

# heatXchange

Customer magazine of the Güntner Group | 20th edition



CO<sub>2</sub> – Resurgence  
of a refrigerant

Effects of a high temperature  
glide on the design

Eurovent certification –  
underrated added value factor





## Your partner with the Plus

Dear reader,

Güntner has been active in the field of refrigeration and air conditioning technology for more than 85 years and is known to you for being a supplier of high-quality products.

It takes more than just good quality, however, to make a strong brand. Quality is more an understood foundation that a brand manufacturer does not need to refer to continuously. Brands are created by a good and distinguishable product that offers added value and is cultivated by credibility and trust.

Güntner invests heavily in this self-imposed obligation to give you certainty always in all aspects – own patents, certifications such as Eurovent and HACCP, energy-efficient control concepts, research in own laboratories... This allows us to offer you added value or, as we term it, the “special Plus” in many areas at the same time – from application expertise through to the specific technical strengths of our units.

You can therefore always rightly expect a special Plus from us. On pages 8 – 9 of this magazine, you will find an overview of the innovations we plan to present to you at Chillventa. A specialist article on page 14 looks at the once more on-trend natural refrigerant CO<sub>2</sub> and its future significance, especially for the commercial technology market.

Aside from natural refrigerants, if you would like to find out more about one of the new synthetic mixtures, then turn to the specialist article on page 16 to read about the impact the refrigerant glide of these mixtures has on the design of evaporators and condensers.

And development continues –  
Don't miss Chillventa!

Here's to an informative read.

  
Bernd Oehlerking  
Head of Global Marketing



**1** Units with Eurovent certification offer customers significant advantages that translate to hard cash.



**2** Following decades of using mainly synthetic refrigerants, a trend towards natural refrigerants has re-emerged in recent years, spurred on by environmental awareness and resulting legislation.



**3** How does a high temperature glide in refrigerants impact the design of evaporators and condensers?



**4** Hygiene in focus – The certified expertise of the Güntner Group offers added value for customers on three levels.

## CONTENTS

Pages 2 – 3

Editorial

Pages 6 – 7

Investing globally in expanding production

Pages 8 – 9

Highlights at Chillventa 2016

Page 10

### **1 Eurovent certification**

Page 11

Güntner's new product structure

Pages 12 – 13

New products 2016

Pages 14 – 15

### **2 CO<sub>2</sub> – Resurgence of a refrigerant**

Pages 16 – 17

### **3 Effects of a high temperature glide on evaporators and condensers**

Pages 18 – 19

### **4 Hygiene in focus – Certified expertise of the Güntner Group**

Pages 20 – 21

Power plant cooling between –56 and +34 °C

Pages 22 – 23

Intelligent energy usage at thermowave

Pages 24 – 25

Something cool is going on at the Royal Albert Hall

Pages 26 – 27

Groundbreaking concept for highest energy efficiency

Pages 28 – 29

The latest on the Güntner product configurator

Pages 30 – 31

Summer World Transplant Games

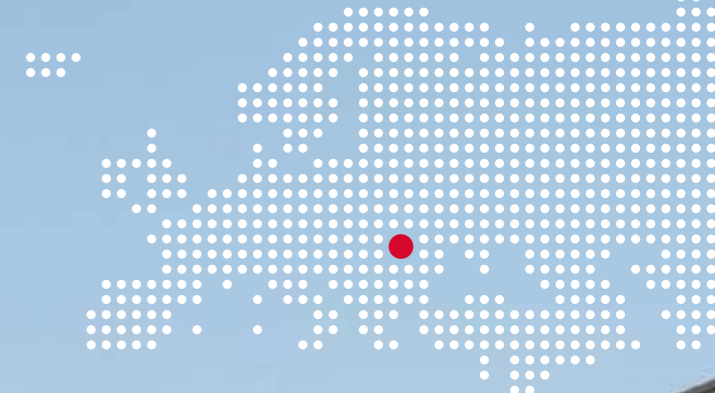
Pages 32 – 33

Communication across all channels

Pages 34 – 35

Web & app

# Güntner is investing globally in expanding production



Investment is ongoing in state-of-the-art production facilities: a completely new facility has been developed in Romania, while production in Mexico has been expanded.

The Güntner Group's latest production facility at the strategically attractive location of Sibiu/Hermannstadt is picking up speed.

### Latest technology

Ample production capacities are assured at the new Sibiu/Hermannstadt location with a total covered area of some 18,000 m<sup>2</sup>. The usual high standards demanded in terms of quality and efficiency are met by cutting-edge production lines and a high level of automation. Output has been increased continuously since production commenced last autumn. With the 4,000th unit now having been produced, the team has every reason to feel proud.

### Strategically good location and good infrastructure

Sibiu/Hermannstadt is one of the three main economic centres in Romania with a correspondingly good infrastructure. The new plant is in close proximity to the international airport of Sibiu with excellent connections to Munich and other European destinations.

### Long-term focus with possibility for further expansion

Present production capacity includes three assembly lines for manufacturing units for commercial refrigeration as well as a powder coating system and separate quality acceptance. Units from the Compact family, such as the GACC (Güntner Air cooler Cubic Compact), GASC (Güntner Air cooler Slim Compact) and GCHC (Güntner Condenser Flat Compact), are the principal products being produced.

Capacity utilisation is expected to rise gradually; increased production will mean an additional easing of pressure on production at the Tata location and adjustment to the increasing sales volumes in the Group. The Tata location will concentrate in future on the production of units for industrial refrigeration engineering. The 40,000 m<sup>2</sup> premises in Sibiu was chosen to allow adequate capacity for the plant to expand, as is expected in line with current trends.

Nothing is standing in the way therefore of continued positive development.

*“With the new plant in Sibiu/Hermannstadt (Romania) focusing especially on commercial units, we are not only meeting the ever increasing demand for energy-efficient and low-noise units, we are also freeing up the necessary additional capacity for producing industrial units at the production location in Tata (Hungary).”*

Güntner CEO Robert Gerle



### Güntner Mexico: Enhanced production capacity for Güntner ECOSS

Production capacities have been expanded once again at the Mexico location owing to the increased demand for Güntner products. Thanks to the excellent success of the ECOSS evaporative condenser, this unit is being produced exclusively in the third production hall in Monterrey. The production capacities that have been freed up as a result in the other halls since the end of May are now being used for producing other product lines.



CHILLVENTA

Hall 7  
Stand 124

Always with the special  
**Plus** Our highlights  
at Chillventa

We would like to introduce you here to some of our innovations that will be on view at Chillventa 2016. Join us in Nuremberg from 11 to 13 October and visit us in Hall 7, Stand 124.

**New adiabatic gas cooler for use in transcritical CO<sub>2</sub> installations**

Natural refrigerants, such as CO<sub>2</sub>, are being used increasingly in the field of commercial refrigeration, in particular, owing to the increased requirements concerning environmental compatibility of refrigerating installations. Güntner supports this development with its newly developed gas coolers with adiabatic air pre-cooling. Transcritical CO<sub>2</sub> systems can thus also be operated efficiently in regions where ambient temperatures can sometimes climb above 40 °C. The Güntner Gas cooler Diagonal Compact GGDC with wetting mats and Güntner Hydro Management GHM wetting controller offers a capacity range of up to approx. 300 kW with a maximum operating pressure of 120 bar and a maximum operating temperature of +150 °C.

This unit combines maximum power density and compact external dimensions with the possibility to pre-cool the flowing ambient air adiabatically and to ensure vapour-free operation. The specifically developed GHM controller continuously controls the water volume according to the heat exchanger's load requirement (fan speed) as well as the measured ambient temperature and humidity. Your plus: the wetting water distribution is constantly and ideally adjusted to the operating conditions. Moreover, the GHM is also capable of checking the operating costs during operation. This provides the basis for an internal cost management function, which continually decides whether the application of water or the increase in speed represents the more cost-saving and therefore more efficient mode of operation.

Expansion of this series to other media is planned for the future.

**New master panel, new communication protocols**

Classic field bus technology, such as Modbus RTU or Profibus DP, has evolved over recent years to become the current standard for integrating heat exchangers in the building management system. Field bus technology is well-proven, stable and reliable. As requirements with respect to the performance of communication technology have continued to increase, the current standard in refrigeration engineering has been expanded in the past two to three years by industrial Ethernet protocols (such as BaCnet/IP or Modbus/TCP) with high growth rates.

Güntner is therefore expanding its standard range to include additional BaCnet/IP and Modbus/TCP communication modules for direct connection to the customer's building management system. The GMP – Güntner Master Panel – provides a central communication interface to the customer's system for integrating several heat exchangers and in so doing also supports a variety of different communication protocols.



