



Nature's maximum efficiency



## HEF2E series

Low-energy consumption adiabatic cooling and humidification systems

- Optimum performance with minimal operating costs.
- Hygiene Certificate VDI 6022.
- Flexible construction for a wide range of applications.
- Simple assembly and easy maintenance.





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Low-energy consumption adiabatic cooling and humidification systems

## General Description

### LOW ENERGY CONSUMPTION OPERATING PRINCIPLES

FISAIR HEF2E-RW and HEF2E-DW humidifiers employ water evaporation produced by air currents; a completely natural process observable at all times in the environment around us. Air passes through a sheet of water and partially evaporates it. The water vapour is added to the air's mix, which is at the same time cooled.

### Standard Available Series

From 570 mm x 350 mm (425 m<sup>3</sup>/h at 2,5 m/s) up to 2975 mm x 2400 mm (55.000 m<sup>3</sup>/h at 2,5 m/s) in one piece assembly, and up to 6150 mm x 4800 mm in modular assembly (220.000 m<sup>3</sup>/h at 2,5 m/s).

### Humidifiers certified VDI6022

Humidifiers certified according VDI6022 hygienic certification.

## FISAIR EVAPORATIVE PANEL

### Stable composition

The Fisair evaporative panel is made up of fibreglass sheets impregnated with structural additives, which enable it to absorb water with no loss in rigidity.

### Hygienic panel

The panel is inorganic, and is not therefore a feed source for bacteria and mould. It also contains silver ions, which act as a biocide and enable the exit of unevaporated water particles from the panel. This biocide action enhances the resistance to microorganisms in this panel in comparison with others, as shown by tests made on the evaporative panel in accordance with standard JIS Z 2911.

The silver ions in the panel are contained in a compound that does not dissolve their particles in either water or air, as shown by tests undertaken in the laboratories of the Spanish CSIC (Higher Council for Scientific Research) and the Fresenius Institute in Germany.

### Safe panel

The panel has been analyzed in the LGAI laboratory to certify its non-flammability, by means of the M0 rating, currently A1.

The panels of FISAIR evaporative humidifiers (Figure 1) are incorporated into stainless steel cassettes with an integrated uniform irrigation system.



### Greater working efficiency

The assembly of the panel sheets is undertaken by means of pressure on the metal frames, without the use of adhesives. The absence of adhesive enables the inclusion of a larger number of sheets per net frontal surface area. In addition to the extraordinary design of the angles, this means the panel has the best saturation efficiency on the market with a minimal pressure drop.

### High maintenance efficiency

Water is a universal solvent able, over time, to dissolve any kind of adhesive. That is why glued panels have a shorter useful life than Fisair evaporative panels. Since the sheets are assembled without adhesive, the useful life of panels in Fisair units is significantly longer than for other glued panels. This feature provides high value-added for the end user because the cost of replacing panels is of vital importance in medium to large-sized installations.

What is more, the absence of adhesives means the panels can be employed with any kind of water. (>60 µS/cm)



Figure 1.  
FISAIR evaporative cassettes

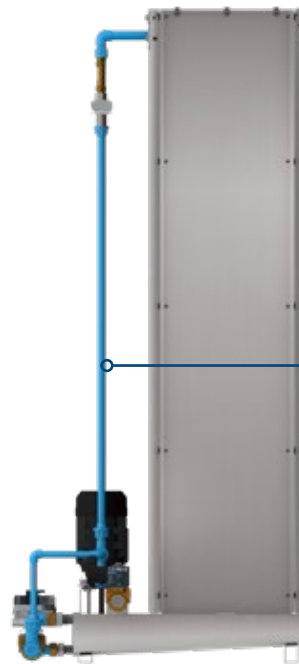
## Features

### Easy maintenance

Panel sheets are mounted on stainless steel frames with an integrated irrigation system. These cassettes are easy to maintain and replace.

The cassettes can be taken out, as standard, frontwards or from the side, which reduces servicing times and the space required in the air-handling unit.

The unit can be accessed on all sides, which is an aid to cleaning and maintenance.



