THE NEW QUANTUM AIR: MORE EFFICIENT, QUIETER, LIGHTER

ENGIE Refrigeration refines its air-cooled QUANTUM series

INNOVATIVE SOLUTION FOR UTILISING WASTE HEAT

thermeco₂ heat pump deployed in an EU-assisted pilot project

WORLD CLASS ACOUSTICS THANKS TO QUANTUM

Optimal refrigeration for the Hamburg Elbphilharmonie
This may take your breath away.

The most powerful air-cooled chiller of its type is made by ENGIE Refrigeration.

We have made one of the best chillers in the world even better. The new air-cooled QUANTUM will set standards. It is even more efficient, even quieter, even more compact and even more powerful than all its predecessors. Take a deep breath and prepare for the best: the new air-cooled QUANTUM from ENGIE Refrigeration.

A new approach to cooling: ENGIE Refrigeration.
EFFICIENT, SUSTAINABLE AND COMPACT – THESE ARE THE CHARACTERISTICS OF THE NEW AIR-COOLED QUANTUM.

JOCHEN HORNUNG, CEO
ENGIE REFRIGERATION GMBH

We at ENGIE Refrigeration work hard every day to offer our customers the refrigeration technology of tomorrow, today. Our aspiration is to provide the highest-quality and most efficient chiller on the market. We will come a little closer to this aim on 24 June 2019: that is when the new air-cooled QUANTUM will become available around the world.

The QUANTUM chillers from ENGIE Refrigeration are a success story. They have been setting standards on the refrigeration market since 2003. Today, more than 3,400 QUANTUM chillers provide an optimal refrigeration solution for customers in all kinds of industries and on all continents. There is a clear recipe of success behind this strong demand and high customer satisfaction: over the years, we have continuously developed the QUANTUM series and adapted it to market requirements.

And we have achieved another milestone with the new, air-cooled QUANTUM. This redesigned air-cooled chiller with a refrigeration capacity of up to two megawatts outperforms not only its predecessor model, but all air-cooled chillers from other manufacturers that are currently available on the market. Read more about the new, air-cooled QUANTUM Air from page 10.

From page 14, this new issue of REFlect also describes the important role that a thermocO2 heat pump currently plays in an EU pilot project in Braunschweig. And we provide answers regarding the F-gas Regulation – for more, turn to page 20.

I wish you an interesting read.

Yours, Jochen Hornung
Powerful drive system

Jellyfish have developed one of the most efficient drive systems in the animal kingdom. Instead of using only the recoil principle, as had long been assumed, they also suction their way forward: their movements create underpressure zones on specific body parts. Water is sucked into these zones, which generates forward drive. This takes jellyfish around 45 per cent further than they would get with a pure recoil. This is highly efficient, as muscle mass makes up only around 1 per cent of body weight in jellyfish. The creatures invest all this saved energy in their own growth: jellyfish can reach a diameter of more than two metres.
Green lung

Cities are often grey, covered in concrete and have poor air quality. Architects are attempting to effectively improve the quality of life in cities by means of green buildings. Among them is Stefano Boeri from Milan, who has designed a ‘Bosco Verticale’ – a vertical forest – with some of his colleagues. It consists of two residential towers, 119 and 87 metres high, which are located in the centre of Milan and covered with 9,000 square metres of terrace area, on which 800 trees and 20,000 shrubs grow. This project is a template for a ‘Forest City’ consisting only of buildings covered in plants, which is currently being developed in south-western China.
Small but powerful

At five milligrams, the weaver ant is extremely powerful in spite of its small size. It can carry around 100 times its own body weight, even though its muscles per square centimetre are no more powerful than those of a human. The ant benefits from its small size and light weight. Larger animals have a greater difference between mass and power. When a large animal lifts an object, its muscles also have to move a greater volume of its own body. The ant, on the other hand, is not burdened by its small body size.
GET READY, SET, QUANTUM!

