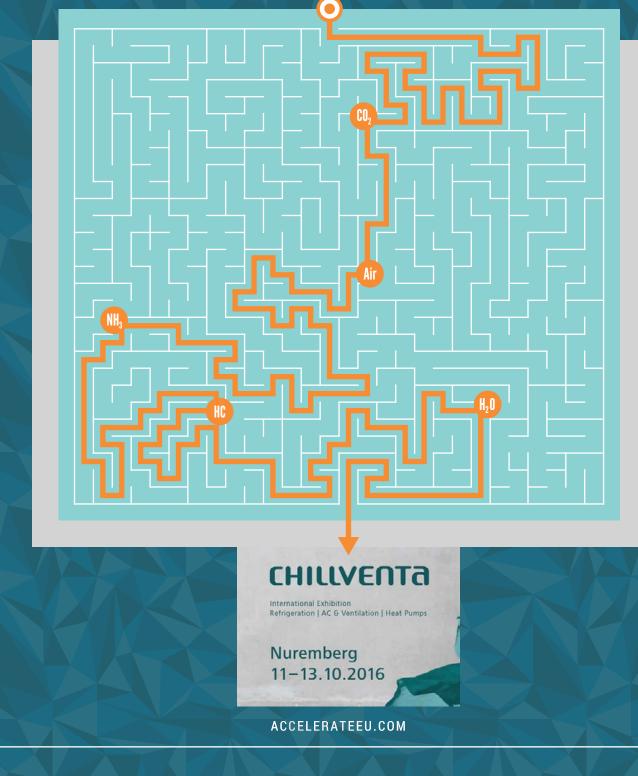


GUIDE FOR NATURAL REFRIGERANTS AT CHILLVENTA 2016









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GUIDE SUPPORTERS

NATURAL REFRIGERANTS AT CHILLVENTA 2016

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WELCOME MESSAGE FROM THE PUBLISHER



MARC CHASSEROT Publisher / CEO

The concept for this GUIDE to Natural Refrigerants at Chillventa 2016 is to connect forwardthinking customers to some of the most advanced companies displaying natural refrigerant technologies and services at the show.

shecco, as the leading publisher of worldwide news for natural refrigerant-based solutions in HVAC&R, designed the Guide as a simple tool to easily identify these companies and their products within the large exhibition hall in Nürnberg.

The GUIDE is presented as a supplement to the Autumn issue (#4) of Accelerate Europe. These two publications provide the best overview of the most progressive business leaders working with climate-friendly solutions in refrigeration and air conditioning in Europe and other parts of the world.

The European market remains a reference for future-proof technologies in refrigeration, heating and air conditioning. The most innovative and exciting technologies will be on display at Chillventa. We trust that this GUIDE will help you navigate your way around the trade show.

For next edition we hope to see even more companies offering innovative solutions with natural refrigerants!

ABOUT THIS GUIDE



ALVARO DE OÑA Editor / COO & Head of Media

This GUIDE to Natural Refrigerants at Chillventa provides a complete listing of all solutions and events related to natural refrigerants at the 2016 edition of Chillventa, which takes place on 11-13 October at its traditional Nürnberg venue.

Chillventa 2016 will feature the world's largest ever showcase of natural-refrigerant technology so far. Among the more than 1,000 exhibitors, nearly 190 companies will be showcasing products or services using carbon dioxide, ammonia, hydrocarbons or water as refrigerants. This represents a 50% increase compared to the last edition of Chillventa, and is a clear sign of the leadership role that European companies are playing in driving the market uptake of climate- and ozone-friendly working fluids.

By indicating all company booth locations and events relevant to CO_2 , NH_3 , R290, R600a and R718, the GUIDE will maximise the value of the trade show for people interested in – or already working with – natural refrigerants. In collaboration with our supporters, the Guide also provides a showcase for a range of state-of-the-art natural refrigerant systems and components on display in Nürnberg. You may find all related companies either in the listing by alphabetical order (p. 36), by booth number (p. 40), or by searching in the exhibitor hall maps (p. 45).

The GUIDE Chillventa 2016 features the following sections:

ABOUT NATURAL REFRIGERANTS: Reviewing the chemical, physical, technical and environmental properties of carbon dioxide, ammonia, hydrocarbons, water and air, the most commonly used natural working fluids.

EXCLUSIVE INTERVIEWS: Providing insight on the latest trends in technologies employing natural refrigerants from some of the leading industry providers.

EVENTS PLANNER: Outlining the presentations and side events dedicated to natural refrigerants, energy efficiency, and related topics, and highlights not-to-miss product launches.

PREMIUM PRODUCT & COMPANY DIRECTORY: Highlighting some of the latest technologies using natural refrigerants, both on display by exhibitors and offered by companies in attendance only.

HALL MAPS: Shows the exhibit locations of all natural-refrigerant-relevant companies, providing participants with the information they need to create a tailored, self-guided tour throughout the exhibition space.

Enjoy the trade show!

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ZANOTTI is an Italian excellence in producing systems for food refrigeration for over 50 years. As leader in the field, we base our professionalism on the constant search for technological innovations to apply to our products. As for green solutions for food refrigeration, Zanotti offers units from small to big capacity cells that operate on gases with very low environmental impact.

INNOVATION, GREEN CONSCIENCE, QUALITY AND EXPERTISE ARE THE KEY WORDS AND THE GREAT PROMISES FOR THE FUTURE.

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NATURAL REFRIGERANTS FOR NATURAL SOLUTIONS

Zanotti Spa, an Italian company, has been a point of reference for the design and manufacturing of refrigeration systems since 1962. In the cold chain since more than 50 years, its name echoes above all, in every field of application.

Zanotti, as we were saying, has developed each component of the cold chain. From the storage of fresh agricultural produce (such as cereals in silos), all the way up to supermarket, stores and restaurant distribution, including the processing of foods, transport with special units to handle and store food safely, Zanotti is always present, accurately and expertly responding to every need with a wide range of products, which actually is the most complete on the market.

Zanotti is now an international group with production sites worldwide like Spain, England and Brazil, and with a capillary distribution network to ensure reliability and service anywhere. Furthermore, its name is recognized at international level.

In the Middle East area and Far East, Zanotti has been chosen by top class catering companies, Emirates Flight Catering and Oman Air, to realize the largest refrigeration systems for important airports. The total value of these projects rises approximately to 30 million euros and the plants are designed to comply with the highest hygienic and reliability standards.

Talking of 'turn-key plants' in the Republic of Kabardino-Balkaria (Russian Federation), Zanotti has been awarded of a contract for the supply of a complete storage system for apples and other kinds of fruit, beating the most important European competitors. The state-of-the-art technologies designed by Zanotti allow to store apples at controlled temperature and atmosphere for long periods of time, up to 7 months, using nontoxic food grade secondary coolants.

Zanotti builds big plants also in other sectors and countries like, for instance, cooling systems for meat in Russia, cooling and freezing systems for chickens in Lebanon and Ethiopia, refrigeration units for yogurt and ice cream production in Greece, logistic refrigerated warehouses in Middle East and Italy.

Zanotti is also active in the design and implementation of refrigeration systems for ice rinks and the names included in its portfolio do not leave any doubt.

It has designed and supplied the Olympic rinks of Turin, the World Championship Arena of Minsk (the biggest one in Europe), the Barys National Ice Rink in Astana and the new Dynamo Arena in Moscow.

The key of its success? The constant search of solutions that preserve the organoleptic properties of foods, the care for the environment and, for its customers, the best energy efficiency with the lowest running costs.

Zanotti is once again at the forefront of innovation, displaying at the next Chillventa an impressive lineup of climate friendly, smart, efficient and versatile new products.

Zanotti's strong commitment to reduce global warming has led to the development of low GWP solutions for cold storage and food retail based on natural refrigerants, such as propane and CO_2 both in sub- and trans-critical applications. Since these substances are excluded by the F-gas regulation, these products can be installed without worrying about future retrofits.

Examples include a low charge propane monoblock, a transcritical CO_2 monoblock, a fully operating first-of-its-kind transcritical CO_2 ice producer and two CO_2 compressor racks. The combined use of natural refrigerants and cascade technology has resulted in an innovative fully natural solution with low GWP, maximum safety and extended operating envelope at high ambient conditions.

Zanotti has then developed a new control system for cold rooms that raises the bar in refrigeration controls in terms of intelligence and connectivity, making life easier for all the stakeholders in the cold chain: installers, thanks to the plug and play approach; end users, thanks to the energy saving algorithms; and service engineers, thanks to the predictive maintenance functionality. All can benefit from the multiple connectivity options, locally from smartphone and tablets or remotely via the internet.

Zanotti will also display one of his well-known monoblock system for cold rooms, configured for ducted condenser airflow, showing the versatility of this proven concept that can meet almost any application requirements. A condensing unit with variable speed compressors will also be displayed to demonstrate Zanotti's focus on energy efficiency and accurate temperature control in food storage applications with the most stringent requirements.

Zanotti will have a compressor rack on display that has been optimized for markets where first cost is a key driver, while retaining build quality and reliability.

Last but not least, a transport unit applicable to refrigerated vans will be on display, as an example of the wider Zanotti transport range suitable for vans, truck and trailers.

Zanotti's skilled technical support team will be happy to answer all the questions on the products and their applications.

Zanotti's refrigeration equipment do indeed make use of technologies that are in line with its customers' expectations and reduce the environmental impact: new natural gases with low GWP and full compliance with the Eco-design Directive for energy efficiency, offering advantages for the environment, customers and food.

Zanotti means innovation, green conscience, quality and expertise, great premises for the future that have solid foundations in its past experience.









ABOUT NATURAL REFRIGERANTS

As a general differentiation, "natural refrigerants" are substances that exist naturally in the environment, while "non-natural refrigerants" or "synthetic refrigerants" are man-made chemicals. The most commonly used natural refrigerants today are ammonia (NH_3 , R717), carbon dioxide (CO_2 , R744), and hydrocarbons (HCs), such as propane (R290), isobutane (R600a) and propylene, also know as propene (R1270).

The precision of the term "natural refrigerants" is sometimes debated, since, to be used as refrigerants, ammonia, carbon dioxide, and hydrocarbons also undergo an industrial purification and manufacturing process. However, today there is a well established distinction between substances whose chemical properties and safety aspects have been studied in their entirety and fluorinated gases, which, given their chemical complexity and comparatively short period of usage, have confirmed and/or unknown negative effects on ozone depletion, global warming and ecological safety, and therefore, are subject to continued debate.



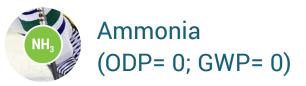
Carbon dioxide (ODP*= 0; GWP*= 1)

Carbon dioxide (chemical symbol $CO_{2^{\prime}}$ refrigerant designation R744) is colorless, odorless and heavier than air. With a Global Warming Potential (GWP) of 1, CO_2 is the reference value for comparing a refrigerant's direct impact on global warming.

Carbon dioxide carries an A1 safety classification (the same as most fluorocarbon refrigerants), indicating that it has low toxicity and is nonflammable. CO_2 as a refrigerant is sourced as a by-product from a number of production methods. Although it is nontoxic, if enough carbon dioxide builds up in an enclosed space, it will begin to displace oxygen. Over a certain period of time, this can cause asphyxiation of those present. With a long atmospheric lifetime, CO_2

does not lead to any by-product formation or decay products with serious environmental impact.

When used as a refrigerant, carbon dioxide typically operates at a higher pressure than fluorocarbons and other refrigerants. While this presents some design challenges, they can be overcome in systems designed specifically to use carbon dioxide. Carbon dioxide is compatible with some, but not all, commonly used refrigeration system lubricants. In particular, it is not suited for use with polyol ester (POE) and poly vinyl ether (PVE) lubricants and it only has limited applications with poly alkaline glycol (PAG) lubricants. It is generally regarded as a cheap and easily available refrigerant.



Ammonia (chemical symbol NH₃, refrigerant designation R717) is a colorless gas at atmospheric pressure. With zero ozone depletion and global warming potential, as well as a short atmospheric lifetime, it does not form any by-products or decomposition products with negative environmental impact. It is compatible with some, but not all, commonly used refrigeration system lubricants. In particular, it is not suited for use with polyol ester (POE) and poly vinyl ether (PVE) lubricants, and it has only limited applications with poly alkylene glycol (PAG) lubricants.

