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Author



Peter Roth
Head of Test Department

Güntner GmbH & Co. KG
Hans-Güntner-Straße 2 – 6
82256 FÜRSTENFELDBRUCK
GERMANY

Eurovent certification – an underestimated added value factor

Summary

In the day-to-day business of the refrigeration and air conditioning market, it is becoming increasingly clear that too little is known about the existence and importance of Eurovent certification. This can result in users missing out on significant monetary benefits. Güntner GmbH & Co. KG took this as an opportunity to address the topic at the 2015 Güntner Symposium and compile an overview of the background, processes and benefits of Eurovent certification.

The roots of the Eurovent organisations go back as far as 1958, but even today, many of the players in the refrigeration and air conditioning industry still have no idea what is behind the term Eurovent and what advantages it can offer to every user. We want to provide clarity on this issue and give a brief outline of Eurovent's history, structure, identity and the added value these organisations have to offer the final customer, in other words, you.

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Eurovent: One name, several organisations

“Eurovent” forms part of the name of several organisations that all emerged from the same origins, yet perform different tasks. The European Committee of Air Handling & Refrigeration Equipment Manufacturers – or Eurovent Committee for short – acts as the representative of European manufacturers in the refrigeration, air conditioning, ventilation and heating industry and has a voice in both technical and political bodies. The committee members – one from each country – are all national institutions for the relevant industries. Germany is represented by the VDMA (German Engineering Federation). Through these member associations, the Eurovent Committee represents over 1,000 companies in 14 European countries.

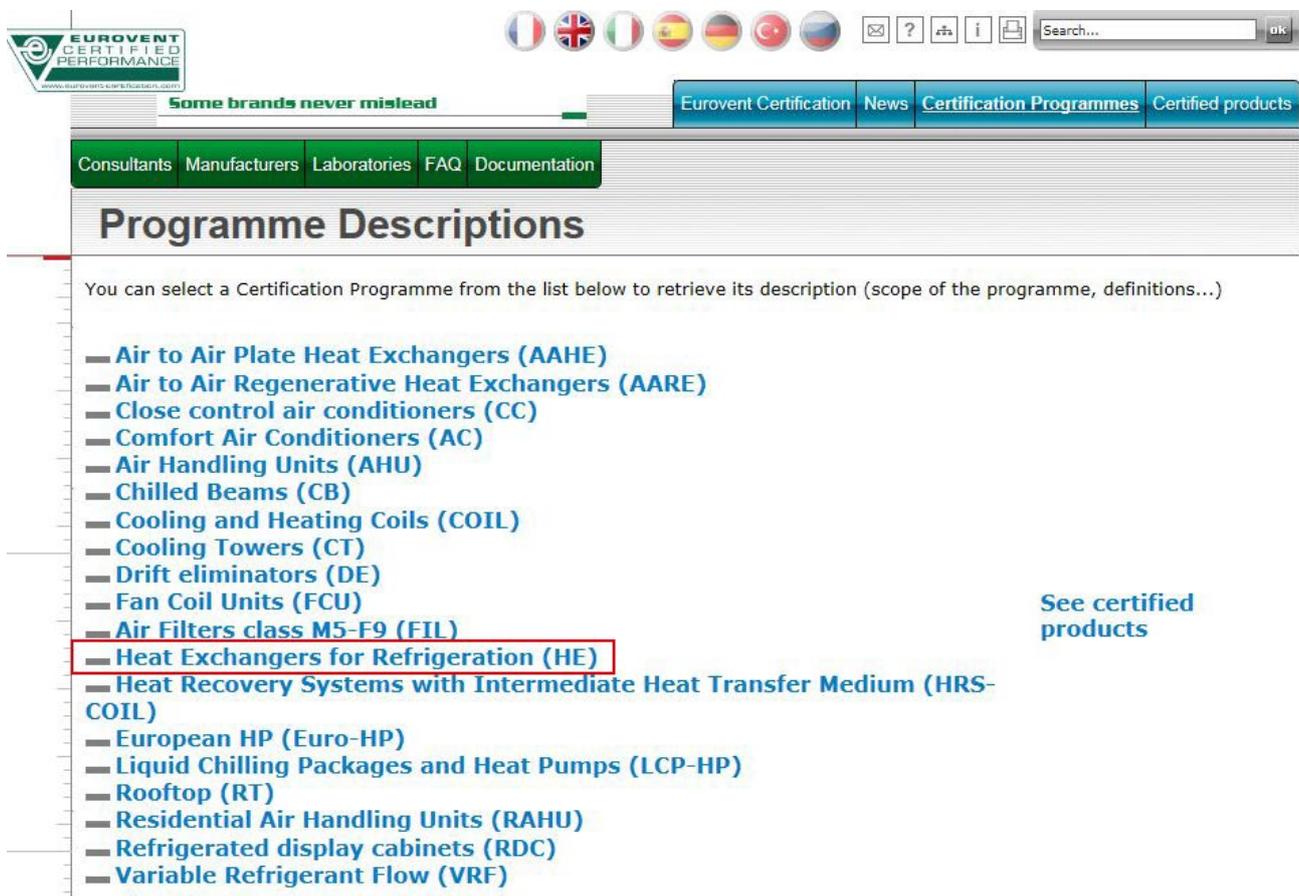
Eurovent Certification: Independent association with a defined identity

