

Pioneers reach next milestone in climate-neutral cooling with water as a refrigerant

*Efficient Energy GmbH further develops its unique technology
eChiller120 provides for efficient and environmentally friendly industrial processes*

Feldkirchen, 29 October 2020. Barely an area of everyday life can forego it: refrigeration technology. Buildings, data centres, the food industry and entire industrial sectors need dependable cooling – usually relying unknowingly on environmentally harmful technologies that employ synthetic refrigerants. The SME, Efficient Energy GmbH, from Feldkirchen near Munich, developed an innovative refrigeration technology that uses water as a refrigerant, and is now presenting its latest generation of refrigeration systems. “Our eChiller is the only series product worldwide that works with water as a refrigerant and therefore does not generate any direct CO₂ emissions”, says Efficient Energy GmbH’s CEO and Managing Director, Georg Dietrich.

The latest generation of the eChiller, with a refrigeration capacity of 120 kilowatts, offers a wide range of possible uses in industry – such as for process and machine cooling for laser heads, rollers and cooling basins, or for technical air conditioning of data centres, control cabinets and server rooms. It is Efficient Energy GmbH’s logical response to the increasing demands of the plastics, rubber, automotive, chemical and pharmaceutical industries. “With the eChiller120, we’ve diversified our product portfolio with a more powerful model which, thanks to a redesign, retains its compact form factor thereby improving flexibility of deployment,” Dietrich explains. Delivery of the eChiller120 will commence in summer 2021. The first advance orders have already been placed.

Cooling with water as a refrigerant: truly pioneering

Efficient Energy GmbH’s eChiller series is truly pioneering in the field of climate-friendly cooling. The concept, which appears relatively simple at first sight, in fact incorporates a vast amount of high tech. The idea of using water as a natural refrigerant is not fundamentally new. Until now, however, no other enterprise has ever thought through the process as successfully as the Feldkirchen-based company. Not only can the eChiller series – which uses a vapour refrigeration process with direct evaporation, compression and condensation in a high vacuum – be integrated into companies’ legacy infrastructures and processes both in terms of space and content; it also makes economic sense.

Cooling vs. climate change

Demand for refrigeration technology is on the rise – not least due to climate change and global warming. The air conditioning and refrigeration industry is growing accordingly, with global annual turnover currently estimated at around USD 80 billion. Around 120 million refrigeration systems are installed in Germany alone, three million of which are used in industry. So many air conditioning systems cause high levels of emissions due to the use of environmentally harmful refrigerants such as fluorocarbons (HFCs). What’s more, poor energy efficiency means that over 17 percent of annual global energy consumption is attributable to cooling and air conditioning. In Germany alone, energy consumption for heating and cooling accounts for 50 percent of total energy consumption. This makes the refrigeration industry an inconspicuous but key driver of climate change.

It was for this reason that the EU enacted the F-Gases Regulation in 2015 to gradually reduce CO₂ equivalents of fluorinated greenhouse gases (F-gases) by almost 80 percent by 2030. After that, a

PRESS RELEASE

complete ban on F-gases seems likely. Consequently, alternatives to the existing refrigeration technology must be found that are usable by households and industry alike. “A refrigeration market with 100 percent natural and climate-neutral refrigerants is possible, the technologies already exist and also make sense from an economic standpoint. What’s needed now is to further increase awareness of the importance of the refrigeration industry in a global context and to break the stranglehold of top synthetic suppliers’ lobby,” says Efficient Energy GmbH’s Head of Sales, Thomas Bartmann.

eChiller120: the logical evolution of an innovative technology

The eChiller120 has a higher refrigeration capacity than its “kid brothers” which will remain in the product range at 35 and 45 kilowatts respectively. Besides its outstanding energy efficiency, which is up to 82 percent higher than for conventional systems, the new refrigeration system also excels with its low maintenance overheads and flexible installation options. Using water as a refrigerant lets many companies achieve legal compliance and meet the climate goals by reducing their CO₂ equivalents of synthetic refrigerants. In this respect, companies which opt for climate-friendly refrigeration technologies are also securing the fundamental viability of their business models.

Further improvements in the eChiller’s specifications are planned for the medium to long term to open up environmentally friendly refrigeration systems “made in Bavaria” to further application areas. The company is funding further growth to achieve this goal, and has also been investing heavily in laboratory infrastructure and expanding its sales partner network.