Despite its undisputed energy efficiency benefits, the use of ammonia is restricted in certain applications and geographic regions due to its toxicity. As a result, R717 is effectively prohibited from use inside occupied spaces but can be used in unoccupied areas or outside.

However, many advances have been made in recent years to minimize risks for human health, particularly for ammonia installations in populated areas. These advances include using ammonia in conjunction with other refrigerants, such as in secondary systems, in order to reduce and isolate an ammonia charge; using advanced safety equipment; deploying containment casings; or using ammonia absorption systems.

It is important to note that ammonia has a strong odor, making leaks easy to detect.

* ODP= ozone depletion potential and *GWP=global warming potential





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Cassette with double heat exchanger for cooling and heating

Integrated control panel with heating and A/C controls

Low energy consumption, no water loops and pump needed, complete solution



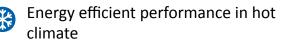
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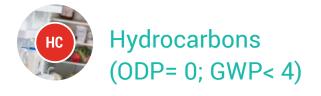
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With zero ozone-depleting characteristics and an ultra-low global warming impact, hydrocarbons (HCs) do not form any by-products or decomposition products in the atmosphere.

HC refrigerants can be applied either in systems designed specifically for their use, or as replacements in systems designed for a fluorocarbon refrigerant. This makes them a cost-competitive solution, and optimal for developing countries. If a hydrocarbon refrigerant is to be used in a system designed for a different refrigerant, it should be noted that modifications are probably required to ensure compatibility. Lubricant compatibility and the issues associated with hydrocarbons' flammability have to be addressed. Thus, the greatest potential for hydrocarbon refrigerants lies in new systems.

Hydrocarbon refrigerants are flammable and, as a result, carry an A3 safety classification, which means they have a low toxicity but are in the higher range of flammability. HCs are often subject to stricter safety requirements concerning the quantities permitted in occupied spaces.

Hydrocarbon refrigerants are fully compatible with almost all lubricants commonly used in refrigeration and air conditioning systems. One major exception to this rule are lubricants containing silicone and silicate (additives which are commonly used as antifoaming agents).



Water (chemical symbol H_20 , refrigerant designation R718) is one of the oldest refrigerants used for refrigeration applications. Also known as dihydrogen monoxide, R718 is an environmentally safe refrigerant with zero ozone depletion potential and zero global warming potential. It is odorless, colorless, nontoxic, nonflammable, non-explosive, easily available, and it is one of the cheapest refrigerants.

From an environmental and thermodynamic point of view, water is an ideal refrigerant for applications above 0°C. R718 has a higher latent heat of evaporation (2,270kJ/ kg) than other natural refrigerants. This means that R718 absorbs significantly larger amounts of energy, in the form of heat, during a change of phase, from liquid to gas, without a change in temperature. An obvious limitation is the high freezing temperature at atmospheric pressure. In addition, water leads to corrosion and oxidation of many metals as it is more reactive than other refrigerants. Thus choosing the right materials for an the R718 system during the design phase requires special attention.



Air (refrigerant designation R729) is environmentally benign, cheap, totally safe and nontoxic. Environmental concerns about ozone depletion, global warming, and increasingly stringent legislation have renewed global interest in alternative refrigeration technology using air. However, air-cycle refrigeration systems is not new. It was used on refrigerated cargo ships around the turn of the 20th century.

Air-cycle refrigeration works on the reverse Brayton or Joule cycle. Air as a refrigerant does not undergo phase change (condensation/ evaporation) at the temperature levels encountered in conventional refrigeration applications. The COP value of air is low because of its light weight, but air-cycle cooling systems can provide relatively high-temperature heat recovery without the efficiency setback experienced by vapor compression systems.

Air has been used commercially for aircraft cooling for a long time. . Air has also been used as a refrigerant for residential and automobile air conditioning and cooling. In some refrigeration plants, air is used in the quick freezing of food products.



DAS HERZ DER FRISCHE

WHY IS Green so cool?

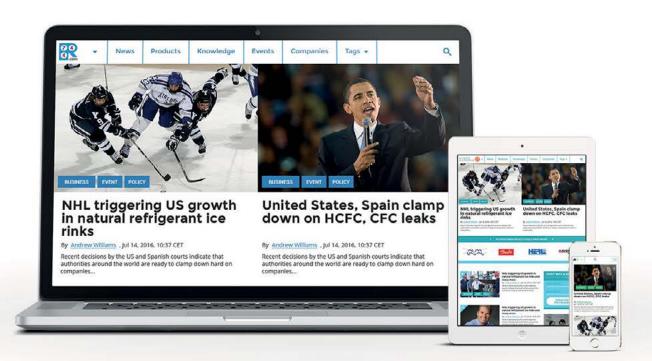
CHILLVENTA October 11–13, 2016 Hall 7, Booth 330

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EXCLUSIVE INTERVIEWS

INDUSTRY LEADER INSIGHTS INTO THE NATURAL REFRIGERANT MARKET

Ahead of Chillventa 2016, shecco interviewed Giovanni Tonin of CAREL Industries S.p.A., Application Specialist - Retail Solutions; Anders Juul of Danfoss, Segment Strategy Manager CO₂, Refrigeration & A/C controls, RC; Matteo Gaggianese of EUROKLIMAT, Marketing Manager; Micael Antonsson of GREEN & COOL, Technical & Business Director; Mikel Diaz of RV COOLING TECH, Head of the Commercial Department. In the following section of this Guide, these industry-leading companies discuss their products optimized for natural refrigerants and comment on how the natural refrigerant market has evolved in Europe and elsewhere in the world.

Increasing energy efficiency demands, together with retailers asking for natural refrigeration solutions in warmer climates, have created a competitive market for natural refrigerant technologies in Europe, spurring rapid product innovation.





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Which natural refrigerant products are you excited to be showing at Chillventa and why?

At this year's Chillventa, the main focus will be on solutions for $CO_{2^{1}}$ from the much-awaited new solutions regarding small condensing units with DC inverter technology, up to larger, increasingly efficient compressor racks in warmer climates too. Specifically, the Hecu sistema solution is a decisive milestone in the new generation of CO_{2} condensing units, guaranteeing better energy performance and high reliability in a simple and compact solution. The range of pRack controllers is also being continuously enhanced with new functions aimed at increasing efficiency and adaptability to CO_{2} through advanced system integration based on smart synchronisation with the refrigeration units.

Could you provide more details about your solution for the new generation of CO₂ condensing units?

By using DC inverter compressors, Hecu sistema can offer real modulation of cooling capacity, so as to achieve low energy consumption above all at part loads. Such very high performance attainable with CO_2 means the system both complies with the Eco-design directive on energy performance and exceeds the limits set by the F-Gas Regulation for condensing unit applications.

Hecu sistema also stands out for its real-time communication with the refrigeration units, allowing implementation of advanced system optimisation logic, with dynamic set points and extremely stable control thanks to the DC compressors and electronic expansion valves.

Carel's solutions also allow precise and reliable management of DC inverter compressors by completely controlling the envelope and optimising the control parameters for each compressor.

Why might CO₂ DC technology become the standard on the condensing unit market?

Until now, CO_2 condensing units have been manufactured as a derivation of compressor racks, obtaining solutions that are over-engineered and not easily applicable to the market standard. With Hecu sistema, condensing unit manufacturers can introduce CO_2 into their product range in a simple and sustainable way. This is a technically advanced solution that is compatible with the state-of-the-art in compressor racks, yet features a small number of components that are ready to be integrated with one another. Hecu sistema for CO_2 thus represents a compact and competitive solution that perfectly responds to market demands.

How do you think this Chillventa will be different from previous years?

Natural refrigerants are increasingly part of the products on display at the Carel booth, and at Chillventa specifically with technological solutions that allow them to be used in non-traditional applications. Continuous innovation in this context is driving the process to overcome existing social-technological barriers and allow the application of natural refrigerants where previously this did not seem possible: increased efficiency, cost reduction, simplicity for users are fundamental assets for these solutions.

Both fixed and mobile connectivity will play an increasingly important role in system optimisation, but also in the maintenance and working life of these systems.

Another important topic will be the reduction in food waste resulting from high-quality food preservation and storage, a pillar of Hecu sistema, which stands out by being able to guarantee extremely stable refrigeration unit temperatures.

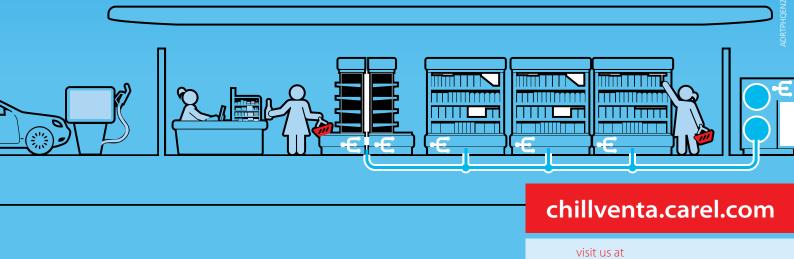


CHILLVENTA

Stand 5-306/308| Hall 5

I-Ecusistem

when green becomes greener The real and sustainable capacity modulation for condensing unit





ENGINEERING TOMORROW

Anders Juul

Danfoss Segment Strategy Manager for CO₂, Refrigeration & A/C Controls

Danfoss

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What natural refrigerant products are you excited to show at Chillventa and why?

Well, we will show several new products at Chillventa.

For industrial ammonia systems we have some new pilots and a defrost solution, which is an innovative way of defrosting that can save users energy. The commercial range includes - the EVR range, which is a valve that we have updated and the new range is now available for propane.

Also for food retail we will be showing the extension of the CCMT valve range. This a fully serviceable high-pressure transcritical control valve with a fully integrated filter and transmitter, which so far we are seeing good traction on in the market.

We will also be showing our ejector technology that we have been developing for some time and the new pack controller AK-PC 782- This is a multi suction group Transcritical CO_2 pack/rack controller.

What do you expect from this edition of Chillventa? Do you think this Chillventa will be different from previous years?

I expect natural refrigerants to be all over the place because this is what I see in general but I also expect to see a lot more about connectivity. The Internet of things (IoT) has really taken off in the refrigeration industry. It has opened our eyes to see it can bring a lot more value to the end customer.

Could you give us an update on the state of development of your ejector technology?

That state of ejectors right now is that we have deployed and sold just below 100 ejectors here in the beginning of September. We know that our ejectors are installed in more than 30 supermarkets or systems globally, primarily in Europe. We are getting close to have a general release.

We need to make sure those using the ejector get the most out of it. As the Ejector is more than just a mechanical component, it is important that the application (Rack/Pack) is designed to exploit the capabilities of the Ejector fully. Here we are striving to make the adaptation of the ejector as easy as possible for the industry, and hence we work hard on ensuring our electronic offerings and application guidelines support the above.

This is a journey and we are learning as we go, we can always make it better. I can only recommend that the visitors at Chillventa walk around and engage with Danfoss and the many OEMs that are capable of discussing the benefits of Ejector technology in transcritical CO₂ applications.



Italy's largest **hypermarket opts** for **CO₂ refrigeration**

The use of CO_2 transcritical refrigeration in warm climates has been a hot topic for many years. The tables are turning, however, and CO_2 refrigeration is advancing across Southern Europe as an efficient and viable solution. In April 2016, the largest hypermarket in Italy opened its doors in Milan.

The 10,000 m² brand new Iper Hypermarket is part of the new Arese Shopping Center. Sustainability is a key pillar of the building design. As a LEED Gold certified shopping center, it is designed and constructed to use less water and energy and reduce greenhouse gas emissions.

This installation, featuring several hundred cabinets and cold rooms, is a pioneer in CO_2 transcritical refrigeration system using ejector technology to enhance efficiency with outdoor temperatures up to 38°C. Danfoss has devised new ways to use the ejector technology in refrigeration applications to increase the energy efficiency of parallel compression. The turnkey refrigeration system is supplied by Arneg.



Scan the QR code to read more about this installation.

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Marketing Manager

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Which propane products are you excited to show at Chillventa and why?

Euroklimat is pleased to present two different solutions for the HVAC&R market, for process cooling and refrigeration. The chillers are air-cooled and water-cooled with R290 and use the latest technology available on the market. Euroklimat wants to look to the future and is ready to meet the requirements set by the most recent regulations.

