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TEKOPOST#21

Summer is here!

... and we've already been treated to some hot days. Let's cool down a little and talk about the latest news from the refrigeration industry.

We grieve for our company founder

Edgar Kirschniok

Edgar Kirschniok was an old-school post-war business man.

Always curious to learn something new and to further himself in life, he began his entrepreneurial activities, among others, as an importer of record players and tweed fabrics. Thanks to his father, who ran a Prestcold agency in the 1950s, Edgar Kirschniokwas already known by many refrigeration specialists and finally joined the refrigeration industry himself.

In the 1960s, he founded SK Kälte which assumed responsibility for constructing entire supermarkets. At the time, there were only two other companies that offered these services alongside SK Kälte.

He founded Prestcold GmbH with Kurt Kohr in 1974. Then in 1982, he founded TEKO Gesellschaft für Kältetechnik mbH, also with Kurt Kohr.

He was always able to capture people's hearts and inspire them with his unbelievable charisma. It didn't matter if you were a customer, supplier or employee – Edgar Kirschniok gained people's trust, could motivate them and had a sympathetic ear for any and every concern.

We will remember him as being a wonderful person, who invested a great deal of commitment and passion to build up, push forward and decisively shape TEKO.

Dear reader,

We are deeply moved. Mr. Kirschniok was a great boss, a kind person and a wonderful role model. We're thankful for the many years we shared with him and will remember him well. Ever since he left TEKO, we have led the company onwards in his spirit and we will continue to master the challenges of the future as he would have wished.

This is why we are delighted to share with you some insight into the different areas of our work in the 21st edition of the TEKOPOST.

We moved to Altenstadt 25 years ago. Lots has changed since then. Take a glance at these changes on pages 4 and 5.

We have even dedicated four pages to our report on the "Natural cooling at Dallmayr". Learn more about what is offered in the historic building that is home to the famous coffee producer.

We have supported social projects for a long time now. This time, we have focused our attention on training and further education, as well as supporting future talent. Alongside our partner Wurm Systeme, we are supporting the "Norddeutsche Kältefachschule (NKF)" in Springe vocational school. Learn more on pages 18 and 19.

Contents

TEKO internal

Information from Altenstadt

Time has flown by! Wasn't it only yesterday that we were just a small, ten-person operation? You're right – a few years have gone by since then. A lot has changed in the meantime. Here's a brief overview of TEKO milestones – from the latest news to almost historic.

TEKO co-founder Kurt Kohr is retiring

After a total of 36 years of TEKO, our senior partner and TEKO co-founder Kurt Kohr retired on 31st December 2018. We thank Mr Kohr wholeheartedly for the many years together, for his business vision, forward-looking ideas and perpetual standing as the 'good soul' of TEKO.

We would like to wish Mr Kohr a fulfilling, healthy and exciting retirement. We hope he spends this time with friends and family, and can fill his days with exciting things for which he otherwise maybe didn't have time. After all, retirement is a new chapter in a person's life – full of freedom, new opportunities and enjoyment!

TEKO and Frigopol look forward to future collaboration

In December 2018, we signed a forward-looking partnership with Austrian company Frigopol Kälteanlagen GmbH (www.frigopol.com) and acquired a majority stake in the company. Both companies complement each other very well in terms of market focus and technologies, and we will use these synergies in plant engineering to meet future challenges together.

This step is set to further strengthen the KKVB Group's position in the European market. In addition, we can respond even more precisely to your requirements and offer ideal solutions.

25 years of TEKO in Altenstadt

TEKO was founded in Frankfurt am Main in 1982. At that time, with just a handful of employees, the focus was on the distribution of technical components (hence the name TEKO, derived from the German **TE**chnischen **KO**mponenten). In 1989, we began producing refrigeration units. After twelve years, the premises in Frankfurt was no longer big enough for our 45 employees. Kurt Kohr and Edgar Kirschniok therefore acquired land of 7000 m² around 30 kilometres away in Altenstadt – which is still where our head office is located today. After building for around a year, the company complex was completed and the entire TEKO team relocated. The official inauguration ceremony was held on 6th May 1994.