Curtains up for the most powerful chiller on the international market: with a refrigeration capacity of up to two megawatts, the new air-cooled QUANTUM Air from ENGIE Refrigeration outperforms all currently available air-cooled chillers with magnet-bearing compressor technology. The redesigned QUANTUM model will be available around the world from the end of June.

‘With the QUANTUM Air, we at ENGIE Refrigeration are living up to our aspiration, which is to offer the highest-quality, most efficient and most durable chillers. This gives us a pioneering role in the refrigeration industry.’

Jochen Hornung,
CEO of ENGIE Refrigeration

More efficient, quieter, lighter – the new air-cooled QUANTUM Air presents important advantages to our customers. For about a year, an interdisciplinary project team at ENGIE Refrigeration – consisting of experts in the fields of product management, technology & development, purchasing and service – worked very hard to further optimise the QUANTUM chillers. The refrigeration specialist from Lindau on Lake Constance was thereby responding to changing customer needs: ‘The requirements for the refrigeration industry have changed in recent years. Our customers are placing increasing value on greater performance and efficiency in their chillers, for example,’ says Jochen Hornung, CEO of ENGIE Refrigeration. ‘We are accommodating these changing conditions by redesigning our air-cooled QUANTUM series.’

New design, tried-and-tested quality

With all this in mind, the ENGIE Refrigeration team is relying on new components for the new air-cooled QUANTUM Air, and is also recombining the individual machine components. As a result, the new model even outstrips the very high efficiency of the current series. The QUANTUM Air is also extremely powerful: as the chiller is suitable for applications from 250 kilowatts to two megawatts, the QUANTUM Air outperforms not only its predecessor, but also all chillers from other manufacturers that are currently on the market. With its Supersilent package, ENGIE Refrigeration also ensures that the QUANTUM Air is as quiet as a whisper. This is particularly essential for noise-sensitive applications, for example in hospitals or office buildings.

Full performance for any application

The QUANTUM Air can be operated with the three refrigerants R-134a, R-513A and R-1234ze, and the refrigerant filling quantity itself has been reduced. ENGIE Refrigeration has also reduced the size and weight of the chiller, so it is easier to transport and install on site. The new design also reduces delivery times and facilitates maintenance, as it will be easier for the responsible ENGIE service technician to enter the interior of the machine during maintenance in future. The QUANTUM Air also presents all the advantages that its predecessor offered: maximum energy efficiency, oil-free compressor, contact-free magnetic bearing, gentle starting behaviour, low noise and vibration levels, reduced
CO₂ emissions and high reliability. The overhauled chiller is therefore ideal for use in a variety of industries – from automotive manufacturers and suppliers to the chemicals and pharmaceuticals industry, industrial production and data centres.

Refrigeration technology of the future
The new QUANTUM Air will be available worldwide from 24 June 2019. On the launch date, ENGIE Refrigeration will offer 28 models of the QUANTUM Air. Fourteen of these models use the refrigerant R-1234ze, and fourteen models use the refrigerants R-134a and R-513A. As its next step, ENGIE Refrigeration will overhaul its water-cooled QUANTUM chillers as well; the relevant models will become available on the international market over the course of 2020. Jochen Hornung is certain that ENGIE Refrigeration will meet current and future customer requirements perfectly with the newly designed air-cooled QUANTUM. ‘With our QUANTUM Air, we at ENGIE Refrigeration are living up to our aspiration, which is to offer the highest-quality, most efficient and most durable chillers. This gives us a pioneering role in the refrigeration industry.’
The Elbphilharmonie is about to set a record: since it opened in January 2017, the Hamburg concert hall has really drawn the crowds. Around 8.7 million people have visited the Plaza viewing platform, and the Grand Hall has a constant utilisation rate of over 98 per cent. The hall is already famous around the world for its outstanding acoustics. ENGIE Refrigeration contributes to this success: two QUANTUM chillers cool the building while making no more noise than a whisper. From internationally renowned conductor Sir Simon Rattle and piano virtuoso Daniil Trifonov to world star Woody Allen and The National, a rock band from the US, for the past two years the Elbphilharmonie has been delighting audiences with a varied mixture of world-class concerts. Musicians and audiences are also delighted with the special acoustics offered by the Grand Hall. The remarkable performance of the building technology plays an important role here; unseen by thousands of guests every
day, it works in secret. The building’s cooling system at the Elbphilharmonie needs to be extraordinarily quiet, for example, so as not to interfere with concerts. And this service has been provided by two QUANTUM chillers from ENGIE Refrigeration since opening day. They provide a refrigeration capacity of around 2,100 kilowatts each – roughly the equivalent of 4,500 household fridges with a capacity of 100 litres each – and provide optimum temperature control for the new Hamburg landmark.

