

MAX PRO

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MAX PRO - ADVANCED HYBRID TECHNOLOGIES - PATENTED SYSTEM

The new product line Cabero MAX PRO offers users significant advantages over traditional evaporative cooling towers, setting new standards in terms of operating costs, water consumption and reliability, longevity and efficiency.

The VARIO ON DEMAND, developed by Cabero for this product line, also allows the user to change the design and functionality of the system based on a unique modular design principle.

All desired function levels can be plugged into each other segments without having to perform a subsequent complex sealing against escaping cooling water. This also enables efficient, simplified and cost-effective installation (not commissioning) without specialist knowledge.

Therefore, an exchange is also subsequently simplified to conventional systems.

In its complete configuration, MAXPro consists of eight function levels that can be combined with each other. Each function level again has different versions.

These standardized variations are selected according to customer specifications (VARIO ON DEMAND) and allow

to meet almost any requirement.

The functional levels are (from top to bottom):

- Fan unit with EC or AC fan
- Desuperheater (air-cooled heat exchanger - in contact with cooling water with special treatment)
- Irrigation - and packing unit
- suction
- Sliding unit
- Cabero booster / flooded heat exchanger block
- Control technology and pump station
- Walk-in stage
- The materials used are of high quality and all wetted components are made of stainless steel.

The choice of materials was deliberately chosen in order to meet the quality of the waste water and the discharge permits of increasingly stringent environmental protection regulations in the future.

The use of stainless steel completely avoids zinc or lead entry into cooling water compared to hot-dip galvanized versions. Cost-intensive passivation treatments and possible leakages caused by white rust were excluded and the required quality standards for the cooling water (fresh water) noticeably eased, so that the costs for water treatment could be drastically reduced.

Normally mineral deposits (scale formation) get created due to especially in the case of heat exchanger unit's humidification in the air stream (regardless of the choice of material - this is also the case with stainless steel pipes). This is not the case with MaxPro systems.

Due to the flooded (completely under water) heat exchanger, the so-called scale formation (depending on the temperatures in the refrigeration cycle) can be completely prevented.

The increase in efficiency is not only based on the fact that a heat transfer resistance (scale or other mineral deposits) can be avoided, but that the heat exchanger tubes - in contrast to sprinkled and in the air flow heat exchangers - have 100% contact with the cooling water in the MaxPro system.

The flooded heat exchanger unit in the MAXPRO is operated (patented) in the pure cross-counterflow principle and the tube is designed so that sediment deposits can be efficiently cleaned.

With the MAX PRO and the innovations used in this product line, Cabero has succeeded, in addition to the long service life, resistance and thus operational reliability, to drastically reduce operating costs and to focus on the unique ecological and economical food print.

Due to the "adiabatic" airflow upstream desuperheater, the efficiency rate can be significantly increased again, the water consumption can be reduced even more and, in addition, swath formation can be avoided in most cases.

The desuperheater (air-cooled heat exchanger), with its built-in tilt at air speeds above 2.8 m / s, serves as a kind of drop separator in most cases.

Although systems made of stainless steel are more expensive to buy than galvanized systems, they are considerably superior to conventional evaporative coolers due to the dramatic increase in efficiency of MAX PRO systems, especially in terms of operating costs and longevity.

Another advantage is that the user can be sure that MAX PRO SYSTEM will continue to meet stringent environmental protection requirements in the future.

The product line is completed by the specially developed MaxPro Controller unit, which in addition to the speed

control for EC and AC motors, the component control such as pump, valves, level control etc .. In particular a variety of new economic and innovative control characteristics demonstrates the operating conditions and can pass to the building management system via defined interfaces or displays them on the controller display.

This control system minimizes the requirements for water treatment and enables safe operation even with higher concentration cycles of the cooling water.

The control of the conductivity of the cooling water allows less sludge and consequently less need for refill water (fresh water). This paired with the currently most efficient heat exchanger Cabero Turbo leads to significant cooling water savings.