„Der Mai ist gekommen . . ." – und der neue Firmensitz der TEKO Gesellschaft für Kältetechnik GmbH konnte an einem sonnigen Freitag, dem 6. Mai, offiziell seiner Bestimmung übergeben werden. 7000 m² Grundstücksfläche, 2100 m² Lagerhalle mit Werkstatt und Hochregallager, 800 m² und 3geschossig das Verwaltungs- und Bürogebäude. Schulungsraum eingeschlossen. Glückwünsche auch von den Herstellerpartnern (linkes Bild): Aspera, AC & R, Castel, Copeland/Prestcold, Eco und Wurm-Elektronik. Alles exklusiv, gemeinsam aber im Verbund.

Just five years later, the generously proportioned premises was extended to incorporate an additional production hall with a test laboratory and training centre. Ten years later (2008), the company undertook its biggest expansion yet, completing a new production facility with associated logistics area, office space and communal rooms.

From 1982 to today, we have continued to develop. We have grown to be a company with over 200 employees, 6 subsidiaries and 5 affiliated companies across 10 countries, and have continued to expand across our site in Altenstadt, doubling our footprint there.

Milestones

1994: Development and manufacture of the first refrigeration systems for foodstuff retailers
2006: First CO2 unit on the market
2007: The CO2 test and training centre opens
2009: First integrated system for cooling, heating and air conditioning
2014: Standardised series solutions with natural refrigerants

New faces at TEKO!

We are pleased to introduce you to new TEKO employees in this edition of the TEKOPOST. We are delighted to welcome every new face – after all, new colleagues are a breath of fresh air and help to continually optimise processes and develop new ideas.

Hassan Abbou: Technical Sales Manager France

Hassan Abbou has been working with the TEKO team as the "Technical Sales Manager France" since November 2018.

The French-born refrigeration technician specialises in the design, planning, installation and maintenance of refrigeration and air conditioning systems, and brings with him 10 years of experience in commercial and industrial refrigeration.

Thanks to his previous employment with installation companies and manufacturers of compressors and multi-compressor systems, Hassan Abbou understands the demands of the French market, customer requirements and the features of refrigeration applications with CO_2.

Hassan Abbou will offer technical advice and support for customers and projects associated with foodstuff retailers, logistics and foodstuff production. TEKO is delighted to welcome this new skilled employee.

Sorin Mocanu: Technical Support

Since April 2019, Sorin Mocanu has been supporting our company in the "Technical Support" department.

Sorin Mocanu was born in Romania, studied mechanical engineering with a focus on refrigeration technology there, and graduated with a Master's degree in 2003.

Thanks to his experience at different Romanian refrigeration companies, he has acquired wide subject knowledge in a range of fields – both technically and relating to projects – and therefore has knowledge of the Eastern European market.

At TEKO, Sorin Mocanu is supporting colleagues in the "International Technical Support" office. He focuses on the technical design and tender preparation for projects related to CO_2.

Robert Kiefner: Quality & Service

Robert Kiefner has been a member of our "Quality & Service" team since June 2019.

The expert refrigeration plant engineer previously worked as a deputy workshop manager for a manufacturer of refrigeration systems. He then sailed the seas with AIDA Cruises and worked there as a "Refrigeration Technician / HVAC Engineer & Inspector for Carnival Shipbuilding".

But his tasks on a cruise ship were not "refrigeration" enough for Robert Kiefner. This is why he now supports our Q&S team, investigating returned compressors and their possible faults, and intensively follows internal quality deviations to eliminate them.

Tatjana Zolotova: Sales department

Tatjana Zolotova has been supporting our colleagues in the South Sales department since January 2019.

Tatjana Zolotova was born in Russia. She speaks Russian and Lithuanian (mother tongue) and thanks to her degree in Education, Literature and Languages, she also speaks German, English and Italian. She is currently learning Chinese, too. She moved to Germany (Munich) at the end of 2018.