Plenty of power, little sound
The two QUANTUM models are located in the basement of the Elbphilharmonie. ‘With a noise level of 75 decibels (A), measured from one metre away, our chillers are so quiet that interference with concerts is impossible. In spite of their huge performance, the two machines develop no more noise than a single standard car at medium performance,’ says Torsten Lankenau, sales engineer at ENGIE Refrigeration. It was because of this quiet cooling that the operators of the Elbphilharmonie awarded the contract to the refrigeration specialist from Lindau. Another advantage is that QUANTUM chillers also generate so little structure-borne sound that a coin stood on its edge on the appliance frame during operation will not fall over. Thus, ENGIE Refrigeration ensures that visitors to the Elbphilharmonie are not affected by the refrigeration system – and has done so without a hitch since autumn 2016.

Clever cooling system
The refrigeration system at the Elbphilharmonie also offers a special feature that ENGIE specialists developed to suit the specific conditions on site: the QUANTUM chillers use brackish water from the inner harbour as cooling water; they are therefore fitted with a particularly corrosion-resistant condenser with copper nickel pipes, which are cleaned automatically at regular intervals with a special brush system.

‘The temperature of the cooling water returning to the Elbe must not exceed 28 degrees Celsius. That is why the refrigeration system uses a special condenser with only one pass, which creates a minor temperature difference from a large volume of water flowing through,’ Torsten Lankenau explains. This allows the chillers to give their maximum cooling performance with river water as long as the Elbe water temperature does not exceed 24 degrees Celsius. Only at higher temperatures does the cooling system fall back on more expensive groundwater, for which several boreholes had to be created. Overall, ENGIE Refrigeration has implemented a refrigeration system in Hamburg that is as reliable as it is cost-effective: using water from the Elbe considerably reduces the running costs. In this regard, the Elbphilharmonie is a success story not just for its operators and the city of Hamburg, but also for ENGIE Refrigeration.
A beacon project for ENGIE Refrigeration: As part of the European Union’s ReUseHeat programme, BS Energy will deploy a thermeco₂ heat pump. This is the first major order for a thermeco₂ model to be implemented under the flag of ENGIE Refrigeration.
ENGIE Refrigeration GmbH has received its first major order for the production, supply and commissioning of a thermecO₂ heat pump. This is a beacon project, because the heat pump will be installed at BS Energy, an energy supplier in Braunschweig, as part of the ReUseHeat pilot programme of the European Union. ENGIE, the heat and refrigeration specialist from Lindau, acquired the CO₂ high temperature heat pumps unit from the insolvency assets of Hafner-Muschler Kälte- und Klimatechnik GmbH & Co. KG only a few months ago.

How can waste heat in cities be used for heating purposes? A good example is a project run by BS Energy, an energy, heat and water supplier in Braunschweig, and its majority shareholder Veolia Deutschland. Along with three other demonstration projects in Madrid, Nice and Berlin, it is part of the ReUseHeat research and innovation programme, to which the European Union has contributed 3.9 million euros in total. The Braunschweig project will be implemented in the new Heinrich der Löwe district, which is currently being developed on the grounds of a former barracks. Around 600 living units will be supplied with waste heat from a nearby data centre. This makes it possible to create a low-temperature heat network, which is also being set up at present.