How have you managed to improve efficiency every year, while working with natural refrigerants?

The company annually invests resources to seek the optimum solutions in terms of energy savings and innovation by using alternative refrigerants and it is a confirmed European leader in R290 chillers with more over than 300 installations already in operation.

How do you think this Chillventa will be different than previous years? Are we seeing a growth in hydrocarbon manufacturers?

The market's attention to alternative refrigerants is growing every year, so we expect an even stronger participation than the previous edition. At this moment we believe many companies are still "at the window" waiting to follow in the footsteps of others. Euroklimat wants to anticipate the market requirements for hydrocarbon systems and is offering new products as much as possible.

What region are you concentrating on this year for potential growth?

We are focusing a lot on the northern states of Europe, which historically have always been focusing more on natural refrigerants. Though we are not losing sight of growing markets, such as Italy and France.

How has the F-Gas and energy efficiency legislation moved your business?

Recent EU-Directives have given us further incentives to research for increasingly efficient solutions. Euroklimat has always been devoted to research in this area as it has increasingly grown in last three years.

How would sum up this year's Chillventa in one word?

Surprising.

Do you think this has been the year for HC?

We think that hydrocarbons initially were underestimated but we believe that they now have a clear space in the market.

Do you think people are moving to natural refrigerant heat pumps?

Hydrocarbons represent a valid alternative for heat pump applications, thanks to the particular efficiency savings that you can get even in critical operating conditions such as those for heating.

Has propane become the standard for household/light-commercial?

It is very likely it will once some "psychological barriers" are overcome.

first in Europe market leader in R290 chillers

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✓ ecological
 ✓ natural
 ✓ efficient
 ✓ safe





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Micael Antonsson

Technical & Business Director

GREEN & COOL, part of UTC Climate, Controls & Security, a unit of United Technologies Corp. including Celsior, PRPFROID and GREEN & COOL

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Which natural refrigerant products are you excited to show at Chillventa and why?

Profroid, Celsior and Green & Cool are part of UTC Climate, Controls & Security, a unit of United Technologies Corp., jointly participating in the Chillventa exhibition in Nürnberg, Germany. We are especially proud to show a wide range of CO₂ products for multiple applications:

- CO₂NVINPACK a rack specially dedicated to C-Store and discounters
- SoloCO20L™, an industrial air cooler designed for large cold storage
- A small condensing unit dedicated to the C-Store and HoReCa segments.

How have you managed to improve efficiency every year, when working with natural refrigerants?

 CO_2 has proven to achieve high efficiency in mild climates and we are continuing to focus on solutions that increase efficiencies in southern climates. At Chillventa we will feature a new high-efficiency solution: a fully natural, standalone, packaged unit combining a sub-cooler and a gas cooler. Come and check it out at our booth # 7A-308.

Are we seeing a growth in CO₂ manufacturers?

There has been an increase in the number of manufacturers utilizing CO_2 , and we are proud to be the pioneer in this new technology. Our unique CO_2 innovations will be on display here at the Chillventa show.

What region are you concentrating on this year for potential growth?

Europe will continue to be our primary area of focus and we are now expanding our reach to the southern climates with our new enhanced efficiency system.

How would sum up this year's Chillventa in one word?

Buzzing

Do you think this has been the year for CO₂?

Commercial refrigeration really progressed in terms of using CO_2 . The really exciting steps, however, are still in front of us. We will continue to expand the capacity of our CO_2 systems to accommodate large and small applications as well as continue to explore performance enhancements to suit warmer and hot climates.

Are you thinking of working with any other natural refrigerants?

We are also pioneering the adoption of propane as a refrigerant for plug-in applications. At this show, Celsior is demonstrating the Velando® CS, a popular multiplexable plug-in vertical freezer that uses propane and offers the ideal blend of product visibility and floor space productivity.

#GoNatRefs





Mikel Diaz

Head of the Commercial Department

RV COOLING TECH

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Website : <u>www.rvcoolingtech.com</u>

Which ammonia systems are you excited to show at Chillventa and why?

We are presenting our two new products lines. Heat Pumps and the Compact Machinery Rooms (CMR). Both products were developed during 2015 and we delivered several units of each type in 2016. We think that the CMRs are going to attract the attention of a lot of visitors as we have all the elements which are needed for a low temperature installation in a compact unit - including the compressors, economiser, liquid separators, ammonia pumps together with a control and power panel and a "plug & play" solution for freezer tunnels.

Regarding your ammonia-based heat pumps, could you elaborate further which applications you offer and which capacities?

It delivers water at temperatures between 70°C and 85°C with a capacity up to 1,200kW. They have the common characteristics of our Ecopack chillers and CMRs, a short ammonia circuit which allows us to use a low charge of refrigerant, and we can deliver it with an external housing and an ammonia neutraliser to place the unit outdoor, so there is no need to build any additional machine room.

How do you manage to innovate in the competitive HVAC&R market?

We are always open to the new products and trends in the market and implement them in our products. We know that our clients like our flexibility and ability to adapt our equipment to their needs.

How do you think this Chillventa will be different than previous years?

We expect that there will be even more demand for ammonia equipment. We see that in many markets there were installers who weren't using natural refrigerants until now and they want ammonia solutions.

How do you think the market for ammonia-based solutions has changed since the last Chillventa two years ago?

There has been an increase in the demand of ammonia-CO₂ cascade systems.

Do you think low charge ammonia is going to become a standard?

We think it is already a standard and almost every new installation is reducing the ammonia charge. We have been working on developing low-charge ammonia applications: Ecopack Chillers, Compact Machinery Rooms (CMRs) and Heat Pumps. We are working towards developing even more solutions in this area.



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PATENTS

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EVENTS PLANNER

Tuesday 11 October | Wednesday 12 October | Thursday 13 October

The following Events Planner highlights presentations, educational programs and product launches taking place during Chillventa 2016, which relate to natural refrigerant technologies. With this planner, you can see at a glance where and when these presentations will take place and best plan your attendance.

This information has been obtained from the Technical Programme on the Chillventa 2016 website - www.chillventa.de - shecco cannot guarantee that there will not be changes after the date of print of this GUIDE.

EVENTS PLANNER

TUESDAY 11 OCTOBER 2016								
TIME*	PRESENTER	PRESENTER	LOCATION	LANGUAGE				
HALL 7A: Specialist Forum Refrigeration with focus on refrigerants, compontents and Eco Design								
10:00 AM — 10:20 AM	CO ₂ Next Generation - Ejektor	Michael Gilgenbach Danfoss GmbH	Hall 7A, Stand 7A-618	German				
10:20 AM _ 10:40 AM	Zukunftsorientierte Integralsysteme - Anwendungen von CO ₂ als Kältemittel	Simon Ahlers TEKO Gesellschaft für Kältetechnik mbH	Hall 7A, Stand 7A-618	German				
10:40 AM 11:00 AM	Anwendungsorientierte Lösungen mit natürlichen Kältemitteln in der Gewerbe- und Industriekälte	DiplIng. Manuel Fröschle GEA Group Aktiengesellschaft,DiplIng. Wolfgang Dietrich - GEA Group Aktiengesellschaft	Hall 7A, Stand 7A-618	German				
11:20 AM 11:40 AM	CO ₂ -Gaskühler mit adiabater Luftvorkühlung	Dipl-Ing. (BA) Michael Freiherr - Güntner GmbH & Co. KG	Hall 7A, Stand 7A-618	German				
11:40 AM _ 12:00 PM	High Efficiency CO ₂ transcritical DC Condensing Unit	Giovanni Tonin CAREL Industries S.p.A. Socio Unico	Hall 7A, Stand 7A-618	English				
1:00 PM 1:20 PM	Raising Efficiency in Bottle coolers applying R290 variable speed compressors	Alexander Adamitzki Secop GmbH	Hall 7A, Stand 7A-618	English				
4:00 PM 	Hydrocarbons - the Best Option for Light Commercial Refrigeration	Marek Zgliczynski Embraco Europe S.r.l. a socio unico	Hall 7A, Stand 7A-618	English				
-	alist Forum Air Conditioning & Venti lations, power control, energy-optin		ocus on cooling-heatin	g, energy				
1:40 PM 2:00 PM	How Scroll Technology Can Help Achieving Higher Efficiency and Lower Carbon Footprint For Small Systems and Applications	Abhinav Barnwal Emerson Climate Technologies GmbH	Hall 4A, Stand 4A-401	English				
HALL 9: Specia	list Forum Applications & Education	& Regulations						
10:20 AM _ 10:40 AM	New Refrigerants, Key Issues and Impact on Compressors and Applications	Stéphane Charbonnier Tecumseh Europe SASU Sales and Logistics	Hall 9, Stand 9-531	English				
1:00 PM _ 1:20 PM	Magnetic Cooling for refrigerated equipment	Vincent Delecourt Cooltech Applications SAS	Hall 9, Stand 9-531	English				
3:20 PM 3:40 PM	Natürliche Kältemittel - auch für das Handwerk kein Problem	DiplIng. Frank Heuberger BIV - Bundesinnungsverband des Deutschen Kälteanlagen- bauerhandwerks	Hall 9, Stand 9-531	German				
4:00 PM _ 4:20 PM	SuperSmart - Expertise hub for a market uptake of energy-efficient supermarkets	Prof. DrIng. Armin Hafner Shecco sprl	Hall 9, Stand 9-531	English				

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WEDNESDAY 12 OCTOBER 2016						
TIME*	PRESENTER	PRESENTER	LOCATION	LANGUAGE		
HALL 7A: Spec	cialist Forum Refrigeration with focu	s on refrigerants, componte	nts and Eco Design			
11:00 AM — 11:20 AM	Field test experiences with the eChiller – a refrigeration system with water	DrIng. Jürgen Süss Efficient Energy GmbH	Hall 7A, Stand 7A-618	English		
11:20 AM _ 11:40 AM	Commercial Refrigeration Applications With Hydrocarbons Using Fully Hermetic Scroll Compressors	Venugopal Kandi Emerson Climate Technologies GmbH	Hall 7A, Stand 7A-618	English		
1:20 PM _ 1:40 PM	Products and Solutions in Systems using CO ₂ as a Refrigerant	Dr. Gábor Böszörményi Emerson Climate Technologies GmbH	Hall 7A, Stand 7A-618	English		
3:20 PM _ 3:40 PM	Analysis of Various Ammonia Defrosting Systems	Carsten Dahlgaard Danfoss GmbH	Hall 7A, Stand 7A-618	English		
	cialist Forum Air Conditioning & Ventuulations, power control, energy-optim		focus on cooling-heatir	ng, energy		
1:10 PM — 1:30 PM	Future Eco-design Requirement on Fans in EU and US	Morten Gabr Sham EVIA - European Ventilation Industry Association	Hall 7A, Stand 7A-618	English		
1:30 PM _ 1:50 PM	European and International Standards for Fans and Unidirectional Ventilation Units	Geoff Lockwood EVIA - European Ventilation Industry Association	Hall 4A, Stand 4A-401	English		
HALL 9: Speci	alist Forum Applications & Education	n & Regulations				
10:10 AM — 10:35 AM	The use of natural refrigerants in Colombia – status quo and experiences	Raul Perea eurammon	Hall 9, Stand 9-531	English		
10:35 AM _ 11:00 AM	Education worldwide: diploma programs for natural refrigerants in South Africa	Isolde Döbelin eurammon	Hall 9, Stand 9-531	German		
11:00 AM 11:25 AM	Experience and challenges with natural refrigerants in China	Dr. Xianping Zhang eurammon	Hall 9, stand 9-531	English		
11:25 AM _ 11:50 AM	Natural refrigerants in Romania	Prof. Dr. Gratiela Maria Tarlea eurammon	Hall 9, Stand 9-531	English		
1:00 PM _ 1:20 PM	Supermarkets in a new energy perspective	Ph.D. Torben Funder- Kristensen Danfoss GmbH	Hall 9, Stand 9-531	English		
1:40 PM _ 2:00 PM	Das Kältemittel R744 in der handwerklichen Ausbildung	Malte Snater Bundesfachschule Kälte- Klima-Technik Maintal	Hall 9, Stand 9-531	German		

