

A MUNTERS ORIGINAL PART

Product Information  
EPCC Evaporative Pre-Coolers  
Condenser

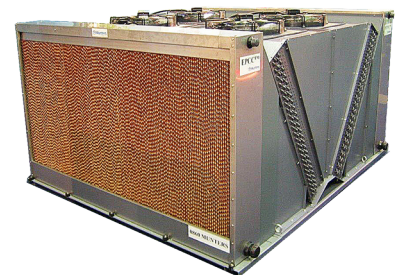
- Reduced carbon dioxide CO<sub>2</sub> emissions
- Reduced energy consumptions
- Increased cooling capacity
- Enhanced compressor function
- Minimised investment costs
- Improved capacities of existing plants
- Noise reduction
- Reduced maintenance



## EPCC Pre-Coolers Condenser

A balance between cooling function, cost and energy

Air-cooled refrigeration units are the typical form of heat rejection system installed to provide air-conditioning, ventilation and refrigeration. Obtaining adequate cooling function must be balanced against the higher capital investment and physical installation space of an over-dimensioned system. Moreover the running costs, comprising both life cycle system maintenance costs and energy consumption, are critical factors. Energy can be measured in money where the unit price is continually rising, but also in terms of environmental impact such as CO<sub>2</sub> emissions. Refrigeration plants account for around 10% of the global electricity consumption and is rising. It is therefore no surprise that cost-consciousness and energy conservation play increasingly important roles in new condenser system design and pro-longation of the life cycles for existing installations.



## An elegantly simple solution to a complex equation

In an air-cooled condenser system the ambient temperature of the air used to dissipate heat from the condenser greatly impacts its performance. As the ambient air temperature rises, head pressures also rise. As a result, energy demand and usage increase while cooling capacity falls. Munters has developed an Evaporative Pre-Coolers Condenser EPCC that increases the cooling efficiency of a condenser system while lowering energy consumption. The EPCC fits onto conventional single-, doublestage condensers and rooftop units. It pre-cools the air entering the condenser system, which in most cases improves or at least equals condenser cooling performance with lower energy consumption. The EPCC has been designed as a natural addition to new air-cooled condenser systems thus making a positive contribution to running costs, extension of condenser life cycle and helping conserve energy and the environment. The simplicity of installation and elegance of the design means that it can even be retrofitted to existing installations thereby spreading the advantages to greater overall benefit.

### How EPCC works

The EPCC uses a Munters high performance media that is installed before the condenser. The media is GREENGUARD Gold certified under UL's certification program, as having low chemical emissions, validating that it meets the highest industry standards globally. The fans in the condenser sucks the air through the media, thus lowering the ambient air temperature entering the condenser. The result is that warm/hot air is cooled due to the evaporation process. The drop in temperature is significant and can be up to -15 °C in the summer depending on geographical location. The EPCC can be fitted to condenser systems employing either a single coil or double (v-shaped) coil.

### Higher pre-cooling efficiency gives improved condenser function

The design of the EPCC high performance media with regards to low pressure drop and high efficiency, allows for optimum pre-cooling of the air passing through the condenser. Pre-cooling of the air enables the condenser coil to reject more heat. This reduces head pressure and lowers the compression ratios.

Application of refrigeration	Riyadh	Los Angeles	Hamburg	Madrid
Ventilation	36%	16%	19%	25%
Freezer	33%	7%	3%	10%
Chiller	34%	9%	5%	12%

Annual energy savings resulting from pre-cooling in air-cooled condenser systems for supermarkets in four different countries and climates in the world

Cooling capacity is increased as a result. For every 1°C reduction in temperature due to pre-cooling of the air gives minimum 2% increase in efficiency of the condenser. This means that even a small temperature reduction from the EPCC can give a significant effect in cooling capacity and energy savings. The pre-cooling effect of the EPCC in the summer can be up to 15 °C and above depending on the climate and season, which means well over 20% improvement in condenser efficiency.

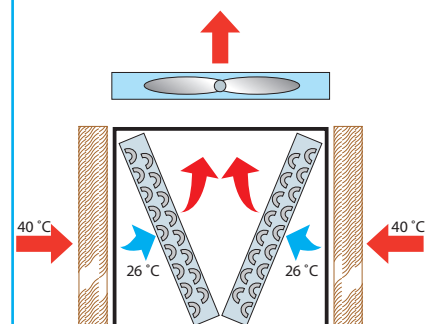
### Technical specifications

The EPCC comprises of media in a rigid frame with a water reservoir of stainless steel. Water is evenly distributed over the media through a specially designed water distribution system. When pre-cooling of the air is required, water is distributed over the adiabatic cooling media. The special design gives a high adiabatic cooling efficiency (80%) while still operating at very low pressure drop (30 Pa or less). No aerosols are generated and no water carry-over occurs. The media is specially manufactured by Munters for its pre-coolers.

### Standard and customized fittings for new or existing installations

EPCC is available in many standard sizes that fit the measurements of most common types of air-cooled condenser systems. Munters can supply a precooling system to any air flow depending on configuration, which means that EPCC can be fitted to a wide range of cooling unit sizes. It is also possible to order custom measurement EPCC systems.

Every 1°C reduction in temperature due to pre-cooling of the air, gives minimum 2% increase in efficiency of the condenser.



Warm ambient air passing through the EPCC matrix comes into contact with water that flows freely across the matrix. Heat energy is absorbed by the water causing evaporation of the water and cooling of the air. The pre-cooled air entering the condenser system allows heat energy from the condenser coil to dissipate more easily thereby increasing the cooling capacity for the same or in most cases less energy consumption.

\* Ambient outside temperature db 40 °C, wb 23 °C



GREENGUARD Gold certification Munters high performance EPCC media has been tested for emissions from over 360 individual chemicals of concern, guaranteeing them as having non-harmful emissions.

Find your local contact on [munters.com](http://munters.com)