Innovative solution for utilising waste heat
BS Energy is relying on the expertise of ENGIE Refrigeration, the heat and refrigeration specialist from Lindau on Lake Constance: a CO₂ high temperature heat pump from the thermecO₂ series, type HHR 360, will be deployed in the Braunschweig residential area. The heat pump will use the waste heat from a data centre as its heat source. The thermecO₂ heat pump will use cooling water from the data centre with a temperature of 25 degrees to create hot water with a temperature of 70 degrees. This generates a heating capacity of 370 kilowatts, which is then fed into the local heating network of the new city district. The refrigeration specialist from Lindau can thus guarantee the exact temperatures that the local heating network requires.

In general, thermecO₂ heat pumps are suitable for local heating networks with particularly large temperature spreads between feed and return temperatures. Paired with a heat source that is easy to develop, this promises customers an economical and efficient solution. It is possible, for example, to use electrical power to raise the low temperature level (heat source) for the thermecO₂ heat pump up to 90 degrees Celsius; in this range, the thermecO₂ heat pump is of great benefit due to its intelligent and autarkic regulation. ENGIE Refrigeration designs its heat pumps to be in constant operation and match the baseload of heat at any time of year. In order to meet increased heat requirements in winter, the local heating network will also be connected to BS Energy’s existing district heating network. In the summer months, the data centre will receive additional cooling – a solution for utilising waste heat that is as innovative as it is efficient.

Focus on eco-friendliness
But the project supported by ENGIE Refrigeration does not just demonstrate high levels of energy efficiency. The solution is also environmentally friendly, because the thermecO₂ heat pump uses the sustainable refrigerant CO₂. CO₂ is also particularly future-proof, as it is easily available and therefore cheap to obtain. For BS Energy, it was important to use a CO₂ high tempera-

Pilot project for the EU
After a one-year planning phase, the practical implementation of the project is now in full swing: as a first step, BS Energy set up a refrigeration and heating plant, followed by piping construction in the Heinrich der Löwe district. At the end of March 2019, ENGIE Refrigeration supplied the thermecO₂ heat pump. The refrigeration experts will also handle maintenance in the coming years. During the first few months, the residential estate will first be supplied from the district heat connection. Integration of the data centre will take place during the year, however, so that it will be possible to use waste heat for heating purposes from next winter. This means the project is on schedule as part of the ReUseHeat programme, which will run until the end of 2021. Afterwards, all four demonstration projects from Braunschweig, Madrid, Nice and Berlin will be analysed and evaluated, and the results will be published by the EU in a final report.

You can find more information at: www.reuseheat.eu
Since the turn of the millennium, Barcelona’s city council has been aiming to convert this former industrial area in the district of Poblenou into an attractive urban neighbourhood. Under the name of 22@Barcelona, a groundbreaking business district is being built there as a model project for all of Europe: former industrial buildings are deliberately preserved, but there are also innovative new buildings such as the Torre Agbar, a 32-storey office complex with a glass and aluminium facade. Today the @22 district is home to a variety of companies, research and technology centres, thousands of residential buildings and a variety of leisure facilities, and features extensive green spaces. A reliable cooling supply for all buildings will be provided in future by a QUANTUM chiller from ENGIE Refrigeration.