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THURSDAY 13 OCTOBER 2016							
TIME*	PRESENTER	PRESENTER	LOCATION	LANGUAGE			
HALL 7A: Specialist Forum Refrigeration with focus on refrigerants, compontents and Eco Design							
11:00 AM _ 11:20 AM	Increasing chiller efficiency by innovative compact heat exchangers	Mustafa Yanik Danfoss GmbH	Hall 7A, Stand 7A-618	English			
11:40 AM _ 12:00 AM	An efficient solution for CO ₂ transcritical supermarkets	Mauro De Barba ELIWELL CONTROLS srl	Hall 7A, Stand 7A-618	English			
1:00 PM _ 1:20 PM	Danfoss refrigerant options per market segment	Torben Funder-Kristensen Danfoss GmbH	Hall 7A, Stand 7A-618	English			
1:20 PM _ 1:040 PM	Your ebm-papst solution – AxiBlade	Patrick Stern ebm-papst Mulfingen GmbH & Co. KG	Hall 7A, stand 7A-618	English			
HALL 4A: Specialist Forum Air Conditioning & Ventilation & Heat Pumps with focus on cooling–heating, energy efficiency, regulations, power control, energy-optimized components							
1:20 PM 1:40 PM	Alfa Laval Arctigo LSV - The most effective server cooling	Mats Carselid Alfa Laval Lund AB	Hall 4A, Stand 4A-401	English			
HALL 9: Specialist Forum Applications & Education & Regulations							
10:00 AM _ 10:20 AM	HVAC Integration von Transkritische CO ₂ Kälteanlagen in der Supermarktanwendung	Joachim Dallinger Epta S.p.A	Hall 9, Stand 9-531	German			
10:20 AM 10:40 AM	Eine effiziente Lösung für transkritische CO ₂ Supermarkt Prozesse	Frank Geyer ELIWELL CONTROLS srl	Hall 9, Stand 9-531	German			
12:00 PM	Abwärmenutzung und Klimatisierung im Supermarkt am CO,-Verbund als	Dennis Peters					



comict

compact Kältetechnik: enviromentaly-friendly refrigeration engineering

compact Kältetechnik GmbH is a manufacturer of customised refrigeration units situated in Dresden, Germany. The company is mainly active in the field of commercial and industrial refrigeration and handles natural refrigerants R744 (CO_2), R290 (propane) and R717 (NH_3 , ammonia).

With its origins as a manufacturer of tailor-made refrigeration units since 1992, compact Kältetechnik has continuously grown and expanded its manufacturing facilities to satisfy the demands of its clients.

Product range – designed and manufactured to fit seamlessly with the required technical equipment:

- Complete refrigeration units (including subcritical CO_2 cascade systems and transcritical booster systems)
- Special compressor units
- Liquid cooling systems
- Heat pumps

The compact product range is in compliance with the ISO 9001: 2008 quality standards, carried through by the competence of skilled employees and rigorous inspection, as well as to inspection by external auditors TÜV SÜD Management Service GmbH.

VISIT US ON CHILLVENTA: **Nuremberg 11. – 13.10.2016** Hall **7 | 528**



PRESS CONFERENCES					
TIME*	PRESENTER	PRESENTER	LOCATION	LANGUAGE	
		OCTOBER 11			
9:00 AM	BITZER Press conference	BITZER	Level 1, Hongkong hall in the Nuremberg Convention Center (NCC) Ost	English	
17:00 PM _ 18:00 PM	Tecumseh Press conference	Tecumseh	Hall 7, 7-336, Exhibition Centre Nuremberg	English	
		OCTOBER 12			
9:00 PM _ 10:00 AM	Alfa Laval: Chillventa 2016 press breakfast	Alfa Laval	Hall 7A, 7A-214,	English	
9:30 AM	GEA Press event	GEA	Hall 7, 7- 306 and 7-504, Exhibition Centre Nuremberg	English	

		SIDE EVENTS		
OCTOBER 10 10:00 AM - 18:00 PM	Chillventa CONGRESS	NürnbergMesse	Hall 7, 7- 306 and 7-504, Exhibition Centre Nuremberg	English, German
OCTOBER 12 15:00 PM - 17:30 PM	SuperSmart: 3rd Workshop / 1st Labelling Board Assembly	shecco	Arvena Messe - Hotel an der NürnbergMesse, Bertold-Brecht-Strasse 2, Nürnberg, Germany	English
OCTOBER 13 11:00 AM - 14:00 PM	Climate friendly cooling - Keeping up with the trends of tomorrow	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Proklima, Green Cooling Initiative	Congress Hotel Mercure, Münchener Straße 283, 90471 Nürnberg	English

Presentation times may vary, please consult the official Technical Programme on www.chillventa.de

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FIND YOUR WAY AROUND CHILLVENTA

More companies than ever before are offering products and services related to natural refrigerants. Whether they work with $CO_{2^{1}}$ ammonia, hydrocarbons, water or air, the companies listed in this section produce a range of solutions including: systems, components, refrigerants, engineering services and training and you can find them all at Chillventa 2016.



COMPANY LISTING* 1. Organized alphabetically

Nat.Ref.	booth	Hall /page	Dosicool International	CO2	8-302	8/ p.66
	7-104	7/ p.63	Dotech	CO ₂ NH ₃ HC	5-123	5/ p.50
CO ₂ NH ₃	7A-207	7A/ p.58	DSI	CO2 NH3	6-105	6/ p.55
CO 2	9-529	9/ p.69	Dusar-Frigo	C02	7-624	7/ p.62
	8-308	8/ p.67	ebm-papst	CO ₂ NH ₃ HC	4A-313	4A/ p.46
CO2 NH3	5-142	5/ p.50	Efficient Energy	H ₂ 0	7A-109	7A/ p.59
CO2 NH3	7A-214	7A/ p.58	Eliwell Controls	нс	5-134	5/ p.50
C02	5-103	5/ p.51	ELREHA	CO2	5-312	5/ p.51
CO2	7A-523	7A/ p.58	Embraco Europe	HC	7-114	7/ p.63
	7-214	7/ p.63	Embrital	нс	7-222	7/ p.62
CO2 NH3	7-410	7/ p.63			6-318 6-418	6/ p.54
C0 ₂	6-406	6/ p.55	ENEX	CO2	4-416	4/ p.48
но	7A-510	7A/ p.59	Epta	CO2	9-213	9/ p.68
NH ₃ HC	5-101	5/ p.51	Errecinque	CO2	7-228	7/ p.62
	7-419	7/ p.62	ESK Schultze		6-212	6/ p.55
CO ₂ NH ₃	7-330	7/ p.62	Espa Sogutma	NH ₃ HC	9-336	9/ p.69
NH ₃	6-402	6/ p.55	EUROKLIMAT	НС	7A-107	7A/ p.59
CO ₂ NH ₃ HC	7-304	7/ p.63	Evapco Europe	CO ₂ NH ₃	7-402	7/ p.63
CO ₂ NH ₃	7A-418 7A-320	7A/ p.58	ExTox	NH ₃	5-315	5/ p.51
CO ₂	5-308	5/ p.51	Faco	NH ₃ HC	4-211	4/ p.49
C02	ĺ	5/ p.50	F.I.C.		6-320	6/ p.54
C02			Fischer Kälte-Klima		7-226	7/ p.62
NH ₃	8-306		Flex Coil		7-402	7/ p.63
CO ₂ NH ₃ HC	7-516		Frascold		6-312	6/ p.54
HO	4A-406	4A/ p.47	Frenzelit Werke		9-401	9/ p.68
CO2	7-528	7/ p.62	Frick India		7A-502	7A/ p.59
Magnetic	7-702		FRIGOMEC		5-132	5/ p.50
			5			7A/ p.59
						7/ p.63
						6/ p.55
					7-123	7/ p.62
	0 412	0/ p.04	International	CO2	5-324	5/ p.50
C02	6-318	6/ n 54	International			
CO ₂	6-318	6/ p.54	Fujian Snowman		7A-104	7A/ p.59
CO ₂ CO ₂ CO ₂ NH ₃ HC	6-318 6-118 7-516	6/ p.54 6/ p.54 7/ p.63		CO ₂ NH ₃	7A-104 7-516	7A/ p.59 7/ p.63
	CO, NH; CO, NH; CO, HC CO, NH; CO, O, O; CO, NH; <t< td=""><td>000 NH 7-104 000 NH 7A-207 000 HC 8-308 000 HC 8-308 000 NH 7A-214 000 NH 7A-101 000 NH 7410 000 NH 7419 000 NH 7300 000 NH 7301 000 NH 7301 000 NH 7301 000 NH 7301 000 N</td><td>NH 7-104 7/ p.63 00 H-207 7A/ p.58 00 H-207 9/ p.69 00 H-0 8-308 8/ p.67 00 H-0 5-142 5/ p.50 00 H-1 7A-214 7A/ p.58 00 H-1 7A/ p.53 7A/ p.53 00 H-1 TA/ p.53 7A/ p.53</td><td>Control Control Control Control (a) (B) 7-104 7/ p.63 Dotech (a) (B) 9-529 9/ p.69 Dusar-Frigo (a) (B) 5-142 5/ p.50 Efficient Energy (a) (B) 7.4-217 7// p.63 Elwell Controls (a) (B) 7.4-213 7// p.63 Elwell Controls (a) (B) 7.4-10 7// p.63 Embrace Europe (a) (B) 7.4-10 7// p.63 Embrital (a) (B) 7.4-10 7// p.63 Embrital (a) (B) 7.4-10 7// p.63 Embrital (a) (B) 7.4-10 7// p.63 Emerson Climate (a) (B) 7.4-10 7// p.63 Entracinque (b) (B) 7.4-10 7// p.63 Entracinque (b) (B) 7.4-10 7// p.63 Entracinque (b) (B) 7.4-10 7// p.63 Entracinque (a) (B) 7.4-10 7// p.63 Entracinque (a) (B) 7.4-10 7// p.63</td><td>Booked michanization Discontinuentation Discontinuentation 00 Win 77-104 77/p.63 Dotech Dotech 00 Win 00 00 Win 9529 9/p.69 Dotech 00 Win 00 00 Win 5-142 5/p.50 Efficient Energy Win Win 00 Win 7A-213 7A/p.58 Eliwell Controls Win Win 00 Win 7A-523 7A/p.58 Eliwell Controls Win Win 00 Win 7A-523 7A/p.58 Elimetic Energy Win Win 00 Win 7A-523 7A/p.58 Elimetic Controls Win Win 00 Win 7A-523 7A/p.58 Encora 00 Win Win 00 Win 7A-103 7/p.62 Esta Schultze 00 Win Win 00 Win Yin Yin Yin Win Yin Yin <td< td=""><td>No. No. No. No. 0 17.104 77.P63 Dotech 0 10.000 5-123 0 17.207 7A/P.58 Dotech 0 10.000 5-123 0 19.529 9/P.690 Dotech 0 10.000 7-624 0 19.308 8/P.677 60.000 10.000 17-624 60.000 17-624 0 10.000 7-4214 7A/P.58 Fifcient Energy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.410 7/P.63 Fifcient Chergy 40.000 5-132 0 17.410 7/P.63 Fifcient Chergy 40.000 5-138 0 17.410 7/P.63 Fifcient Chergy 40.000 6-112</td></td<></td></t<>	000 NH 7-104 000 NH 7A-207 000 HC 8-308 000 HC 8-308 000 NH 7A-214 000 NH 7A-101 000 NH 7410 000 NH 7419 000 NH 7300 000 NH 7301 000 NH 7301 000 NH 7301 000 NH 7301 000 N	NH 7-104 7/ p.63 00 H-207 7A/ p.58 00 H-207 9/ p.69 00 H-0 8-308 8/ p.67 00 H-0 5-142 5/ p.50 00 H-1 7A-214 7A/ p.58 00 H-1 7A/ p.53 7A/ p.53 00 H-1 TA/ p.53 7A/ p.53	Control Control Control Control (a) (B) 7-104 7/ p.63 Dotech (a) (B) 9-529 9/ p.69 Dusar-Frigo (a) (B) 5-142 5/ p.50 Efficient Energy (a) (B) 7.4-217 7// p.63 Elwell Controls (a) (B) 7.4-213 7// p.63 Elwell Controls (a) (B) 7.4-10 7// p.63 Embrace Europe (a) (B) 7.4-10 7// p.63 Embrital (a) (B) 7.4-10 7// p.63 Embrital (a) (B) 7.4-10 7// p.63 Embrital (a) (B) 7.4-10 7// p.63 Emerson Climate (a) (B) 7.4-10 7// p.63 Entracinque (b) (B) 7.4-10 7// p.63 Entracinque (b) (B) 7.4-10 7// p.63 Entracinque (b) (B) 7.4-10 7// p.63 Entracinque (a) (B) 7.4-10 7// p.63 Entracinque (a) (B) 7.4-10 7// p.63	Booked michanization Discontinuentation Discontinuentation 00 Win 77-104 77/p.63 Dotech Dotech 00 Win 00 00 Win 9529 9/p.69 Dotech 00 Win 00 00 Win 5-142 5/p.50 Efficient Energy Win Win 00 Win 7A-213 7A/p.58 Eliwell Controls Win Win 00 Win 7A-523 7A/p.58 Eliwell Controls Win Win 00 Win 7A-523 7A/p.58 Elimetic Energy Win Win 00 Win 7A-523 7A/p.58 Elimetic Controls Win Win 00 Win 7A-523 7A/p.58 Encora 00 Win Win 00 Win 7A-103 7/p.62 Esta Schultze 00 Win Win 00 Win Yin Yin Yin Win Yin Yin <td< td=""><td>No. No. No. No. 0 17.104 77.P63 Dotech 0 10.000 5-123 0 17.207 7A/P.58 Dotech 0 10.000 5-123 0 19.529 9/P.690 Dotech 0 10.000 7-624 0 19.308 8/P.677 60.000 10.000 17-624 60.000 17-624 0 10.000 7-4214 7A/P.58 Fifcient Energy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.410 7/P.63 Fifcient Chergy 40.000 5-132 0 17.410 7/P.63 Fifcient Chergy 40.000 5-138 0 17.410 7/P.63 Fifcient Chergy 40.000 6-112</td></td<>	No. No. No. No. 0 17.104 77.P63 Dotech 0 10.000 5-123 0 17.207 7A/P.58 Dotech 0 10.000 5-123 0 19.529 9/P.690 Dotech 0 10.000 7-624 0 19.308 8/P.677 60.000 10.000 17-624 60.000 17-624 0 10.000 7-4214 7A/P.58 Fifcient Energy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.421 7A/P.58 Fifcient Chergy 40.000 5-132 0 17.410 7/P.63 Fifcient Chergy 40.000 5-132 0 17.410 7/P.63 Fifcient Chergy 40.000 5-138 0 17.410 7/P.63 Fifcient Chergy 40.000 6-112