**Invisible yet powerful**

A situation often arises when it comes to refrigeration and air conditioning technology for inner-city projects that there is no space for outdoor installation, noise protection regulations are strict and the building regulations prevent a simple solution. Güntner has the right units to deal with this scenario: the new indoor series with AC or EC centrifugal fans are available in a capacity range of 10 to 500 kW as condensers (GCHI/GCVI), fluid coolers (GFHI/GFVI) and gas coolers (GGHI/GGVI) for all conventional medium. The centrifugal fans can be chosen individually for connection to air ducts, while a number of different variants are also possible when it comes to the dimensions.



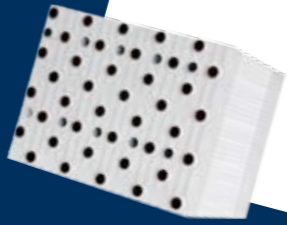
**Operational reliability thanks to glycol collecting system**

As water ethylene/glycol mixtures are classified as fluids hazardous to water in Germany, operators of dry cooling plants usually use closed circuit systems for water protection. The Güntner Glycol Guard is a sophisticated glycol collection system with reliable monitoring of the ethylene/glycol concentration of the waste water. The system's core is a specific sensor with integrated cleaning function developed by Güntner. As soon as ethylene/glycol is determined, an alarm notification is sent to the customer's system.



**Coated heat exchanger for aggressive atmospheres**

Units with stainless steel core tubes and, where appropriate, epoxy resin-coated fins were used to date in cold rooms with aggressive atmospheres, such as storing foodstuffs, in order to avoid corrosion. The new Güntner Coil with fully coated heat exchanger offers an excellent alternative in practically all applications with corrosive atmospheres. With its even coating over the entire coil, it protects the usual copper/aluminium material combination reliably against corrosion and is therefore a good value alternative to stainless steel design. Your plus: the units are hygienic, certified under HACCP, while the coating is food safe and additionally resistant to chlorine-based cleaning agents.



**Interested?** Just come see us at Chillventa and we can provide you with details in person concerning all of our innovations. We look forward to seeing you there!



# Eurovent certification – underrated added value factor

The roots of the Eurovent organisations go back as far as 1958, but even today, many of the players in the refrigeration and air conditioning industry still have no idea what is behind the term Eurovent and what advantages it can offer to every user. We want to provide clarity on this issue and give a brief outline of Eurovent's history, structure, identity and the added value these organisations have to offer the final customer, in other words, you.

## Eurovent Certification: Independent association with a defined identity

The Eurovent Certification Company was founded in 1993 to provide equal competitive conditions within the market. Its remit is to promote fair competition and to guarantee to customers that the units available on the market are assessed correctly and can therefore be more readily compared. To this end, independent laboratories confirm the accuracy of manufacturers' claims by regularly taking and checking measurements on randomly selected units. Over time, an increasing number of certification programmes for different categories of units were added; at present there are 36 main certification programmes. An overview can be found on the website: [www.eurovent-certification.com](http://www.eurovent-certification.com)

Financing is provided exclusively by the members, in other words the companies that participate in the certification programmes. Güntner is involved in the HE programme (Heat Exchangers for Refrigeration).

## Customer benefits from certified units

In addition to the unambiguous classification of the energy consumption you can expect from your chosen unit, certification offers other substantial advantages that are worth real money.

- The classification of equipment into energy efficiency classes is an essential feature of the certification. You receive a unique classification of the energy consumption you can expect with the selected unit. This allows the operating costs to be identified uniquely.
- The independently measured and verified information gives you security for your configuration. You can gear the configuration precisely to the operating point; safety margins aren't necessary.
- Having certified data makes it easier to compare different units. This ensures fair competition under realistic conditions.

- The "certify-all principle" ensures that manufacturers cannot make their name with a few top seller units: it is always complete series that are certified, so there are no loopholes for individual units.
- The confirmed and hence reliable technical data increases investment security and guarantees safe and reliable planning and operation in relation to the performance and energy efficiency of the complete system. The operating costs are clearly calculable from the outset.
- Certified units save real money: "We recommend every user with a current or upcoming construction project to calculate the energy consumption resulting from a hypothetical inaccuracy. Serial testing performed a couple of years ago highlighted an inaccuracy of up to 35% with non-certified units. A reduced performance of 15 to 20% could therefore realistically be assumed for calculation purposes. A much better payback period can be identified in the case of certified units on the other hand, generally less than two years", says Peter Roth, Eurovent Manager at Güntner.
- Eurovent certification of the selected units is an essential prerequisite to obtain grants from defined funding programmes (e.g. BAFA).



Would you like to find out more about this topic? The complete article with additional information on the global significance of certification and testing and certification of central data can be found on our website: [guentner.eu/know-how/technical-articles](http://guentner.eu/know-how/technical-articles) or simply use the adjacent QR code.

## Air coolers

Compact	SLIM	
	DUAL	
	CUBIC	
Vario	DUAL	
	CUBIC	
	Application	PROCESS AGRI BLAST FLOOR PENTHOUSE HIGHSTORE THERMOSTORE

## Condensers/fluid coolers

Compact	FLAT	
	VERTICAL	
	V-SHAPE	
Vario	FLAT	
	VERTICAL	
	V-SHAPE	
Application	INDOOR-H	
	INDOOR-V	

# Güntner's new product structure

Over recent years we have taken into account the large number of refrigerants used and their specific requirements with respect to heat exchangers by revising our product portfolio and making it more transparent for our customers. Every refrigerant, every application has its own requirements, which we meet with precisely adapted products taken from a modular system.

Three product lines (Compact, Vario, Application) have evolved here, which are not only optimally equipped to fulfil all applicable regulations, but are also impressively well designed and optimised at a technical level to offer viable solutions for all refrigerants. The available heat exchanger coil combinations are optimised precisely to suit the required refrigerant and fluid in each case. The core tube diameters and materials together with the fin geometries offer the ideal combination of maximum capacity and minimum tube volume.

The **Compact** product line not only stands for compact dimensions, but also for unit variants that are tailored specifically to the requirements in commercial refrigeration applications.

**Vario** stands for product variability; the corresponding series can therefore be assembled from the complete modular system and thus offer a level of adaptability that is unrivalled in the sector, especially in the area of industrial refrigeration.

The series referred to as **Application** are application-related special units that can be adapted to the respective application right down to the last detail.

This means the right unit for every application in each product line from a variety of possible combinations of the modular system. But what does that mean for you? Will this not make the choice much more complicated? Not at all! Precision design is guaranteed thanks to the heat exchanger coil combination pre-set by the selected refrigerant with the corresponding operating pressure, the casing pre-set by the installation, the chosen fan technology and a series of other variables. You can continue to work with ease using the GPC (Güntner Product Configurator), which configures the appropriate unit to suit your specifications.

The new product structure is therefore also reflected in the naming. The new naming is based on the construction and application and is further differentiated through specific colouring. Thus, green stands for Compact, blue for Vario and orange for Application. Designations such as slim, dual, flat or vertical speak for themselves.

**All product families have one thing in common: you tell us the parameters, we supply the right unit. Always with the special Plus.**

# Our new products 2016

Güntner has revised its successful condenser, gas cooler and dry cooler product series. New units have been developed in this framework for a broad range of applications in refrigeration and air conditioning technology. Available in horizontal or vertical design depending on requirements, these units prove themselves equal to every task. In line with Güntner's new product structure, the units are divided into different product lines to suit the respective application.

The **Compact product line** offers standard units for standard applications, which are available ex stock at the best possible price/performance ratio. The Compact condensers and dry coolers are available both in finoox and microox technology.

The new Compact product series are perfectly suited for the numerous applications in commercial refrigeration thanks to a capacity range of 4 kW – 400 kW, compact design and heat exchangers adapted for different refrigerants.

The GCHC (horizontal design) and GCVC (vertical design) condensers are available for all common and new synthetic refrigerants as well as propane.

The CO<sub>2</sub> gas coolers named GGHC and GGVC have a maximum operating pressure of 120 bar and are thus ideally suited for subcritical as well as transcritical plant designs. The GFHC and GFVC dry coolers complete the product family for all applications in the field of indirect cooling.



FLAT / Compact

VERTICAL / Compact

# Compact Diversity

# Maximum Variability

FLAT / Vario

VERTICAL / Vario

The **Vario product line** comprises series that can be customised for individual projects as required. Customers can select the configuration that best suits their individual requirements from a wide range of different materials, variants and accessories.

### Unrivalled variability

The new Vario series offer a capacity range of 50 kW – 1500 kW and were designed primarily for application areas such as industrial refrigeration and air conditioning as well as process and server room refrigeration. Apart from the conventional and new synthetic refrigerants, the natural alternatives such as ammonia, CO<sub>2</sub> and hydrocarbons (e.g. propane) can of course also be selected as an operating fluid. As with

the Compact product series, the GGHC and GGVC gas coolers can also operate with a maximum operating pressure of 120 bar. A wide range of accessories are offered for the Vario series. In addition to common accessories, such as vibration dampers and extended legs, accessories such as inspection covers are also available, for example, for cleaning purposes. What's more, the accessibility of the heat exchanger may be further improved with hinged fan sheets.

