



## V-SHAPE Vario

**GVD condenser** for HFC and propane, **AGVD condenser** for NH<sub>3</sub>

**GGD gas cooler** for CO<sub>2</sub>

**GFD fluid cooler** for water/glycol and other fluids

75 kW – 2,100 kW



# Your application. Your Vario!

## Millions of types but only 1 parameter that counts: You.

Once your requirements have been fed into our tried-and-tested Guntner Product Configurator (GPC), it will dynamically design your individual unit. The process is fast and reliable and is based precisely on the application that you have in mind. With pinpoint accuracy.

The wide modular variety of heat exchanger coils, sizes, fans and accessories is what allows the GPC to come up with such a perfectly tailored design.

## A playground for all your ideas

Whether you are looking for a condenser, gas cooler or fluid cooler, you will always find the perfect solution to meet your specific needs with our Vario units – plus our extensive range of accessories.

## Optimised key component

The extensive, modular heat exchanger concept with numerous tube geometries and optimised tube circuiting allows for precise designs – plus special designs offered as standard solutions.

## Tailor-made fit for the key component

Your heat exchanger coil is protected by a robust and durable casing which is easy to transport – plus colour varnish of your choice.

## Vario

The Vario product line comprises series which can be customised quickly and accurately for individual projects by means of the Guntner Product Configurator. Customers can select the configuration that best suits their individual requirements from a wide range of different materials, variants and accessories.



## Unbelievable energy efficiency

High-quality fans paired with Guntner's sophisticated control concepts produce unbelievably energy-efficient units. Plus calculation directly at the operating point and certification.

## Optimal load distribution

- Easily transported by crane thanks to two moveable crane lugs
- Can be transported by crane without lifting beam
- Quick and easy bringing-in procedure
- High torsional stiffness

## Maximum power but minimum space

- V-shape design
- Minimal footprint
- Optionally available with HydroSpray (evaporative cooling) and HydroPad (adiabatic pre-cooling)

# What sets your Güntner Vario apart?



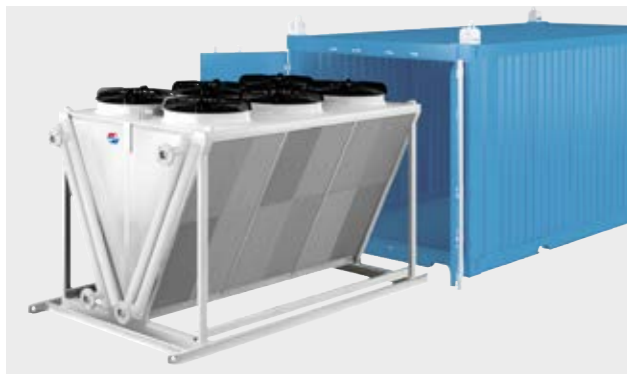
## AxiTop diffuser

The AxiTop diffuser improves airflow routing at the outlet of the fan. This accessory makes it easier to overcome the downstream pressure drop. With skilfully adapted geometry, the fan can achieve the same volume flow at lower speed. Lowering the speed reduces both noise emissions and power consumption.



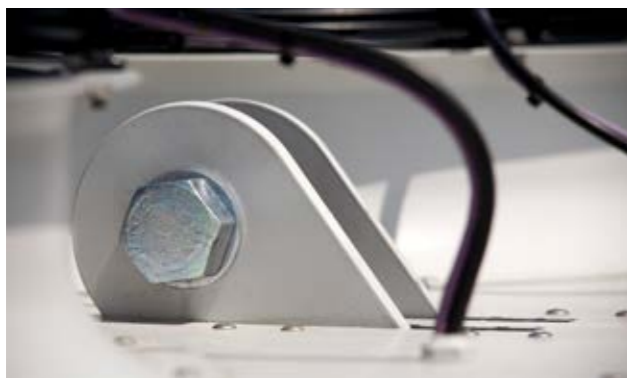
## Reliable and leak-proof

- Tried-and-tested Güntner floating coil principle (the fluid-carrying tubes do not have any contact with the casing, which increases the service life of your heat exchanger)
- High degree of torsional stiffness for crane and forklift transport
- Snow/wind loads taken into account statically