At TEKO, Tatjana Zolotova is supporting the Sales department in our office near Munich. This includes all tasks associated with order processing.

DID YOU KNOW...

Every week, we receive a delivery of fresh fruit from a local organic supplier. That way, our staff get to have their daily dose of vitamins. It's quite astounding what we've managed to polish off in 2018!

1053 kg	bananas	110 kg	kiwis
912 kg	apples	73 kg	peaches
520 kg	pears	27 kg	strawberries
295 kg	clementines	19 kg	persimmons
137 kg	grapes	11 kg	blueberries
128 kg	plums	152 kg	Miscellaneous

A feast for the senses at Dallmayr delicatessen

... and our ROXSTA is taking on cooling duties.

Everyone recognises it. The historic building of the Dallmayr delicatessen in Munich. And anyone who hasn't personally visited it may still be aware of the building – especially the coffee department – thanks to the TV advert.

However, the headquarters in Munich don't just sell coffee, but rather a comprehensive range of delicatessen products, including chocolates and exquisite pastries, wines, sausages and ham, fruit and vegetables, fish, cheese, bread and fresh pasta, not forgetting the deli counter serving hot and cold dishes. There is also a gourmet restaurant, a Champagne and oyster bar, a coffee shop, a catering service and an online shipping service.

The goods for sale in the delicatessen are largely produced in house: the second floor is home to a prep kitchen where 70 chefs prepare gourmet salads, dishes for a variety of counters, miniature cream tarts and many other tasty treats.

In 2017, Dallmayr started undertaking comprehensive renovation and modernisation works on the delicatessen building on Dienerstraße. First, the former "Lukullusbar" was converted, extended and re-opened as the "Dallmayr Bar & Grill". Diners can now enjoy some scrumptious morsels in an area measuring 30 square metres. The shop floor got a facelift in 2018. New service counters, wider aisles, new lighting and

The famous yellow building of the Dallmayr headquarte centre. Anyone who loves delicatessens of every kind can six-storey building on Dienerstraße.

a new larger delicatessen serving hot and cold dishes that are always freshly prepared. The meat chillers and the last cold stores in the basement were refurbished in 2019, and 2020 will see the patisserie and chocolate area be transformed. However, it's not only the restaurant and shop floor that have been modernised, but the entire refrigeration system, too. K.E.D. Kälte- und Klimatechnik GmbH based in Bischofsmais undertook the refrigeration modernisation work.

Christian Kraus (head of the "Dallmayr" project at K.E.D.): "*To avoid disrupting the busiest periods at Dallmayr, the building work starts every year after Easter and runs until the beginning of Oktoberfest. As the day-to-day business must run as normal during this period, it is important for K.E.D. and Dallmayr to work together closely and the cooperation has been very positive. For*

each of the conversion phases, individual areas were cordoned off by drywalls so that the sales department could run as normal across the rest of the business."

rs in Munich's city not miss out on the

Refrigeration solution – natural CO2

The R 134a / R 404A unit, which has been running for 20 years and supplied the cold storage rooms in the basement and the cool counters on the shop floor, was replaced by a CO2 unit.

"Twenty years is a very long time for a refrigeration system to be in operation. On the one hand, costs for replenishing refrigerant increased due to the refrigerant situation. On the other, the unit's efficiency was of course no longer satisfactory. Modernisation was crucial here. Dallmayr opted for the environmentally friendly, future-proof refrigerant CO2, which we can only support. Since we have worked well with TEKO over many years and already have a great deal of experience with CO2 units, we chose a TEKO ROXSTAsmart." – explains Christian Kraus.

The ROXSTA*smart* is used to cool 20 cold storage rooms, 63 refrigeration cabinets, two flake ice generators and a special evaporator at the butcher's counter on the shop floor. It was particularly challenging to move the ROXSTA*smart* into the historic building in the heart of Munich's city centre. *"We used a goods hoist to position the machine in the building's cellar. The corridors in the cellar are extremely narrow, which is why there wasn't enough room for a forklift. We therefore needed two lift trucks and six people to manoeuvre the unit through the narrow, labyrinthine corridors to the machine room. It was a real feat of teamwork."* – remembers Christian Kraus.