Very efficient, very safe
The district cooling network in @22, known as Tanger, is the responsibility of DISTRICLIMA, a Spanish subsidiary of the ENGIE Group. Two chillers are already in operation there, but the neighbourhood is growing quickly, and so it is necessary to expand the refrigeration capacity. To this end, a water-cooled QUANTUM chiller from ENGIE Refrigeration will be installed by April 2019. It runs on the refrigerant R-134a and provides a cooling capacity of six megawatts. So far the two existing chillers are only efficient under a full load. The new QUANTUM machine can be regulated more easily and is also highly efficient under partial load. That is why DISTRICLIMA chose a model from ENGIE Refrigeration. The existing chillers will in future produce ice for the local ice reservoir, while the QUANTUM will feed cold directly into the district cooling network. It will do so with absolute reliability and maximum operating safety, as the twelve compressors in total are designed to be redundant. The chiller also features low CO₂ emissions in spite of its huge capacity − another significant advantage for DISTRICLIMA and @22.

Refrigeration solutions for groups of buildings
ENGIE Refrigeration has extensive experience of district cooling projects and is already responsible for three large district cooling networks in France. They include the Thassalia ocean thermal energy conversion plant in Marseille, which two QUANTUM chillers have been using since October 2016 to cool the new Euroméditerranée business district.
Sometimes there is no compromise. In the production of medicine, for example, it is essential to have exactly the right temperature. That is why companies in the chemical and pharmaceutical industry impose stringent requirements for production cooling. And that is what a well-known major company in France has done by choosing ENGIE Refrigeration.

Utilising extensive experience
Three water-cooled QUANTUM chillers with a refrigeration capacity of 2.4 megawatts each have been deployed in the production hall since February 2019. With eight oil-free turbo compressors in total and the eco-friendly refrigerant R1234ze, these are the largest water-cooled QUANTUM models that ENGIE Refrigeration has built so far. Commissioning was preceded by a planning phase that lasted several months, during which the experts from ENGIE Refrigeration weighted in with their experience of process cooling in the pharmaceutical industry. Among the company’s long-term customers in this field are Nordmark Arzneimittel GmbH & Co. KG from Uetersen, and Boehringer Ingelheim Ellas S.A. from Koropi, near Athens.

A real powerhouse: ENGIE Refrigeration has produced its largest water-cooled QUANTUM chiller so far for a French industrial customer. The chiller is now providing optimal temperatures in a sensitive production environment.

A focus on customer requirements
Benefits for our new customer in France: Daniel Keller, Head of Sales Support at ENGIE Refrigeration, explains: ‘Our aim is to implement the best possible refrigeration solution for every process and meet our customers’ specific requirements with tailored concepts.’ The QUANTUM chillers in France, for example, are equipped with twin condensers for heat recovery, which allow the waste heat resulting from the production process to be further used; in France, this solution for heat recovery is subsidised with tax breaks. The chosen compressor design also provides excellent energy efficiency, while use of the refrigerant R-1234ze with a GWP value below 1 makes a positive contribution to the eco-friendliness of the machine. QUANTUM chillers have an exceptionally high level of operational reliability thanks to their intelligent mode, multi-compressor design and double sensor system – an aspect that is essential in the chemical and pharmaceutical industry.

The chemical and pharmaceutical industry with its complex production processes is one of the most sensitive areas of application for refrigeration systems. That is why a major French company relies on the extensive know-how of ENGIE Refrigeration. Featuring eight compressors and the eco-friendly refrigerant R-1234ze, the largest water-cooled QUANTUM chiller thus far was recently installed at the company’s head office.
WHAT EXACTLY IS A HEAT PUMP?
A heat pump is a heat generator that runs on electrical power and raises the temperature from a low temperature level to the temperature level required by the operating company. In this case, efficiency – i.e. the relationship between effort (energy requirements) and benefit (heat output) – can lie between 300 and 400 per cent. Heat pumps are an energy-efficient and environmentally friendly technology.

HOW DOES A HEAT PUMP WORK?
A heat pump functions according to the same principle as a chiller – a household fridge, for example. The refrigerant is moved through a closed circuit by means of a compressor. In the process, the refrigerant absorbs heat and transfers it to the evaporator as useful heat at a higher temperature. To do so, the heat pump uses heat sources that are normally not technically usable, such as geothermal energy, river and ground water or even the ambient air. Heat pumps can then increase the temperature of geothermal energy from 10 degrees Celsius to 40 degrees Celsius, for example. High temperature heat pumps can provide heat with an effective temperature of 90 to 110 degrees Celsius.

