

ECT5400 Internal Evaporative Cooler with EC Fan

The ECT 5400 is part of EcoCooling's internal evaporative cooler range. At its design flow rate of 5,400m³/hr it can service a cooling load of 15kW with a COP of 54. The coolers small size means it is easy to install and maintain making it the ideal option for small server or telecommunications rooms. The ECT range is also available in a 10800 model for larger IT loads (~35kW).

Technical Specifications

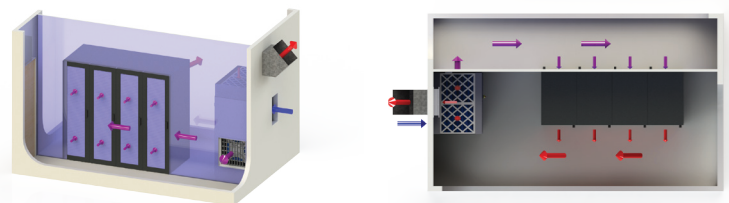
Characteristic/Feature	Value/Detail
Power Supply	1~ 230V 50Hz 13A
Cooling Capacity in Adiabatic Mode	15kW (ΔT of 8°C)
Design Supply Flow Rate	5400m ³ /hr .
Weight	<300kg
Dimensions (h x d x w)	1800 x 820 x 1220mm
With Recirculation Filter Module	2050 x 820 x 1220mm
With Supply Filter Plinth	2200 x 820 x 1228mm
Design Power Usage:	
Cooling Mode	0.28kW
Ventilation Mode	0.21kW
Recirculation Intake Size (h x w)	600 x 300mm



Standard Build ECT5400
(Additional components available)

Installation Requirements

- ❖ 240VAC 1 ~13A power supply
- ❖ Via either the rear or left hand side of the cabinet:
 - ❖ 300 x 600mm (w x h) fresh air intake
 - ❖ ½" BSP mains water supply
 - ❖ 32mm gravity drain pipe
- ❖ Room temperature and humidity sensor
- ❖ Pressure relief vent



Example of Data Centre Installation

Core Features

The standard unit is supplied fully assembled and can fit through a single door. If necessary, it can be broken down into two modules allowing for easy movement through more difficult buildings and spaces.

Module 1: Fan module which houses the control system.

Module 2: Corrosion resistant AluZinc™ cooling module.

Fan: A 450mm centrifugal fan is fitted as standard. Use of EC (Electrically Commutated) fans enable significantly quieter and more energy efficient operation than conventional AC fans.

Temperature control: A consistent supply temperature is achieved year round by accurately adjusting the mixing of cooled air with warm recirculated air, whilst optimising the speed of the supply fan keeps the exhaust temperature constant.

Filtration: All fresh air entering the cooler passes through an EU4 filtration panel with integral insect screen. Additional filtration modules are available for sensitive IT applications.

Touch screen controls: The ECT5400 is controlled via a touch screen user interface. Standard functionality includes logging of performance data and faults, altering of system parameters, a functional test routine and password protection.

Configuration: The unit air outflow and inflow configuration can be modified on order depending on the requirements of individual installations. There are possible air intake ports at both the rear and left hand side and the unit can be configured to deliver supply air from 4 different points. Full details can be found in a separate document.

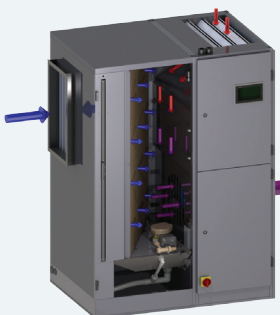
Energy Savings and Cost Comparison

The table below shows cost comparisons between the standard ECT 5400 evaporative cooler and traditional DX and CW (Chilled Water) air-conditioning systems.

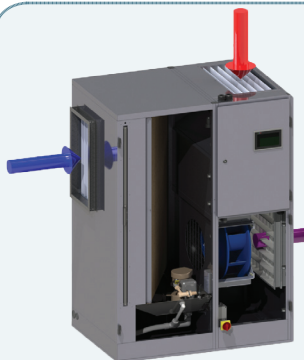
System Design: 15kW cooling load. Electricity at 10p/kWhr. Water £1.00 p/m³. London location. 24/7 usage.

Type of Cooling System	Typical COP	Effect on PUE	Energy Use (kW)	Water Used in Evaporation (m ³ /yr)	Annual Running Cost
ECT5400	54	0.019	0.28	15	£260.28
DX CRAC	2	0.5	7.5	0	£6573.75
CW CRAC	3	0.33	10	0	£4382.50

Basic Principles



Cooling Mode
In cooling mode, the unit can operate with or without at-temperation to achieve the required supply temperature. In this mode, the water circulation system is in operation and the cooling pads are wetted. The evaporation of water from the pads results in a reduction in air temperature.



Ventilation Mode
In ventilation mode, the supply temperature is met by mixing warm room temperature air with the incoming cool air using the attemperation damper. The level of attemperation, or mixing of recirculated warm air with fresh air, is controlled by the damper.

Optional Add-Ons

Remote monitoring: Remote monitoring and control can be setup through either a Modbus or Ethernet connection. Email alerts of faults and alarms can also be enabled.

Metering: The control system continuously logs energy usage and performance data which can be viewed on the touch screen or downloaded in MS Excel format. Inputs are also available for water metering.

Redundancy: Most supplementary cooling systems can be linked into the ECT5400 controller for automated switch over in the event of malfunction.

Filtration on recirculation airflow: Additional recirculation filtration is available if necessary, this comes as an additional component which can be affixed to the top of the unit. Please see below for dimension details.

Filtration on Supply Airflow: Additional filtration of the supply air flow is also available.

AHU additional components: The unit can be purchased as a cooler or AHU (Air Handling Unit). On the AHU model, a 3kW heating system is built into the attemperation loop. Supply air temperature increases of ~9°C should be achieved at a flow rate of 1000m³/hr. The system runs off a standard single phase 13A supply.

Fan choices: The ECT 5400 comes as standard with a 450mm centrifugal fan. Prices for the alternative axial fan* are available upon request.

Humidification damper*: A humidification damper option is available for control of minimum humidity.

*For more information on configurations and additional options please see following pages.

Legionnaires

EcoCooling's process control system ensures the risk of legionella is kept to a minimum. The main risk factors for legionella formation have all been addressed in the design and controls of the ECT units. For more information and risk assessment forms please contact EcoCooling directly.

Commissioning Service

EcoCooling offer a commissioning service after installation of the ECT unit. It is recommended that the cooler is serviced every 3 months. Standard EcoCooling components are used, which are available ex-stock.