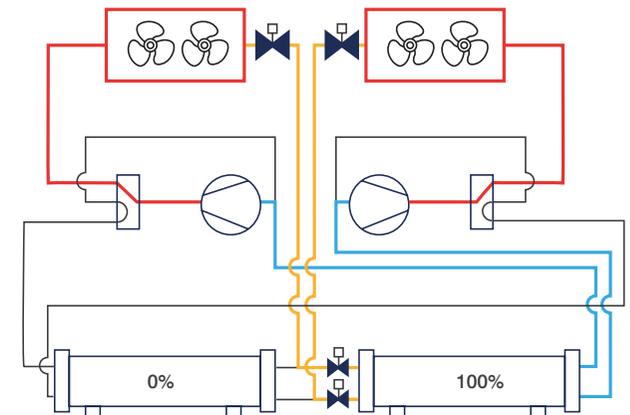
### Winter heating prevailing

Heating only mode  
The excess energy is rejected through the source heat exchange

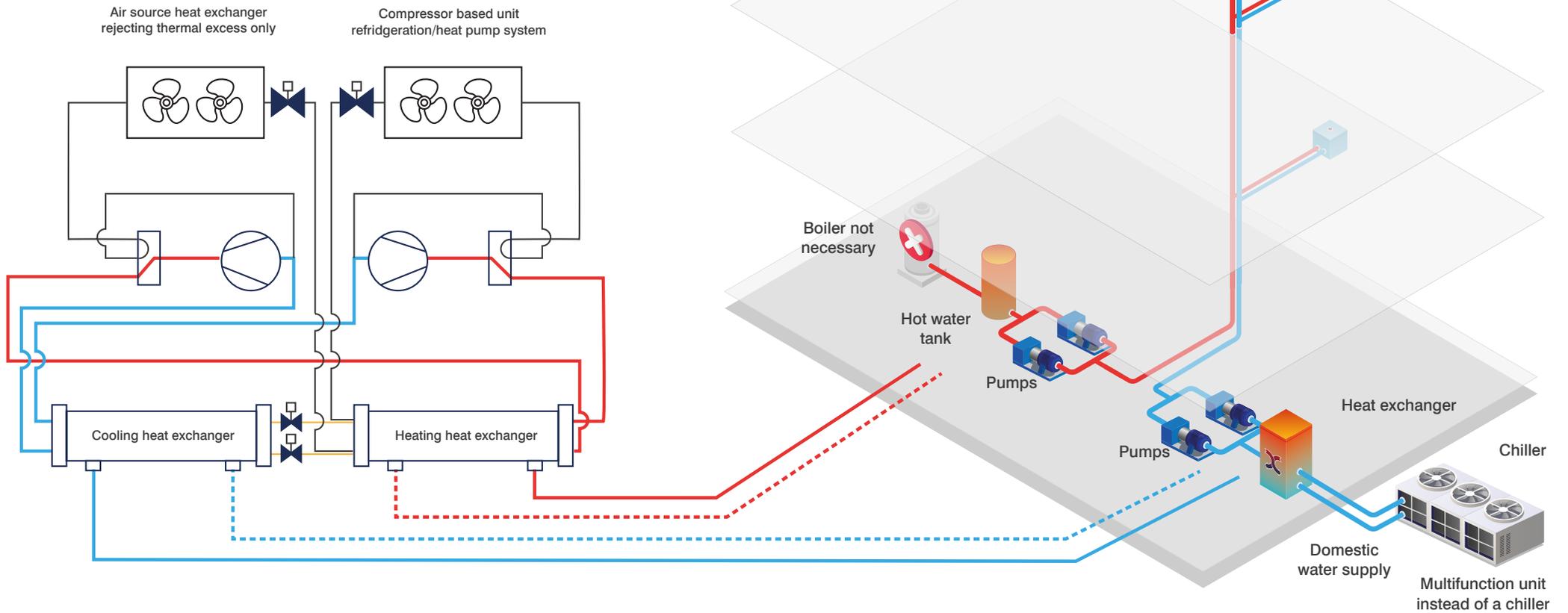


### Summer cooling prevailing

Cooling only mode  
The excess energy is rejected through the source heat exchange



# Mutifunction Heat Pump Data



# iChill

## Chiller Technical and Performance Data

### 1 High Efficiency (EXC) R1234ze range with compressor soundproofing

The table opposite details the model selections available, with data for a soundproofed selection of a high-efficiency model.

This is based on chilled water at 7/12°C in a 35°C ambient.



