

Germany's most modern bakery

As of February 2010, bakery products are produced in Bergkirchen for 1,100 REWE, TOOM and PENNY outlets.



Glockenbrot Bakery was taken over by the REWE Group in 1986.

Line of Business:	Commercial Refrigeration
Application:	Supermarket Cooling
Country / City:	Germany / Bergkirchen
Fluid:	NH ₃ , CO ₂ , Temper -20, Temper -40
Product:	Wall/ceiling air cooler GGHN, Evaporator CXGHN, Drycooler GFH, Condenser AGVH

The company Glockenbrot Bäckerei GmbH & Co. oHG produces bakery products at the bakery Backwerk Süd (in the district of Dachau, near Munich) for outlets all throughout Southern Germany, processing 100 tonnes of flour every day. But it is not only the manufacturing technology which meets the highest of standards. Already during planning, environmental protection aspects and a well-thought-out energy concept were central concerns. For instance, the use of district heating and heat recovery reduces energy consumption by 40 % compared to conventional systems. Accordingly, from the very beginning, there was also an emphasis on achieving the most positive energy balance possible with regard to the refrigeration system.

ation system, which was planned and realised by Jan Schulte from the company Schiessl, together with the contracted refrigeration engineering company Peters from Meerbusch.



It was decided that a NH₃/CO₂ cascade system was to be used in order to cover normal refrigeration and freezing requirements, whereby the coolant Temper -20 and ice water are also cooled by means of the NH₃ compound. The cold brine serves the purpose of supplying the Güntner GGHN drycoolers in the pre-cooling rooms; it is cooled in the system by plate heat exchangers with a capacity of 700 kW.



GGHN drycoolers in cold storage rooms

The Güntner CXGHN evaporators used in the deep-freeze rooms have an integrated warm brine defrosting system. The decision to use warm brine defrosting aids the energy effi-

ciency of the refrigeration system, as it contributes to the utilisation of waste heat and saves the additional costs of defrosting deep-freeze evaporators and air coolers in the normal cooling circuit, which electric defrosting, for example, would entail.

brine for defrosting is generated with an oil cooler. The system includes six defrosting coils (each 22 kW); in total, there are 16 defrosting points to be loaded. For defrosting in the deep-freeze area, Temper -40 cold brine is used. The ammonia condenser AGVH has eight step-controlled and two frequency-controlled fans. From the set minimum condensing temperature $T_{min} = 32\text{ °C}$, the fans are operated with a combination of stepless and stepped control. “Our concept has consistently proven itself,” says Jan Schulte. “The system runs without problems and the components are also of the right quality.”



NH₃/CO₂ machine assembly within the container



NH₃ condenser AGVH



CO₂ evaporators in the deep-freeze room

Heat which is not used for defrosting is dissipated by means of a Güntner GFH drycooler with a thermal capacity of 100 kW. The warm