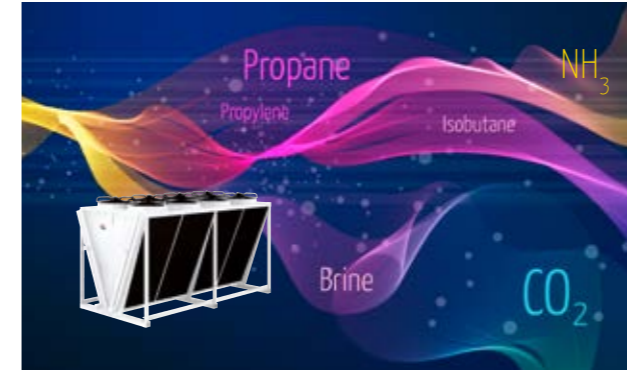
## Ideal measurements

- Low transport costs on account of optimised unit dimensions for truck and container transport
- Specially optimised module sizes for high flow rates, minimal tube volumes and all capacity ranges



## Easy to assemble

- Robust design
- Factory-fitted assembly groups (control panels, empty casings, etc.)
- Robust crane lugs to simplify transport by crane



## Versatile

- Condensers for synthetic refrigerants, hydrocarbons and ammonia
- Gas coolers for transcritical and subcritical CO<sub>2</sub> systems
- Fluid coolers for water/glycol mixtures



## Unbelievable energy efficiency

- AC/EC technology
- ErP-ready
- Calculation of sound power in in-house test lab
- Control concepts adapted specially for the unit
- AxiTop optionally available



## Control with added value

- Stable operations in particularly low partial load ranges – Super Low Capacity Motor Management (SLCMM)
- Continuous cooling – emergency operation function in the event of control signal failure
- Reliable operations in the event of snow and ice – break-free mode if a fan is blocked

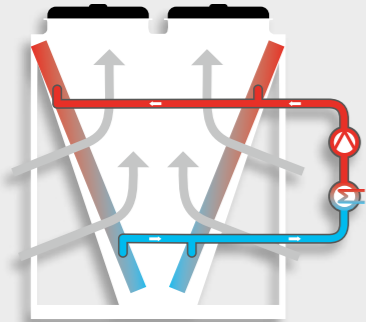


## Inspection and cleaning

- Easy access for cleaning
- Convenient inspection opening
- Constant high capacity
- Special fin geometry for effective cleaning

# Wet or dry – the decision is yours!

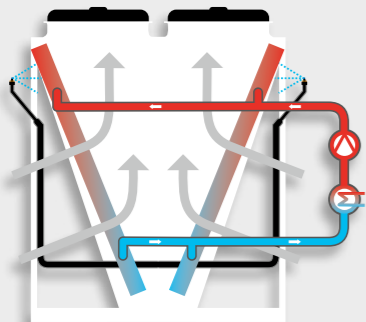
Requirements unique to your projects and/or those of your customers mean that the most suitable technology needs to be used in each case in order to achieve the best results. Every type of technology has its own specific advantages and disadvantages. The decision regarding which technology to use will be based both on the investment costs and the subsequent operating costs of the entire system.



## Dry

Air-cooled finned heat exchangers are optimised for operation with dry air thanks to their design and combination of materials.

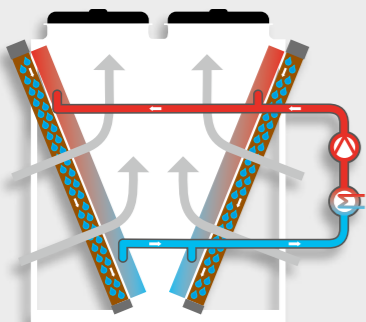
- Low-maintenance
- Reliable thanks to mature technology
- Not subject to national relevant regulations



## HydroSpray

Water can be directly sprayed onto the heat exchanger with the HydroSpray accessory. The driving temperature difference is increased and performance is improved thanks to evaporative cooling.

- Precise calculation with climate data
- Requires only half as much water as conventional systems
- Automatic water suction pump



## HydroPad

The heat exchanger remains dry with the HydroPad accessory. Wetting the pad enables adiabatic pre-cooling. As a result, the unit can be run in free cooling mode for a longer period of time.