K.E.D. installed a CO2 dual flow cooler manufactured by WHITELINE for the butcher's counter. Since the customer requested that it was completely hidden, the cooler was encased in specially designed metal cladding. Dallmayr also requested that the staff's working comfort was taken into consideration by ensuring that they couldn't feel any cold draughts. To protect staff, the supply air is optimised using an evaporating pressure regulator installed on the suction line and by running the EC fans at a lower speed.

K.E.D. was faced with another challenge outside the building. The gas cooler also needed to be concealed somewhere. Since the refrigeration measures were being implemented while the business was still running, K.E.D. was unable to swap the condenser directly.

Gas cooler – hardly visible from the courtyard

The waste heat from the refrigeration system is used as part of the TEKO COOL2HEAT*basic* solution to heat service water. The heating energy is provided by means of district heating and the air conditioning is supplied by a cold water chiller on the roof.

Control electronics – Wurm Systeme

The high-quality goods produced by Dallmayr demand a great deal from the refrigeration and control engineering – after all, quality must always meet customers' high expectations and Dallmayr's own demands from selecting and preparing ingredients to presenting and storing the goods.

Storing the goods in refrigeration cabinets is something that requires particular attention. In this instance, aspects relating to the correct storage temperature, the lowest possible dehumidification of the goods and gentle defrosting cycles for the refrigeration cabinets all play a key role. All these demands are met by the FRIGOLINK product platform from Wurm Elektronische Systeme in Remscheid. Yet another reason for equipping even the smallest of cooling points with these benefits. In total, the project has over 80 cooling points with which the system has been fitted. Energy consumption is thus another of the project's focal points.

Another important aspect is the requirement relating to quality assurance, which is covered by the comprehensive software solutions offered by Wurm. There is a tailored solution for every field of interest.

For more information about Wurm, go to
teko-gmbh.com/en/products/control-electronics
or wurm.de/en

"The 'Dallmayr' project was one of the most demanding I've worked on. But that's what makes it so exciting. Especially since we had to incorporate a few custom solutions, too, such as the air conditioning for the cooking zones and the IT area. The installation and air conditioning for the butcher's counter was particularly special. It goes without saying that technology was at the forefront here – but with the requirement that the installed technology could not be seen at all. The good thing about Dallmayr is that the proposed solutions were well received and subsequently implemented. Since the renovation works are not yet complete, there will surely be a couple more unforeseeable requests that need to be implemented. We're looking forward to these challenges since the entire project only works thanks to the excellent cooperation between Dallmayr and K.E.D." – explains Christian Kraus.

Description of the system technology

Facts & figures

A total of 86 cooling points:

- 16 MT cold storage rooms
- 4 LT cold storage rooms
- 5 MT refrigerated cabinet
- 6 MT refrigerated counters
- 13 MT service counters
- 7 MT substructure cooling systems
- 26 MT refrigerated drawers
- 5 MT refrigerators
- 1 LT refrigerator

Refrigeration system requirements

Refrigerant R 744 (CO_2)

ROXSTA*smart*

- Medium temperature cooling
  4 x Frascold compressor (1st compressor with frequency converter)
  70.8 kW (to -8 / $t_{GK\ out}$ 38 °C)
- Low temperature cooling
  3 x Frascold compressor (1st compressor with frequency converter)
  16.0 kW (to -32 / t_C -8 °C)

Control

Wurm control electronics FRIGOLINK:
multi compressor system, medium-pressure and high-pressure valves, gas cooler control, heat recovery unit (COOL2HEAT*basic*) and all cooling points

Heat recovery

COOL2HEAT*basic*:

max. capacity per unit 100 kW
(Water inlet 30 °C / water outlet 65 °C)

Special features

- Frequency converter for each suction pressure stage
  (medium/low temperature cooling)
- COOL2HEAT*basic* heat recovery
- WHITELINE gas cooler with 3 EC fans

TEKO goes industrial!