GEA	CO ₂ NH ₃ HC	7-306 7-504	7/ p.63	KIRLOSKAR	NH ₃	6-122	6/ p.54
Geopal System	CO ₂ NH ₃ HC	5-117	5/ p.51	KRIWAN	CO ₂ NH ₃ HC	7-332	7/ p.62
GlenDimplex	H ₂ 0	4A-311	4A/ p.47	LG Electronics	HC	4A-403	4A/ p.47
Deutschland				LU-VE Deutschland	CO2	7-524	7/ p.62
Grundfos	CO ₂ NH ₃ H ₂ 0	5-416	5/ p.51	Luvata		7A-208	7A/ p.58
GTS	НС	7A-716	7A/ p.59	MAJA	CO ₂ NH ₃	7-334	7/ p.62
Güntner	CO ₂ NH ₃	7-124 7-125	7/ p.62	Mastercool Europe	NH ₃ HC	8-201	8/ p.66
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COMPANY LISTING* 2. Organized by halls & booth number

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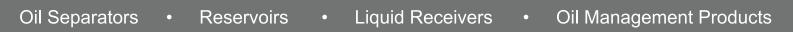


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FLOOR MAPS & PREMIUM PRODUCTS

These hall maps are a unique reference tool to draw attention to the companies offering climate-friendly solutions for HVAC&R at Chillventa.

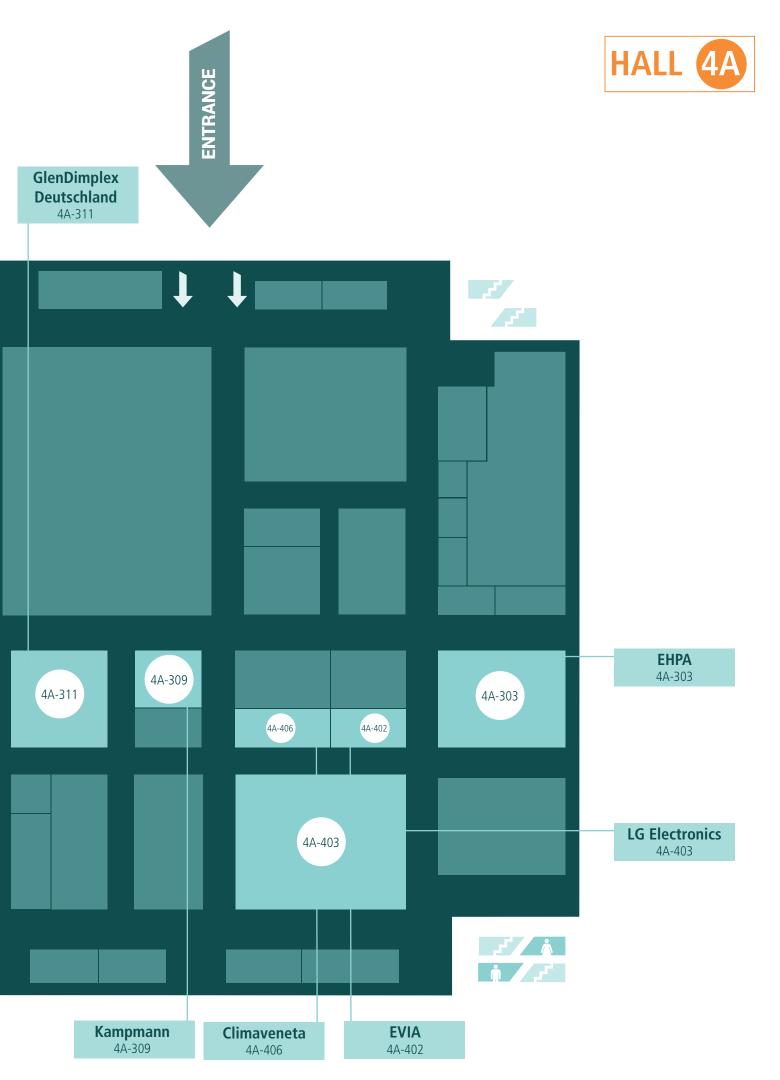
The Premium Products Directory is a selection of the latest natural refrigerant-based technologies on display at Chillventa 2016 manufactured by industry supporters of this Guide. This Directory allows participants to find, in each exhbitor hall, both systems and components for household, commercial, and industrial applications.

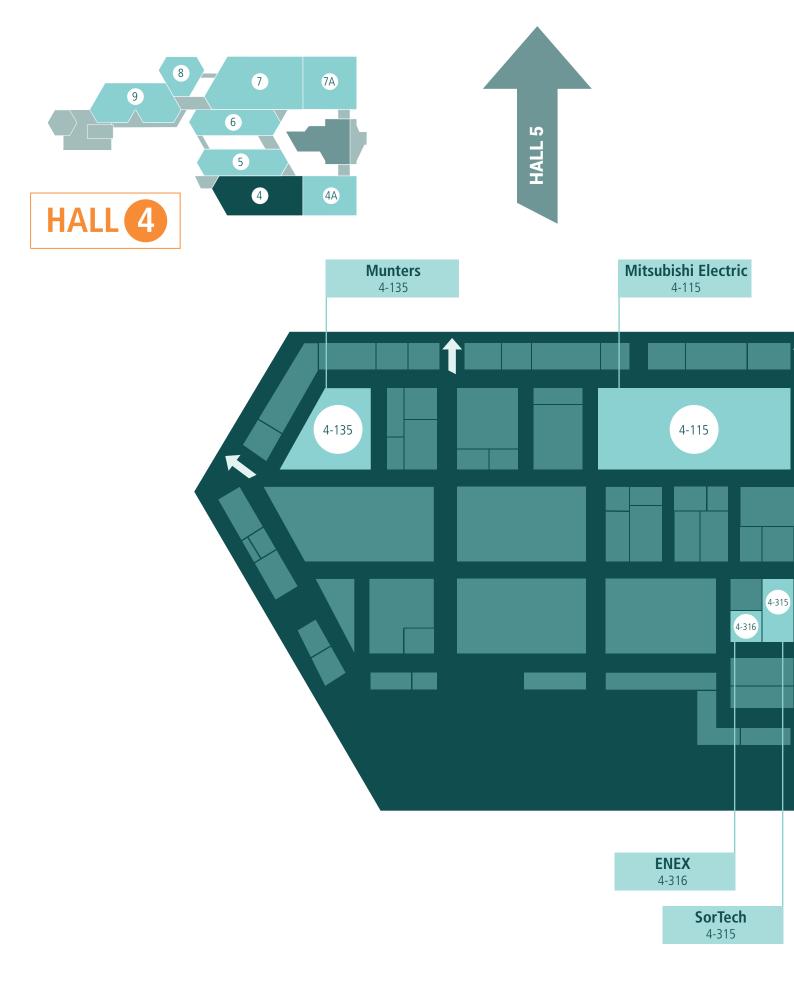


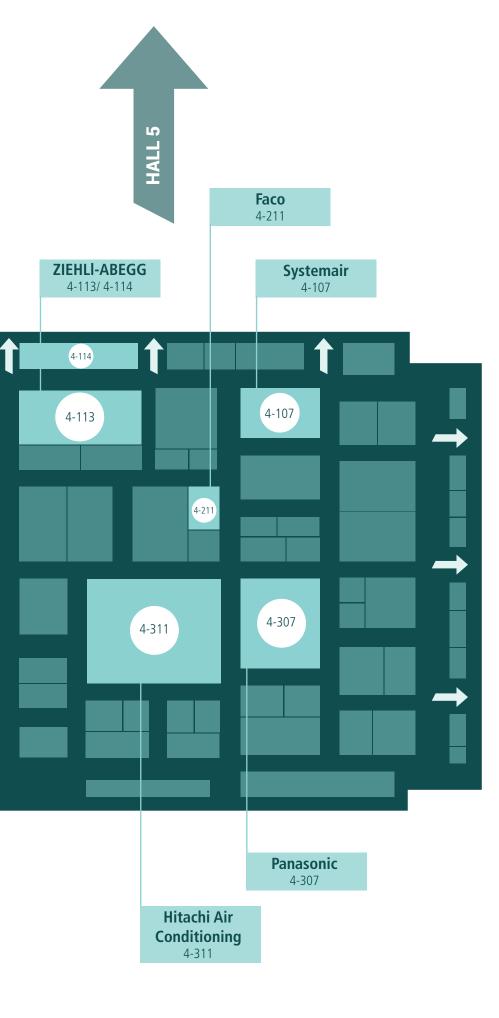






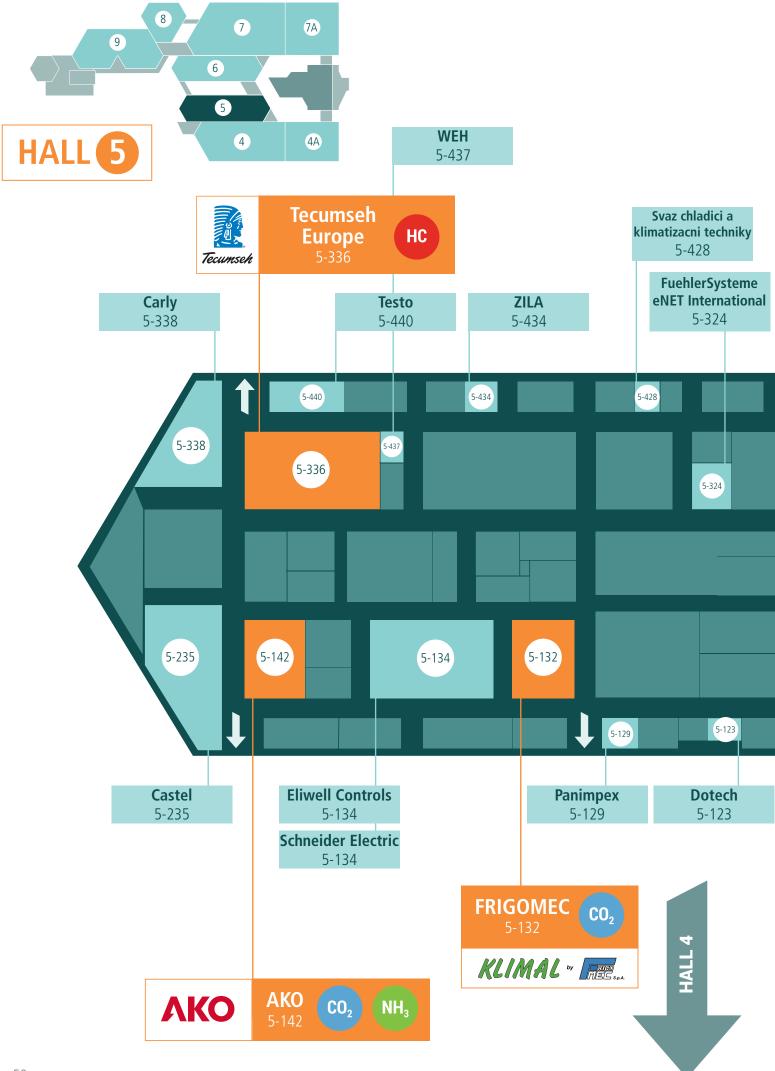








HALL 4







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Hall 5/5-142 / Contact person at the booth: **JOSÉ MARIA CABRIA** or **JORDI SERO**.



