
airstream
technologies
Airstream – C
Heat recovery air handling units (AHUs) for leisure centres and commercial swimming pools.
airstreamtech.co.uk
A tried, tested and approved design for over 40 years.
THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2022

Airstream – C

First conceived in 1983, the Airstream – C range is a low-carbon solution for a healthy environment for commercial swimming pools and leisure centres.

The outstanding efficiency of these units allows up to 90% heat recovery from our in-house designed plate heat-exchanger. This reduces the top-up heating requirement, lowering carbon emissions, capital, running costs and ROI.

High levels of temperature and humidity control are managed by an intelligent controls system to ensure interstitial condensation does not form within the structural envelope. This is critical as the nature of the chemicals present in a pool environment can cause structural failure.

To bring down running costs of the units, advanced fan speed regulation allows fan power to reduce by up to 80% as the de-humidification load lessens at times of low occupancy, such as overnight or when the pool is covered.

Utilising our composite plate heat exchanger rather than an aluminium plate heat exchanger minimises the unit weight whilst eliminating risk of corrosion. All installed plate heat-exchangers are backed up by our lifetime guarantee against corrosion.

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Airstream – C highlight reel

The Airstream – C range has a variety of AHU sizes to cover a wide range of air volumes, starting from 2m³/s with an unlimited capacity. For low air volumes between 0.5m³/s – 2m³/s, please see our Airstream–R range.
Intelligent integrated controls included as standard
Monitoring of air temperatures
Monitoring of humidity levels
Compact footprint
High energy efficiency (up to 90% heat recovery)
Market-leading 5-year warranty when you sign-up to a 5-year service plan
Lifetime warranty against corrosion for all plate heat-exchangers
Low maintenance requirements
Low running cost
Low-carbon solution
Quiet operation
Remote monitoring enabled
Energy-saving pool cover features

General construction

The construction of the pool air handling unit shall be constructed to EN1886, with the minimum classifications for an indoor unit as outlined below:

- Mechanical Strength of Casework – D2
- Housing Leakage Class – L2

The framework shall be manufactured from fully insulated, extruded aluminium section with a powder-coated finish.

Ravatherm insulation, specifically designed for corrosive pool environments, provides the thermal insulation for all panels installed. Sandwiched between a composite inner panel and a plastisol coated outer panel, our kit is built to last.

All removable service panels have a continuous high efficiency seal, ensuring an L2 leakage rating for each unit. Quick release locks provide easy maintenance.

Double glazed inspection windows alongside internal lighting are installed into fan sections to allow for monitoring of the fans without the need to disrupt the unit's operation.

Each unit is fitted with a drip tray below the plate heat-exchanger to allow any water collected during operation or during the cleaning of the unit to flow to a condensate drain point.

Dampers

Bypass and recirculation dampers are included as standard with each unit.

The bypass damper comes equipped with an open/close actuator pre-installed from the factory. The re-circulation damper comes equipped with a modulating actuator pre-installed.

Powder-coated aluminium blades are fitted with rubber seals to ensure an effective seal when closed.

All movement is achieved via composite drive gears, fitted to avoid contamination in the air stream.

The damper construction allows an optimal air path to achieve the lowest pressure loss and optimum air flow onto the internal components.

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Washable panel filters

Washable aluminium filters, rated to ISO EN 16890 ePM10 65% (M5), are installed in the supply air as standard.

These filters are designed to remove fine debris and contaminants from the outside air to ensure a healthy internal environment, increasing the longevity of the unit.

Each filter bank is equipped with a pressure switch that triggers a low-level “filter dirty” alarm. This is sent to the BMS and is displayed on the unit control screen as a clear text message.

Option for additional filters upon request.

Plate heat exchanger (PHE)

Boasting up to 90% efficiency, our plate heat-exchanger designs are constantly developed to push the boundaries of performance.

Constructed from composite material as opposed to aluminium ensures 100% resistance to the corrosive environment of swimming pools. This is backed up by our lifetime guarantee against corrosion for each plate heat-exchanger.

An additional benefit of the composite construction is a significant reduction in the weight of the plate heat-exchanger assembly. This decreases the number of roof steels required, minimising project costs.

Our cross-flow PHE ensures each unit is as compact as possible while maintaining the required access for each component.

Low temperature hot water coil

Low Temperature Hot Water (LTHW) coils are installed as a top-up heater after the plate heat-exchanger.

Each coil is manufactured from copper tubing with magnesium alloy fins to ensure longevity in a corrosive pool environment.

The casework for each coil is epoxy-coated to minimise corrosion in a pool environment.

With a selection of coils compatible for most flow/return temperatures. These can each be heated by EcoAir Box’s air-source heat pumps (ASHPs) – available to purchase separately.
EcoAir Box are a separate trading division of Excool Ltd, similarly to Airstream.

ASHPs

All LTHW coils are supplied with either a 2-PICV or a 3-way valve.

Direct-driven fans with EC motors

Highly efficient (IE5) EC fan motors pack a punch whilst ensuring running costs are kept to a minimum.

The centrifugal impellers installed onto the included fans are made of a 100% sustainable composite material, reducing environmental impact. Each fan is statically and dynamically balanced, removing the need for anti-vibration mounts.

Intelligent over-temperature protection and an IP55 rating highlights the robust design of the fan motors installed.

Each fan is suitable for a minimal operational window of -20˚C to 40˚C. This ensures suitability throughout any temperature fluctuations.

Intelligent controls system

The unit is supplied with a control panel fitted with a programmable logic controller.

