

Bio-Processor KFF, Germany

Award winning manufacturer embraces risk-free closed cooling

For Germany's largest producer of organic meat products, quality and operational reliability is key. Kurhessische Fleischwaren (KFF) GmbH needed to replace its old R-22 refrigeration units, to comply with new EU regulations and ensure reliable operation of its growing refrigeration facilities, without increasing running costs.

Daikin's ZEAS all-in-one refrigeration system provided an ideal solution for the company's cooling and deep-freezing operations. A total of 28 inverter-controlled ZEAS systems were installed to control temperatures within the 10,000 square metre production and storage facility. The system uses the future-proof refrigerant R-410A to provide a reliable closed cooling chain, which is fully compliant with new EU regulations forming part of a planned phase-down of HFC gases.

Proud of its nationwide brand, the Fulda-based manufacturer was keen to uphold its award winning reputation. *Our products are made from the best raw materials and in a proven craft tradition. With us, quality comes first. ZEAS technology, offered us high operational reliability in the cooling chain, together with efficient operations,* explains Erich Michel, Master Butcher and Managing Director, KFF GmbH.

Getting the right mix

The factory hall is split into production, warehousing, packaging and order picking areas, all with varying temperature demands ranging between -30° C to + 12° C. An increase in production meant additional cooling was required. With limited space for expansion, a more efficient solution was sought.

On the basis of their positive experience with four ZEAS cooling chambers installed in 2013, the company decided to

adopt the new technology throughout. With a total cooling output of 58.8 kW, six ZEAS units now provide deep-freezing temperatures in three deep-freezing chambers, while normal refrigeration operations are met by 22 ZEAS units, with a total of cooling output of 461 kW. The bespoke system design was the result of close collaboration between Daikin's technical department, the Engineering Project Manager, Architect and Installer.

Maximum efficiency for partial-load operations

With its small footprint and high energy performance, ZEAS is a highly cost-effective and space-saving replacement for legacy systems, combining cooling and refrigeration requirements in a single, integrated unit. The temperature needs of different cooling zones can be met by connecting several, individually controlled cooling units to the outdoor unit. Inverter-control offers efficient operation even at partial loads, while delivering the necessary capacity to meet peak demands. The ZEAS system is based on established next generation Daikin VRV (Variable Refrigerant Volume) technology, which is proven to enhance efficiencies significantly.

As a result, KAFF now has the possibility of reacting flexibly to different production requirements. In our planning, we had previously considered other system concepts, such as for instance centralized CO_2 cold brine equipment. This concept was rejected, due to a so-called 'single point of failure', namely that the entire system would malfunction completely in the event of the failure of any one of its components. With the ZEAS system we have achieved a confidence in the low maintenance of operations, even if one of the components of the facility should fail. Says Isabelle Horst, Project Manager, Rauschenberg Ingenieure GmbH Engineering.

Reliable operation with no disruption and continuous backup

A smooth switchover with no downtime was essential to avoid disruption to business operations, which meant installing the system at night. Each cooling chamber is refrigerated by two separate ZEAS units to provide an especially high redundancy. *"The ZEAS units are distributed over the flat roof and installed on five different installation surfaces. The entire piping of the cooling system was installed on newly assembled pipeline routers. For the protection of the installation on the roof, all of the pipeline routers were provided with rust free aluminium covers",* explains Artur Scholz, the Managing Director, Rhön Kälte GmbH.

A series of evaporators connected to different ZEAS units provides continuous backup to ensure room temperatures are maintained at all times.

Intelligent controls guarantee operational reliability and high efficiency

ZEAS' intelligent controls continuously monitor the system, reporting on any malfunctions and providing data on energy consumption online to enable optimal savings. *"The control unit, together with the ZEAS facility, forms a complete concept, which guarantees KFF reliable cooling operations. An added plus point is the flexibility of the concept, with which the required cooling output can always be adapted to changing production requirements"*, concludes Architect Peter Riethmüller, Staubach & Partner Architekten.



ZEAS technology provides reliable cooling across a range of temperatures



Maintaining quality takes priority for the ethically sourced manufacturer