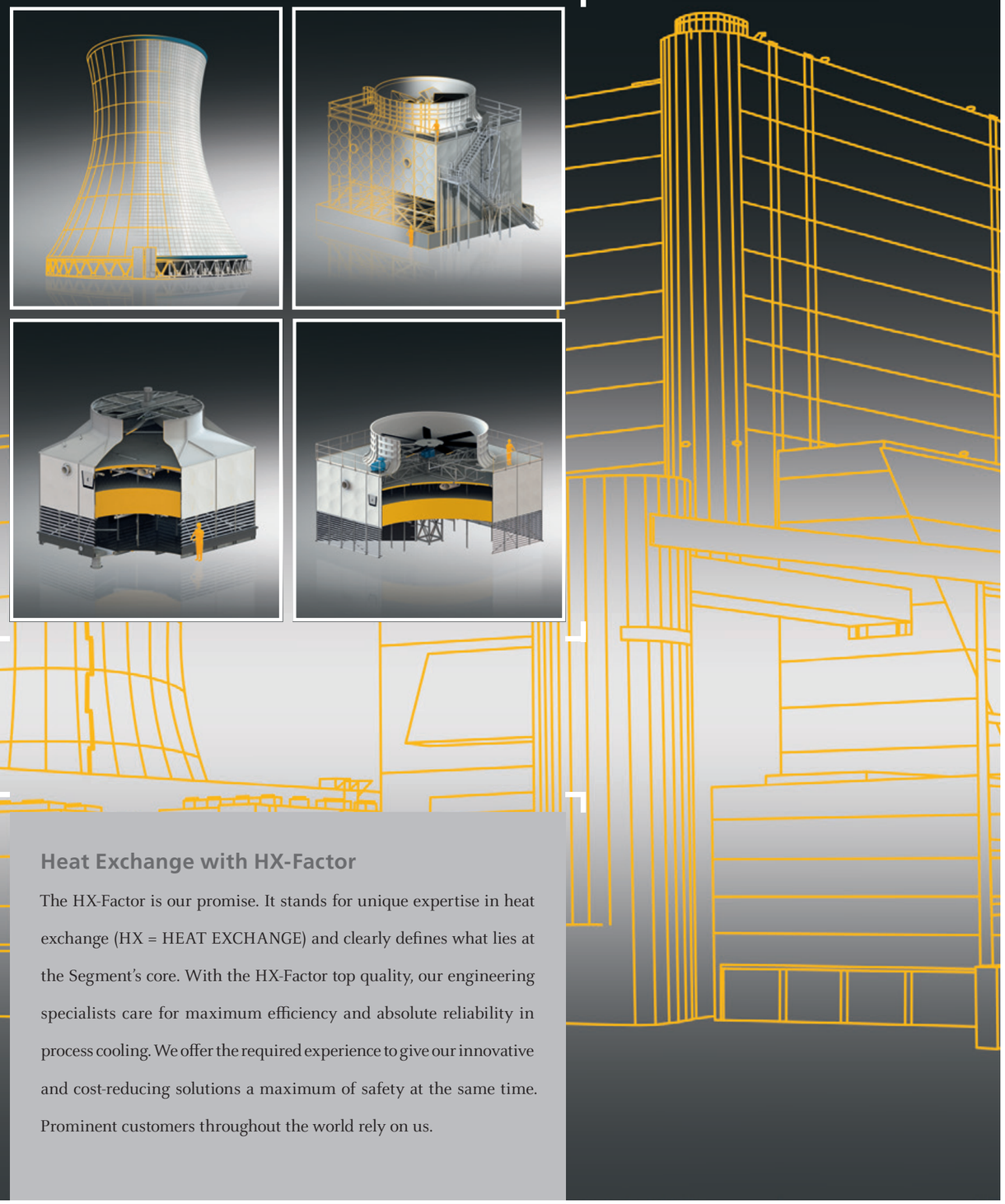


# GEA Cooling Towers

## Polacel CMDR counterflow cooling towers



## Heat Exchange with HX-Factor

The HX-Factor is our promise. It stands for unique expertise in heat exchange (HX = HEAT EXCHANGE) and clearly defines what lies at the Segment's core. With the HX-Factor top quality, our engineering specialists care for maximum efficiency and absolute reliability in process cooling. We offer the required experience to give our innovative and cost-reducing solutions a maximum of safety at the same time. Prominent customers throughout the world rely on us.



