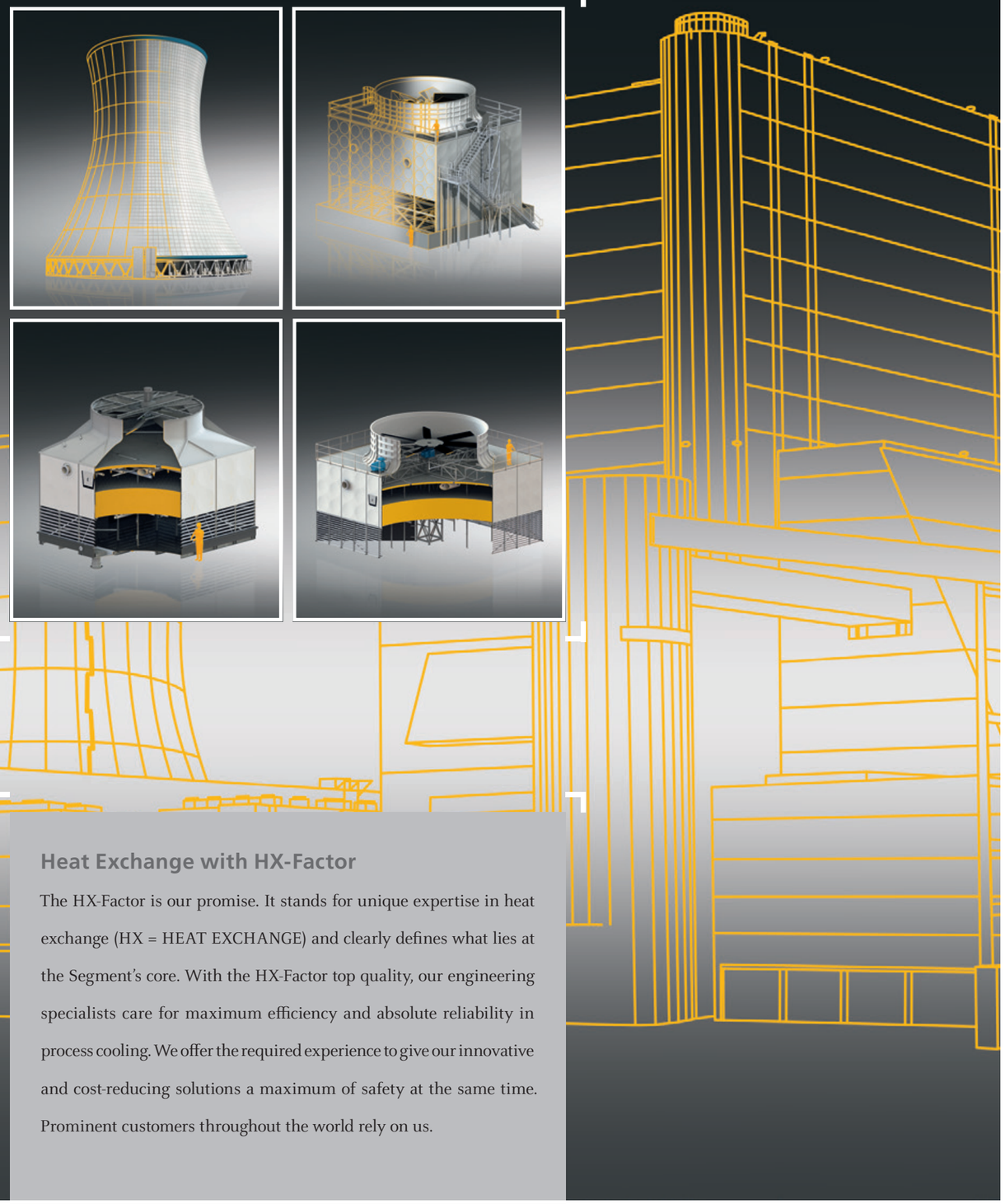


GEA Cooling Towers

Polacel Crossflow cooling towers XE – XT – XL – XM



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.







Benefits

- One contact person for all solutions
- Globally active in more than 40 countries
- Individual solutions
- Maximum availability, security of operation and system efficiency

GEA Polacel

GEA Polacel is a company of the GEA Group AG. The GEA Group, headquartered in Bochum, Germany, is a globally successful technology group with more than 250 companies in 50 countries.

The company now focuses on specialty mechanical engineering – especially process engineering and equipment. GEA Group technologies are applied in the food, chemical and petrochemical industries, the energy sector, air treatment and shipbuilding as well as the pharmaceutical and cosmetic industries. The GEA Group is one of the world`s market and technology leaders in 90 per cent of its businesses.
GEA is a solid foundation for the GEA Polacel activities and it provides us with greater scope. Good contacts with affiliated organizations that are leaders in our field provide an ongoing stimulus to our own development. This is what makes GEA Polacel a leader in the introduction of technological improvements.

The Effect of crossflow

Using the crossflow principle, warm water flowing down through a cooling unit is cooled by air drawn upwards by a fan. Evaporation and direct heat exchange cause the temperature to fall rapidly. Compared to counterflow cooling towers, induceddraught crossflow cooling towers are much quieter and smaller. The performance figures are next to perfect.