CAREL Industries S.p.A. – www.carel.com **CAREL - Hecu sistema for CO**₂ **condensing unit**

Hecu sistema has now evolved to work with natural refrigerants by integrating management of DC inverter compressors for CO_2 .

By using DC inverter compressors, Hecu sistema can offer real modulation of cooling capacity, so as to achieve low energy consumption above all at part loads. Such very high performance attainable with CO_2 means the system both complies with the Eco-design directive on energy performance and exceeds the limits set by the F-Gas Regulation for condensing unit applications.

Hecu sistema also stands out for its real-time communication with the refrigeration units, allowing implementation of advanced system optimisation logic, with dynamic set points and extremely stable control so as to ensure perfect food preservation and reduce food waste.

CAREL supervisors can be used to monitor and optimise the operation of all connected systems, preventing possible malfunctions and scheduling maintenance so as to guarantee excellent service levels.

Hall 5/ 5-306, 5-308 / Contact person at the booth: GIOVANNI TONIN



ILK Dresden – www.ilkdresden.de

ILK Dresden-Your R&D Experts for Innovative Solutions with All Natural Refrigerants-R290, R717, R718, R744

ILK's vacuum ice slurry technology using water (R718) as refrigerant was awarded with the first place at the German Refrigeration Award 2016. Pumpable ice slurry – a mixture of water and ice particles – is produced with the highest efficiency of all ice producing technologies. Ice slurry can be used in several applications.

One is the storage of large amounts of cold energy to cut the peak power demand or to better integrate fluctuating renewable electricity. The energy density for storage and transport is increased by using the latent heat of ice. Large cooling power can be provided at the constant melting temperature.

Hall 5/5-118 / Contact person at the booth: MATHIAS SAFARIK



Tecumseh - www.tecumseh.com/en/europe

TC Series Compressor Provides Performance Improvement for Light Commercial Refrigeration Applications

Tecumseh Products Company is pleased to announce the availability of the TC Series compressor. Optimized for use with eco-friendly hydrocarbon refrigerants R290 (propane) and R600a (isobutane), the TC's high efficiency, combined with its compact size, makes it a perfect choice for beverage cooler and small commercial freezer applications where the need for energy improvement will continue.

The compressor's dual rating point allows a given model to be applied to both low and medium temperature or, medium and high temperature applications, thereby significantly reducing the number of compressor models required by an equipment manufacturer.

Hall 5 / 5-336 / Contact people at the booth: PATRICK VIGUIER

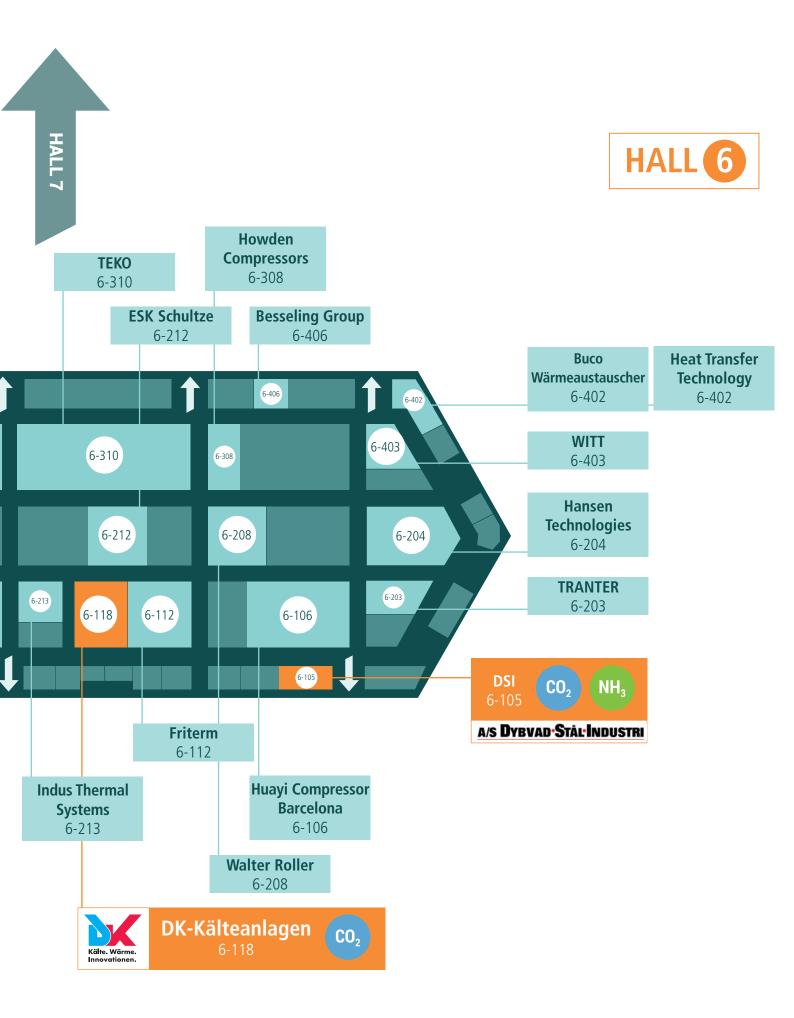


Wieland – www.k65-system.com K65 - High Pressure Tube System

The K65 tube system has been developed for the use of CO_2 (R744) as a refrigerant. K65 alloy provides the mechanical strength high enough to withstand the huge required pressure ratings combined with excellent handling properties. Due to the high mechanical strength, the thinner walls of the tubes save material, resulting in a lighter weight product easier to handle, for example, when mounting the pipes on ceilings. Wieland K65 tubes can be brazed to Conex Banninger K65 fittings without any need for special equipment, this combination falls under a joint system guarantee that includes CO_2 applications up to 120 bar.

Hall 5 / 5-212 / Contact person at the booth: FRANK TREFZGER





PRODUCT AND COMPANY DIRECTORY FROM HALL 6



DK-Kälteanlagen – www.dk-kaelteanlagen.de

DK-Heat Recovery for heating and drinking water heating in only one tank

At the CHILLVENTA 2016, DK will present the new CO_2 heat exchanger for the buildings heating! This new exchanger has a larger free cross-section area, resulting in the need for less individual heat exchangers, whilst offering an increased level of heat transfer.

Advantages:

• DK finned tube heat exchanger technology working for over 37 years, giving problem-free performance • Best utilization through direct heat transfer into the water

New possibilities are available to the supermarket designer, now that DK have added a stainless steel spiral tube heat exchanger inside the tank to provide heated potable water. In addition to the advantages of the new $\rm CO_2$ heat exchanger for the buildings heating, the indirect DHW heating promises in flow system more advantages:

- Optimal protection against Legionella
- Two walls between refrigerant and water

Hall 6 / 6-118 / Contact person at the booth: FELIX BRÄUTIGAM

100% Water 80% Energy savings

eChiller[®] – the efficient and clean refrigeration system

eChiller[®] is the centrifugal chiller that saves up to 80% in power and works with just water (R718) as a refrigerant. The unit is suitable for all kinds of applications and redefines process cooling.

Your advantages in a nutshell:

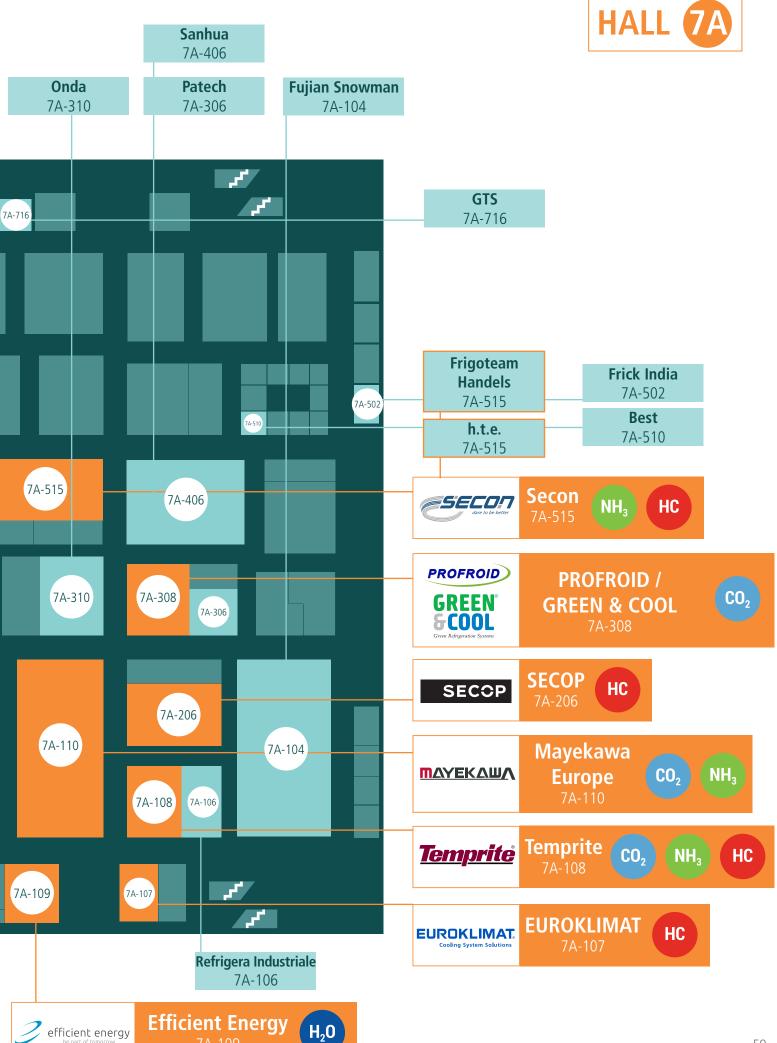
- Resource-friendly
- Environmentally sound
 Pure water as a refrigerant (R718),
 Non-toxic, CO₂ neutral
- Low-maintenance
 EU F-Gas Directive does not apply
- Cost-effective
 Significantly reduced operating
 costs from continuous energy savings
- Non-hazardous
 No legionella formation

For more information: www.efficient-energy.com

We look forward to seeing you at CHILLVENTA!







PRODUCT AND COMPANY DIRECTORY FROM HALL 7A



Haelok Swiss Precision - www.haelok.com

The new connection system for all natural refrigerant systems (PREMIERE)

Haelok's unique pipe connection system is a cost-attractive alternative to the conventional elaborate joining techniques such as welding and brazing. It is suitable for high-pressure applications and can easily cope with difficult operating and space-limited installation conditions. Independent studies show savings of over 30% depending on the application. The connectors are suitable for working with all natural refrigerants like carbon dioxide (R744 / CO_2) - in the sub - and trans-critical pressures from 40 bar up to 155 bar, ammonia (R717, NH₂) and all the hydrocarbons.