Unit reference	Number of circuits	Nominal cooling capacity (kW)	EER	Nominal heating capacity (kW)	Sound pressure @ 10m dB(A)	Dimensions (mm) (H x W x L)	SEER (gross)	SSCEE compliance	SEPR
120.1	1	204	3.2	N/A	61.2	2536 x 2228 x 2925	5.15	203	6.45
160.1	1	256	3.03	N/A	61.2	2536 x 2228 x 2925	5.13	202	5.67
200.1	1	360	3.15	N/A	61.9	2536 x 2228 x 4175	5.17	204	5.78
240.1	1	420	2.99	N/A	61.9	2536 x 2228 x 4175	5.14	203	5.76
290.1	1	511	3.09	N/A	63.5	2536 x 2228 x 4175	5.2	205	5.56
250.2	2	423	3.18	N/A	63.5	2536 x 2228 x 5425	5.42	214	6.41
280.2	2	483	3.13	N/A	64.5	2536 x 2228 x 5425	5.38	212	5.99
320.2	2	540	3.03	N/A	66.5	2536 x 2228 x 5425	5.36	211	5.64
360.2	2	631	3.01	N/A	65.9	2536 x 2228 x 6675	5.42	214	5.91
400.2	2	711	2.98	N/A	66.9	2536 x 2228 x 6675	5.37	212	5.53
440.2	2	790	3.04	N/A	67.2	2536 x 2228 x 7925	5.39	212	5.53
480.2	2	881	2.95	N/A	67.2	2536 x 2228 x 7925	5.37	212	5.8
540.2	2	966	3.03	N/A	67.5	2536 x 2228 x 9175	5.33	210	5.7
580.2	2	1056	3.07	N/A	68.7	2536 x 2228 x 10425	5.35	211	5.54

Alternative data for other selections is available on request.

Note this unit is only available in the high efficiency range.

# iChill

## Chiller Technical and Performance Data

### 2 High Efficiency (EXC) R513A range with compressor soundproofing

The table opposite details the model selections available, with data for a soundproofed selection of an excellence model.

This is based on chilled water at 7/12°C in a 35°C ambient.



Unit reference	Number of circuits	Nominal cooling capacity (kW)	EER	Nominal heating capacity (kW)	Sound pressure @ 10m dB(A)	Dimensions (mm) (H x W x L)	SEER (gross)	SSCEE compliance	SEPR
120.1	1	294	3.18	N/A	60.9	2536 x 2228 x 2925	5.13	202	5.95
160.1	1	374	3.15	N/A	61.9	2536 x 2228 x 2925	5.12	202	5.89
200.1	1	506	3.14	N/A	61.5	2536 x 2228 x 4175	5.11	201	6.10
240.1	1	602	3.14	N/A	62.9	2536 x 2228 x 4175	5.12	202	5.99
250.1	1	593	3.32	N/A	65.2	2536 x 2228 x 4175	5.36	211	6.10
280.2	2	670	3.23	N/A	66.2	2536 x 2228 x 5425	5.38	212	6.03
320.2	2	741	3.15	N/A	66.2	2536 x 2228 x 5425	5.37	212	5.93
340.2	2	811	3.24	N/A	65.5	2536 x 2228 x 5425	5.39	213	5.99
360.2	2	900	3.20	N/A	67.7	2536 x 2228 x 6675	5.34	210	5.99
400.2	2	992	3.15	N/A	67.7	2536 x 2228 x 6675	5.31	210	5.97
440.2	2	1089	3.02	N/A	67.7	2536 x 2228 x 7925	5.35	211	5.95
480.2	2	1204	3.15	N/A	68.1	2536 x 2228 x 7925	5.34	211	5.99
540.2	2	1325	3.04	N/A	68.1	2536 x 2228 x 9175	5.30	209	5.99
580.2	2	1423	2.95	N/A	68.1	2536 x 2228 x 10425	5.31	210	5.92

Alternative data for other selections is available on request.

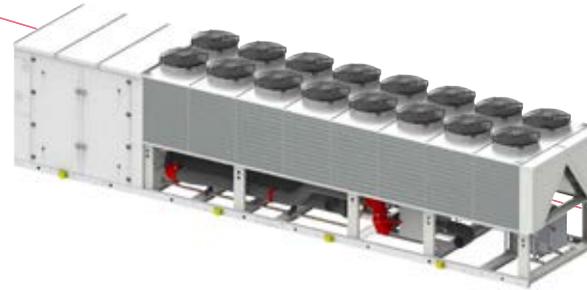
# iChill

## MultiFunction Heat Pump Technical and Performance Data

### 3 Multifunction R513A with compressor soundproofing

The table opposite details the model selections available, with data for a soundproofed selection of a high-efficiency model.

This is based on chilled water at 7/12°C in a 35°C ambient and hot water at 40/45°C in a 7°C ambient.



Unit reference	Number of circuits	Nominal cooling capacity (kW)	EER	Nominal heating capacity (kW)	Sound pressure @ 10m dB(A)	Dimensions (mm) (H x W x L)	SEER (gross)	SSCEE compliance	SEPR
220.2	2	523	2.88	503	65.2	2538 x 2228 x 7756	5.10	201	5.76
240.2	2	545	2.85	508	65.2	2538 x 2228 x 7756	5.08	200	5.76
260.2	2	575	3.06	537	66.4	2538 x 2228 x 8725	5.08	200	5.70
280.2	2	634	3.11	631	66.6	2538 x 2228 x 9700	5.18	204	5.80
320.2	2	722	3.05	697	67.8	2538 x 2228 x 10680	5.12	202	5.67
340.2	2	792	3.02	776	66.8	2538 x 2228 x 10755	5.05	199	5.59
420.2	2	990	2.85	907	67.8	2538 x 2228 x 10755	5.05	199	5.60

Alternative data for other selections is available on request.