- Heat exchanger remains dry\*
- No water treatment required
- Saves energy and water

Not subject to national relevant regulations.



# HydroSpray system

Spraying finned heat exchangers with water can significantly improve their performance. This applies particularly to systems that utilise free cooling, such as for computer equipment, where spraying can save a significant amount of energy. Direct usage in refrigeration systems can increase the COP value by up to 40 % in the case of high ambient temperatures by reducing the condensing temperature.

- ✓ Calculation with on-site climate data
- ✓ Uses only half as much water as conventional systems
- ✓ Spray controller is pre-assembled and fully wired: only 1 x water and 1 x power supply need to be connected
- ✓ Spray duration up to 1,000 h/a
- ✓ Self-draining
- ✓ Water usage can be regulated in up to nine steps
- ✓ Low operating costs: No chemical additives, no high-pressure pump
- ✓ The transport dimensions do not change as the system is retractable
- ✓ Conductivity sensor for checking the water quality (professional version)

## Basic or Professional version

Two versions of the Guntner HydroSpray system are available: Basic and Professional. The most suitable version should be chosen based on the intended application and installation site.

With the Basic version, all fan sections are sprayed simultaneously above a defined switch point. The Professional version uses a function named Section Cycling. Each fan chamber forms a section; the nozzle for each section is controlled individually by the system.

## Water quality requirements

To ensure long-term smooth operation of the sprayed fluid coolers/condensers, we have defined relevant requirements pertaining to the water quality. For this reason, the water must be analysed at the relevant site for each project.

A simple softening system is sufficient in most cases for short spraying durations. An additional demineralisation system using reverse osmosis is required in the case of a spraying duration of 1,000 h/a.

# Why should I use HydroSpray?

*Provides protection in the case of temperature peaks*

*Increased performance with same small footprint*

*Low water consumption thanks to patented Section Cycling*

*Lower investment costs on account of smaller units*

*Low switch points for air conditioning and process cooling applications*

*All HydroSpray components are factory-fitted*



# HydroPad system

The adiabatic HydroPad pre-cooling system available for V-SHAPE Vario condensers and gas coolers offers valuable advantages. On the one hand, the humidification pad system can increase the capacity of the unit, allowing you to operate smaller units with a reduced footprint without falling below the required performance levels, while on the other hand, these accessories enable you to reduce the condensing temperature, which means you can operate any refrigeration system more efficiently and thus save real money.

- ✓ Calculations with climate data
- ✓ Lower water consumption than spraying systems thanks to smart volume control and high dry/wet switch point
- ✓ Pads can be changed in a few simple steps

## Energy and water-efficient thanks to smart control

With the humidification pad system, wetting is switched on above a defined switch point. The humidification pads are subsequently wetted via continuous control. The mounted controller dynamically controls the ideal fan speed to water feed quantity ratio.

Extensive analysis options can be utilised for system optimisation and in the event of servicing.

## National relevant regulations

With the *HydroPad* system, the incoming air is pre-cooled by means of adiabatic cooling. This process does not transmit any energy or heat to the intake air. The system has been designed to ensure that the heat exchangers are completely separate from the evaporation unit and remain dry even when the pre-cooling unit is active.

As such, they do not fall within the scope of national relevant regulations.\*

# Why should I use HydroPad?

*Low water consumption*

*Low water quality requirements*

*No recirculation*

*Lower energy costs thanks to efficient control*

*Longer durability as the heat exchanger remains dry*

*Hygienic operation in accordance with national relevant regulations*

*Substantial reduction in transcritical operating times in warm regions*



\*Please note that we make no claims regarding any of the above information, in particular with regard to legal matters, as to its correctness or completeness since it is only for information purposes. We provide no guarantees and accept no liability in conjunction with the use of this information brochure.

# Güntner Hydro Management GHM – efficient control made easy

The smart GHM control unit continuously records the amount of water applied, the speed of the fans and the state of the ambient air. This provides the basis for the **integrated cost management function** that continually decides whether applying water or increasing the fan speed will provide the **more efficient mode of operation**. This reduces your operating costs without any loss of performance, thus **saving you real money**.