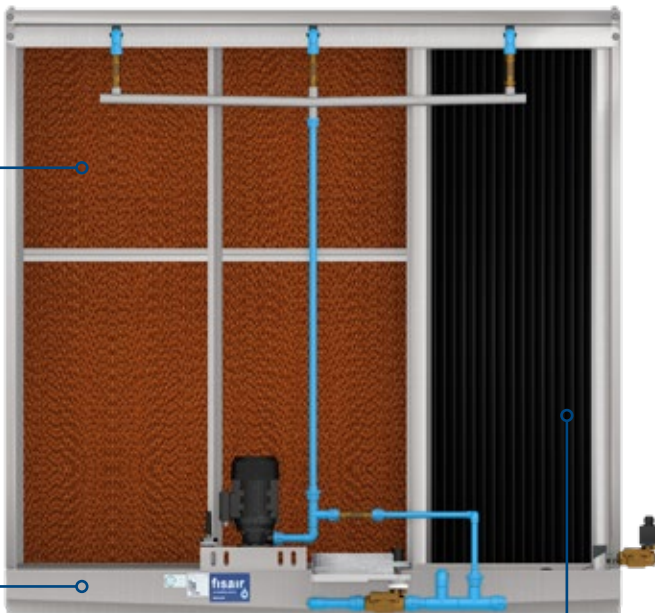
HEF2E side view

### Pipe system

Fused PP-R pipe system, complies with VDI-6022

### Irrigation system

Highly efficient irrigation system developed for the uniform water panel distribution. Incorporates balancing valves with individual flow meter for each irrigation cassette



HEF2E front view

### Hygiene and resistance

The stainless steel tray is manufactured so as to prevent any kind of water deposit remaining after it is emptied.

### Efficacy

PP high efficiency droplet separators profiles when droplet carryover speed is exceeded.

### Minimal consumption and protectionn

The water pump is a highly efficient element designed for a long working life without galvanic bridges or easily corroded elements. Its design prevents any kind of electrical risk.



Wide range of applications

### Simplicity and water saving

The constant bleed-off system consumes water efficiently by making use of a flow meter and a regulation valve. It drains only what is needed to avoid clogging the panel with minerals.

### Quick and easy assembly

Sliding on AHU guides





## HEF2E series

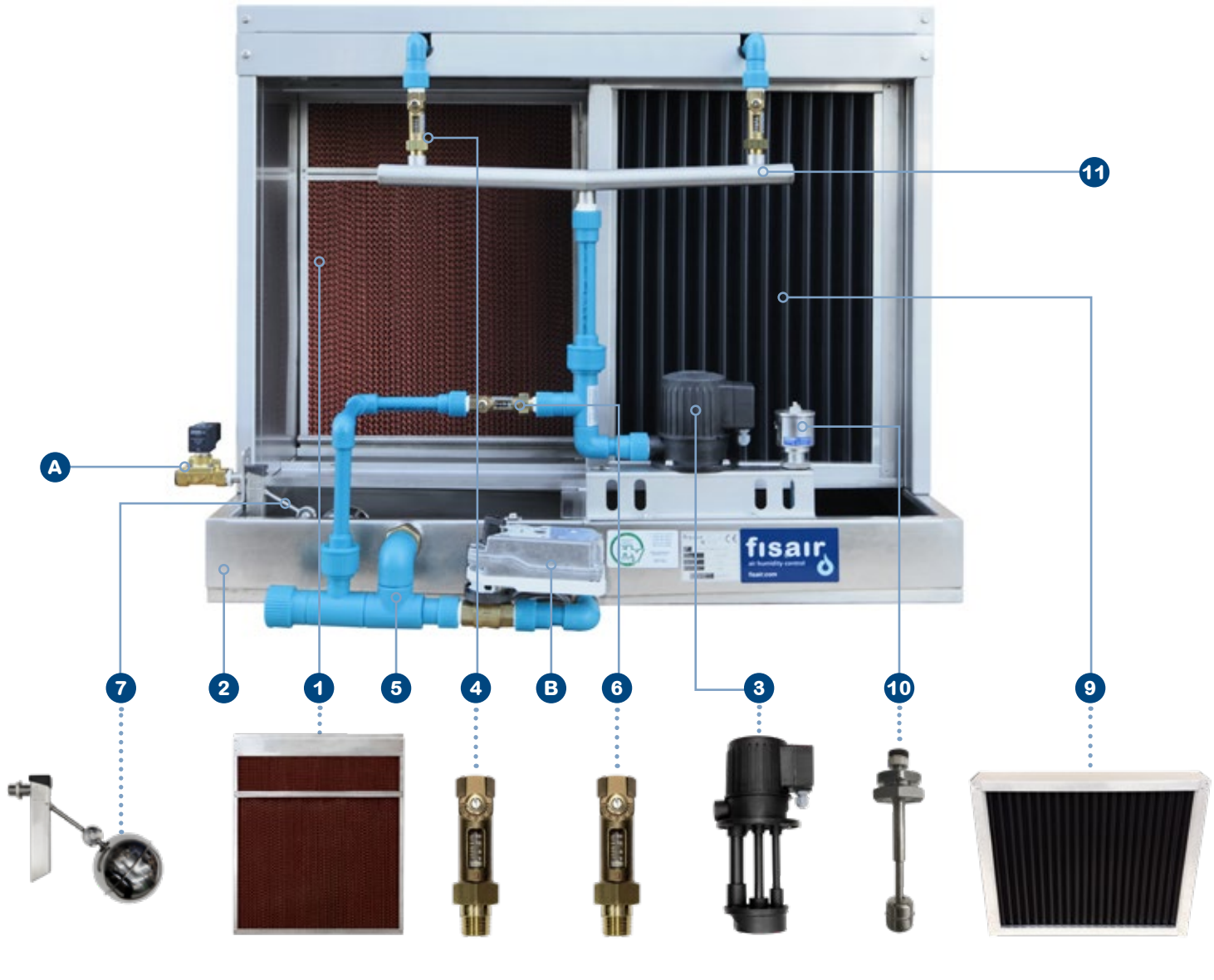
Low-energy consumption adiabatic cooling and humidification systems