FACTS & FIGURES

Refrigeration industry in a climate context:

- Refrigeration and air conditioning equipment accounts for approximately 8 percent of global CO₂ emissions.
Global air traffic, by comparison, accounts for the generation of only a slightly larger share of all climate-damaging gases.
- Under the EU’s F-Gas Regulation (Regulation No. 517/2014), the use of fluorinated greenhouse gases (F-gases) is to be reduced in stages by almost 80 percent by 2030.
The goal is to reduce emissions by 70 million tons of CO₂ equivalent.
A complete ban on F-gases seems likely after 2030.
- The Kigali Accord of 15 October 2016 kicked off the conscious reduction (phasedown) of climate-damaging refrigerants worldwide. In the EU, the F-Gas Regulation has been implementing the phasedown since 2015 with a gradual reduction of partly fluorinated hydrocarbons (HFCs).
- According to the Green Cooling Initiative (GCI) of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Proklima, around 9.5 billion cooling appliances will be in use worldwide by 2050. This is more than 2.5 times the current number. If the refrigeration industry fails to achieve significant improvements in energy efficiency, it will result in a 90 percent increase in energy consumption by refrigeration appliances.
- If conventional refrigerants and refrigeration technology are not replaced, the annual emission of greenhouse gases attributable to refrigeration will more than triple by 2050.

For further information and facts about the refrigeration industry please visit:

<https://insights.efficient-energy.de/en/8-things-you-should-know-about-the-refrigeration-industry/>

PRESS RELEASE

The product: eChiller

- The eChiller is the only series product worldwide to use water as a refrigerant (R718).
 - The benefits of water as a refrigerant:
 - Odourless, non-flammable, not toxic – and thus much safer (other natural refrigerants exist, such as ammonia, but these are flammable and toxic)
 - Economical and highly available*
 - Power-saving
 - CO₂-neutral
 - Future viability of business model not jeopardised by stricter legislation
- * Use of small amounts in the eChiller with one-time filling of 60 to 100 litres of regular, softened tap water without additives in a closed circuit.
- A conventional refrigeration system with a commercial (synthetic) refrigerant and 30 kW cooling capacity generates 24 metric tons of CO₂ a year through refrigerant leakage and power consumption. The eChiller, by contrast, generates only around 7 metric tons** through electricity consumption. This is equivalent to a reduction in emissions of over 70 percent – which also translates into financial savings for your company.
 - ** Total of direct and indirect emissions with the assumed synthetic refrigerant R410A.
 - Industrial applications of the eChiller:
 - Machine and technology cooling, e.g. for component moulding and lasering
 - Process cooling, e.g. for rollers and cooling basins
 - Technical air conditioning / waste heat solutions in buildings, data centres, server rooms and control cabinets
- Relevant industries: automotive, plastic and rubber, chemicals and pharmaceuticals etc.

Press Contacts

Angelika Thum
T: +49 (0) 89 693 369 7272
M: +49 (0) 172 173 31 26 407
angelika.thum@efficient-energy.de

Yvonne Paeßler / Bastian Korte
T + 49 (0) 421 328811-36 oder -22
yvonne.paessler@dialog-pr.com / bastian.korte@dialog-pr.com

About Efficient Energy GmbH

Efficient Energy GmbH is an innovative manufacturer and system supplier of environmentally friendly refrigeration technology, based in Feldkirchen near Munich, Germany. The company uses pure water (R718) as the refrigerant in its eChiller product range, and thereby entirely avoids fluorinated refrigerants. Efficient Energy helps its customers overcome the increasing regulatory challenges of refrigeration technology, and offers them long-term, sustainable solutions with its eChiller model range. With its outstanding cost efficiency and low CO₂ footprint, companies benefit on many fronts. The pioneering technology has also been noticed by politics and the media, and has received multiple awards for the eChiller. These include: the Deutscher Rechenzentrumspreis 2017, the RAC Cooling Industry Award 2017, the Partslife Umweltpreis 2017, the Deutscher Kältepreis 2016, the European Business Award for the Environment 2018/2019 from the EC and the Red Herring Top 100 Europe in 2020.