Necessary information for this, such as the fan speed, is read out from Güntner Motor Management GMM via the bus communication. This speed data can alternatively be transmitted using a 0 – 10 volt signal.

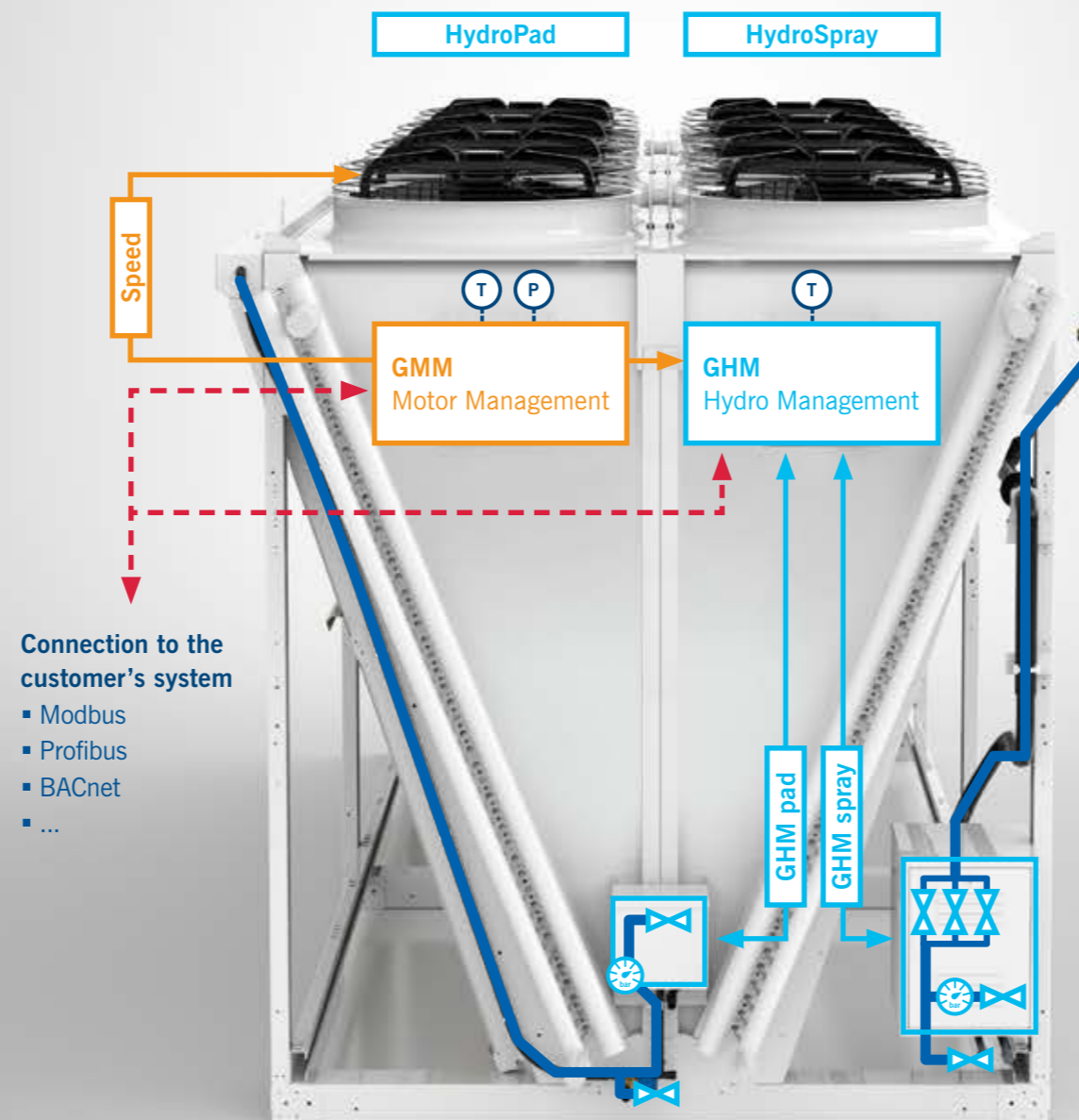
## HydroPad control GHM pad

The GHM pad humidification controller controls the water applied to the humidification pads in the air inlet of the heat exchanger. The GHM pad regulates the amount of water according to the load requirement (fan speed) of the heat exchanger as well as the measured ambient temperature and humidity. For frost protection and hygiene reasons, the controller has a self-draining function. In addition, at the end of pad maintenance intervals, it issues a notification.