### Types

#### HEF2E-RW Units with recirculation in order to save water:

The hygiene of these systems is guaranteed by the design and the suitability of the materials. The panel is very durable if the water bleed-off is properly sized.

#### HEF2E-RW with recirculation



#### HEF2E-DW

#### Direct water units to reduce maintenance work:

The absence of deposits of water reduces the cleaning work required by these systems.

## Construction

FISAIR evaporative coolers	
Standard	
Panel <b>1</b>	High efficiency fireproof glass fibre and low pressure drop
Tray, frames and structure <b>2</b>	AISI-304 stainless steel, AISI-316 optional
Water pump <b>3</b>	IP55 low consumption, protected to work without water
Irrigation valves <b>4</b>	Balancing valves with flow meter
Overflow <b>5</b>	AISI-304 stainless steel, AISI-316 optional
Constant bleed-off system <b>6</b>	Balancing valve with flow meter
Fill <b>7</b>	Automatically closing float valve in AISI-304.
Droplet separator <b>9</b>	Standard if the panel drop removal velocity is exceeded A space is kept in reserve whatever the case may be
Low/High level sensor <b>10</b>	Low level sensor (to protect the water pump) and high level sensor (to open/close the fill solenoid valve)
Water header <b>11</b>	AISI-304 water header in "V" geometry to comply with hygienic regulations VDI6022
Optional	
Gap cover plates	Construction with gap cover plates for adaptation to AHU
Droplet separator	Included, with polypropylene profiles
Fill <b>A</b>	By solenoid valve IP 55 (VDI6022 standard)
Empty <b>B</b>	Motorized zone valve IP 54 (VDI6022 standard)
ATEX classification	According to required classification
Stage control	By solenoid valves
Bleed-off system	By conductivity sensor, controller and motorized valve
Sterilization system	Inlet water treatment UV lamp for DW (direct water) systems or immersed water treatment UV lamp for RW (recirculated water) systems
Basic control panel CCB2.0	Protection and signalling with all the functions required to comply with VDI 6022 and water conductivity control. Set up for on/off control
Stages control panel CCE2.0	It includes the same functions as the CCB2.0 and the control by means of a regulated signal 0.10 VDC or 4.20 mA with up to 5 stages (standard) or 16 stages (special)
HEF2E for ducts	Perimeter flanges to fix the duct
Data bus communication	Modbus TCP/IP, Modbus RTU, BACnet





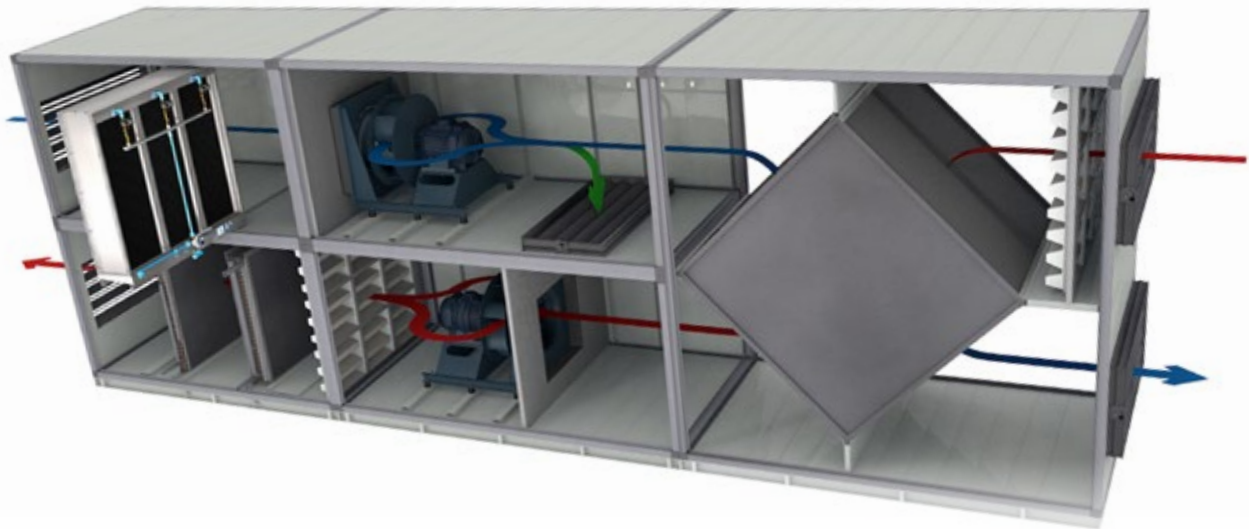
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### Configurations