Ammonia (propane) for industrial refrigeration technology

Ammonia has been the leading refrigerant in industrial refrigeration technology for decades. As well as having a GWP of 0, the medium is unparalleled in terms of efficiency and flexibility throughout the capacity range. Moreover, ammonia is a cost-effective refrigerant that will be available in the long term.

Propane single-compressor units (AMMON-S-H / AMMON-S-V)

In addition to our proven propane "AMMON" compound machines, we have been manufacturing propane single-compressor units since 2018. Depending on the application and cooling performance required, these can be installed on a refrigeration unit to suit your capacity range. In general, this ensures high operational reliability and guaranteed refrigeration performance. Our machine series is standardised for the manufacturing process, therefore offering short lead times with attractive delivery times and the best quality.

The single-compressor units are specially designed for medium temperature cooling, low temperature cooling and air conditioning, and cover a large **capacity range: 188 to 800 kW** (to -10 °C / tc +35 °C)

Compressor

When it comes to the centrepiece of our machines, we trust the many years of experience offered by manufacturers Mayekawa and Bitzer. For smaller capacity ranges up to approx. 400 kW (-10 / +35), we have opted for the open OSKA-85 screw compressor series by Bitzer and the i-series by Mycom. Larger capacity ranges up to 800 kW (-10 / +35) are fitted with the largest open screw compressors by Bitzer – the OSKA-9593 and OSKA-95103.

Motor

The screw compressor is driven by flange-mounted, 1-speed three-phase motors that are generally equipped for operating with frequency converters. All motors fitted are in the IE3 energy efficiency class and are available in the IP23 and/or IP55 protection class.

Oil separator

We also offer you the choice between a vertical or horizontal oil separator. Both variants feature 3-fold separation as standard and guarantee a maximum oil pour rate of 5 ppm. The third separation level can be removed if requested.

Oil cooler

When choosing an oil cooler, we have opted for a shell and tube heat exchanger. Thanks to their low-maintenance design, they ensure efficient and reliable operation over many years.

Base frame

To prevent vibrations and reduce noise, all of the above components are mounted on a torsion-resistant frame. This allows the single-compressor units to be manufactured quickly and we are able to offer you a certain added value for installation and maintenance work. As an example, a stainless steel drip tray is fitted below the compressor block to collect any condensation that may fall. It also serves as an oil drip tray when carrying out maintenance work on the screw compressor. Moreover, the motors are stored on U-profiles made from polyethylene. These profiles are used as "guide blocks" and allow maintenance staff to fit and remove the motor safely and easily. The entire machine unit is positioned on height-adjustable rubber-bonded metal feet to compensate for any unevenness in the floor and to minimise the transmission of structure-borne noise to the base plate in the machine room.

Heat recovery pump station (HEAT*rec*)

Our heat recovery pump station "HEATrec" came about from wanting to "use waste heat wisely". This additional module collects the heat energy generated by the screw condenser oil coolers using a plate heat exchanger and uses it to support the customer's service water network or hot brine production. If there is no heat demand, the heat energy described above is released into the atmosphere via a 3-way motor valve on an on-site heat exchanger. To ensure trouble-free operation, generally two service pumps are installed. Thanks to the narrow and low design, almost any pre-installed refrigeration system can be retrofitted with this module.

Propane evaporative condenser (CFR-A / CFR-C)

In addition to our propane machines, we can also offer you the propane evaporative condenser manufactured by "DECSA". These are available in two variants: Suction-ventilated with axial fans (CFR-A) and pressure-ventilated with radial fans (CFR-C). While the models in the CFR-A series are significantly more efficient to run since they use suction-ventilated axial fans, the models in the CFR-C series are much quieter to run thanks to the optionally available air-intake and exhaust silencers.

Both series cover a **capacity range of 190 to 7300 kW**.

Why do you need an evaporative condenser in the first place?

On the one hand, an evaporative condenser allows you to have significantly more capacity in a smaller installation area than with purely air-cooled condensers. On the other hand, the efficiency enhancement of the refrigeration system plays a crucial role. Due to the principle of evaporation, considerably lower condensing temperatures can be maintained throughout the year.

