
EcoAir
Box
AIRSTREAM-C
HEAT RECOVERY AIR HANDLING UNITS FOR LEISURE CENTRES
AND COMMERCIAL SWIMMING POOLS
ECOAIRBOX.COM
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, ECOAIR BOX'S AIRSTREAM – C RANGE (FORMERLY THE CSR2 RANGE) IS A LOW CARBON SOLUTION PROVIDING A HEALTHY ENVIRONMENT FOR COMMERCIAL SWIMMING POOLS AND LEISURE CENTRES.

The outstanding efficiency of these units allows up to 90% heat recovery from the plate heat exchanger. This reduces the top up heating requirement, lowering carbon emissions, capital & running costs.

High levels of temperature and humidity control are managed by an intelligent control 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 and overnight.

Utilising our composite plate heat exchanger rather than an aluminium plate heat exchanger minimizes the unit weight whilst improving corrosion resistance. All installed plate heat exchangers are backed up by our lifetime guarantee against corrosion.

EcoAir Box

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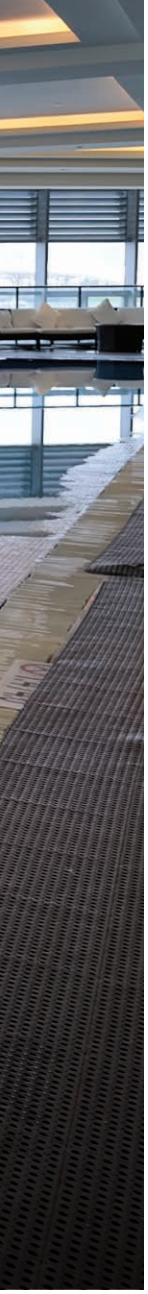

AIRSTREAM–C HIGHLIGHT REEL

Ten AHU sizes cover a wide range of air volumes (2m³/s to 12m³/s) - 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 (return, supply & fresh)
Monitoring of humidity levels (return & supply)
Compact footprint
High energy efficiency (up to 90% heat recovery)
Lifetime warranty against corrosion for all plate heat exchangers
Low maintenance requirements
Low running cost
Low carbon solution
Quiet operation

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 shall 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 shall be 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 located below the plate heat exchanger to allow any water collected during the operation of the unit, or during the cleaning of the unit to flow to a condensate drain point.

DAMPERS

Bypass & recirculation dampers are included as standard within 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 within the air stream.

The damper construction allows for 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 return air as standard.

These filters are designed to remove debris, such as dust, that has been deposited into the pool area and to protect the internal components increasing the longevity of the unit.

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

An option to fit manometers is available on request.

BAG FILTERS

Washable composite F7 filters, rated to ISO EN 16890 ePM2.5 70% & ePM1 63%, are installed in the supply air as standard.

These microbiologically inactive, VDI 6022 guideline compliant filters are non-corroding and fully incinerable.

F7 bag filters are designed to remove fine debris and contaminants from the outside air to ensure a healthy internal environment.

An option to fit manometers is available on request.

PLATE HEAT EXCHANGER (PHE)

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

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

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

Our Cross-Flow PHE assemblies 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 suitability in the corrosive pool environment.

The casework for each coil is epoxy coated to ensure suitability in the corrosive pool environment.

With a selection of coils compatible for most flow/return temperatures (80/60 °C, 50/30 °C & 45/30 °C) which can each be heated by our own ASHPs – available to purchase separately.

ASHPs

All LTHW coils are supplied with either a 2-PICV or a 3-way valve. For internal AHUs the chosen valve would be supplied loose for installation externally to the unit by others. For external AHU's this would be pre-fitted into the unit to be connected to the supply by others.

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 helping to reduce the impact on the environment. Each fan is statically and dynamically balanced, removing the need for anti-vibration mounts to be installed.

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

Each fan is suitable for a minimal operation window of between -20˚C & + 40˚C ambient temperatures. This ensures suitability for the increasingly challenging conditions facing the UK throughout the year.

INTELLIGENT CONTROL SYSTEM

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

The control panel shall include:

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

All necessary components for motor control and protection including fuses and overloads.

A terminal strip shall be provided for connections to external components and control signals. All potential free contacts suitable for 230V/2A.

An included display screen shows set points and actual values for damper positions, hours run and status messages.