For documentation and monitoring of compliant operation and to comply with legal requirements, we recommend our new Legio Protect controller as an important conceptual component in your control and monitoring technology.

YOUR BENEFITS AT A GLANCE:

areas of application:

NH₃, CO₂, all refrigerants, butane, propane, mineral oils and brine

All water wetted components in 304/316 stainless steel, e.g. - Stainless steel block - Stainless steel housing and covers - Fully welded stainless steel tub and deflector (baffle)

Longer service life - Self-passivating stainless steel allows a significantly longer service life than galvanized steel
- Fans or components in the air flow are designed for evaporation - - Highly improved resistance, even when operating the system with low water quality

Smart and compact design - Unique performance yield thanks to optimized water distribution and cross-counterflow principle

- Efficient prevention of mineral deposits on the replacement pipes due to flooded heat exchanger block
- lower operating weight - lower refrigerant charge
- VARIO ON DEMAND - after the freely selectable "CABERO eight function level principle"
- No formation of swaths when using the desuperheater function stage
- increased switching points dry / wet (when using a desuperheater)

Range of power outcome - 0.5 - 3.0 MW per device - single-row and double-row fan arrangement graded in 7 device lengths - possible from the combination (Vario on Demand) via 820 device versions

Highly efficient fans - AC or energy-optimized EC motor technology - Quiet operation.

- Maintenance-free motors (no maintenance and replacement of pulleys or belts or other costly maintenance work on the fan) - Increased redundancy through the use of multiple fan motors

Irrigation system (cooling water system)

- Large internal channel diameter of the spray nozzles, designed for large dirt particles prevents the blockages of the same - Pump riser with delivery of two segments easy to install. - Two pumps increase redundancy - Fully drainable and easy-to-clean heat exchanger tray

Air inlet grid - through honeycomb inclusions we prevent the escape of cooling water to the outside - opaque - UV resistant - Corrosion resistant

Certifications - ISO 9001 quality assurance - PED certified

Simplified installation and service - Efficient and simple design (lower installation costs) - Dimensionally stable and fully welded stainless steel housing in all functional stages which are in contact with cooling water

- No elaborate sealing work required by the eaves sheet principle in the segment transitions. - Folding fan nozzles for simplified cleaning of the desuperheater

- Additional inspection openings for irrigation system (spray nozzles) and the packing - walk-in stage

- easily replaceable function levels

MAX PRO Controller - Function-specific modes of operation according to the priority principle for the weighting of the resources to be saved - No additional software required

- Warnings and messages in clear text on the controller display

- Easy integration with the GLT or customer systems due to defined interfaces - Legio Protect recommended

1. All wetted components and housings in stainless steel

2. Upstream desuperheater installed in the adiabatic airflow (no aerosols and no swathing)

3. Dry operation possible up to ambient temperatures 12 °C

4. Highly efficient Turboplus stainless steel heat exchanger, installed under water (no mineral deposits or as with pipes which are installed in the air flow) In addition, full flushing of the individual core tubes - thus 100% contact with the cooling water) all chambers are operated in pure cross countercurrent -> thereby cooling limit temperatures are up to 1.5 K above wet bulb temperature possible.

5. High resistance to water quality in borderline
6. Small footprint -> high performance on a small footprint -> easy maintenance and low maintenance -> good accessibility when cleaning the components
7. High operational safety compared to conventional systems
8. Easy and cheap spare parts procurement through 6 module system
9. Very low operating costs (due to maintenance-free EC / AC fans diameter 800-1000 and the ERGO Water Manager) to conventional evaporative coolers. In addition, an extremely long life and high reliability
10. normal to extremely quiet sound pressure level
11. Complete monitoring of operation by Cabero Ergo Plus Control units / defined interfaces to building control MODBUS, etc. and other special customer requests.
12. For optimum operational safety, use of the CABERO Legio Protection System CLPS
13. Accessories including climbing ladder, fall protection, commissioning by Cabero Service, etc.
14. Made according to PED and ISO guidelines

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