The Eurovent Certification Company was founded in 1993 to provide equal competitive conditions within the market. Its remit is to promote fair competition and to guarantee to customers that the units available on the market are assessed correctly and can therefore be more readily compared. To this end, independent laboratories confirm the accuracy of manufacturers' claims by regularly taking and checking measurements on randomly selected units.

Over time, an increasing number of certification programmes for different categories of units were added; at present, there are 36 main certification programmes. You will find an overview of these on the following website www.eurovent-certification.com → Güntner is involved in the HE programme (Heat Exchangers for Refrigeration).



Picture 1: Certification programmes



The screenshot shows the Eurovent Certification website interface. At the top, there is a logo for 'EUROVENT CERTIFIED PERFORMANCE' and a navigation bar with links for 'Eurovent Certification', 'News', 'Certification Programmes', and 'Certified products'. Below the navigation bar, there is a section titled 'Programme Descriptions'. A list of certification programmes is displayed, including 'Air to Air Plate Heat Exchangers (AAHE)', 'Air to Air Regenerative Heat Exchangers (AARE)', 'Close control air conditioners (CC)', 'Comfort Air Conditioners (AC)', 'Air Handling Units (AHU)', 'Chilled Beams (CB)', 'Cooling and Heating Coils (COIL)', 'Cooling Towers (CT)', 'Drift eliminators (DE)', 'Fan Coil Units (FCU)', 'Air Filters class M5-F9 (FIL)', 'Heat Exchangers for Refrigeration (HE)', 'Heat Recovery Systems with Intermediate Heat Transfer Medium (HRS-COIL)', 'European HP (Euro-HP)', 'Liquid Chilling Packages and Heat Pumps (LCP-HP)', 'Rooftop (RT)', 'Residential Air Handling Units (RAHU)', 'Refrigerated display cabinets (RDC)', and 'Variable Refrigerant Flow (VRF)'. The 'Heat Exchangers for Refrigeration (HE)' programme is highlighted with a red box. To the right of the list, there is a link that says 'See certified products'.

Global importance of the HE programme

The HE programme (Heat Exchangers for Refrigeration) for cooling and air conditioning equipment has been running since 2001. Güntner has been successfully participating in the programme continuously since then – without exception, all the units in the participating series have been certified, for the last 14 years!

The HE programme covers three categories of units: condensers, fluid coolers and DX evaporators.

Naturally, in order to participate in the certification programme, each manufacturer must first complete an initial qualification process. Depending on the variety of types in the series produced by the manufacturer, 3 to 10 units per series must be submitted for testing. If these units all pass the test, then repeat measurements are carried out each year on at least one unit per series in order to renew the certification. If one unit fails the test, the measurements must be repeated or, within four weeks, the information in all catalogues and any existing software must be corrected to state the measured value. In addition, an extra unit must be submitted for testing the following year, and if the violation affects information about the thermal power then the penalty is two additional units. It's easy to imagine, depending on the number of series to be tested, how quickly this can turn into a major challenge for participants if several units fail to meet the requirements.

On the other hand, having manufacturers' claims confirmed in this way ensures that you, the customer, can compare corresponding units and thus reliably plan their use in your projects – any time and anywhere. The market volume in Europe for equipment from these programmes currently amounts to €837 million; of that, the proportion of certified units is 54 %.

