Güntner Info

*The new condenser system*

# GVX

## with microox® technology

***Benefits:***

***– Reduced refrigerant charge***
***– Easy and thorough cleaning***
***– Corrosion-resistant***
***– Energy-saving EC fans***
***– Reduced weight***
***– Modern design***
***– Reduction of operating costs***

microox®

*Güntner ...keep(s) your quality.*

# Why is the GVX with microox® technology so special?

## Innovative technology

The Güntner microox® heat exchanger is the perfection of the microchannel technology and consists completely of aluminium. This was achieved by adjusting the profiles and the wall thicknesses of the heat exchanger modules and by adapting the modules for higher refrigerant pressures. All microox® heat exchangers are produced in modern production lines at Güntner.

## Low refrigerant charge

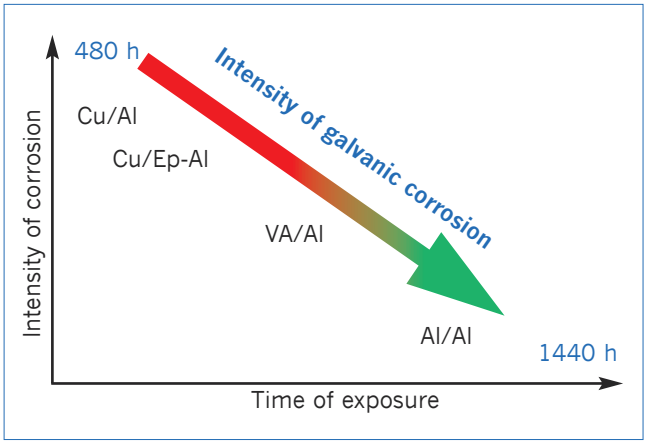
Up to 50 % less refrigerant charge compared to capacity

The regulation EC 842/2006 (F-Gas regulation) prescribes leak tests depending on the refrigerant charge of the installation (see table),
– Less leak tests are necessary at a lower refrigerant charge
– Reduced $CO_2$ equivalent

| *Refrigerant charge in kg* | 3 - 30 | 30 - 300 | > 300 |
|---|---|---|---|
| *Prescribed leak tests per year* | 1 | 2 | 4 |

## Corrosion resistance

Heat exchanger consists completely of aluminium
– Entire casing made of aluminium
– No galvanic corrosion
– Powder-coated




Test result (Salt spray test acc. to DIN EN ISO 9227 (DIN 50021)):
Galvanic corrosion of different metals depends on the material combination. The microox® heat exchanger has been exposed much longer to the salt spray test than the fin-and-tube heat exchanger in Cu-Al. The finoox® heat exchanger was strongly affected by galvanic corrosion after 480 hours. Even after 1440 hours, the microox® heat exchanger, consisting completely of aluminium, was not affected by galvanic corrosion.





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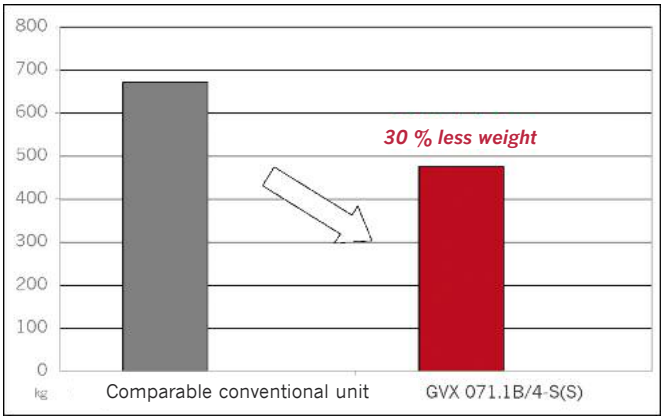
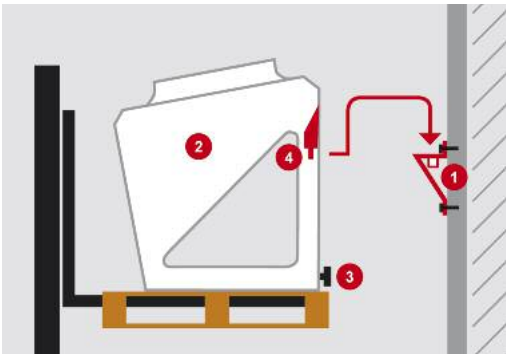
## Lower weight for transportation and mounting

The GVX with microox® technology consists completely of aluminium and has an inferior weight compared to conventional heat exchangers.