Hall 7A / 7A-720 / Contact person at the booth: talk to any representative



SAGINOMIYA – www.saginomiya-global.com **CO**₂ **Line-Up of Automatic Controls**

Saginomiya is a leading manufacturer of automatic controls dedicated for refrigeration and air-conditioning units. The company has provided the products for CO_2 transcritical systems since year 2000 and gradually extended its portfolio. Our CO_2 line-ups are applicable to various units including CO_2 heat pumps, bottle coolers, show cases, supermarket systems, refrigeration units, etc. Saginomiya's CO_2 line-up of automatic controls consists of:

UKV-J, JKV – Electronic expansion valves (capacity 3 to 20 kW)

- HPV Solenoid valves(orifice φ 1.0 mm, φ 1.2 mm, φ 4.0 mm, φ 7.8 mm)
- HSK Pressure sensors (sensing range of 0 to 150 bar)
- CCB Pressure switches (operating pressure up to 150 bar)

Hall 7A / 7A- 619 / Contact person at the booth: talk to any representative



SECOP – www.secop.com

Secop Variable Speed Compressors Available for Hydrocarbons A NEWCOMER WITH 60 YEARS OF EXPERIENCE

Formerly known as Danfoss Compressors, Secop is one of the founding fathers of modern compressor technology with an experience that goes back to the beginning of the 1950's

For more than 25 years, Secop has been setting the standard in compressor technology by developing highly efficient variable speed compressors and by compressors working with hydrocarbons (R290 and R600a).

Secop's latest variable speed compressor developments XV/KXVL (household applications), DLV/NLV/SLV (light commercial applications) and the BD-Series (DC-powered applications) will be showcased in ...

Hall 7A / 7A-206 / Contact person at the booth: talk to any representative



TTE oil separators for CO₂ transcritical applications



Klimal by Frigomec has designed a new special series of fully welded oil separator for R744 transcritical application, 130 bar rated, equipped with a particular demister that assures a continuous oil separation in any operating condition. The tests results, by independent recognized laboratory, have showed a high separation efficiency.

The TTE oil separators remove oil from R744 refrigerant in a double-step process:

- Separation by centrifugal effect
- · Separation by demister coalescent effect

TECHNICAL SPECIFICATIONS

- Maximum allowable working pressure:
- Working range temperature:
- Certifications and markings:
- 9 different models:

130 bar -10 / +160 °C CE according to 2014/68/EU from 88.9 to 406.4 mm to perform in a wide operating range

Plus: NO filter element replacement!

Available optionals:

- Different connections type and size (for brazing, welding and threaded)
- · Sight glasses and/or auxiliary sockets
- Integrated supplementary oil reserve

Liquid receivers for CO₂ in large applications

Klimal by Frigomec is able to manufacture, in horizontal configuration, liquid receivers with a volume up to 5000 litres, to suit individual customer needs.

The new large liquid receivers are used :

- as storage in big plant; the pumped CO₂ systems use less energy than glycol systems.
- in cascade systems, in combination with other refrigerants.

TECHNICAL SPECIFICATIONS

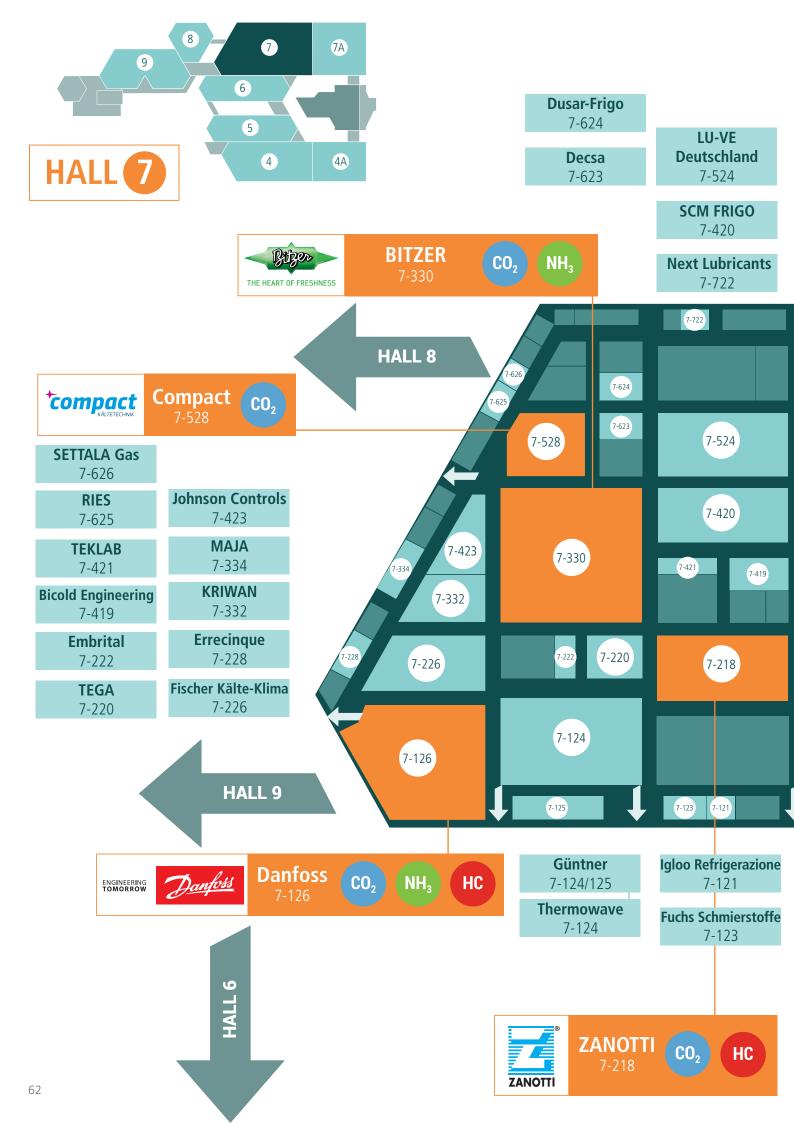
- Maximum allowable working pressure:
- Maximum overall length:
- Shell diameter range:
- Certifications and markings:

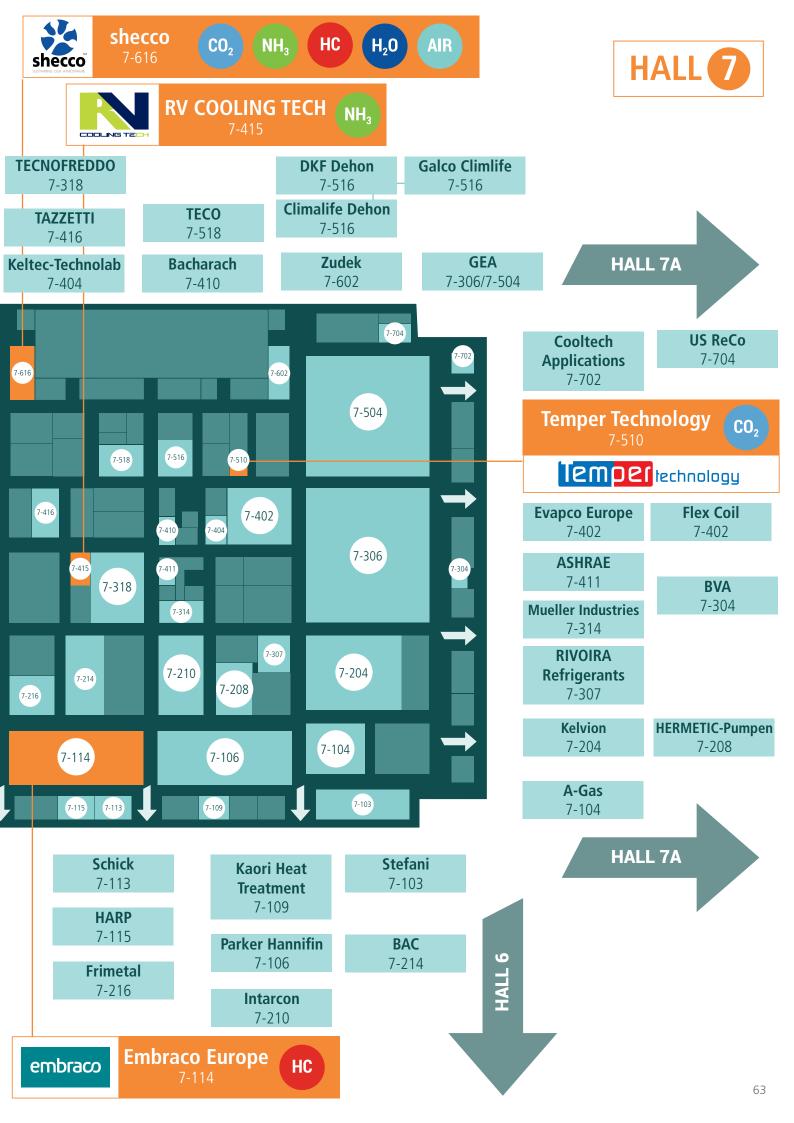
60 bar@ -10 / +120 °C and 30 bar@ -50 / -10 °C 5800 mm 610, 800, 1000 and 1200 mm CE according to 2014/68/EU

Benefits: - fully customized products - short lead time









PRODUCT AND COMPANY DIRECTORY FROM HALL 7



Temper - www.temper.se

Green & Powerful HTF

Reduce your environmental footprint with Temper Technology's top of the line environmental friendly heat transfer fluid, Temper. Temper can be used in a wide range of refrigeration applications for indirect cooling systems. It is available in seven different versions from -10°C to -60°C. The remarkable thermal properties make Temper an excellent choice.

- Ready-mixed & non-toxic
- Combined with an effective and advanced corrosion inhibitor
- Readily biodegradable
- A range between -60°C to 180°C in pressurized systems

We offer competent and high technical support based on specific need. Our production facility in Gothenburg enables great flexibility to meet market demands for products and volume.

Hall 7 / 7-510 / Contact person at the booth: CARL GABINUS

SHECCO PRODUCTS



shecco - www.shecco.com

shecco is a global market accelerator for climate-friendly technologies, helping over 100 partners to bring their innovative natural refrigerant solutions faster to the market. With more than 15 years of expertise in offering innovative, effective and flexible solutions, we focus in three areas:

media: Online industry platforms, magazines, webinars, Social Media and tailored PR services – for an effective outreach in online and print media

events: Conferences, workshops and networking events – as your meeting place to discuss important topics with the right decision makers.

market development: Market research & consulting, public affairs, special projects & global campaigns – tailored services for building your business case.

Hall 7 / 7- 616 / Contact person at the booth: talk to any representative



ACCELERATES – accelerate.shecco.com Be visible on Accelerate Magazines!

Accelerate, brought to you by the leading HVAC&R publisher shecco Media, is the first FREE online and print magazine for and about business leaders in natural refrigerantsbased technology.

Published on a quarterly (Europe, Australia), bi-monthly (Japan) and monthly (North America) basis, Accelerate reports about innovation, markets and technology trends in this fast growing market.

Distributed for free in major industry shows and with broad online promotion to more than 35,000 HVAC&R subscribers, there is no better way to promote your unique natural refrigerant products, services and projects.

Hall 7 / 7- 616 / Contact person at the booth: talk to any representative



online platforms – R744.com / hydrocarbons21.com / ammonia21.com

Be Visible on the World's Leading Business Platforms for Natural Refrigerants

Newly revamped in October 2016, the websites feature daily articles and the largest database of products & services for Natural Refrigerants-based technology.

Attracting thousands of readers regularly, the platforms provide now a better userexperience, being fully mobile and tablet-friendly and integrated with social media channels to enhance visibility.

Be our next partner and enjoy the benefits of promoting your products and services worldwide.

Hall 7 / 7- 616 / Contact person at the booth: talk to any representative



#WebinarWednesday - www.webinarwednesday.net

"Reach the World Naturally"

WebinarWednesday is the global webinar series to showcase the latest natural refrigerant technologies, products, services and projects. Reaching a global network of more than 35,000 decision makers, the interactive digital platform pairs your content and executives with our expert moderators and industry-leading webinar software. #WebinarWednesday allows you to reach the right audience, learn about natural refrigerants trends and share your success stories with peers, partners and customers... all in real time.