### Efficiency mode

Moreover, the GHM pad is also capable of checking the operating costs during operation. This provides the basis for an internal cost management function, which continuously decides whether the application of water or the increase in speed represents the more cost-saving and therefore more efficient mode of operation. To this purpose, the water consumption is constantly recorded in this system.

Unlike with the GHM spray, with the GHM pad the amount of water is continuously controlled. Consequently, even when the humidification system is switched on for the first time, extremely uniform heat dissipation is ensured.



## Güntner Motor Management

### GMM

The GMM has been specially developed for Güntner units and is tailored to achieve the best possible level of effectiveness for heat dissipation. Therefore, it increases the economic efficiency of the system. The Güntner Motor Management is installed in all Güntner controllers and carries out the information manager, system manager and process controller functions.

## HydroSpray control GHM spray

The GHM spray regulates the water spraying according to the capacity requirement of the heat exchanger as well as the ambient and fluid temperature. The Basic or Professional version can be chosen based on the intended application.

	Basic	Professional
<b>Spray duration</b>	Up to 300 h/a	Up to 1,000 h/a
<b>Section Cycling</b>	No	Yes
<b>Softening</b>	Yes	Yes
<b>Desalination</b>	No	Yes
<b>Draining</b>	Yes	Yes

The **GHM spray basic** has one spray step. This system sprays the heat exchanger based on various parameters to achieve an increase in performance to cover peak loads.

The **GHM spray professional** with Section Cycling ensures section-by-section spraying based on demand. Each segment of the heat exchanger forms a section; the nozzle for each section is controlled individually by the system. When the spraying is activated, this does not trigger a sudden and massive increase in performance. The increase in performance is implemented in individual steps. This prevents a large drop in condensing pressure and saves the maximum amount of valuable treated water.

# The V-SHAPE Vario in action

## HYZA poultry processor

Topolčany near Bratislava/Slovakia

Located on the roof of the building operated by the poultry processor HYZA in Topolčany near Bratislava, an R-723 refrigerating unit simultaneously produces warm and cold water. A V-SHAPE Vario dissipates the non-usable heat from the primary refrigeration circuit via a secondary water/glycol circuit.

Additional spraying improves the system's efficiency during the hot summer months.



## Miele

Bünde/Germany

At the Miele plant in Bünde, adsorption chillers provide cold for laser equipment and sheet metal press lines as well as air conditioning for the laboratories, offices and server rooms. Sprayed V-SHAPE Vario fluid coolers work simultaneously as evaporators and condensers to produce cold with adsorption chillers.



## Copenhagen Royal Arena

Copenhagen/Denmark

Non-usable heat from the new Copenhagen Royal Arena, which hosts international music and sporting events, is dissipated into the environment by powerful V-SHAPE Vario units in the tightest of spaces. In addition to concerts, the hall also plays host to sporting events, including ice hockey matches and table tennis tournaments.



## Heatcatcher system for lime plant

Thrislington/United Kingdom

Four air-cooled V-SHAPE Vario condensers form part of an Organic Rankine Cycle system which uses the waste heat from a lime kiln to produce electricity for the lime plant's own usage. The waste heat is used to evaporate refrigerant which in turn drives an electrical generator.



## Landshut aluminium foundry

Landshut/Germany

Economically recycling heat is the central idea behind a custom-planned decentralised energy system at this light metal foundry. In the refrigeration circuit, three V-SHAPE Vario units with HydroSpray connected in parallel and two JAEGGI HTK Hybrid dry coolers also hydraulically connected in parallel ensure cooling in line with demand.





### Transcritical CO<sub>2</sub> system with HydroPad

Beijing/China

The first transcritical CO<sub>2</sub> system in China was installed for a new Metro Cash & Carry market. A dry flat bed cooler is combined with an adiabatic V-SHAPE with HydroPad. Because this system can run longer in subcritical operation, its COP is considerably improved compared to a dry air cooler.