# GEA Cooling Towers

## Efficient technology for high-performance solutions



Our companies under the roof of GEA Wet Cooling Towers offer the whole portfolio of cooling towers – from smaller, ready-to-install towers to large, natural-draft cooling systems. Our Research and Development Team and our manufacturing base ensure that we deliver wet cooling towers at the highest quality level.

In Europe we have combined our activities for modular and large cooling towers. The experts of GEA Cooling Towers, together with their cooling tower colleagues at GEA Energietechnik (GET), make up one team with combined knowledge and expertise. Our customers greatly benefit from this important step.

GEA Cooling Towers has its roots in 1967, when the Dutch company CELBOUW was founded. GEA acquired 50 % of shares in Polacel in 1989, and the rest of its shares, in 1991. GEA Cooling Towers technology offers a complete portfolio for the design, manufacture, and service of cooling towers, with components from GEA 2H. Its spectrum includes small modular cooling towers (for smaller processes), mechanical-draft cooling towers (for chemical companies), and cooling towers for large air conditioning facilities (for all sizes of commercial complexes). In collaboration with GEA GET, GEA Cooling Towers now also offers field-erected cooling towers and natural-draft cooling towers for large industrial and power applications.

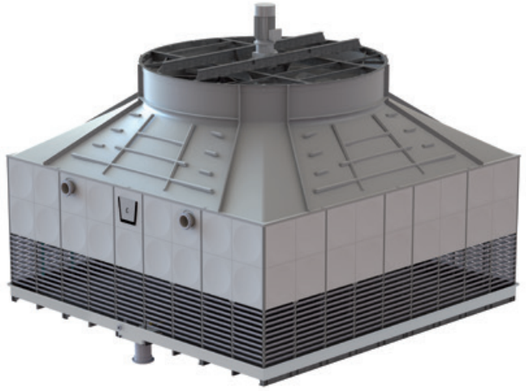
The history of GEA Energietechnik (GET) reaches back to the founding period of GEA, around 1920. In order to offer its customers the most cost-effective solutions for requirements in the area of re-cooling, the GET product portfolio was expanded in 1964 by adding wet-cooling technology. In 1965, GET built its first natural-draft wet cooling tower, for a 300-MW power plant in Niederaussem (Germany). Since then, GET has constructed a great number of facilities with both wet as well as dry cooling technology, to the full satisfaction of its customers.



GEA Wet Cooling is among the largest providers of technology on the cooling tower market. It is one of the very few companies to offer all sizes of towers, including modular cooling towers, field-erected mechanical-draft cooling towers, natural-draft cooling towers, fan-assisted natural-draft cooling towers, and closed-loop cooling towers.









## GEA Polacel CMDR cooling Towers

GEA Polacel designs, manufactures and maintains cooling towers for process and climate Cooling. Our energy-efficient and environmentally-friendly cooling water generators stand out because of the complete quality policy we employ.
The GEA Polacel CMDR systems combine a high cooling capacity with low energy consumption. The modules are supplied ready to use and they are easy to adjust to cooling requirements and the available space. Whether they are used single or in series. The cooling performance of these cooling towers is optimal and operation is problem free. The efficient CMDR systems are the best choice for man and his environment.

## The Effect of Counterflow

CMDR cooling Towers work on the principle of counterflow. This means that the water flows down while the air is pulled upwards by a fan. As the water flows further through the system, the air it encounters is fresher. In other words cooler and less saturated with moisture. Counterflow cooling towers can approach the wet bulb temperature better compared to crossflow cooling towers.

### Benefits

- HVAC
- Chemical Industry
- Power and Engery
- Metallurgy and Paper
- One contact person for all Solutions
- Globally active in more than 40 countries
- Maximum availability, security of operation and system efficiency







## Cooling with a geared motor on an axial fan

The Polacel CMDR series are characterized by a compact motor gearbox combination that is mounted directly on top of the cooling tower above the axial fan. The cooling generated by evaporation of approximately 1% of the cooling water. The direct contact between water and ambient air is created over the surface of plastic fills. The cooling towers have a counter flow configuration, this provides the most efficient exchange of enthalpy and the coldest water. Although modular by size the Polacel CMDR series can be adapted to the requirements of the customer with regards to noise limitations or heavy duty water conditions.

Polacel CMDR series of modular cooling towers. These models have a successful history in the market for industrial cooling tower applications. The modular built standard cells are Available in a range of 14 sizes between 12 an 120m2. Most applications are industrial water cooling between 1 and 30 MW per cell.