Yet another advantage of the Vario product line is that the wide variance also supplies the best technical solution with standard units for very specialised applications. This cuts down on any special designs and thus time that may have previously been needed.



# CO<sub>2</sub>

## Resurgence of a refrigerant

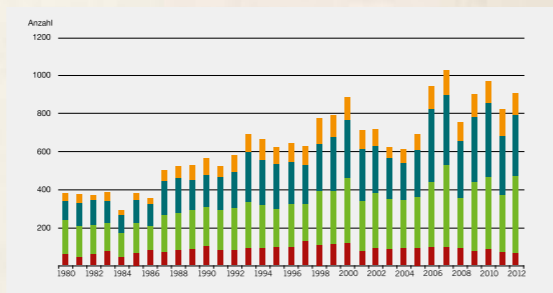
Following decades of using mainly synthetic refrigerants, a trend towards natural refrigerants has re-emerged in recent years, spurred on by environmental awareness and resulting legislation. Reason enough for Güntner to explore the topic of “carbon dioxide as THE refrigerant of the future for commercial refrigeration” at the renowned Güntner Symposium. Prof. Dr.-Ing. habil. Michael Kauffeld from the Institute of Refrigeration, Air Conditioning and Environmental Technology at Karlsruhe University gave a comprehensive and very informative presentation on this subject.

From around 1860 to 1930s

In the early days of refrigeration engineering some 150 years ago, carbon dioxide was one of the first refrigerants used, just like other natural substances such as ammonia, air, water, sulphur dioxide and methyl chloride. Safety concerns very quickly came to the fore again, however, after a number of accidents, with the result that the natural refrigerants were displaced by the CFC safety refrigerants.

1980s

During the eighties, the growing of the 20th century, the growing problems arising from the gradual loss of the ozone layer and the greenhouse effect would lead to a rethink. The dramatic effects were becoming increasingly obvious and being reflected in extreme climate phenomena around the globe. The economic cost of this ran into billions as confirmed by statistics from the insurance industry.



- Geophysical phenomena (Earthquake, tsunami, volcanic eruption)
- Climatological phenomena (Heatwave, freeze, drought, wildland fire)
- Hydrological phenomena (Flash flood, river flood, storm surge, land slide)
- Meteorological phenomena (Storm)

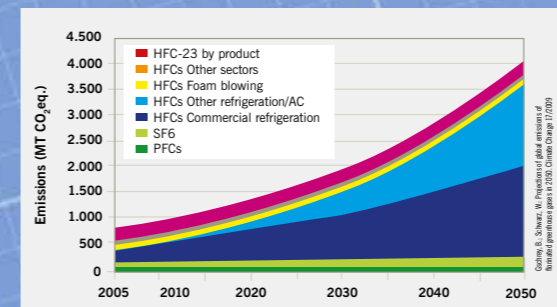
$$\Delta p = \lambda \cdot \frac{e + e'}{d} \cdot \rho \cdot \frac{W^2}{2}$$

$$\dot{Q} = k \cdot A \cdot \Delta t_m$$

$$\frac{P_1}{P_2} = \left( \frac{n_1}{n_2} \right)^3$$

Since 1990

F-gas emissions have accounted for a significant percentage of total greenhouse gas emissions within the EU since 1990 owing to their accelerated growth (by 60% since 1990; as much as 300% in the case of HFCs). The EU took measures to counteract this disproportionate increase in F-gases. The aim is to reduce greenhouse gas emissions by 80 - 95% by 2050. The so-called phase-down scenario (EU F-Gas Regulation 517/2014, Annex V) provides for successive prohibitions in relation to the GWP of various units and plant types. In addition to the effects of the old F-Gas Regulation, this should mean 75 million tonnes less CO<sub>2</sub> equivalent by 2030. The reduction in the refrigerant charge therefore also plays an important role, since the costs of refrigerants will probably increase by a factor of 2 to 3 owing to the phase-down of F-gases likewise provided for in the F-Gas Regulation and the number of prescribed plant inspections in relation to the refrigerant charge can likewise give rise to considerable cost differences.



Back to the future

Natural refrigerants such as ammonia, CO<sub>2</sub>, propane and propylene will therefore play a more important role again in the future while HFO will be avoided owing to the high price for systems with large charge volume. As is usually the case there is no magic formula; each refrigerant also has a down side. Ammonia is poisonous, CO<sub>2</sub> requires high pressures and frequently higher plant costs, while hydrocarbons, such as propane and propene, are flammable. Each plant has its own requirements, which means that the decision in favour of a certain refrigerant must be weighed up again each time.

Despite this, CO<sub>2</sub> is regarded as the frontrunner in the field of commercial refrigeration. When the overall costs of the refrigerant for refrigerating plants of varying sizes are compared, CO<sub>2</sub> comes out on top from a charge volume of around 50 kg or more – in other words on a scale that is relevant for commercial refrigeration. From a geographical perspective, transcritical CO<sub>2</sub> plants fare very well in terms of energy efficiency compared with a standard R404A plant north of the Alps; south of the Alps, however, the comparison does not yet favour carbon dioxide. This situation will change in the future through the use of different technologies such as ejectors.

### Conclusion:

To all intents and purposes, CO<sub>2</sub> can be regarded as the refrigerant of the future for commercial refrigeration, both in transcritical plants and in ammonia CO<sub>2</sub> cascades. The GWP is low and transcritical plants frequently fare better in terms of energy efficiency when compared with conventional HFC systems. The necessarily high operating pressures may pose a challenge but there are manufacturers – including Güntner – whose components can withstand operating pressures of up to 120 bar. From a cost perspective also, CO<sub>2</sub> is a good choice.

$$Re = \frac{w \cdot d}{\nu}$$

$$\dot{V} = \frac{m}{\rho}$$



# Effects of a high temperature glide on the design of evaporators and condensers

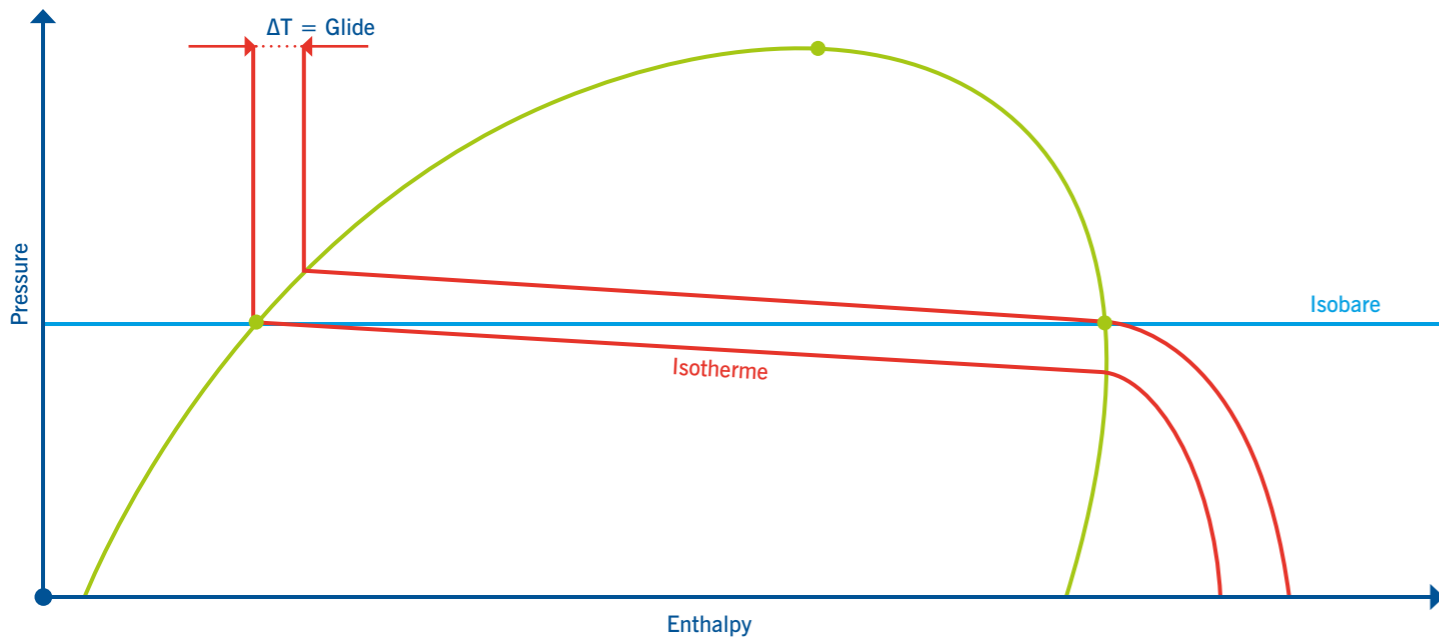


Figure 1: Zeotropic refrigerant mixture in log p,h diagram

Under the European F-Gas Regulation EU 517/2014, only refrigerants with low GWP will be permitted for use in future. The corresponding new synthetic refrigerants exist but what do their properties, such as high temperature glide, mean for the practical side of refrigeration and air conditioning technology, for example in terms of the design of the units?