Particularly in summer, when the greatest cooling capacity is required and the refrigeration system is running the longest, using an evaporative condenser will save on energy costs many times over. Due to the high outside air temperatures,

air-cooled condensers often reach their limits so that condensing temperatures can reach > +48 °C. By using the DECSA evaporative condenser, it is ensured that the condensing temperature does not exceed +33 °C, even when outside air temperatures are high.

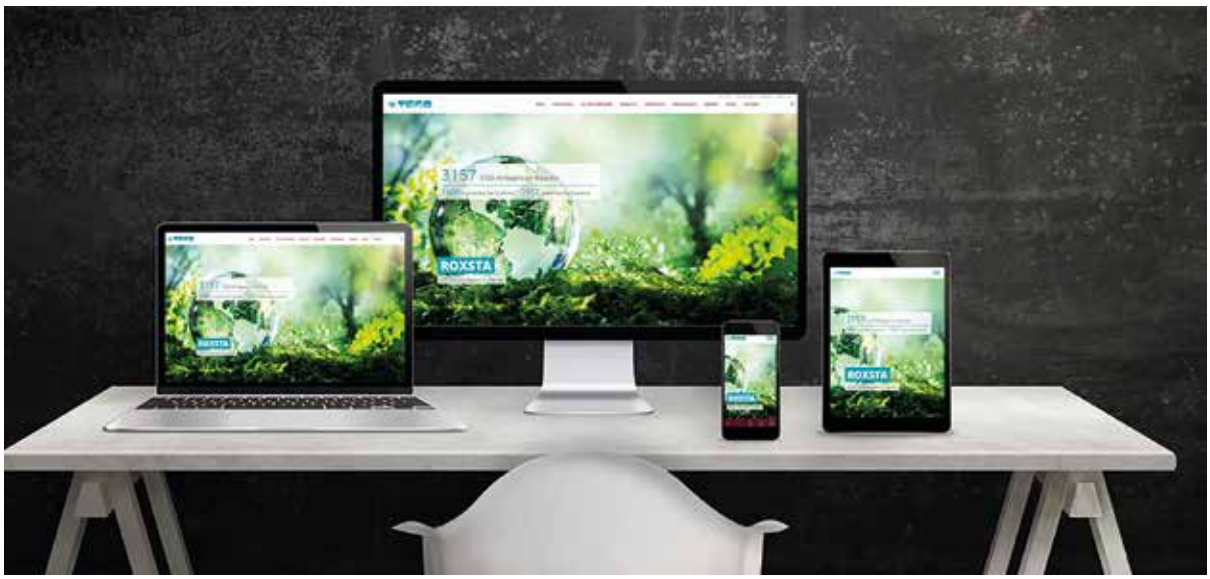
In general, it can be assumed that lowering the condensing temperature by 1 K each will save between 2-3% of the drive energy required by the refrigerant compressors.

Equipment and construction features:

- Tube coil heat exchanger in galvanised heating tape
- Housing plates hot-dip galvanised (Z-725 = 725 g zinc per m2)
- Additional powder coating of the hot-dip galvanised housing plates (DECSA Coating Plus)
- Easily removable stainless steel strainer inserts on the pump suction side
- All motors are IE3-compliant
- Narrow design to reduce transport costs and necessary installation area
- Continual capacity and quality controls guarantee many years of reliable operation

Options:

- Heat exchanger tubes can be fully (100%) or partially (50%) ribbed
- Heat exchanger made from stainless steel pipes
- Quite and extra quiet axial fans (CFR-A only)
- Air inlet and outlet silencers (CFR-C only)
- Fill level sensor to precisely determine the water level in the basin



May we introduce...?

Our new website!

We have been "renovating" for a long time, which is why we were even more delighted to finally launch our new website – **www.teko-gmbh.com/en** – at the end of February. Featuring a modern design, freshly prepared content and adapted to your end device, of course: browse away on your PC, tablet or smartphone.