## Wall mounting

– The GVX is well-suited for wall mounting
– Quick and easy mounting saves costs
– Up to 30 % lower weight
– Mounting to walls with low wall bearing capacity is possible
– No additional wall mounting brackets required
– Accessory: Wall mounting beam with or without vibration dampers




1. Attach mounting beam to wall
2. Lift unit and hang it into beam
3. Adjust distance with levelling foot
4. Fix locknut

## Floor mounting

All units are also suitable for floor mounting and can be installed directly on the floor or on U or T beams.
For floor mounting, it has to be observed that there is enough room for sufficient air supply. Further information is contained in the chapter "Modular concept" and in the operating and maintenance instructions.

# Modular Concept

## Basic modules (single-row)

All GVX units consist of basic modules.

Fan diameters:
450 mm, 500 mm and 710 mm

The installation position has to be observed when the unit is ordered.

No special dimensions.

## Two-row installation (consisting of two basic modules)

V shape
With swivelling fans (optional) for cleaning from inside to outside

A shape
Floor mounting system (feet) required.
Good cleaning properties due to easy to open flaps for cleaning.





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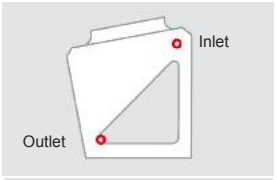
## Capacity range

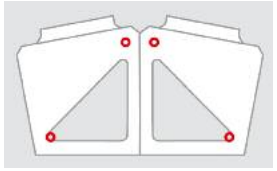
20 kW to 300 kW ($\Delta t1$ = 10 K), up to 41 bar admissible operating pressure.

## General

– Each GVX is equipped with fans wired to terminal box as standard
– With a single-row basic module, all heat exchanger coils are connected to one inlet and outlet.
– Two-row units, consisting of two basic modules each, have two inlets and outlets.
– Inlets and outlets are made of copper.
– The casing consists of aluminium and is powder-coated in RAL 7035; it is available in all RAL colours on request.

Equipped with optional disconnect switch on mounting plate



# Module extensions

## Liquid receiver

Depending on the unit size, a liquid receiver can be installed up to the size given in the adjacent table. The GVX can be delivered with factory-mounted receiver; the receiver can be delivered piped or unpiped.

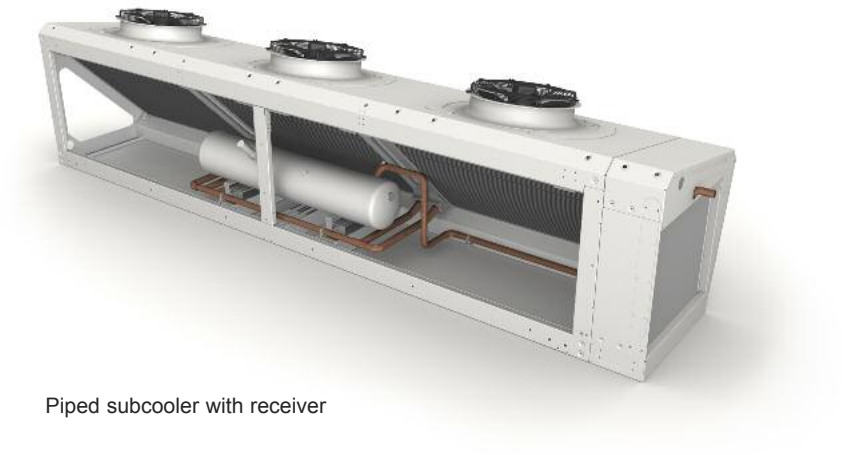
| Diameter | Number of fans | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 045 / 050 | 30 l | 38 l | 38 l | 38 l |
| 071 | 30 l | 75 l | 75 l | 75 l |

Max. admissible receiver sizes

## Subcooler

Each GVX basic module can be equipped subsequently with a laterally mounted subcooler. The subcooler can be selected in the GPC piped or unpiped. For the piped variant, a receiver has to be selected additionally.