LED's fitted to the control panel show unit operation and fault status.

All sensors and actuators shall be 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 by distribution junction boxes and tested shielded twisted paid cables for communication up to a 100m over a free network structure.

Programs and time clocks shall remain secure in the event of 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 available for remote monitoring and adjustment by the supplier over standard communication:

- BACnet IP
- Modbus

The interface shall provide access to data points giving 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 shall be automatically adjusted to ensure that the pool hall remains under a constant negative pressure during the occupied period.

The fan motor speeds shall be automatically adjusted in order 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
- 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 by the client.

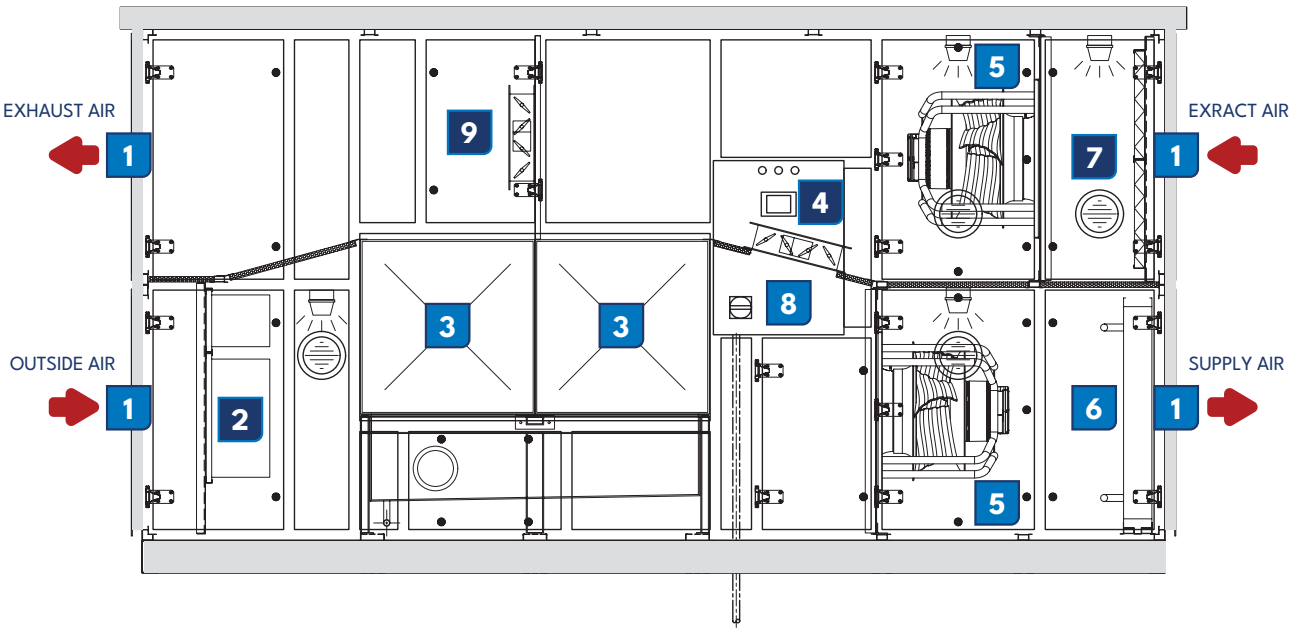
- **Variable Air Volume** - While recirculating air from the pool hall, the air volume shall be automatically adjusted according to the heating requirement of the space. This helps to reduce energy consumption.

- **Humidity Control** – The Humidity set point for the pool in use period shall be adjusted on the controller. When the pool is not in use the humidity set point shall 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 with the addition of 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 EUROFLANGE CONNECTION SPIGOT
2. MAIN BAG FILTER - ISO EN 16890 EPM2.5 70% & EPM1 63% - F7
3. COMPOSITE PLATE HEAT EXCHANGER
4. CONTROL PANEL WITH INTEGRATED CONTROLS SOFTWARE
5. EC DIRECT DRIVE FAN/S
6. OPTIONAL LPHW COIL
7. RETURN PANEL FILTER - ISO EN 16890 EPM10 65% - M5
8. FULLY MODULATING RECIRCULATION DAMPER
9. OPEN/CLOSE BYPASS DAMPER

EcoAir Box

DESIGNED, ENGINEERED & MANUFACTURED IN THE UK

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