GEA Polacel crossflow cooling towers

Polacel designs, manufactures and maintains cooling towers for process and climate cooling. Our energy-efficient and environmentally cooling water generators stand out because of the complete quality policy we employ.

The Polacel crossflow cooling tower is quiet and economical, and has a high cooling capacity. The modular system can be easily adjusted to suit cooling requirements and the space available. The cooling towers have optimal performance and run problem-free. The considerable savings in water usage (95%+), and the exceptionally low noise level make the economical crossflow cooling towers the best choice for both man and the environment.



Cooling Tower type 3 XMS 2.720
Telephone-/Communication center in the Netherlands

[Maximum efficiency]

Measuring cooling performance: the wet bulb

The wet bulb temperature is in fact the lowest temperature that can be achieved by air cooling in any given situation.

This temperature is measured by wrapping a glass thermometer in a cotton cover that has been soaked in water, and placing it in a stream of air. The water will evaporate and extract heat (sweating during physical exercise performs 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 achieve this minimum temperature the most economic and efficient way possible. The GEA Polacel crossflow cooling tower range achieves this and successfully balances cooling performance with low power consumption (low cost) and low noise.

[Modular system]

Made-to-measure comes as standard

When choosing a cooling tower, the four most important factors are: the cooling water temperatures (inlet and outlet), the wet bulb temperature, the noise emissions, and the water requirements.

GEA Polacel assesses the specific requirements together with the client, and uses this assessment to develop a suitable design. The expandable modular system is flexible enough to solve all kinds of capacity demands as 'standard'. However, for the customer with special needs, the Polacel engineers will build a tailor-made solution.



Placing Cooling Tower with crane on steel construction

[Low Noise]

Noise and other environmental considerations

Cooling towers are usually mounted outdoors, often on a roof and in the middle of a residential area. That is why any noise caused by the fan, falling water, the electric motor and the gearing could pose a potential problem.

In order to reduce noise levels, GEA Polacel has created a number of important features. Larger fans (lower speed, less noise, greater efficiency), pressure-less water distribution, cooling units that run down into the water tank, and other noise-reducing measures all combat the various problem areas.

GEA Polacel makes detailed calculations to show exactly what, and how much, noise the cooling tower will make. GEA Polacel can also make advance calculations for all the requirements that are placed on cooling towers by noise regulations and environmental permits.

GEA Polacel engineering

Other prominent distinguishing features of the crossflow design are:

- The design of the fan section and the larger fan ensure lower energy consumption and result in an important reduction in noise.
- A crossflow cooling tower with a large axial fan uses around 70% less energy than a counterflow cooling tower with a centrifugal fan.
- Using a geared motor to drive the fan, the cooling capacity can easily be adjusted as required.
- The pressure-less water distribution system is energy-efficient, and the water pan is easy to clean.
- The cooling units are mounted in such a way as to make cooling per unit possible. The advantages of this technique are savings of energy, the ability to adjust the capacity, and the easy access for maintenance. Capacity can also be adjusted by regulating the water flow. (The water distribution system and the cooling units can be adjusted to suit the amount of water used.)
- The air inlet louvres create ideal air inflow and minimize water loss caused by splashing.
- The design takes into account the possible need for variation in capacity, operation during maintenance, and other features the client may require.
- Clients can choose from four standard models in the crossflow range, each model with different air speeds.



Skeletal and fan of the Cooling Tower from the inside view



Cooling Tower type 3 XM 2.2.720
Chemical plant in Germany

Structural qualities

The advanced 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 foundations and the high internal rigidity.
- Where possible, the cooling tower is fully portable and installed ready-to-go.
- The GEA Polacel frost-proof polyester water pan can withstand sub-zero temperatures. Essential for free-cooling applications.
- Due to their low profile, crossflow cooling towers present fewer aesthetic problems.
- The expandable modular system has virtually no limitations in terms of shape and size.
- All structural design principles are analysed and tested in advance using dynamic calculations and computer studies.

Cooling Tower type XT 2.720
Hospital in the Netherlands



[Maximum quality]

Durable and reliable

GEA Polacel designs and manufactures cooling towers that have a long life and require a minimum of maintenance.

This performance is achieved by a careful choice of materials - stainless steel combined with glass fibre reinforced polyester and plastics - the exceptionally sound design and the considerable experience of our engineers. 'Cheap and cheerful' solutions such as fans with a V-belt drive, or painted panels, are avoided. The result is a cooling tower that is low maintenance, economical and able to deliver a consistently high quality, problem-free performance.



Cooling Tower type XL 2.320
Chemical Plant in the Netherlands

[All around support service]

Advice and service

GEA Polacel builds cooling towers that meet exact specifications. Our sales engineers give advice, analyse your needs, and personally make sure, up to and including the installation, that your order is carried out completely according to your instructions.

The GEA Polacel service department specializes in cooling tower maintenance. Irrespective of make or type, the maintenance specialists know the ins and outs of the whole technical area, and are up to date with all the latest developments. GEA Polacel has over thirty years of experience in cooling tower maintenance. We work in accordance with the requirements specified by ISO, VCA, VDMA, CTI and Eurovent. The technicians can carry out the proper maintenance at any location and within practically any timeframe.



Cooling Tower type XL 2.320
Chemical Plant in The Netherlands

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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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