The subcooler is equipped with an EC fan (1~, 200 – 277 V, 50/60 Hz). The air direction of the fan is forced draught.



Piped subcooler with receiver

## Empty casing

Each GVX can be equipped optionally with an empty casing, available in three different lengths. The condenser GVX is mounted to the empty casing on a U beam.
The inspection covers are equipped with quick release fasteners.

Options:
– Acoustic insulation
– Bottom sheet
– Transversal supports
– Casing with doors

GVX with mounted empty casing

# Options


| | | | |
|---|---|---|---|
| **1. EC or AC fans** | **2. Disconnect switch** | **3. GMM + weather protection roof** | **4. Subcooler** |
| **5. Empty casing** | **6. Liquid receiver**<br>a) piped<br>b) unpiped | **7. Feet for floor mounting** | **8. Wall mounting beam** |

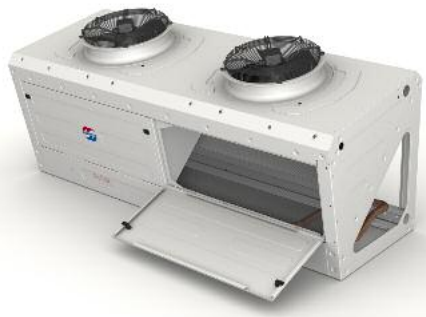
# Simple and thorough cleaning

## The coil geometry simplifies thorough cleaning of the coil with high pressure cleaner

Good accessibility for cleaning and inspection due to large flaps for cleaning and inclined position of the coils.
Due to the low coil depth and the high stability of the microox® heat exchanger, thorough cleaning is possible with normal water pressure or high pressure cleaner.

## Flaps for cleaning

– Large, easy to open flaps for cleaning
– Cleaning of heat exchanger against air flow direction is possible.



## Swivelling fans

In cases where the cleaning flap is not accessible, we recommend the use of swivelling fans, available as option.

The fans can be opened upwards and provide simple access to the coil for cleaning against the air flow direction. Swivelling fans are available in all diameters.





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# Fans and fan speed control

## Use of AC and EC fans

Axial fans are used for the GVX. These axial fans are available in two technologies, with EC motors or AC motors (alternating current or three-phase current). All fans are wired at factory. The parameters of EC fans are set, so that they are ready for operation.

## Speed control for AC fans

For AC fans, continuous controllers are available as option. For this purpose, the Güntner phase angle controllers **GIRD, GIRW** with and without noise filter can be selected or the Güntner sine controller **GDRS** for frequency control with all-pole sine filter. Due to the connection of the microox® modules, step control of these fans is only possible to a limited extent.

## EC fans with Güntner Motor Management GMM

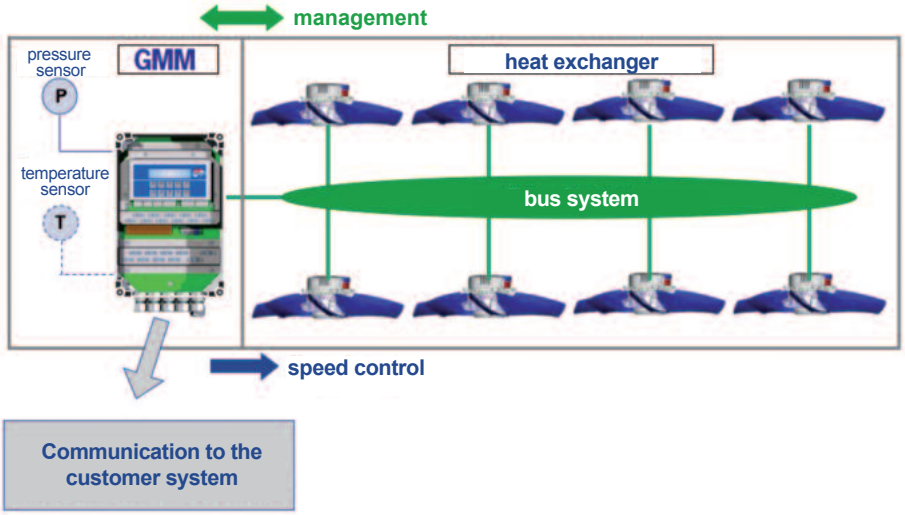
EC fans are controlled by the Güntner Motor Management GMM. EC fans are equipped with an innovative motor technology. These EC motors have integrated electronics that creates the rotating field of the motor. Especially for speed-controlled fans, this technology provides various benefits.