# We are there when you need us

## Life cycle support for critical cooling

Our UK based 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. Guaranteed emergency response times mean that a qualified Airedale engineer will be with you in an agreed timeframe, therefore maximising your system's uptime.

For non-UK clients, we offer a service partner network across Europe and the Middle East.

## Choose the right service and maintenance contract for you

Our air conditioning service plans offer a preventative air conditioning maintenance service solution to improve system resilience and increase the longevity of your cooling system.

Planned maintenance not only assists in preventing unit breakdowns in business-critical environments, but also helps to improve energy efficiency and enhance system optimisation for improved performance. Over the life cycle of the product this can lead to reduced running costs, improved carbon footprint and quicker returns on investment.

## Unrivalled spares service

With over £1.5 million worth of stock on site at its Leeds headquarters, Airedale is the UK's largest stockist for air conditioning parts and specialist HVAC spares and can deliver worldwide.



Vodafone data  
centre update

*“Reliability and the level of service that Airedale offers are key issues for a business critical location such as this. The project ran very smoothly.”*

# Cloud Diagnostics

Airedale Cloud Diagnostics™ is a cloud-based monitoring and diagnostics platform developed for mission critical HVAC plant.

Airedale's extensive field experience has been leveraged, along with leading-edge data science, to develop powerful diagnostic tools, including a ground-breaking refrigerant leak detection algorithm.

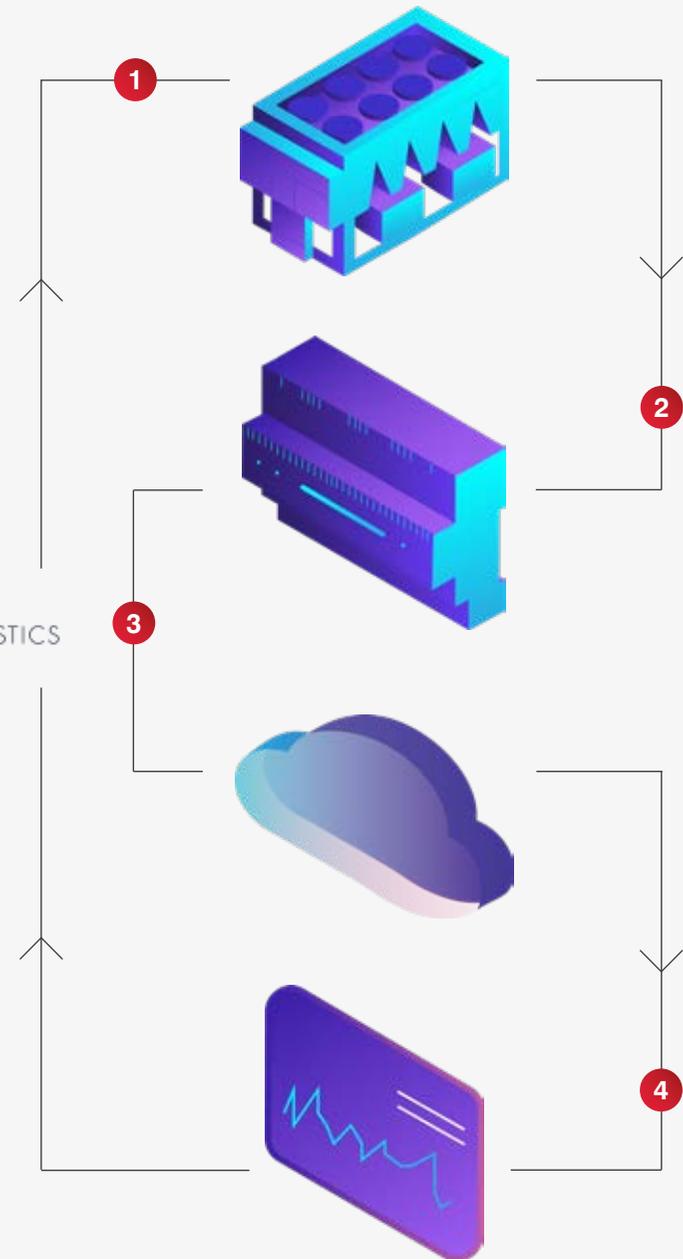
Access is via a web-based platform and intuitive dashboard, with data collection from the equipment via a gateway in the control panel and a local internet connection.

Cloud Diagnostics, once connected to chiller plant, has the ability to analyse performance of the unit over time using machine learning techniques.

A comprehensive pattern of data gathering and analysis allows the tool to recognise "failure patterns" and warn the user of a potential failure before it happens. If a drop in performance against operating conditions is detected, this will act as an early warning system for the customer/maintenance team to investigate further.

Cloud Diagnostics can be specified at order stage or retrofitted to existing equipment on site.

Airedale  
CLOUD DIAGNOSTICS





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