Michael Freiherr, Product Manager, examined this topic at the Güntner Symposium. A summary of his presentation is outlined below.

Apart from the natural alternatives CO<sub>2</sub>, NH<sub>3</sub> and propane, synthetic refrigerant (mixtures) are also an option when it comes to refrigerants with low GWP. However, some of these so-called low GWP refrigerant (mixtures) exhibit very high temperature glides of up to 8K. The following rule of thumb applies: the lower the GWP, the higher the temperature glide.

## What is the temperature glide?

In a zeotropic mixture, often also referred to as a non-azeotropic mixture, the composition of the liquid phase within the two-phase range is always different from that of the vapour phase. The reason for this is the very different boiling points of the individual components.

Although the individual components all evaporate at the same time, the component with the lowest boiling point evaporates much more than the other components with higher normal boiling points (NBP). As a result,

the component with the lowest NBP will be completely evaporated first, while the remaining components continue to boil. But since their boiling points are now higher, the mean evaporation temperature will rise steadily over the two-phase range, as shown in Figure 1.

Refrigerant	Mass proportion in %	NBP in °C
R-32	24.3	-52
R-125	24.7	-48
R-1234yf	25.3	-30
R134a	25.7	-26

Tab 1: Composition of R-449A

The temperature at the end of the two-phase range of an evaporator, the so-called dewpoint temperature, is therefore always higher than the inlet temperature of the evaporator. A similar situation arises with the condenser, only that the two-phase range is passed through in the opposite direction. The temperature of the refrigerant at the outlet of a condenser (bubble point temperature) is therefore always lower than at its inlet (dewpoint temperature).

This phenomenon is called temperature glide and must be given special consideration when designing evaporators and condensers.

## What impact does the temperature glide have?

The temperature glide of zeotropic refrigerant mixtures significantly influences the design and operation of the heat exchanger. And large temperature glides have a greater influence than small ones. As the refrigerant passes through the condenser, its temperature decreases steadily because of the temperature glide. In the evaporator the opposite happens: here, the temperature of the refrigerant gradually increases. This behaviour gives rise to significantly varying mean temperature differences compared to single-component refrigerants.

In the condenser, the decreasing temperature difference calls for larger heat exchanger surfaces, while evaporator designs can apparently be smaller because their mean temperature difference is greater. However, in some applications, the dramatically higher dehumidification capacity of smaller evaporators argues against the standard dimensioning method using the dewpoint temperature. One specific example of this is NT applications involving the refrigeration of unpackaged foodstuffs that are susceptible to humidity.

In deep-freeze applications this fact is less relevant, because the absolute dehumidification at very low temperatures is low anyway. It is nevertheless advisable to design heat exchangers using the mean temperature method.

## What is the mean temperature method?

The mean temperature for a condenser is the arithmetic mean of the boiling temperature and dewpoint temperature. Determining the mean temperature when designing an evaporator is a bit more complicated than for the condenser. Reducing the refrigerant upstream of the evaporator has the effect that it is already within the two-phase range when it enters the evaporator. In this case, we can no longer simply calculate the mean temperature as the arithmetic mean of the boiling temperature and dewpoint temperature, rather it must be determined in an iterative process. But pressure and dewpoint temperature also increase in this case.

Corresponding conversion tables or calculation software, such as the Güntner Product Calculator, can be drawn on in practice for the design.

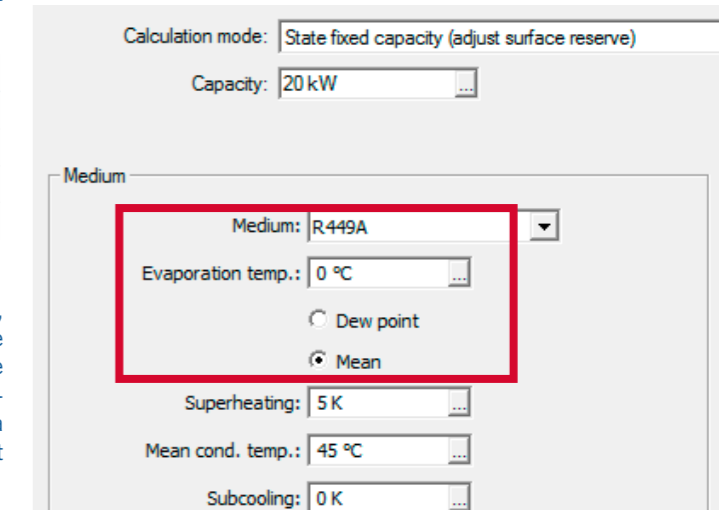


Fig. 2: GPC perspective

**Incidentally:** apart from allowing the units to be designed directly using the mean temperature method, the GPC also offers further advantages. The software contains physical properties for more than 40 refrigerants, performs correct thermodynamic calculations, is free of charge and can be used without being registered. What's more, it is available in 16 languages.

Would you like to find out more about the effects of a high temperature glide on the design of evaporators and condensers? Then visit our website to read the complete specialist article and check out the presentation on our YouTube channel [www.youtube.com/GuentnerAG](http://www.youtube.com/GuentnerAG) by Michael Freiherr!



# Hygiene in focus – Certified expertise of the Güntner Group

**The certified know-how offers added value for customers on three levels: from planning advice to hygienically perfect construction and installation of certified units through to after-sales service for professional inspections and maintenance, your hygiene interests are in expert hands.**

The requirements for operating evaporative cooling systems are becoming increasingly strict. This is also understandable considering the constantly recurring cases of legionella disease worldwide since 2010 in the surrounds of such systems. The requirements of VDI Guideline 2047-2 “Hygienically sound operation of evaporative cooling systems”, in particular, not only impose obligations on the operators of evaporative cooling systems in Germany, rather also assert specific requirements with respect to the design and equipping of the units used. All open and closed cooling towers are affected by the requirements of the guideline.

## Hygiene certification of units

The Güntner Group ensures that all design measures are taken that can contribute to hygienic operation of evaporative coolers. The JAEGGI HTK hybrid cooler has thus now also been certified specially in line with the requirements of VDI 2047, Sheet 2, by the Institute for Air Hygiene (ILH). The design of the units also considers national regulations, however, such as the Approved Code of Practice (ACoP) L8 guidelines applicable in Great Britain and Ireland. These were supplemented by the publication of HSG274 Part 1, which places stricter demands on the risk assessment of these units. The design measures employed with the JAEGGI units are based on the different phases of the event chain for legionella proliferation: entry of legionella, uncontrolled proliferation, spread of infection caused by aerosol contamination.

Requirements include minimising the entry of biological material and germ-promoting substances in general and especially through make-up water, without exceeding the legal limits of the biocide dosage. In order to achieve these aims, the JAEGGI HTK hybrid cooler also incorporates precise regulation in addition to constructive measures such as tray covers. The proliferation of legionella bacteria is countered using a variety of measures, from selection of the design material through to ease of maintenance and servicing.

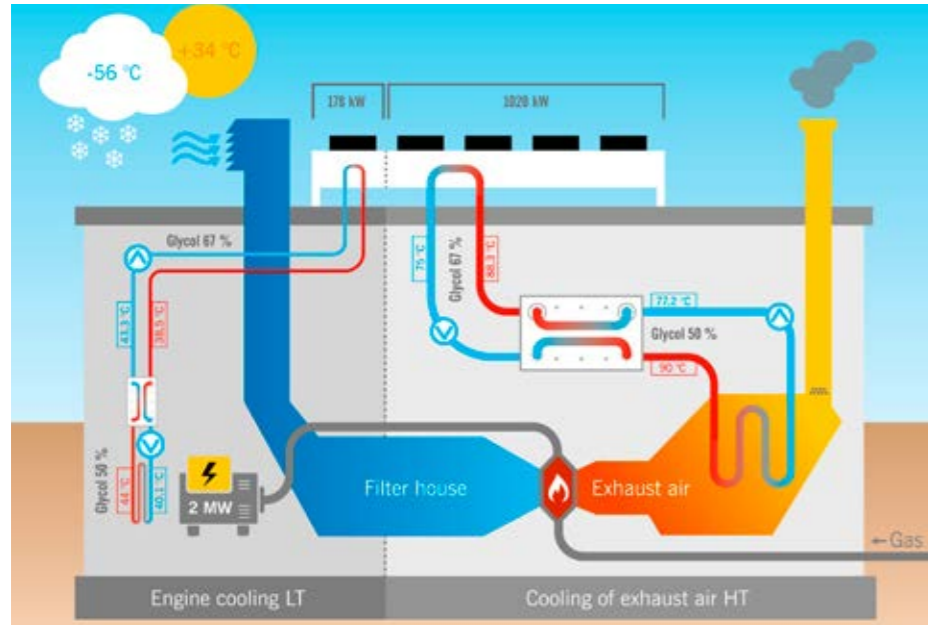
In terms of the central issue of spreading of contaminated aerosols, the hybrid dry cooler offers especially reliable protection, which again was specially certified. Year-round vapour-free operation was verified by an aerosol measurement performed by the DMT in Essen with a so-called blotting paper test. Further details of the numerous positive features of the HTK units can be found on the website [www.jaeggi-hybrid.ch](http://www.jaeggi-hybrid.ch).

