

THINK TODAY, SAVE TOMORROW

WET COOLING TOWERS CAN SAVE AN **ADDITIONAL** 56.000 TONS OF CO₂ PER YEAR.

READ THE STUDY AND FIND OUT THE ENERGY SAVING POTENTIAL OF CONVERTING AIR-COOLED CHILLERS INTO WATER-COOLED CHILLERS.



This document was published by the Eurovent Association and was prepared in a joint effort by participants of the Special Project 'Evaporative Cooling 2030'.

EU CLIMATE TARGETS

To achieve EU climate change goals, highly efficient technology is vital!



What the evaporative cooling industry saves **TODAY**

- Evaporative Cooling equipment installed in EU per year*: 3.900 units (average)
- Total heat rejection installed base in kW in EU per year*: 3.600.000 kW (average)
- Total fan power installed in kW in EU per year*: 66.000 kW (average)

* Source: Eurovent Market Intelligence



What the evaporative cooling industry can save **TOMORROW**

56.000 tons of CO₂ saving per year*

Average number of air-cooled chillers

(cooling capacity > 1.000 kW) installed in EU per year**

530 units = 700.000.000 kWh on average per year

Average CO₂ emission saving by converting the installed base of air-cooled chillers into water-cooled chillers:

- Industrial application: 15,5%
- HVAC application: 16%

* Estimation based on the number of the installed air-cooled chiller converted into water-cooled chillers

** Source: Eurovent Market Intelligence



HEAT REJECTION SYSTEMS COMPARISON & CO₂ SAVING

Mechanical refrigeration systems are frequently used for industrial cooling, food processing, and air conditioning.

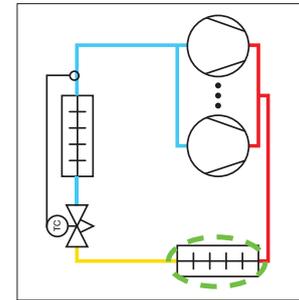
The ecological footprint of such systems greatly depends on the technology used to remove the condensation heat.

Eurovent has conducted an extensive study for a variety of load profiles, climate conditions, and control strategies.

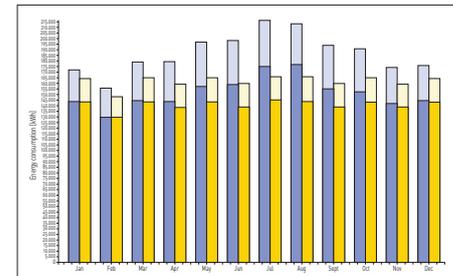
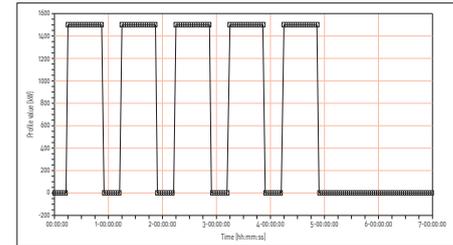
One year of operation was simulated for each system; the same yearly load profile and weather conditions were used in all simulations.

Each simulation was performed on an hourly basis by performing one steady state simulation for each hour in the year. In each hour, the load was known from an hourly load profile for the entire year.

The result of this study is that the refrigeration system using wet cooling towers is the clear winner when it comes to a year-round CO₂ footprint.

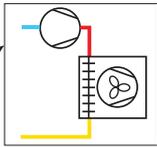


Industrial application

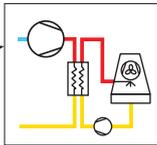


Legend:
 ■ Air cooled system compressor
 ■ Air cooled system fans and pumps
 ■ Cooling tower system fans and pumps
 ■ Cooling tower system compressor

Average CO₂ saving: 15,5%

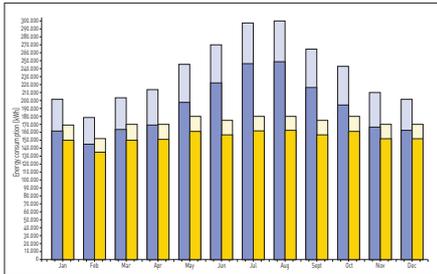
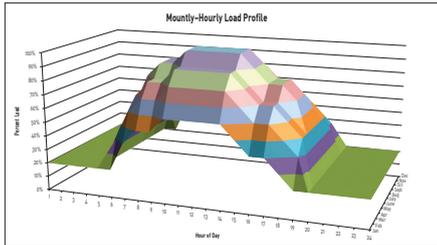


An air-cooled process must be intended as a process in which air passes over a coil or channel containing fluid; the heat is transferred from the coil directly to the fluid.



A water-cooled process must be intended as a process that utilises a spray system to pass water over coils or fill media to reject heat to the atmosphere through evaporation. The spray water itself or the fluid contained in the coil can then be used by a cooling system.

HVAC application



■ Air cooled system compressor ■ Air cooled system fans and pumps
■ Cooling tower system fans and pumps ■ Cooling tower system compressor

Average CO₂ saving: 16%

What do 56.000 saved tons of CO₂ per year represent?

#Greenhouse gas emissions from **10.800*** passenger vehicles driven for one year



#CO₂ emissions from **electricity use of 8.800*** homes for one year



#CO₂ emissions from **118.000*** consumed barrels of oil



#Carbon sequestered by **24.000*** hectares of forests



* <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



WE ARE EUROPE'S INDUSTRY ASSOCIATION FOR INDOOR CLIMATE (HVAC), PROCESS COOLING, AND FOOD COLD CHAIN TECHNOLOGIES – THINKING 'BEYOND HVACR'

Eurovent is Europe's Industry Association for Indoor Climate (HVAC), Process Cooling, and Food Cold Chain Technologies. Its members from throughout Europe, the Middle East and Africa represent more than 1.000 companies, the majority small and medium-sized manufacturers. Based on objective and verifiable data, these account for a combined annual turnover of more than 30bn Euros, employing around 150.000 people within the association's geographic area. This makes Eurovent one of the largest cross-regional industry committees of its kind. The organisation's activities are based on highly valued democratic decision-making principles, ensuring a level-playing field for the entire industry independent from organisation sizes or membership fees.

Eurovent's roots date back to 1958. Over the years, the Brussels-based organisation has become a well-respected and known stakeholder that builds bridges between manufacturers it represents, associations, legislators and standardisation bodies on a national, regional and international level. While Eurovent strongly supports energy-efficient and sustainable technologies, it advocates a holistic approach that also integrates health, life and work quality as well as safety aspects. Eurovent holds in-depth relations with partner associations around the globe. It is a founding member of the ICARHMA network, supporter of REHVA, and contributor to various EU and UN initiatives.



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