### ebm-papst dispatch centre

Hollenbach/Germany

A JAEGGI HTK Hybrid dry cooler and a Guntner V-SHAPE Vario condenser are located directly next to each other on the roof of the recently opened ebm-papst dispatch centre in Hollenbach. The V-SHAPE Vario acts as a condenser in the event of power peaks whereby a cold water generator is activated.



### Data centre of an online retailer

China

Cooling the recently constructed data centre requires only approx. 1 % of the energy used to achieve the processing power. This corresponds to a PUE for the system of up to 1.08. The recently developed two-phase-immersion technology indirectly dissipates the waste heat into the ambient air via four sprayed V-SHAPE Vario units.



### Heat dissipation from turbo refrigeration machines

Germany

To cover summer peak loads (wet bulb temperature: 22 – 26 °C), a semiconductor manufacturer relies on a solution involving ice banks, which are charged by turbo refrigeration machines and whose waste heat is dissipated via four sprayed V-SHAPE Vario units.



### Free cooling at the Danone plant in Moscow

Moscow/Russia

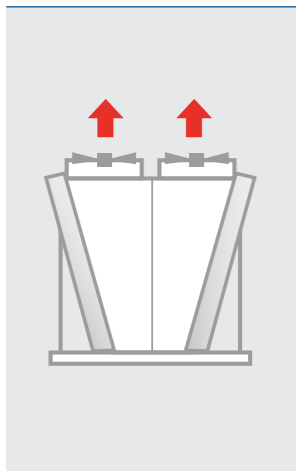
Danone-Unimilk has been producing yoghurt and curd-based products at its plant near Moscow since 2000. The plant was expanded in 2011 and a new refrigeration concept using free cooling and a perfectly coordinated, energy-efficient control system was installed.

As such, four V-SHAPE Vario fluid coolers were chosen to provide free cooling in the winter months with a total capacity of 6 MW. The AC fans of the fluid coolers are intelligently and continuously controlled via the Guntner Motor Management GMM sincon.

## Technical details

	Fluid	Nominal capacity	Pressure stages	Fin pattern
Condenser	HFC	122 – 2,128 kW	32 bar	2.0 / 2.4 / 3.0 mm
	NH <sub>3</sub>	127 – 2,148 kW	32 bar	2.0 / 2.4 / 3.0 mm
Gas cooler	CO <sub>2</sub>	123 – 1,468 kW	120 bar	2.0 / 2.4 / 3.0 mm
Fluid cooler	Glycol	75 – 1,700 kW	16 bar	2.0 / 2.4 / 3.0 mm

### Orientation



### Available accessories

	HFC / CO <sub>2</sub>	Fluids
• Epoxy resin-coated fins	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Multiple circuit coil	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Fans wired to terminal boxes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Fans wired to safety switches	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Speed controller	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• HydroPad or HydroSpray pre-cooling system	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Flange connections	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Threaded connections	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Venting/draining with a ball valve	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### Fans

Technology: AC/EC  
 Number: 1 – 18  
 Arrangement: in two rows  
 Ø: 800 / 910 mm  
 Air-flow direction:  
 draw through  
 Voltage: 230 V / 400 V  
 Frequency 50 – 60 Hz



### Materials

Fluid	Casing	Fins	Core tubes	Outlet header / distribution tube	Connections
HFCs/ fluids	Galvanised steel, powder-coated	Al (standard) Al epoxy	Cu/VA	Cu/VA	Copper
CO <sub>2</sub>	Galvanised steel, powder-coated	Al (standard) Al epoxy	Cu alloy	VA	Cu (standard) VA