The control panel includes:

- **Door interlocked isolator**
- **Terminals for main power supply**
- **Motor and control components**
- **Safety circuits**

Additional details:

- All necessary components for motor control and protection, including fuses and overloads.
- A terminal strip for connections to external components and control signals. All potential free contacts suitable for 230V/2A.
- A display screen that shows set points and actual values for damper positions, hours run and status messages.
- LEDs fitted to the control panel that show unit operation and fault status.
- All sensors and actuators are constantly monitored, allowing detection of any failed sensors/actuators or any break down of communication with any component.
- Connection of all sensors/actuators shall be achieved through distribution junction boxes and tested shielded pair cables for communication up to 100m over a free network structure.
- Programs and time clocks remain secure in the event of a power failure. The essential sensors for measuring outside air temperature, supply air temperature/humidity, return air temperature/humidity, all damper actuators and the hot water coil valve, shall be connected to a single bus system.

Remote monitoring & interface

The control system pre-installed has the option for remote monitoring and adjustment by the supplier over standard communication:

- **BACnet IP**
- **Modbus**

The interface provides access to data points, sharing information on all temperature and humidity values, actuator positions, status of all motors, hours run, actual supply and return air flow in m^3/s, filter pressure drop displayed in Pa.

Air volume regulation

Air volumes are automatically adjusted to ensure that the pool hall remains under a constant negative pressure while occupied.

The fan motor speeds automatically adjust to maintain the programmed air volumes during different modes of operation or when the filters become progressively dirtier.

Pre-installed controls software

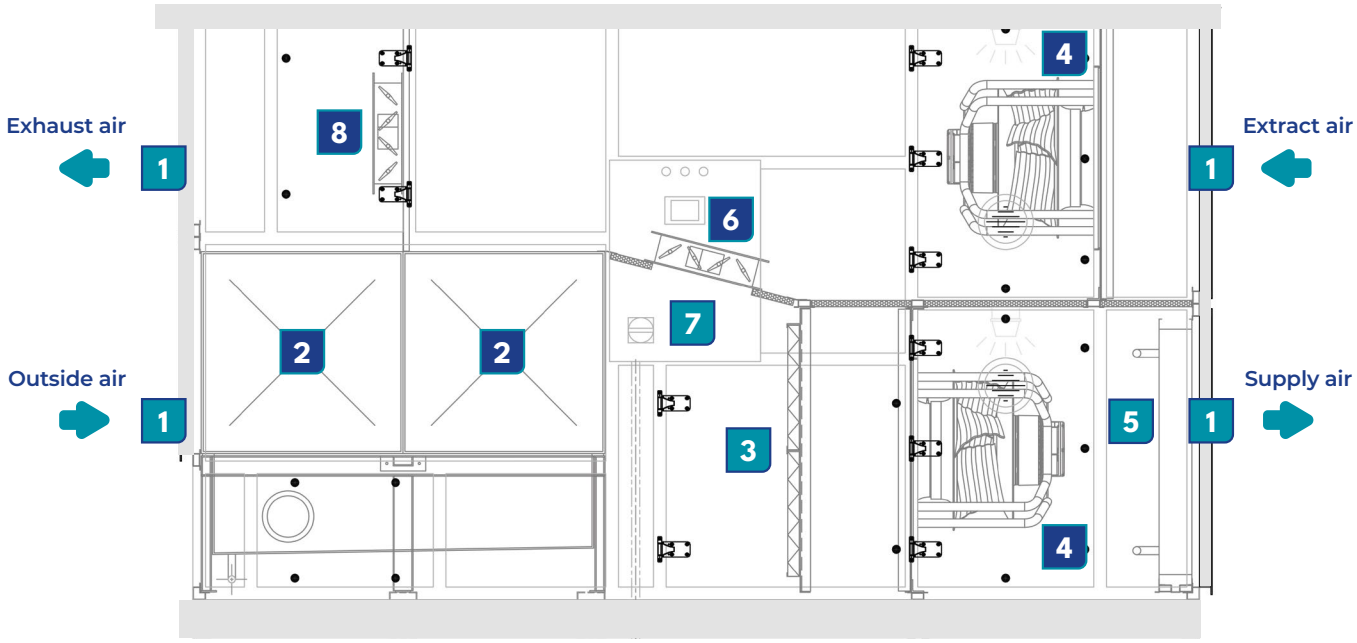
Control and regulation functions shall include:

Modes of operation available:

- **Pool in use**
- **Pool not in use/covered**
- **Automatic operation**

- **Enable outside air** – Allowing for the mixing of fresh air to replace pool hall air on a timed basis. This shall also be enabled by an external contact.
- **Pool hall temperature regulation** – Allows control via return air temperature with supply air minimum and maximum values. Return air temperature set-point can be adjusted on the controller within a preset range set by the client.
- **Variable air volume** - While recirculating air from the pool hall, the air volume is automatically adjusted according to the heating requirement of the space. This helps to reduce energy consumption.
- **Humidity control** – The humidity set-point for the pool while in use can be adjusted on the controller. When the pool is not in use, the humidity set-point will vary according to the outdoor temperature.
- **Sensor monitoring** – Short circuits, cable breakdowns, etc. will activate the general fault indication with a clear text message.
- **Fault indication** – Two levels of alarm (high or low) are included. An LED warning lamp offers a visual aid along with the faults displayed as a clear text message on the display screen.
  For remote indication of fault signals, potential free signals shall also be available on the terminal strip.

Airstream – C layout



1. 30mm Euro Flange connection spigot
2. Composite plate heat-exchanger
3. Supply panel filter - ISO EN 16890 EPM10 65% - M5
4. EC direct drive fan/s
5. Optional LPHW coil
6. Control panel with integrated controls software
7. Fully modulating recirculation damper
8. Open/close bypass damper

airstream technologies

Designed, engineered and manufactured in the UK

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