

**SERIES
ZAE**

Air-handling units with panel thickness 60mm and air volumes from 1.000 to 130.000 m³/h, certified according to the norms of the EUROVENT program.

The air-handling units of the ZAE series have been designed to allow the maximum flexibility of selection and use, thanks to the modular structure and a complete and versatile selection software. To guarantee for the reliability and correctness of the data supplied by the selection software and by the components used, the range has been certified according to the Eurovent criteria.

**Base features:**

- 24 main sizes; bespoke executions according to the customer's specifications, with modifications from the standard, in terms of both dimensions and capacities;
- modular structure with aluminium frame;
- sandwich panels with 60mm thickness and thermal cut, available in:
 - galvanised steel
 - pre-plasticised galvanised steel
 - aluminium
 - stainless steel AISI 304
- condensate drain pans in AISI 304 stainless steel as standard;
- insulation material available in hot-injected polyurethane with density 42kg/m³ or rock wool with density 90 kg/m³;





■ The main **bearing frame** of our air-handling units is made out of extruded aluminium profiles with thermal cut. By means of three-way joints in hot-dip aluminium, the containing frames for the elements are obtained, and the support on which the panels are fixed, thus constituting the bearing assembly of the containing shell. The structure thus realised is free from welding but equally resistant from the mechanical point. On request, it is possible to manufacture the AHUs in dismantlable version, in case of specific space requirements or restrictions, to be later re-assembled on site.



■ The **panels** are metal boxes carried out with the coupling of two 6/10 mm thick metal sheets, previously sheared and shaped on the four sides; successively, they are injected with polyurethane foam (or insulated with specific rock wool pads) which, when stabilising, constitute a finished product of excellent mechanical strength. The panels are fixed with self-tapping screws to the main frame of the air-handling unit.



The standard range of panels include the following configurations:

- 1. pre-plasticised galvanised external / galvanised internal:** the external sheet is constituted by a plasticized galvanised sheet, the internal one by a simple galvanised sheet - this is the standard execution which is most commonly used - the external plastic coating is made from polyvinyl chloride (PVC) with a thickness of 150 microns. The standard colour is light grey code N1 (on request, other colours could be used, within the RAL range). The plastic coating, having protective anti-oxidising and anti-scratch function, is made from a plastic film applied at hot temperature (around 160°C) on the metal sheet and it is self-extinguishing, non-toxic, anti-mould and non-hygroscopic. Our plasticisation is suitable also for external installation, its resistance having been tested with positive results at temperatures between -35°C and +80°C. for more than 3 hours (according to the general disposition on metal sheets or plasticized sheets contained in the articles 2-5 of the D.M. 21/03/1973 – Gazzetta Ufficiale n°104 dated 24/04/1973).
- 2. aluminium external / galvanised internal:** the external sheet is constituted by an aluminium sheet, the internal one by a simple galvanised sheet - a solution appropriate for applications where a good resistance to weathering is requested.
- 3. aluminium external / aluminium internal:** the external sheet is constituted by an aluminium sheet, the internal one by a simple galvanised sheet - a solution appropriate for applications where a good resistance to weathering is requested, together with a competitive price.
- 4. stainless steel external / stainless steel internal:** both sheets are in AISI 304 stainless steel at a very elevate mechanical resistance and absolute inalterability to external agents, weathering, ambiances with high salt concentration, applications in chemical, pharmaceutical and food industry.



■ **Perimetric base frame**, constituting a continuous support to the units under all sides and allowing to unload the weight on a larger surface reducing the load on the structure on which our units are placed. The base frame is manufactured in two ways: by coupling a galvanised cold-rolled metal profile, 30/10 thickness, with special 2-way joints, in aluminium alloy, with 100mm height, or with welded 30/10 galvanised metal corners and 180mm height (normally for larger air-handling units). On request it is possible to supply additional support feet, with different height to be defined when ordering, to combine with a perimetric base frame or alternatively as the sole support for the unit.



■ **Condensate drain pans** exclusively in stainless steel material: AISI 304 stainless steel with 15/10mm thickness, with very elevate mechanical performances. Also the support frames for cooling coils and humidification systems and, in general, all the wet surfaces inside the unit, are manufactured in AISI 304 stainless steel with 10/10 mm. Each condensate drain pan is equipped with one or more discharge points complete with pipe, also manufactured in stainless steel.



■ **Inspection doors** made with the same process as the panels and in the thickness 60mm and with the same insulating material (polyurethane or rock wool). The doors are fixed to the frame with an opening system of handles and hinges, or closing latches, according to the requirements and specific possibilities of the application. The accessible areas in negative pressure will have outwards-opening doors – the accessible areas operating under positive pressures will have inwards-opening doors. In compliance with the CE 89/392 Machine Directive, related to the safety in motor-fan sections, a counter-door is installed behind the fan access door, named 'anti-accident grid' with the same dimensions of the first one but made from 50% micro-perforated metal sheet, duly enforced at the edges and fixed on 4 points with M10 nuts. In this way we grant:



inaccessibility to the area with moving devices, unless using the appropriate wrench, quick inspection of the section through the grid for a safe confirmation of a still unit and a sufficiently long time to remove it.



■ Integrated control systems

TCF can supply control and power boards for the management of the air-handling units. The supply of air-handling units complete with controls may include: control components integrated in a dedicated technical compartment, complex solutions for precision control, possible combination with power boards, control board for 'niche' installation for heat recovery units, air-conditioning units and low profile AHUs, controls for indoor installations with components 'at sight' as well as customisations and logos available upon specific customer's request. All AHUs with controls are tested in the factory, so as to guarantee the perfect operation of all the elements when finally commissioning the unit on site.



■ Selection software

An innovative selection program, easy to use and complete, allows the selection of all the components of a fan air-handling unit, from dampers to filters, water and DX heat exchangers, heat recovery systems (plates, rotary wheels, run-around-coils), humidification systems, fans and silencers.



The software may be downloaded from internet and installed on the pc, for a total autonomy of management and selection also when off-line, and it provides the technical datasheet (in formats .rtf, .pdf and .dwg drawings) complete with all the selection data, operating diagrams and psychrometric charts showing the selected air treatment.

■ The Eurovent Certification

In the air handling units market the certifications, and in particular the Eurovent certification, once requested only seldom, are more and more required in the design phase, in order to comply with the new National and International requirements for energy saving. By choosing a product with the Eurovent label, the designer is sure to rely on a product designed and manufactured respecting the European norms with the performances of the various elements (fans, heat exchangers, silencers etc.) guaranteed and certified. TCF has submitted its ZAE range of air-handling units to the controls of the prestigious and demanding Eurovent criteria, whose tests on the model boxes are performed at the TUV laboratories in Germany, a further additional guarantee of a total independence of judgement and evaluation, in order to be able to offer the customers a product which responds unequivocally to the requests of an everyday more demanding market. On the grounds of the performed tests, the Air Handling Units of the ZAE series have been classified with the following Eurovent classes:



Certified characteristic (Diploma n°09.07.436)	Class
Casing mechanical resistance	D1
Casing air leakage with test pressure -400Pa	L1
Casing air leakage with test pressure +700Pa	L1
Filter by-pass leakage	F9
Thermal conductivity "U"	T2
Thermal bridging factor of standard execution	TB2