# Configuring perfect products the quick and easy way

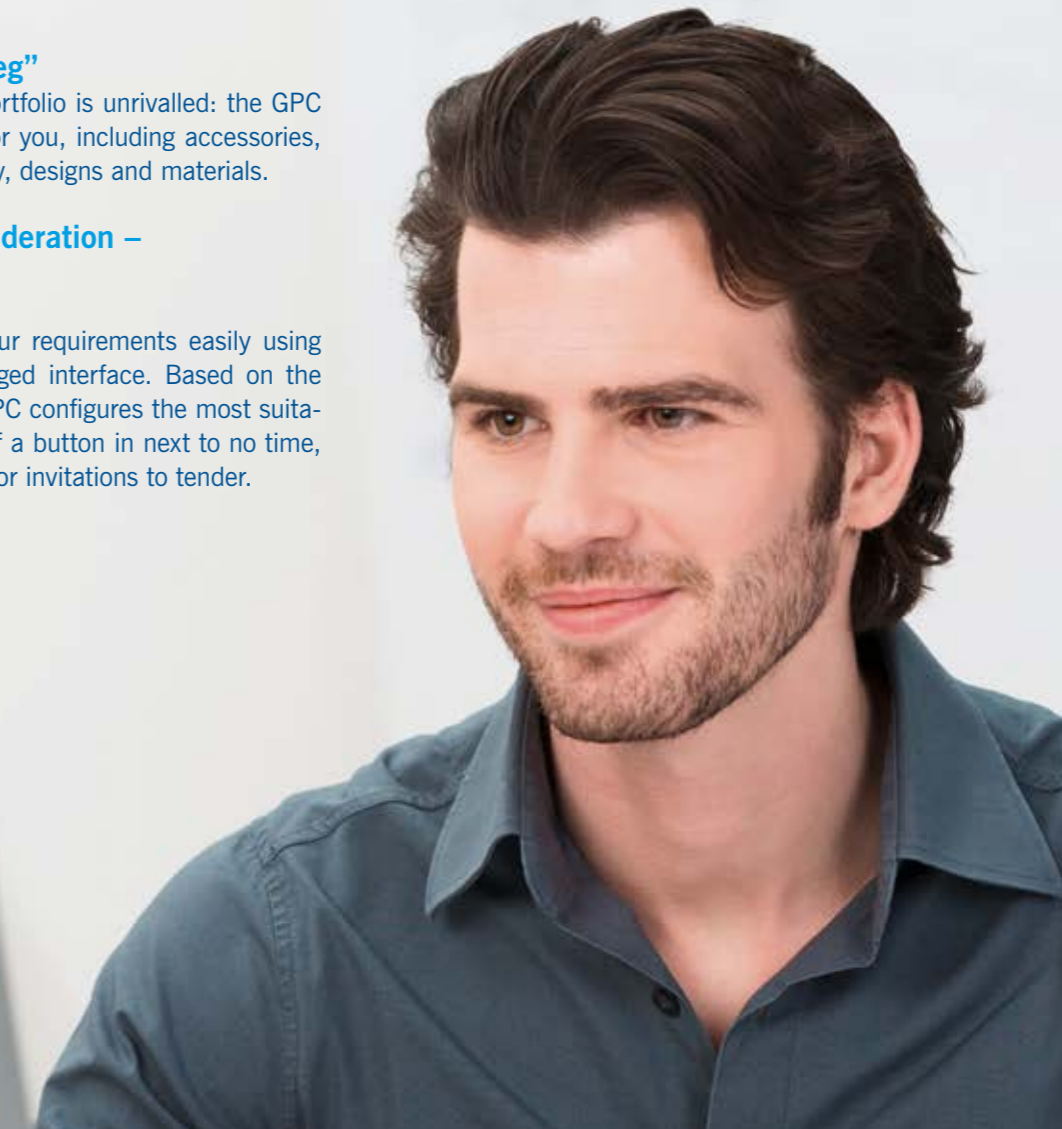
## – the GÜntner Product Configurator

### A tailor-made fit “off the peg”

The GÜntner standard product portfolio is unrivalled: the GPC chooses the most suitable unit for you, including accessories, from a unique range of technology, designs and materials.

### Everything taken into consideration – quickly and easily

The GPC allows you to enter your requirements easily using its self-explanatory, clearly arranged interface. Based on the information that you enter, the GPC configures the most suitable product for you at the push of a button in next to no time, including ready formulated texts for invitations to tender.



### YOUR BENEFITS AT A GLANCE: //

- Ready formulated texts for invitations to tender
- Reliable capacity specifications
- Current prices and delivery times
- Switchable units of measurement – units according to the SI or imperial system
- Choice of 50 fluids
- Choice of 15 languages



Download the GÜntner Product Configurator (GPC) now for free with no need to register

[www.guentner.eu](http://www.guentner.eu)

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