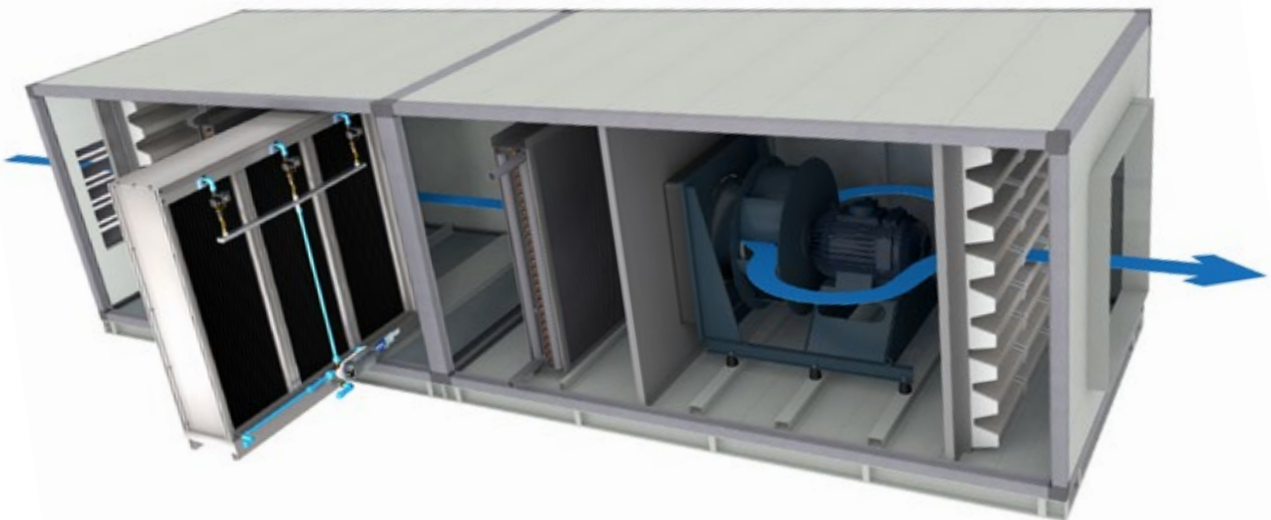
#### Use in air handling units

FISAIR air humidifiers are normally incorporated into air-handling units after the coil as shown in figure 2. Since all the components are in service down stream, access from this side is normally enough.



**Installation in return. Fig. 1**

Increased performance of the heat exchange with the return air flow by means of adiabatic cooling.



**Installation in supply. Fig. 2**

Adiabatic humidification at cold times of year with greater energy efficiency in all the humidification systems.

## Other applications

Basically, evaporative humidifiers are employed whenever it is necessary to increase the humidity content of a directed current of air. They are very common in the following cases:



Air-handling units for evaporative cooling in large industrial premises.



Air supply units for painting and varnishing chambers.



Pre-coolers for condensing units.



Pre-coolers for gas turbines and cogeneration combustion engines.



Air-handling units for the textile industry, graphical arts, wood manufacturing and other hygroscopic products.



Food and agriculture industry.

## Fisair Selection Tool

### DESCRIPTION AND ADVANTAGES:

- The Fisair Selection Tool, for the HEF2E Evaporative Humidifiers/Coolers, it is a unique selection tool in the market. With this tool it is possible to select the best HEF2E solution for each specific project and application.
- It is possible to print a detailed “Technical Specification Sheet” with all technical data needed to select the unit and to set up the unit for the commissioning and operation. The list price is included in each selection.
- Easy, simple and very intuitive to work it allows to select in a few minutes several units for one or more projects and print it all in the same document.
- Provide technical drawings and to allow AHUs OEMs to know exactly the space they need to install the HEF2E.
- Contains a library with documentation (reference example, connections drawings, commercial brochure, technical manual and IOM manual) to allow the AHUs OEMs to develop a fast and independent work.
- Available for free to our partners.







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adiabatic cooling and  
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**fisair**  
air humidity control 

[fisair.com](http://fisair.com)



CBHEF2E-EN-20-1