## Service and advice from certified employees

But that's not all: the Güntner Group not only pays special attention to equipment certification, but also to the expertise and consulting skills of its employees. Numerous JAEGGI and Güntner employees from sales and service have therefore successfully completed “Hygiene Training under VDI 2047, Sheet 2” to ensure the evaporative cooling systems are operated in line with hygiene requirements. This training may only be performed by providers who are themselves certified.

The course covers areas such as technology and microbiology (examples of topics: installation and operating principles of evaporative cooling systems, relevant fundamentals of microbiology, system monitoring, control of chemical and physical parameters, monitoring of the use of biocides, system maintenance including disinfection, relevant laws, regulations and other technical rules). The training concludes with a written examination in accordance with the requirements of the VDI.





## OVERVIEW

Business line:	Energy and process cooling EPC
Application:	Production of power from gas
Country/Region:	Russia/Vingapurská in Siberia
Fluid:	67 % ethylene glycol
Wet bulb temperature:	40/34 °C
Product:	Güntner fluid cooler S-GFH, thermowave plate heat exchanger EL 500EBGL

# Power station cooling between minus 56 and plus 34 °C

The Siberian climate represents a particular challenge for refrigeration engineers when it comes to producing power from gas. The Slovakian Elteco company installed Güntner fluid coolers as well as thermowave plate heat exchangers in Siberia to dissipate heat produced by five 2 MW gas generators.

Continental climate zones require reliable plant engineering and solid refrigeration plant components. Temperatures during the Siberian winter can reach minus 56 °C whereas they can climb up to 34 °C in the summer months. Elteco's task was to dissipate the waste heat of five gas generators with a capacity of each 2 MW via fluid coolers in this climate zone. The associated gas is produced

near Noyabrsk amidst West Siberian oil fields (Vingapurská region) and processed for power generation. The final customer here is the Mining Company Sibur Tyumen Gaz in Vingapurská, Russia. The electrical energy obtained from the production of power from gas is used locally in the process industry for petroleum and natural gas.

### Glycol concentration 67 %

A glycol concentration of at least 67 per cent is required in the refrigeration cycle so that the fluid coolers do not suffer from any damage at the extreme winter conditions prevalent in Siberia. However, the manufacturer of the employed gas generators gives a limit of 50 per cent for the glycol concentration. Another challenge was the restricted roof area of 9,500 x 2,300 mm at the installation site for the air conditioning equipment. Furthermore, the sound level of the refrigerating installation must not exceed 65 dB(A)/7 m.

An efficient solution with two separate coolant circuits was found for Sibur Tyumen Gaz so-

lution: Eight thermowave plate heat exchangers of type EL 500EBGL form an hydraulic interface between the five axial Güntner fluid coolers of type S-GFH and the five 2 MW gas generators.

### thermowave plate heat exchangers

The heat transfer surface of the gasketed thermowave plate heat exchangers is about 129 m<sup>2</sup> on the high-temperature side, distributed over 267 plates. The refrigerant of the gas generator is cooled down from 90 to 77 °C while the glycol mixture flow temperature is 74 °C in the plate heat exchanger and the return temperature is 88 °C.

On the low-temperature side, 101 plates are installed with a surface of about 48 m<sup>2</sup> cooling down the coolant of the gas generator from 44 to 40 °C. The flow temperature of the glycol mixture in the PHE is 38.5 °C and the return temperature is 43 °C.

### Special design of the heat exchanger

To cool the motor engine parallel to the flu gas two concurrent cycles with different temperature levels are combined in the customized fluid coolers. The low-temperature side has a capacity of 178 kW and a refrigerant flow rate of 40.1 m<sup>3</sup>/h whereas the high-temperature side has 1,020 kW with a coolant flow rate of 73.3 m<sup>3</sup>/h. At external summer temperatures of 34 °C, 190,400 m<sup>3</sup>/h of air are circulated per cooler.

The heat exchanger of the Güntner GFH fluid cooler is equipped with the tried and tested Güntner floating coil principle. This makes sure that it withstands extreme temperature variations. The fluid coolers' fans are designed for temperatures of up to minus 40 °C as no additional fan power is required for heat dissipation below this temperature.

Low-temperature side		High-temperature side	
Capacity	178 kW	Capacity	1,020 kW
Fluid	67 % ethylene glycol	Refrigerant	67 % ethylene glycol
Flow velocity	40.1 m <sup>3</sup> h <sup>-1</sup>	Flow velocity	78 m <sup>3</sup> h <sup>-1</sup>
Fluid flow temperature	43.3 °C	Inlet temperature	88.3 °C
Fluid return temperature	38.5 °C	Refrigerant return temperature	75.0 °C
Pressure drop	22 kPa	Pressure drop	max. 36 kPa

# Intelligent use of energy

thermowave plate heat exchangers are used in the heat recovery plant of the Vienna Ottakringer brewery.

**In the Vienna Ottakringer brewery, about 740,000 hectolitres of beer are produced every year, and the company reported an energy requirement of about 20,000 MWh. The new heat recovery system with integrated thermowave plate heat exchanger allows for returning the waste heat which is produced, for instance, during the cooling process, from the refrigeration system back into the production process. This way, the waste heat can be reused in an environmentally friendly way.**

The Ottakringer brewery was awarded for its contribution to the “Climate and environmental protection” by the Federal Ministry for a Livable Austria. The reason for this: Since 2014, an integrated heat recovery system has allowed for the intelligent use of available energy and has combined ancient brewing tradition with modern technology in an optimal, efficient and environmentally friendly way. The aim was to reduce the superheated steam energy through the integration of a heat recovery system and to recirculate it back into the production process. Also, two thermowave plate heat exchangers are integrated into the process for this purpose.

The deployed thermolineVario TL 150 KEAL acts as oil cooler and supports the existing NH<sub>3</sub> refrigeration system. About 70 kW of heat output are released here. For a significant use of this excess heat, an additional thermowave thermolineEco EL150 ECCL plate heat exchanger is used. It serves as a system separator between refrigeration plant and brewing process and uses the dissipated heat of the refrigeration system for heating the brewing water.

This brewing water is first heated from about 12 °C to 35 °C and, in a second step, from 35 °C to up to 50 °C. It is then stored temporarily in a 30 m<sup>3</sup> buffer storage in different temperature layers and, according to demand, removed for the further brewing process.

Since the commissioning in the summer of 2014, about 200 MWh had been saved already until the end of the year. This means monthly savings of 28.5 MWh which roughly corresponds to the energy consumption five single-family homes with each a 4-person household require throughout the year.

## Production efficiency and sustainability

The integration of the new heat recovery system to support the hot water network shows the high production efficiency and sustainability in the Ottakringer brewery and the enormous potential of heat recovery systems. thermowave plate heat exchangers are key components. They can transfer the resulting waste heat to another process, or transfer thermal energy from one fluid to another and thus contribute significantly to the reduction of primary energy consumption.

## Overview

Business line:	Food and beverages, refrigeration
Application:	Oil cooling, heat recovery/system separation
Country/City:	Austria/Vienna
Fluid:	Propylene glycol (35 %)
Product:	thermolineVario TL 150, thermolineEco EL 150

# Under pressure?

Not a problem with thermolinePlus



**In addition to the plate heat exchanger series thermolineVario, thermolineEco and thermolinePure, thermowave also offers the thermolinePlus series for high-pressure applications up to 63 bar.**

The units offer excellent advantages such as compact design, little space requirement, low weight and low refrigerant charge, quite apart from their outstanding high capacity.

They are ideal for applications with the natural refrigerant CO<sub>2</sub> thanks to their high pressure resistance. They are thus perfectly suited, for example, for heat recovery in CO<sub>2</sub> cascades or for use in many industrial refrigeration processes and in heat pumps.

## Maximum operational reliability

The units consist of a pack of laser-welded modules. The welded plate module forms a flow passage that is hermetically sealed to the outside. The laser-welded seams have a sealing function and ensure optimum operational reliability even in the case of critical applications. Pressures of 160 – 300 bar were tolerated in burst strength tests of the laser-welded seam depending on the type tested.

The highly resilient ring gaskets, which were developed especially for these applications, form the transition from one module to the next. They seal the opening between the modules and are designed such that the contact surface between the medium and the seal is limited to a minimum. Adhesive-free gaskets with clip-on technology are used exclusively in order to avoid the adhesive exerting any chemical influence on the gaskets. These gaskets are not only resistant to the media flowing in the apparatus, rather at the same time guarantee the leak tightness of the plate heat exchanger and thus also the safety of the system.