Testing and certifying core data

For admission to the programme and certification of the tested equipment, various specifications made by the manufacturers on the properties of the units are documented, checked and confirmed:

- Thermal power
- Power consumption of the fan
- Air volume flow
- Surface of the heat exchanger
- Sound power/sound pressure level for fluid coolers and condensers
- Pressure drop on fluid side of fluid coolers

All the measured quantities are neutrally and independently documented on the Eurovent website and publicly available. In other words, you can view and compare the data for certified manufacturers at any time. Descriptions of the processes and procedures used in each programme's tests (rating standards) are also freely available on the website.

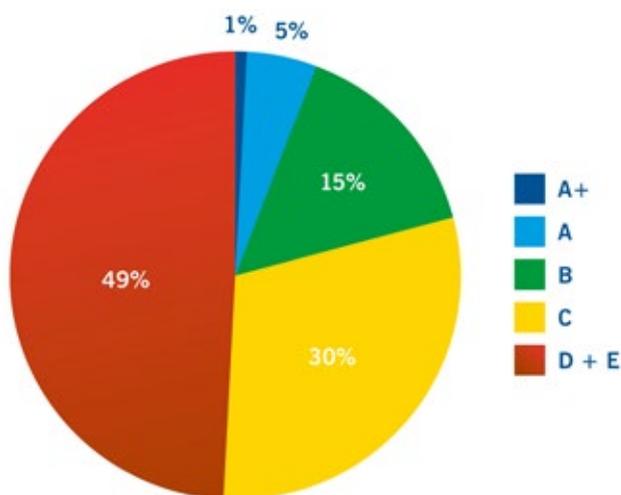
Units that use refrigerants such as ammonia, CO₂ or propane are currently still excluded from certification because there are no independent laboratories to carry out appropriate tests. From 2017, there are plans to offer certification at least for CO₂ gas coolers and CO₂ DX evaporators as a separate unit category; TÜV Süd is currently building an appropriate laboratory.

Compulsory declaration: Energy efficiency class

The classification of equipment into energy efficiency classes is an essential feature of the certification. Generally speaking, a unit's energy efficiency class is the ratio of its electrical power consumption (fan power) to its thermal power measured under standard conditions. The EU Commission proposes that the top 1 % of units available on the market should be classified as A+; the next 5 % as class A; the next 15 % as class B and the next 30 % as class C, with the remainder in classes D and E. The Ecodesign Directive even proposes that in future, every amendment to the Directive should define class E in such a way that units in this group violate the limits laid

down by the amended Directive and may therefore no longer be sold after the respective date. Due to the continuous improvement in equipment performance, these classifications should be revised every three years to reflect the current state of the art.

At Guntner, you will find information about energy efficiency classes both in the Guntner Product Calculator and in the catalogue data sheet for the relevant product series.



Picture 2: Distribution of energy classes

Class	Energy Consumption	Dx Air Coolers		Condensers, Dry Coolers	
		$R_{\text{cooling}} = \frac{P_{\text{cooling}} + C_{\text{cooling}}}{\text{Fan power cons.}} \cdot \frac{\text{In spacing}}{4.5}$		$R_{\text{cooling}} = \frac{\text{Capacity} \cdot (0.011 + 19)}{\text{Fan power cons.}}$	
A+	Extremely low	$R \geq 73$		$R \geq 226$	
A	Very low	$47 \leq R < 73$		$169 \leq R < 226$	
B	Low	$35 \leq R < 47$		$109 \leq R < 169$	
C	Medium	$25 \leq R < 35$		$69 \leq R < 109$	
D	High	$16 \leq R < 25$		$37 \leq R < 69$	
E	Very high	$R < 16$		$R < 37$	

Table: Energy classes thresholds

Customer benefits from certified units

In addition to the unambiguous classification of the energy consumption you can expect from your chosen unit, certification offers other substantial advantages that are worth real money:

- **The independently measured and verified information gives you security for your configuration.** You can design precisely to the operating point; safety margins are not necessary.
- **Having certified data makes it easier to compare different units.** This ensures fair competition under realistic conditions.
- **The “certify-all principle” ensures that manufacturers cannot make their name with a few top sellers:** it is always complete series that are certified, so there are no loopholes for individual units.
- **Certified units save real money:** “We recommend every user with a current or upcoming construction project to calculate the energy consumption resulting from a hypothetical inaccuracy of, for example, 20 % in a heat exchanger. Certified units generally pay for themselves well within two years,” says Peter Roth, Eurovent officer at Guntner.
- **The confirmed and hence reliable technical data increases investment security** and guarantees safe and reliable planning and operation in relation to the performance and energy efficiency of the complete system.