## Benefits of EC fans with Güntner Motor Management GMM

The Güntner Motor Management (GMM) has been developed especially for Güntner heat exchangers. Only the combination of energy-efficient EC fans with the GMM creates an intelligent heat exchanger system for an energetically optimal operation of the heat exchanger and furthermore for efficient maintenance and servicing.

## AC and EC fans

| | AC | EC |
|---|---|---|
| *Diameter*<br>*Protection class* | *450, 500, 710 mm*<br>*IP 54*<br>*wired at factory* | |
| *Type* | *alternating current and three-phase current* | *alternating current and three-phase current* |
| *Control* | *Continuous control (optional)* | *Continuous control* |
| | *– Phase angle controller GIRD / GIRW with or without noise filter* | *– Güntner Motor Management GMM* |
| | *– Frequency converter with all-pole sine filter, GDRS Güntner sine controller supplied lose* | |




Benefits at a glance:

– Developed especially for Güntner heat exchangers
– Reduced energy consumption compared to conventional EC fans
– High efficiency motors, efficiency between 85 and 90 %
– Reduced installation effort for switch cabinet and wiring
– Efficient maintenance and servicing

## *Basic functions of the controller:*

### 1.) System Manager

The controller manages the EC fans during commissioning, servicing and operation. This Plug-and-Play-capable system automatically executes all programming according to the respective design point of the heat exchanger and displays detailed information in real time. Consequently no software or special know-how is required for setting the parameters or addressing the EC fans. Thus costs and time for commissioning can be reduced.

### 2.) Process Controller

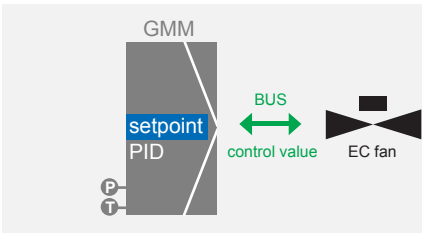
The GMM controls the fan speed depending on the measured condensing pressure, controls processes and thus creates an energy-optimised heat exchanger system. Here it is important always to set the minimum condensing temperature as setpoint. The refrigerant can be selected in the controller. This selection is important, because the GMM converts the measured present value for pressure into temperature.

### 3.) Information Manager

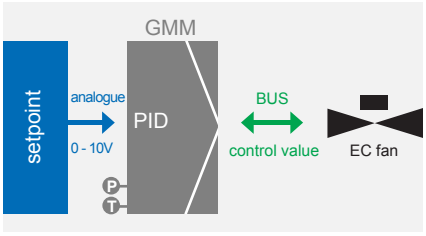
The GMM offers communication interfaces to main control systems and to the EC fans. Due to the plain text display, it is very simple to enter operating parameters and settings. The display also shows operating and fault messages. This operation-relevant information can also be communicated to main control systems via bus system or standard interfaces. The communication functionality increases reliability and transparency of system operation.