WHY IS CO₂ A GOOD REFRIGERANT?
The refrigerant market is currently undergoing a transformation. Environmentally harmful HFC refrigerants are increasingly being replaced with HFO refrigerants and natural refrigerants. The F-gas Regulation has further strengthened the long-term trend towards natural refrigerants, including CO₂, whose technical name is R-744. CO₂ is both environmentally friendly and user-friendly. CO₂ can be used safely as a refrigerant; as it is also cheap and easy to obtain, it is considered a sustainable option. In addition, CO₂ as a refrigerant has a GWP of 1 and an ODP value of 0, so it has no harmful effects on the Earth’s atmosphere.

CO₂ HIGH TEMPERATURE HEAT PUMPS IN FOCUS

Heat pumps are a key technology for heating and supply. High temperature heat pumps that run on the natural refrigerant CO₂ – like the thermeco₂ models from ENGIE Refrigeration – are considered especially future-proof. What makes these machines special, and what advantages do they offer when compared to alternative systems? REFlect presents the most important aspects.
**WHICH APPLICATIONS DOES A HEAT PUMP COVER?**

Heat pumps are suitable for all types of commercial and industrial facilities and buildings. They unfold their full potential in applications that simultaneously call for heat and cold, because a single heat pump can replace a heating system and a refrigeration system at the same time. This is where the special qualities of the technology come into effect. Models like the thermeco₂ high temperature heat pumps can provide refrigeration capacity and simultaneously supply a heating network with 90 degree Celsius heat, for example. The thermeco₂ high temperature heat pumps are also able to utilise the waste heat from refrigeration or air-conditioning systems – which is usually released into the environment – and heat it to the effective temperature required for heating the building or for warm water preparation, for example. In the industrial area, these machines are a very efficient choice for drying processes or to create superheated steam.

**HOW DO OPERATING COMPANIES BENEFIT FROM HEAT PUMPS?**

Heat pumps are characterised especially by their energy efficiency and eco-friendliness. For one thing, heat pumps preserve the environment by not emitting any harmful exhaust emissions – unlike combustion systems, which generate nitrogen oxide, particulate and CO₂ emissions. The operating company also saves money by not having to invest and run a flue gas system. Moreover, heat pumps are extremely energy-efficient, as they utilise and enhance ambient heat. They also lose almost no heat in the process, which is another advantage of this ‘green’ technology. In total, operating companies benefit because heat pumps can save significant amounts of energy and therefore hard cash.

**WHAT IS SPECIAL ABOUT THERMECO₂ HEAT PUMPS?**

ENGIE Refrigeration develops, designs and produces thermeco₂ high temperature heat pumps in Germany. The range comprises eleven performance classes between 45 and 1,440 kilowatts. All of the models have one thing in common: thermeco₂ heat pumps feature robust industrial design and ultramodern construction. Due to their compact construction, they can be deployed wherever space is limited. And they use only CO₂ as a refrigerant. As a result, thermeco₂ models can achieve very high effective temperatures of up to 110 degrees Celsius.
There is almost no issue that occupies minds in the refrigeration and air conditioning industry as much as the new F-gas Regulation (Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006). What does this regulation mean for operating companies, planners and manufacturers? And what suitable solutions does ENGIE Refrigeration offer its customers? REFlect spoke to Jörn Stiegelmeier, head of technology and development, about the topic.

For months the F-gas Regulation has been a hot topic among refrigeration experts. What are the aims of this new regulation?

Many common refrigerants are fluorinated greenhouse gases – also referred to as F-gases – and contribute to the greenhouse effect as soon as they reach the earth’s atmosphere. The F-gas Regulation was passed with the aim of considerably reducing emissions of fluorinated greenhouse gases in the European Union by 2030. This will be an essential contribution towards the successful implementation of the European Union’s climate targets and in the fight against global warming.