Full details of the complete thermowave product portfolio can be found at: [www.thermowave.eu](http://www.thermowave.eu)

Why not take a look!



## OVERVIEW

Business line:	Air conditioning
Application:	Air conditioning
Country/City:	Great Britain/London
Fluid:	Ethylene glycol 20 %
Product:	Güntner fluid cooler S-GFV



# Something cool is going on at the Royal Albert Hall

Regular visitors to the Royal Albert Hall have noticed something refreshingly different about the famous venue in recent months. Thanks to the installation of a major new air cooling system, based on a bank of Güntner adiabatic coolers, the iconic hall now provides its patrons with an environment to match the quality of its international concert schedule.

Before the Güntner units were installed, in time for the 2014 Proms season, there was an existing 250kW condenser-less chiller coupled with 4 x 80kW duty standby temporary chillers that served the building. Delivery of design conditions into the Hall was restricted by the undersized primary plant so plans were put in place to open up plant areas and, with Güntner's adiabatic package, the Hall is now served by 800kW of primary plant ensuring that the design conditions are achieved.

Prior to 2014, the million-plus people who visited the Hall for concerts and other events annually sometimes faced overheated conditions out of keeping with the majesty of the surroundings. That has been improved since the Güntner system became operational. Consisting of a total of six S-GFV adiabatic coolers, a UV water treatment system and associated controls, the system cools the condensing water of the chillers which in turn cool a large section of the building including the lower section of the auditorium and the stage, maintaining them at a comfortable temperature and, crucially, also providing a high degree of controllability.

## Anti-Legionella and planning compliant

In order to avoid the risk of Legionella and other waterborne bacteria, the Güntner adiabatic cooling system has been designed to conform to the requirements of ACOP L8 Control of Legionella bacteria in water systems and incorporates a number of important safety features.

All the water used for the spray system is supplied via an Adiabatic Control Box (ACB). Any water in the supply pipe is set to drain for a fixed period prior to spraying, to eliminate the risk of stagnant water. A powerful Ultraviolet lamp doses all water passing through the spray system with intense UV radiation, which is lethal to pathogens.

When the system calls for adiabatic cooling, the UV lamp is energised and the main solenoid activated. Water is flushed through the system and out to drain to remove any residual water that may have been left in the system. After a pre-determined interval, the drain valve closes and the booster pump starts to increase the pressure and atomise the water leaving the spray nozzles. Should the system develop a fault, such as UV lamp failure, the system automatically shuts down and a fault signal is generated.

## Grade I listed

Apart from the efficiency, functionality and safety of the system, one of its principal benefits was the flexibility provided by its modular design which became particularly important when the installation was being planned. Not only is the Royal Albert Hall a notable Victorian building, it is also Grade I listed, which means that any changes – internal or external – are strictly regulated.

The Güntner equipment had to be installed in such a way that visual and noise intrusion were kept to a minimum. Not only did the installation have to be achieved in a very tight time frame in order to fit in with major events but the impact on residents living in close proximity to the Hall also had to be taken into account. In the event, after careful planning and consultation with major bodies such as English Heritage, the kit was accommodated into a tight space close to the Hall's Queen Elizabeth II Diamond Jubilee Steps, with minimum disruption to the show schedule or local residents.

The system has now been in operation for more than a year and according to Peter Barnes, the Hall's Building Services Manager, is performing perfectly. *"We are delighted with the effects of the Güntner system, which has helped us to keep our iconic building at a comfortable temperature during the hottest months of the year, so audiences can forget about the weather and enjoy an unrivalled programme of events."*

## The Royal Albert Hall

is the world's most famous stage. Over the past 144 years, it has hosted everyone from Winston Churchill, Albert Einstein and Edward Elgar to the Beatles, Bob Dylan and Adele. Last year, its breathtaking auditorium presented 397 events by the world's greatest performers – taking in rock, pop and classical music, dance, films, Cirque du Soleil and even tennis – with the magical setting and inspired artists creating amazing memories for audiences. Opened in 1871 to fulfil Prince Albert's vision of a central hall to promote the arts and sciences, the Hall is a registered charity that remains true to his founding ambitions within a modern context. It hosts over 400 events a year in its secondary space, the Elgar Room, and beyond, broadening the Hall's appeal to incorporate younger and more diverse audiences.

Its Education & Outreach programme reaches more than 100,000 participants each year, working with schools, young people and the community, as well as other charities such as Music for Youth, as part of its extensive public benefit remit.

## THE BBC PROMS

The Proms – the popular name for the BBC Promenade Concerts – are London's most famous and ambitious summer music festival. Over eight weeks, they offer daily concerts of orchestral and classical music and other events, both in the Royal Albert Hall and at other indoor and outdoor venues around the UK, such as Hyde Park.

The first Proms concert took place on 10 August 1895 and was the brainchild of the impresario Robert Newman, manager of the newly built Queen's Hall in London, whose aim was to reach a wider audience by offering more popular programmes, adopting a less formal promenade arrangement and keeping ticket prices low. Newman teamed up with Henry Wood, a young musician who was beginning to make a name for himself as an organist, accompanist, composer and conductor of choral and orchestral music.

In February 1895, Newman offered Wood conductorship of a permanent orchestra at Queen's Hall, and the first Proms season was launched. The Proms transferred to the Royal Albert Hall in 1941 after the original venue was destroyed in the Blitz. The following year, the BBC agreed to resume its sponsorship of the event; an arrangement that continues to this day.

The audiences that attend the Proms are recognized as exceptionally knowledgeable and receptive. Many concerts feature contemporary, experimental or little-known works by rising composers, music from non-Western cultures (including India, Thailand, Indonesia and Japan), percussion, jazz, gospel and electro-acoustic music, and concerts aimed specifically at children.

# Groundbreaking concept for highest energy efficiency

One of the most ambitious IT projects in the higher education sector, the West Cambridge Data Centre, was officially opened on 19 March 2015. The plant offers an overall re-cooling capacity of 1815 kW in free cooling mode and is operated according to ASHRAE 2008 standards for higher allowable data hall temperatures, thus eliminating the need for refrigeration compressors and, with power usage effectiveness of 1.2, leading to the construction of one of the most capable, secure and energy-efficient data centres in the higher education sector in the UK.

Taking into account the fact that 30 – 40 % of any data centre's power is needed to store digital data and the amount of digital data generated is soaring, it was decided to invest in a completely new datacentre with the highest possible reduction in energy consumption.

## Novel approach, less power consumption

To achieve this goal, the university accepted a forward-thinking approach: The 'chilled water' solution, true to the ASHRAE A2 temperature range, supplies air at a higher temperature (up to 35°C) than conventional approaches, and without the use of chillers. This enables the system to work very efficiently in 'free cooling' mode for 100 % of the time, effectively leading to 10 % reduction in power consumption compared to 2013.

## Backup power and capacity reserve

To safeguard the continuous operation of the centre, all the equipment has dual power feeds; backup power is guaranteed by three generator sets that can maintain operation for three days. Of the four N+1 Hybrid Dry Coolers, only three are necessary to keep up the everyday running of the plant. The whole is controlled by an intelligent system with the highest possible power efficiency and flexibility.

The new facility comprises four data halls with one hall kept deliberately free for future demand – considering the speed with which the amount of data increases, a clear-sighted decision. Therefore, an additional Hybrid Dry Cooler has been incorporated into the system in order to be prepared for the next step.



Technical data		
Type of cooler	3 x HTK1.8/5.45-2S-P6-CU-SLNF + 1 x HTK1.8/5.2-2S-P6-CU-SLNF, all with Hybrimatic controller	
Heat output for total layout design	4 x 605 kW capacity = 2.420 kW installed capacity	
Water-side cooling	Coolant Medium temperatures (incoming/outgoing) design max Total medium-mass flow of coolers Hydraulic circuit	
	27 % Glycol 35 °C/28 °C 287.8 t/h (= 276.2 m³/h, density 1.041.8 kg/m³) Parallel, 6-pass crossover counter-current	
Air side		
Operating status of cooler:	Hybrid mode	Dry mode
Ventilator speed	76 %	100 %
Air status at input	35 °C/41 % Phi	19 °C
Corresponds to wet-bulb temperature (input)	24 °C	
Air status at output	29 °C/96 %	30.6 °C
Total moistening water consumption		
With air status	35 °C dry bulb/41 % RH/24 °C wet bulb	
Evaporation water quantity	3.5 m³/h for 3 coolers	

# Güntner Product Configurator GPC

Our GPC design software is continuously being improved and extended. That's why we issue updates from time to time. Now is the time again: the new GPC with practical and time-saving add-on functions is here.

The new version of course takes account of all requirements arising in all areas with respect to the heat exchangers due to the F-Gas Regulation. Apart from new refrigerants as well as new input and filter methods, all newly developed and revised series have of course all been included successively in the design programme. We have put together a summary of some of the most important changes for you below:

## Product name = File name

When saving a design, the product name is suggested automatically as a file name. Characters that are not permitted in file names (e.g. obliques) are replaced by underscores. This saves time and also makes it easier to assign a number of products in the case of large projects.