### Benefits

- Built for continuous operation over long lifetime
- Proven concept
- Standardized 3D modeling stand for an easy and reliable assembly on site
- All models can be hoisted completely preassembled
- Structural strength has been calculated for a variety of wind loads and seismic conditions
- Low noise measurements can easily be integrated in every model
- Special applications with trickle fill and heavy duty grids

## Benefits:

The advance design engineering has also resulted in a number of special structural advantages.

- Only a minimum number of support points are necessary as a result of the self-supporting foundation and the high internal stiffness
- Completely transportable, ready to be installed
- The Polacel frost-proof water tank can withstand sub-zero temperatures
- The Polacel CMDR system can also be installed on existing water basin
- The extendable modular system has virtually no limitations in terms of form and capacity
- All structural design premises are analyzed and tested by means of dynamic calculations and computer studies beforehand.




## Cooling performance measured: The wet Bulb

The wet bulb temperature is in fact the lowest temperature that can be achieved by air cooling in different circumstances.

This temperature can be measured by wrapping a glass thermometer in a piece of cotton that has been drenched in water and placing in a stream of air. The water will evaporate and lose heat. (sweating while taking exercise has the same function and makes a “cooling tower” out of our skin). The wet bulb temperature is therefore lower than the ambient temperature.

Cooling towers try to approach this achievable minimum temperature using as little energy and as efficiently as possible. The Polacel CMDR range succeeds in doing this and combines maximum efficiency with low power consumption, and therefore minimal costs.

## Pre-assembling

CMDR Cooling Towers can be easily assembled on site. Using the extended manuals with 3D instructions. If required, the smaller models CMDR can be delivered completely pre-assembled on a low loader. Then the complete cooling tower can be shipped to its final destination in 2 pieces.

## Modules to size

The cooling water temperature (inlet and outlet), the wet bulb temperature, noise and the water load are the five most important factors in the selection of a cooling tower. GEA Polacel makes an inventory of the requirements together with the client and uses this inventory as the basis of the design for a suitable solution. The modular CMDR system can be extended and there are standard solutions available for different capacity needs. GEA Polacel engineers make customized changes to meet special requirements.

## Noice reduction

Mostly cooling towers are standing on a roof or at the edge of the site. The noise produced by the cooling tower such as the fan, falling water and the electrical motor or geared motor can be a problem.
GEA Polacel has put a number of developments into practice that reduces the noise nuisance. Larger fans ( lower speed, less noise and higher efficiency) floating silencers to reduce the noise of splashing water. There are also other noise reducing measures that combat the different sources of noise .
GEA Polacel makes calculations for all cooling towers in relation to the requirements laid down in environmental permits.





## The security of quality

GEA Polacel designs and manufacturers cooling towers with long lifetimes and minimal maintenance needs.

This is achieved through the materials used – stainless steel combined with glass fibre and plastic – the sound design and the experience of our engineers. The result is a cooling tower that is low maintenance, energy efficient and able to supply constant excellent problem-free performance.

## Advice and service

GEA Polacel builds cooling modules that meet precise specifications. Our sales engineers give advice, analyze your wishes and take personal responsibility for delivery so that your order is completely in line with your instructions.

GEA Polacel own service organization specializes in cooling tower maintenance. Irrespective of brand or version, the maintenance specialists know all the ins and outs of the whole technical area and are involved in the latest developments.
GEA Polacel has broad experience in cooling tower maintenance. We work in accordance with the requirements described by ISO, VCA, VDMA, CTI and Eurovent. The technicians can carry out the maintenance needed in virtually every location and in practically any time frame.

## Benefits:

- Stand alone
- Inline
- Back to back arrangements

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## Expect one-stop solutions

By concentrating various performance fields into a single, one-stop solution, GEA Heat Exchangers especially enables more effective control of the complex processes in heat transfer. It also speeds up order execution and simplifies preventive and remedial maintenance of heat transfer facilities. In this way, GEA creates clear and personally addressable responsibility for the entire process of project implementation. In a global, tightly meshed network, our highly qualified staff provides all key processes in industrial production and air treatment. GEA has set a new standard for efficiency, reliability, and availability in heat exchange. With production and service locations around the world, GEA Heat Exchangers offers a unique industrial network to provide excellence in engineering and expertise in local services and comprehensive support of our customers in a wide range of dedicated applications.

Excellence Passion Integrity Responsibility GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

www.gea-heatexchangers.com

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