What are the most important contents of the regulation?

The key element of the F-gas Regulation is that it progressively restricts the supply of hydrofluorocarbons (HFCs), which are used as refrigerants and, in specialist applications, as foaming agents for insulating materials. As a result of this phase-down, in 2030 only 21 per cent of the average annual quantities between 2009 and 2012 will be available on the market. There are also different usage and sales prohibitions, as well as regulations on leak tests, certification, disposal and labelling. For example, from 1 January 2020, it will no longer be permitted to place commercialised stationary chillers containing a refrigerant whose GWP value exceeds 2,500 on the market. From that point in time it will also be prohibited to top up refrigerant with a GWP above 2,500 if the total filling quantity exceeds a CO₂ equivalent of 40 tons. These regulations pose new challenges for the refrigeration and air-conditioning industry. They directly affect manufacturers of refrigerants and refrigeration systems, but ultimately they simply affect every operating company and end customer of chillers.

Can you describe these effects?

One of the results of the phase-down is that the amount of F-gases available on the market is reduced and allocated according to quotas. That means all HFC consumers compete for a permitted overall quantity; there are no separate contingents for individual EU Member States or individual applications. In our day-to-day business we have noticed that it is becoming ever more difficult to procure specific refrigerants such as R-134a; prices and delivery capacities are changing every day. As a result, refrigerants are being sold for ever higher prices. The refrigerant R-134a, for example, experienced a price increase of around 100 per cent between January 2017 and April 2018, and a further price...
JÖRN STIEGELMEIER

has been responsible for technology and development at ENGIE Refrigeration since 2015. He regularly appears as a speaker at industry events such as the efficiency forums organised by ENGIE Refrigeration and Condair; this year he spoke in detail about the F-gas Regulation.

increase of around 600 per cent between April 2018 and February 2019. In this context, it is hardly surprising that the illegal refrigerant trade is flourishing. Nevertheless, this contribution towards environmental protection should not be underestimated: The assumption is that by 2030, the average GWP value of all refrigeration applications in Europe will have dropped to a value of between 500 and 600.

How has ENGIE Refrigeration responded to the F-gas Regulation?

There is important and good news: ENGIE Refrigeration provides answers to the regulation. We can help any customer implement an alternative refrigeration solution that complies with the F-gas Regulation. Logically, there is increasing demand for refrigeration systems with low-GWP refrigerants. We offer a variety of solutions. Since early 2018, for example, existing QUANTUM chillers can be converted from R-134a to R-513A. R-513A has a GWP of 631 (AR (4)) (573, AR (5)) and, like R-134a, is assigned to safety class A1. It achieves the same refrigeration capacity and almost the same efficiency, while the EER value is lowered by around 2 per cent.

In many applications, R-1234ze could also be a suitable replacement. R-1234ze (safety class A2L) has a GWP of 7 (AR (4)) (<1, AR (5)) and is not subject to the provisions of the F-gas Regulation. However, it should be noted that in case of a conversion the refrigeration capacity drops by around 25 per cent for the same efficiency. If you are buying a new system, the new air-cooled QUANTUM Air series is a perfect fit. It will hit the markets in June 2019 and includes models with R-134a, but also with R-513A and R-1234ze. All of them require lower filling levels for refrigerants. We also have thermeco₂ heat pumps in our portfolio. These pumps utilise the natural refrigerant CO₂, which has a GWP value of 1.

What specific advice would you offer your customers at the moment?