## New products

In addition to the new functions, the new design series are of course also available, such as the Slim Compact (GASC) and Cubic Compact (GACC) air coolers as RX for HFC and CX for CO<sub>2</sub> respectively. The new Flat Compact (horizontal design) and VERTICAL Compact (vertical design) families are available on the condenser/dry cooler side. These are available in various designs and are optimised for the respective medium, for example as RD for HFC, CD for CO<sub>2</sub>, PD for propane and FD for fluids. The condenser series are available up to an operating pressure of 41 bar and are likewise available in microox technology in addition to the well-proven finoox technology. This technology offers all of the advantages of a specially low tube content.

The new FLAT Vario and VERTICAL Vario series are now also available most recently in the GPC.

## New refrigerants with low GWP

With the availability of new low GWP mixtures, the GPC has been brought up to date as quickly as possible in each case. The following new refrigerants are therefore now available:

- R448A (N40)
- R449A (XP40)
- R450A (N13)
- R452A (XP44)
- R513A (XP10)

This means that the units can be designed in the GPC for more than 50 refrigerants and heat carriers.



Güntner heatXchange 20

Calculation mode: State fixed capacity (adjust surface reserve)

Capacity: 20 kW

Medium

Medium: R449A

Evaporation temp.: 0 °C

Dew point

Mean

Superheating: 5 K

Mean cond. temp.: 45 °C

Subcooling: 0 K

Hide model ranges which are not suitable to selected fluid

Calculate single unit

Series: GCHC

Model filter: Separate search texts with a space Apply filter

Model: 035.1/11-39-0000057

035.1/11-25-0000061

035.1/11-25-0000062

035.1/11-25-0000063

035.1/11-25-0000064

Passes: 20

Medium

Medium: CO2 (R744)

Evaporation temp.: -25 °C

Dew point

Mean

Superheating: 5 K

Inlet state by temp. and pressure

Inlet temp.: -28 °C

Inlet pressure: 16.8 bar

## More technical details in the hit list

Technical details that cannot be derived from the unit name will be displayed in the future both in the hit list and on the GPC printout. This will make it easier to select units and creates clarity, for example, in relation to the motor and heat exchanger technology used in the selected unit.

## Temperature glide – mean temperature method

The so-called low GWP refrigerants demonstrate consistently high temperature glide in the range between 3 K and 8 K. This temperature glide influences the design and operation of the heat exchanger.

As a zeotropic refrigerant mixture passes through the condenser, its mean temperature decreases steadily because of the temperature glide. In the evaporator the opposite happens: here, the mean temperature of the refrigerant gradually increases. This behaviour gives rise to significantly varying mean temperature differences compared to single-component refrigerants. In the condenser, the decreasing temperature difference calls for larger heat exchanger surfaces, while evaporator designs can apparently be smaller because their mean temperature difference is greater. The heat exchangers should be designed using the mean temperature method in order to counteract these effects. The input mode required for this purpose is provided by the GPC in its latest version for DX evaporators and condensers.

## New type filter function for individual device recalculation

New filter functions have been added to the GPC in order to take account of the variant diversity of the new Compact series. This ensures that operation remains as simple as ever. The list of types can therefore be pre-filtered according to various features or a unit selected specifically by entering the UI (Unit Identifier). You can enter individual or several text fragments of the type name, each of which must be separated by a blank; you can choose the sequence of fragments freely. To select a unit based on the UI, simply specify the complete UI (without leading zeros); for example: "62" supplies the unit with UI 0000062.

## New input mode for CO<sub>2</sub> DX evaporators

The input method has also been extended for DX evaporators for CO<sub>2</sub>. The inlet status can now be predefined optionally based on the inlet temperature and the inlet pressure. This option is necessary for transcritical applications because, unlike in subcritical applications, the inlet status of the refrigerant in the evaporator cannot be determined by the condensing temperature and subcooling.

Fans **(AC)**: 4 Piece(s) 3~400V 50HZ/(l)

Data per motor (nominal data):

Speed: 1180 min<sup>-1</sup> / (1390 min<sup>-1</sup>)

Capacity (el.): 0.55 kW

Current: 0.90 A<sup>(4)</sup>

Hits: 20

	Unit key	Cond. temp. [°C]	Surface [m <sup>2</sup> ]	Tube volume [l]	Air [m <sup>3</sup> /h]	Speed [min <sup>-1</sup> ]	Heat exchanger technology	Noise pressure level [dB(A)]	Motor technology	Motor capacity per motor [kW]
✓	GCHC RD 050.1/14-46-...	45.7	240.9	20.9	25895	1180	finoox	46	AC	0.55
✓	GCHC RD 050.1/14-51-...	44.4	240.9	20.9	29977	1390	finoox	51	AC	0.72
✓	GCHC RD 050.1/13-50-...	45.6	301.1	26.0	24120	1300	finoox	50	AC	0.68
✓	GCHC RD 050.1/22-50-...	45.7	240.9	22.7	28491	1300	finoox	50	AC	0.68
✓	GCHC RD 050.1/13-51-...	45.1	301.1	26.0	25128	1390	finoox	51	AC	0.72
✓	GCHC RD 050.1/22-51-...	45.3	240.9	22.7	29977	1390	finoox	51	AC	0.72
✓	GCHC RD 045.1/14-50-...	46.0	361.3	31.5	20364	1360	finoox	50	AC	0.47
✓	GCHC RD 063.1/13-54-...	43.9	133.3	7.9	36157	1040	microox	54	AC	1.75

# Summer World Transplant Games

The Olympic Games in Brazil have only just recently come to an end. Few know that a major sporting event likewise took place last year in South America. The World Transplant Games Federation (WTGF) awarded the Summer World Transplant Games for the first time to a South American country. Transplant recipients from 44 countries came together in Argentina from the 23rd to the 30th of August 2015 to compete in numerous sporting events.

It sounds amazing, does it not? On hearing the word “transplant”, the thought that automatically springs to mind is one of illness and pain, not sport and competition. In reality, transplant recipients can go on these days to lead a practically normal life thanks to the aid of modern medicine. And many of these people are active in sport, are involved in local sports clubs and enter competitions. Sports people in Germany who are transplant recipients are members of the TransDia e.V. association. Sport is only one aspect here however, what is more important is to raise awareness of transplantation and the associated topic of organ donation.

## Athletic performance with new organs

Sports people who have been virtually given a new start in life thanks to transplantation are dedicated to helping others who have not yet been so lucky by focusing public attention on the topic in a positive way. This may not always be entirely welcome, after all who wants to be reminded of their own mortality? The group in the 20 to 50-year age bracket in particular likes to avoid the topic. Many instances of transplantation also arise in this age group. The press also seems to prefer not to deal with this topic for this reason.

However, it is extremely important to talk about it as it can affect anyone. It is a well known fact that the number of available organs has been decreasing for years. In Germany alone, the number of organ donors fell from 15.9 per one million inhabitants in 2010 to a total of 10.7 in 2014.

## Hope for a new life

There are real stories behind each of these numbers: people who have been waiting full of hope for a live-saving transplant – their lives on hold. One of these people is our colleague Thomas Rack, a sales representative at JAEGGI:

*“Only by being in the situation can you actually understand it properly”, says Rack. “I was diagnosed with chronic, incurable liver disease in 1995. In early 2010 I was put on the waiting list for a transplant. And in August 2012 I successfully received a liver transplant. I was lucky, without the transplant I would have survived for at most 6 months. But this wait, this permanent uncertainty, the desperate hope for a small chance ... it is difficult to bear, and many go through it for longer than I did and then still have no luck. You would not wish this situation for anyone.”*

## More transplantations through more publicity

Thomas Rack was lucky. He has been actively involved with TransDia e.V. for years and attended the Summer World Transplant Games for the first time this year. More than 900 transplant recipients from almost every country in the world came together for a week in Argentina to compete in events such as athletics, swimming, tennis, table tennis, badminton, squash, cycling etc., but also less strenuous sports such as golf, bowling and darts. It is less about reaching the highest level of sporting achievement and more about the opportunity to exchange experiences.



▲ Thomas Rack receives the bronze medal after the 400 m final



Juegos Mundiales para Trasplantados  
**ARGENTINA**  
MAR DEL PLATA 2015

Thomas Rack: *“Some of the stories are incredible! Our youngest team member is 13 years old. She was born with chronic liver disease and would not have reached her first birthday only her mother donated part of her liver to her. Marina is now able to live a practically normal life and even managed to win the gold medal for table tennis.”*

The games offer an opportunity to focus public attention on these positive effects of transplantation and organ donation.

Interestingly it was shown that the world games and the intensive reporting in local media are helping to significantly increase the number of organ donations and thus transplantations in the region. In other words: Let's talk about it.