In the News section, you will find the latest information about TEKO, our products and innovations from the world of refrigeration. Are you an operator, refrigeration specialist or OEM manufacturer? Choose the right section for you to get more information that meets your needs. Get to know our range of products or experience TEKO products being used (references). On our Careers page, there are exciting jobs waiting to be discovered, as well as the dates for future training sessions and events.

Before we describe our new website to you in too much detail, simply take a look for yourself. We hope you like our new online presence as much as we do, and wish you lots of fun while discovering it!

www.teko-gmbh.com/en

Have you already discovered our social media channels?

Follow us on Facebook, LinkedIn and YouTube, and keep up to date with the latest industry news!

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youtube.com TEKO Kältetechnik

Exhibitions & Events

REFRIGERA // Piacenza (Italy)

REFRIGERA (from left: O. Rauer, H. Abbou, A. Meier)

From **20th-22nd February**, we attended **REFRIGERA in Piacenza** – Italy's exhibition focusing on the entire production chain for industrial, commercial and logistical refrigeration technology.

CO_2 is also top of the rankings as a refrigerant in Italy. For this reason, we presented some of our CO_2 solutions at REFRIGERA. Using the **ROXSTA*air***, **ROXSTA*cube*** and **ROXSTA*smart***, our colleagues Andreas Meier, Oliver Rauer and Hassan Abbou had many enthusiastic conversations and shared the latest news from the refrigeration industry.


Girls & Boys Day

Girls & Boys Day // TEKO in Altenstadt

On **28th March**, three boys and a girl visited us as part of Girls & Boys Day, where they explored different TEKO departments: from a tour through the Production department and the office to the training workshop, where the children were able to let their creativity run wild when bending and soldering pipes. Of course, they took their work home with them as a memento. To conclude the day, they worked as a team to prepare packages for shipping in the Outgoing Goods department.

They all had a lot of fun! We're delighted that we were able to give the children an insight into day-to-day life here at TEKO and hope that we'll see one or two of them within the industry in future.


ÖKKV annual meeting

ÖKKV annual meeting // Geinberg (Austria)

The ÖKKV annual meeting held on 4-5th April in Geinberg saw Alexander Wirsching give a presentation explaining how simple, efficient and cost-effective CO_2 solutions can be.

ATMOsphere Australia // Melbourne (Australia)

On **8th & 9th May, ATMOsphere Australia was held in Melbourne**. Colleagues Andreas Meier and Jonas Linnemann were there. As part of a "Technology Roundtable", Andreas Meier demonstrated suitable technical solutions using natural refrigerants that meet the climatic conditions Down Under.

Experts from the refrigeration industry, interesting presentations and interactive discussions ensured this event was the ideal platform for exchanging knowledge and increasing the use of CO_2 and CO in Australia. We would like to thank Shecco for organising such an interesting event.

ATMOsphere Australia

Trainee Day

Trainee Day // Duisburg

On **6th June**, the magazine DIE KÄLTE + Klimatechnik organised the **4th Trainee Day** at the Bertolt Brecht vocational college in **Duisburg**.

130 trainees studying on the "Mechatronics engineer for refrigeration technology" course attended five presentations to hear the latest industry news. Our colleague Jonas Linnemann was there to report on the "features and applications of CO_2 as a refrigerant".

Further events in 2019 and 2020:

SAVE THE DATE!

- **ATMOsphere Asia**
  24th September 2019 in Bangkok
- **RHVAC Bangkok**
  25-28th September 2019 in Bangkok
- **ATMOsphere Europe**
  16-17th October 2019 in Warsaw
- **Gulfood Manufacturing**
  29th-31st October 2019 in Dubai
- **SIFA Paris**
  19th-21st November 2019 in Paris
- **EuroShop**
  16-20th February 2020 in Dusseldorf
- **Chillventa**
  13-15th Oktober 2020 in Nuremberg

TEKO & Wurm

Support for the NKF Springe vocational school

There is a huge skills shortage in the refrigeration industry. Promoting young talent and raising the industry's profile is an on-going topic and should be right at the top of the agenda for all refrigeration companies.