First, operating companies and end customers need to ask themselves whether their existing or planned refrigeration system is affected by the regulation. They also need to consider which additional regulations will come into force while the system is in service, for example the prohibitions on refilling that will apply from 2020/2030. They should also decide which alternatives are feasible – for example, whether it makes sense to convert the current machine or replace it completely with a new model instead. When machine rooms are planned, particularly in new builds, (flammable) low-GWP solutions should be considered. From our many conversations with customers, we know that these questions can be very substantial and complex. The experts at ENGIE Refrigeration will be happy to help you with these questions.
STRONG DEMAND IN ALL INDUSTRIES

ENGIE Refrigeration added the safety refrigerant R-513A to its portfolio about a year ago. It is efficient, non-flammable and more climate-friendly than other refrigerants. With its low greenhouse potential it already meets the requirements of the F-gas Regulation. Over the past months, ENGIE Refrigeration has received numerous new orders for QUANTUM chillers with R-513A from customers in all kinds of industries, from data centres to hospitals and carmakers. In principle, operating companies that already run a chiller with the refrigerant R-134a can easily switch to a chiller with R-513A, as both refrigerants are in the same safety group, A1.

NEW PROJECTS WITH R-513A

EFFICIENCY FORUMS DELIGHTED WITH CURRENT TOPICS

FIXED DATE IN THE CALENDAR

Now in its third year, three ‘expert symposia for energy-efficient building technology and process cooling’ organised by ENGIE Refrigeration and Condair took place in March and April 2019. Numerous people attended the events in Frankfurt, Hamburg and Berlin in order to talk to experts and colleagues. Experts from ENGIE Refrigeration and Condair presented lectures providing insights into current developments and new regulations. Key topics included the F-gas Regulation and heat pump technology. For more information, go to www.effizienz-forum2019.de (in German).

INTERESTING CONVERSATIONS AT THE TRADE FAIR

At the E-world energy & water fair in Essen in February 2019, numerous customers and other interested parties visited the ENGIE Deutschland booth to find out about the latest solutions and talk to ENGIE experts on site. As the company acquired the CO\textsubscript{2} high temperature heat pump division from Hafner-Muschler in June 2018, there was a lot of interest this year in using heat pumps for intelligent heating.

SUCCESSFUL E-WORLD ENERGY & WATER 2019

A very busy booth: E-world 2019 was a great success for ENGIE Refrigeration.
ENGIE REFRIGERATION SUPPORTS A NEW CAREER

WILL SWAP COOKING SPOON
FOR SCREWDRIVER

From kitchen to production: at 38 years of age, Carsten Petersen is taking a chance on a new career.
In November 2018 the trained chef started his apprenticeship with ENGIE Refrigeration and has since been handling large chillers instead of small kitchen appliances.

Take a big portion of courage, a dash of curiosity, a handful of diligence and a large spoonful of manual skills. These are the ingredients Carsten Petersen needed for his new career.

The 38-year-old is a trained chef and has spent many years in the kitchen. First in Dresden, the city where he was born, and then in Lindau on Lake Constance, where he moved twelve years ago. Now he is undertaking another apprenticeship – as an industrial electrician in the field of systems technology at ENGIE Refrigeration.

Help from all sides

His employer helped him take this step; for months, Carsten Petersen and ENGIE Refrigeration fought for his right to retrain as an electrician. His wife and his two children, four and eight years of age, also stood behind their husband and father. His family was the reason for Petersen to give up being a chef a while ago. He explains: ‘With long hours and low pay, it was very difficult for me to combine work and family.’

Enthusiastic about the job

That is why Petersen joined a small electrician’s company in Lindau six years ago, found his way around this new field, and learned about electrics. Recommendations finally led him to join ENGIE Refrigeration as a production assistant in autumn 2016. With his manual skills and plenty of enthusiasm, he quickly won over his colleagues.

Then he was offered a permanent position as a specialist, which, however, requires a technical education. Petersen says, ‘Because I feel so at home at ENGIE Refrigeration and want to help shape the company, I quickly realised I need to obtain the necessary expertise during an apprenticeship.’ He started that apprenticeship in autumn 2018. And he has major goals for the next phase as well: ‘In five years I want to muck in as effectively as my colleagues who have worked for the company for a long time.’ He definitely has the right ingredients.