Hall 7 / 7- 616 / Contact person at the booth: talk to any representative



ATMOsphere – www.ATMO.org

2017 ATMOsphere Events

ATMOsphere is growing at full throttle! 2017 will be packed with conferences in Tokyo, Sydney, San Diego, Bangkok and Berlin!

While 2017 will bring new and exiting features, ATMOsphere will keep its essence and main goal: bringing together key HVAC&R industry stakeholders (end users, policy makers, suppliers, academics, associations and many others) to change the future of heating and cooling, naturally and discuss the latest natural refrigerant technologies, market trends and policy issues in the different regions across the world.

Registrations will open soon. Use the code "Chillventa" to benefit from our special discount!

Hall 7 / 7- 616 / Contact person at the booth: talk to any representative



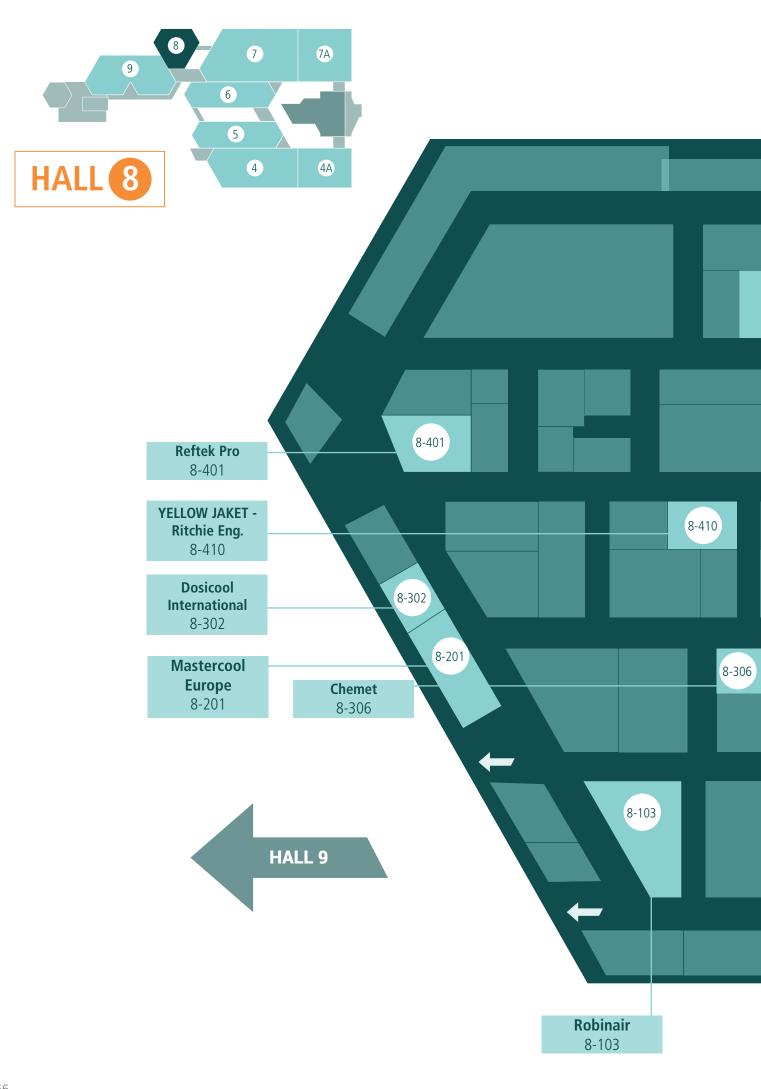
SuperSmart – www.supersmart-supermarket.org

SuperSmart is an EU project that aims to speed up the uptake of more energy-efficient refrigeration, heating and cooling solutions for Europe's food retail sector by reducing its energy use, lowering its environmental footprint, and increasing its economic benefits.

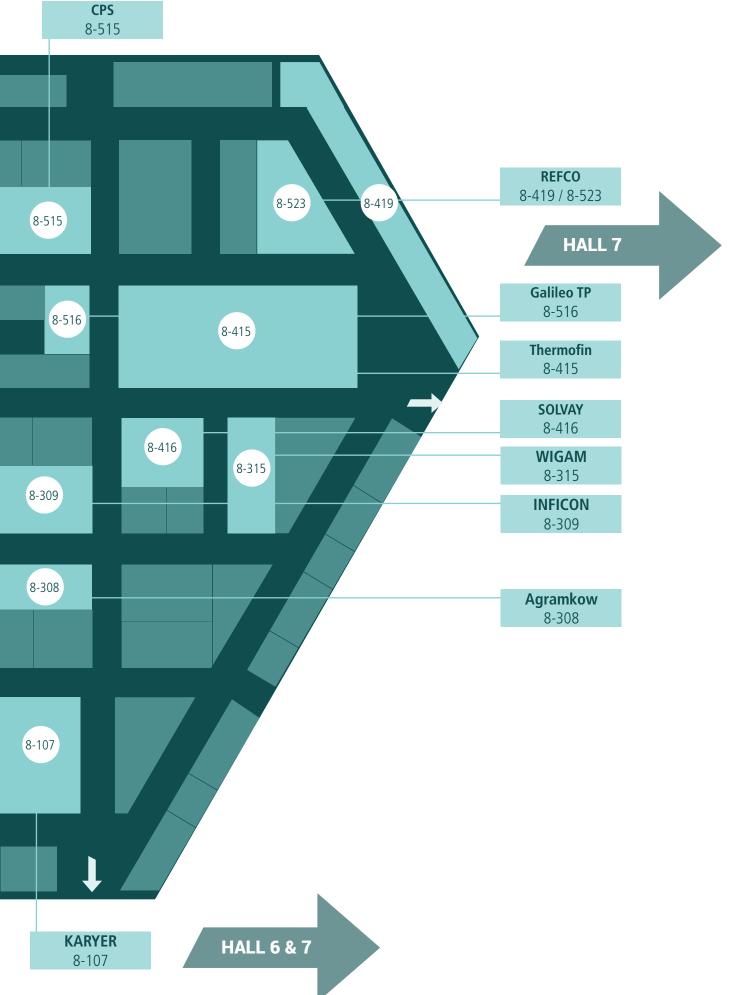
How you can get involved:

SuperSmart welcomes the active participation from food retailers and supermarket chains, system and component suppliers, contracting & consulting companies, industry associations and consumer groups involved in supporting climate-friendly food retail stores in Europe.

Be SuperSmart and join the effort: info@supersmart-supermarket.org



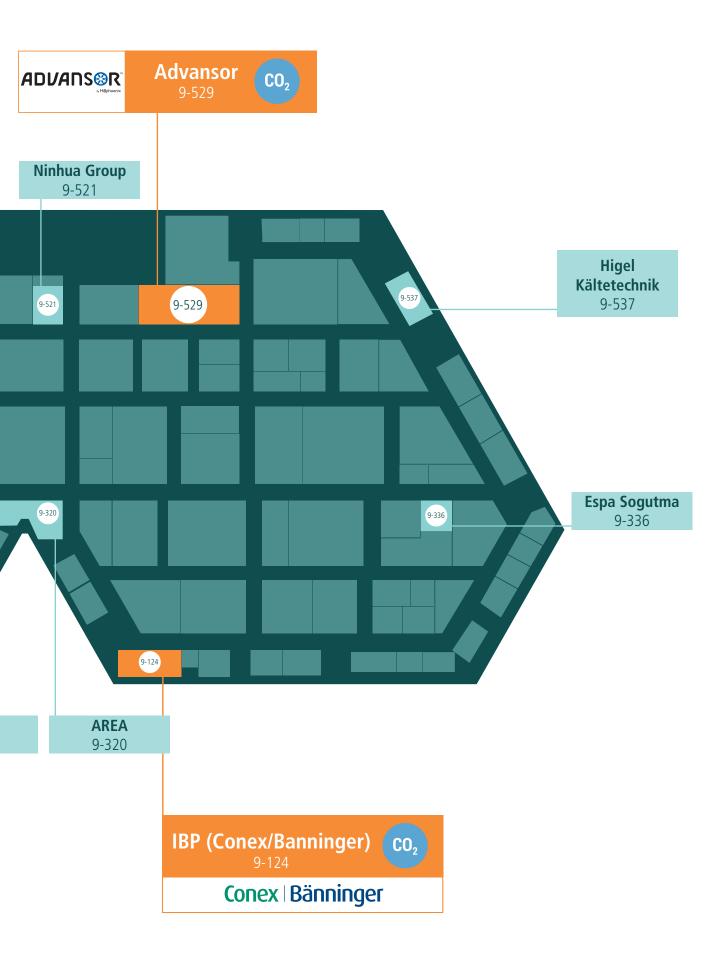












ABOUT THE AUTHORS



MARC CHASSEROT

Publisher / CEO shecco

Marc holds degrees (including two Masters) in Economics, Politics, and Marketing. He has studied at the London School of Economics, INSEAD Singapore, Sciences Po Paris, and the College of Europe. He has specialized in natural refrigerants since 2003. He is an active member of ASHRAE. He founded the leading industry platforms R744.com, hydrocarbons21.com, ammonia21.com and R718.com. Since 2007 Marc is co-founder and CEO of shecco, an independent market development company specializing in bringing natural refrigerants faster to market and with offices in New York, Brussels and Tokyo.



ALVARO DE OÑA

Editor / COO & Head of Media shecco

Alvaro is a shareholder and co-founder of shecco as an independent entity. With a background in social sciences (with a degree in Psychology and a Masters in HR Management) and a postgraduate degree at the London School of Economics in International Relations, he is currently shecco's Chief Operating Officer. As part of his tasks, Alvaro is leading shecco's media team in its efforts to share relevant stories, news and updates on the global transition towards natural refrigerants.



ANASTASIA PAPAGIANNOPOULOU

Maketing and sales assistant shecco

Natassa holds a MSc. in Economic and Regional Development from Aristotle University of Thessaloniki. She has working experience in various sectors but working for the Swedish EPA instilled her with the determination to work for the environmental field. As a Marketing and Sales Officer in shecco, she is applying the above in promoting companies working with natural refrigerants.



CHARLOTTE MCLAUGHLIN

Reporter shecco

Charlotte's background is in Politics and Economics at University College Dublin but she has had a long interest in journalism having worked previously for the BBC and Irish radio stations. As a reporter in shecco, Charlotte is covering breaking news in the natural refrigerants industry. She currently writes for online industry platforms and contributes regularly to Accelerate Magazines.



CHARLOTTE GEORIS

Graphic designer shecco

After her studies in graphic design in Brussels, Charlotte joined shecco to reinforce the media team. As a specialist in print publications, she plays a key role in the lay-out of Accelerate Magazines published by shecco. She is a regular contributor to other shecco projects and publications. For GUIDE Chillventa 2016 in particular she created the concept and all graphic elements in the publication.

shecco

sustain our atmosphere

Natural Refrigerants Faster to Market

shecco is a global market accelerator helping companies to bring their climate-friendly solutions faster to market. In the heating, air conditioning and refrigeration (HVAC&R) sector, we specialise on the Natural Refrigerants CO₂, ammonia, hydrocarbons, water and air. Through our activities we reach a global network of 50,000+ expert individuals.

We offer a suite of products and services across multiple countries, industries and stakeholder groups, in three areas:

shecco Media 😵

Industry platforms, magazines, webinars, Social Media and tailored PR services - for an effective outreach in online and print media.

shecco Events 😵

Conferences, workshops and networking events - your meeting place to discuss important topics with the right decision makers.

sheccoMarketDevelopment 😵

Market research & consulting, public affairs, special projects & global campaigns - tailored services for building your business case.



We work with 150+ clients around the world seeking to advance the business case for Natural Refrigerants, among them:

Advansor, AHT, Alfa Laval, BAC, Bitzer, Carel, Carnot, Carrier, Cimco, Danfoss, Dorin, Embraco, Emerson, Epta, GEA, Hillphoenix, Hoshizaki, Hussmann, Johnson Controls, Liebherr, Mayekawa, Mitsubishi Heavy Industries, Panasonic, Parker, Sanden, SWEP, Temprite, True

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Industrial heat pump technology using natural refrigerants. Save Megawatts of energy by recycling waste heat and upgrading it to high temperature utility or process water.

These applications perfectly match our industrial refrigeration solutions.





Visit us at CHILLVENTA Hall 7A Booth 110

www.mayekawa.eu