## Fabulous results

Incidentally: even if the competitive aspect is not a priority, everyone still wants to know how well they did, or? Germany ranked in 8th place with 26 x gold medals, 24 x silver and 12 x bronze. Our colleague reached the 400 m final and came third, receiving a bronze medal. He likewise secured third place in the high jump and therefore came home from Argentina with 2 prized bronze medals.

Heartiest congratulations!



# Communication across all channels

Digital connectivity: social media channels, such as Facebook, LinkedIn and YouTube, offer various types of information and communication. Güntner is active in various social media channels, where you can find out about the latest topics concerning Güntner. All of Güntner's social media presences can be accessed easily via the website. Why not take a look!



## Güntner channel on YouTube

The Güntner YouTube channel has been up and running since the beginning of 2011 and deals with a wide-ranging array of topics. Whether loading a GFD on transport rails in a container or watching interviews and presentations from trade fairs or our Symposium – you are in the right place here. Speaking of the Symposium: videos on various presentations from the 2015 Symposium can likewise be found here.

[www.youtube.com](http://www.youtube.com)



## Güntner on LinkedIn

LinkedIn is a business platform where discussions of the latest issues take place in a number of refrigerating-related groups. It represents an excellent network for exchanges within the refrigerating community in which we of course also participate. You will find our product news here as well as references, news in relation to technical issues and of course also career opportunities.

[www.linkedin.com](http://www.linkedin.com)



## Güntner on Facebook

If you would like to find out what else is happening at Güntner in addition to product news and other technical information, take a look at our "personal" calling card. You can find insights behind the scenes here in all regions. Give us a "like" and join us live.

[www.facebook.com](http://www.facebook.com)

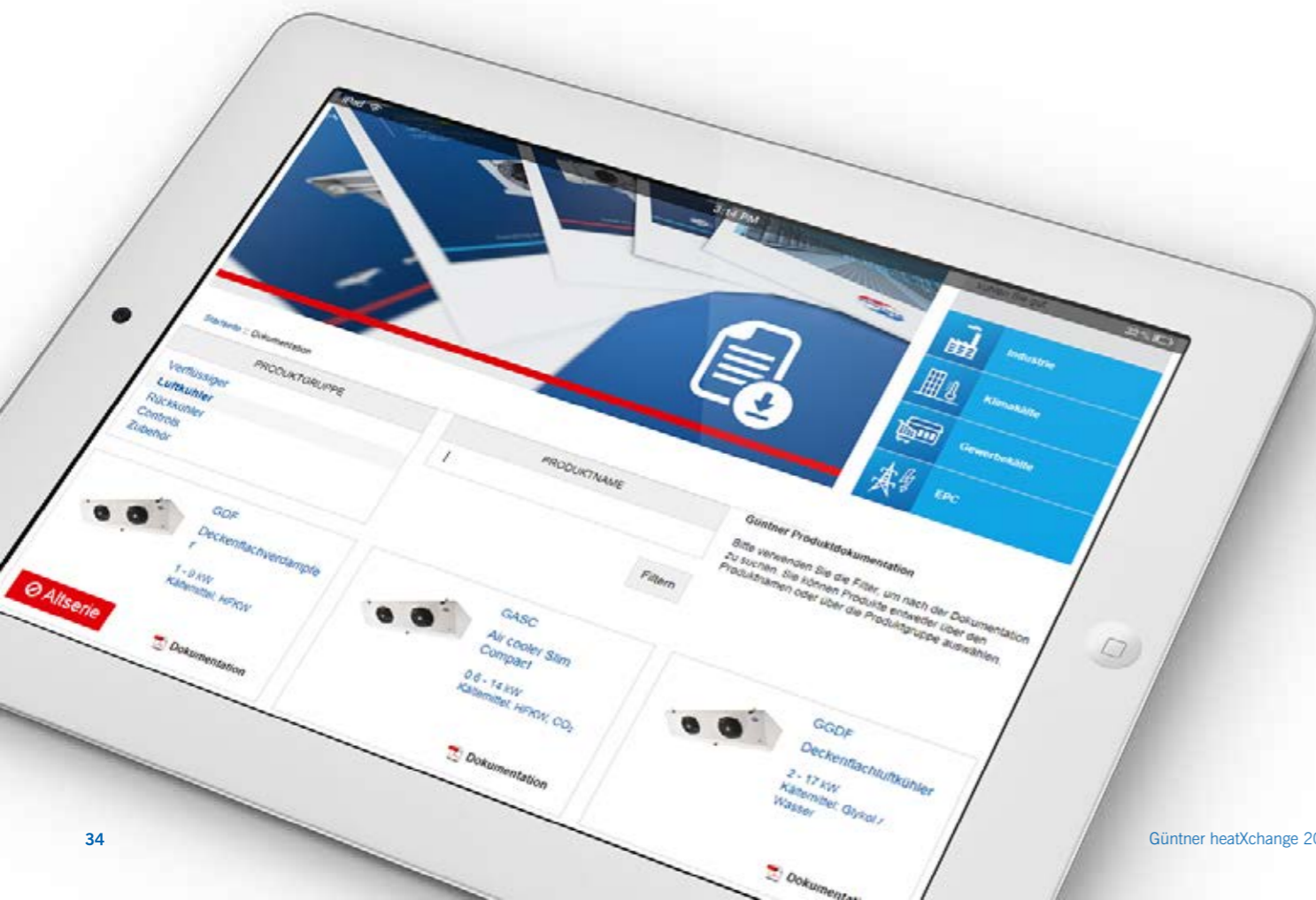
# Web & App

## Old but not forgotten

You will find all the information you need about Güntner and our units on our website: from technical details to application tips and equipment documentation. We have now implemented a new function to make it easier for you to access documentation in particular and to make the discontinued series available to you.

Are you looking for installation instructions for your new unit or have you misplaced the instructions for your old unit? No problem at all! The documentation can now be located easier than before since it has its own tab in the main menu. You can either filter directly based on the product name, for example GDF, or choose the relevant product group.

The documentation is also still available for series that are no longer carried in the current product portfolio. These series are clearly identified in red as discontinued series. However, the corresponding documentation can still be accessed directly. Ultimately, our products are just so sustainable that the associated documentation can easily go missing...



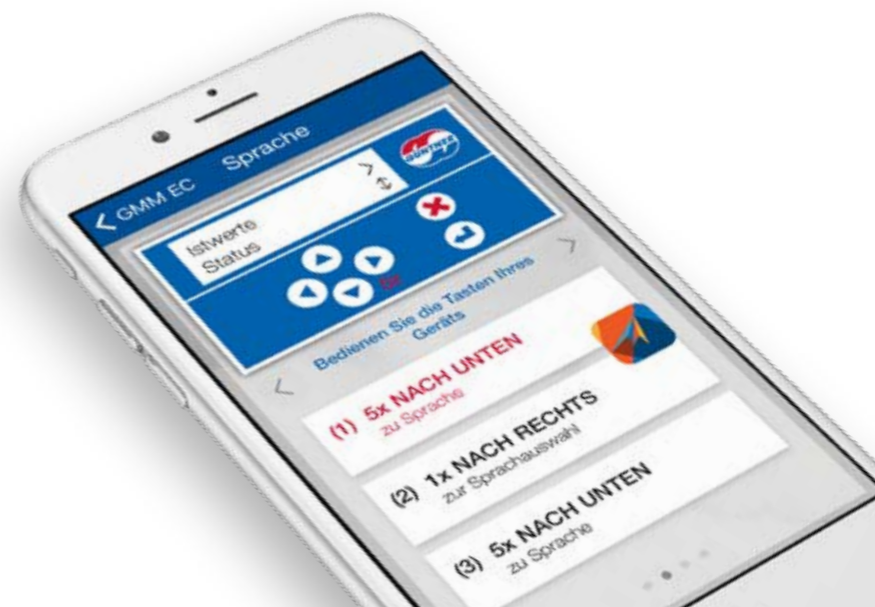
## “How-to” help in the form of an app

The established Güntner App and its many functions on refrigeration and air-conditioning technology have been available to our customers since 2013. It now offers a new functionality, which is a valuable addition to previous technical information: the new Tutorial Function.

This feature will show you several functions of our products in a concise and clearly arranged manner so that you can learn how to operate Güntner units as quickly and easily as possible. The available subject areas are continuously being updated.

The first available tutorials are about the installation and programming of the Güntner controllers GMM EC, GMM step, GMM sincon, GMM phase cut and GMM f-drive. An instruction allows you to easily carry out the individual functions, be it the initial start-up, the activation of the tear-off function or the setting up of the Low Capacity Motor Management (LCMM). Figures of the respective display view and brief and clear instructions will guide you step-by-step through the application. The tutorials can be operated intuitively – just like the other functions of the App: you simply “wipe” from one step to the next.

You will find the App update with the tutorial function for iOS and Android in the App stores for free. Depending on the geographical region and the selected function, the tutorials are available in up to five languages (English, German, French, Spanish, and Portuguese).



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