## *Flexible Use – Operating modes*

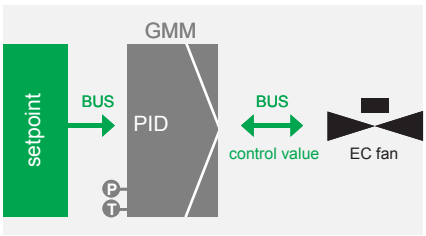
Automatic control of the GMM with PID:




1.) automatic control to internally set setpoint

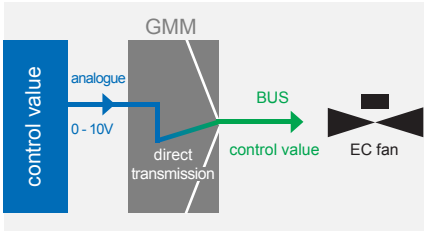



2.) automatic control to setpoint that is preset via analogue input

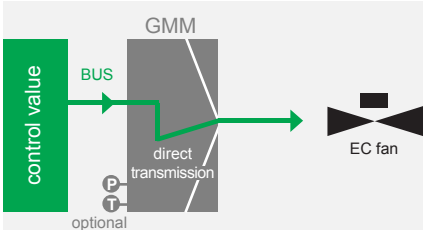



3.) automatic control to setpoint that is preset via BUS

"Slave signal" of main control:




1.) no independent control is active – the control value that is preset via analogue input is directly communicated to the fans. (slave signal)




2.) no independent control is active – the control value that is preset via BUS is directly communicated to the fans. (slave signal)

## Operational reliability

The GMM creates stable pressure ratios in the refrigeration cycle and thus increases operational reliability of the installation. All operation-relevant components of the installation are monitored permanently. In the event of an operating fault, the system changes automatically to emergency mode. This "bypass operation" can be activated and set via the plain text display of the GMM.

## Low Capacity Motor Management (LCMM)

The GMM offers further functions, like e.g. the Low Capacity Motor Management (LCMM), for ensuring an energetically optimal operation also for operation of heat exchangers in low capacity ranges. This function is necessary if the heat exchanger needs to be operated and controlled for very low capacity requirements (e.g. winter operation). With the LCMM, operating costs can be reduced.

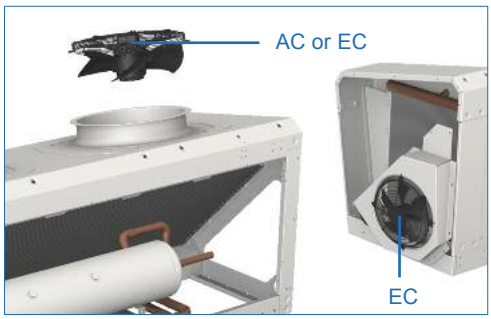
## Mounting of control system

GVX with factory-mounted control unit and disconnect switch in controller casing (available as option)

## Control configuration for GVX with integrated subcooler

If the GVX is equipped with a subcooler, the following control configurations are available:

| Main fans GVX | Subcooler fan ([3]) | | | |
|---|---|---|---|---|
| Fan type | Fan type | Day-time operation | Night-time operation Low noise | Control |
| AC | EC | ON 100 % | OFF | GIRD ([1]) GIRW GDRS ([2]) |
| EC | EC | ON 100 % | Reduced like main fan with GMM | GMM |




([1]) GIRD = Phase angle control with noise filter.
([2]) GDRS = Frequency control with all-pole sine filter, supplied lose.
([3]) The subcooler fans are adapted to the acoustic level of the main fans.

| Special features | Benefits |
|---|---|
| *Low temperature differences save energy.* | *The GVX with microox® technology has a high power density and is consequently especially suitable for operation at small temperature differences.* |
| *Subcooling* | *The subcooler for subcooling the liquid refrigerant can be controlled separately and allows for optimum energy efficiency in all operating states.*<br><br>*No additional footprint or installation work is required for including the subcooler module in the condenser casing.* |
| *EC/GMM* | *Highest energy efficiency can be achieved by using fans with EC motor.*<br><br>*The Güntner Motor Management GMM allows for simple regulation of the fans via the menu of the controller.*<br><br>*With the combination of EC fan and GMM, optimum energy efficiency and user friendliness can be achieved.* |
| *Simple inspection and cleaning* | *The GVX is very easy to clean due to the combination of cleaning flap and microox® technology.*<br><br>*Regular and thorough cleaning can avoid unnecessarily high condensing temperatures and ensure consequently an energy-efficient operation of the refrigeration installation.* |

*For further information, please contact our sales team:*
*sales@guentner.de*

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