This is exactly what the "Norddeutsche Kältefachschule (NKF)" in Springe does! The guild offers further education opportunities in the fields of refrigeration, air conditioning and electrical technology, therefore making a sustainable contribution to ensuring the future of the refrigeration installation trade.

The college offers modern, fully equipped teaching and seminar rooms, and focuses on handicraft skills. Students benefit from practical training facilities, such as the bench and refrigeration workshop. This is where basic training is held in relation to CO_2 unit construction, sharing expertise in flammable refrigerants and general unit construction – it is also where examinations and preparatory courses are held.

Jonas Heile (NKF lecturer): *"In the bench and refrigeration workshop, refrigeration units can be installed on special racks at different configuration levels. On some courses, these racks are dismantled and stored together with the condensing units. The repeated assembly and temporary storage of the condensing units quickly results in irreparable damage. Moreover, the sets must be forever converted for certain refrigeration circuits. Not only does the appearance of the condensing units suffer, but so does their functionality, too."*

TEKO support

Mr Heile sought a robust, long-lasting solution that offers a high degree of flexibility thanks to the different individual components, and therefore decided to approach us.

In light of the skills shortage and wanting to promote young talent, it goes without saying that we wanted to offer our support. We found the best solution together. Installing condensing units should be incorporated in the classroom, offering more opportunities to practise. Following in-depth planning, we followed a drawing from NKF to manufacture base plates for the condensing units, and supplied unit components for around 70 units in total.

"The individually manufactured condensing units are very stable. This allows for units to be configured in all the necessary ways. The components can be swapped quickly, in turn making maintenance far more convenient. The stable base plate allows for continual storage and retrieval, and simplifies transportation. In brief, the condensing unit is perfectly suited for training practice" – explains Jonas Heile.

Wurm support

While working together, Mr Heile shared another problem: *"The cell workshop has 16 cold storage cells and each one is fitted with a complex refrigeration system. Until this point, the training facilities were controlled using different control systems produced by different manufacturers. The main thinking behind this was to demonstrate different approaches. In practice, this proved to be impractical. The controllers did not match our training methods, there was no consistent, comparable standard – in other words, the training practice was not optimal. Moreover, there was no remote data transmission."*

We got in touch with our partner, Wurm Systeme, straight away. Wurm were also inspired by the project and fitted the 16 refrigeration systems with the latest electronic control devices, including EDI and temperature logging.

The condensing units are controlled using the CRC refrigeration controller. As a result, the controller also controls the evaporator and the electronic e-valve. It controls different types of defrosting that are required by the tasks. The different types of refrigeration points make it possible to react quickly and easily to changing requirements and to change parameters accordingly. The sufficient number and precision of sensors keeps a permanent record of the unit's running behaviour. Frigodata XP software supports teaching staff to record and evaluate the unit behaviour. This means they can quickly see whether the units installed meet the tasks set. The visual representation is now integrated in the classroom and helps to convey an understanding of the unit's running behaviour.

"The units in the cell workshop are predominantly used for troubleshooting, as well as completing the appropriate exams. Trainees regularly dismantle the units as part of the "unit construction" course and then rebuild them according to the specification. Between courses, the units are left running for troubleshooting purposes, and are monitored remotely using Wurm controls. Temperature logging allows daytime and nighttime running to be recorded. This means we can see whether the unit is truly ready for operation with the chosen settings," explains Jonas Heile.

A circular concept – adapted to users' needs

As proven many times already in the food retailing sector, the gears at TEKO and Wurm merge together perfectly. And they have done so again here at the Norddeutschen Kältefachschule – a world away from food retailing applications.

The teaching design at the NKF supports students and gives them certainty that they have opted for an interesting, promising profession. This is something that we – TEKO and Wurm – can only encourage.

Legal notice: The TEKOPOST was written as a joint project by TEKO GmbH employees. The contributions reflect the authors' opinions. There shall be no legal obligation for TEKO GmbH derived from this.

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