Rittal cooling units

COOL
WHEN THE HEAT IS ON

Soltau is something of a hotspot. When the ovens at **Harry-Brot** reach over 200 degrees Celsius, the bread rolls and loaves aren't alone in feeling the heat. The company's staff and equipment also work up a sweat. Despite a room air temperature of 45 degrees, everything needs to run like clockwork – excellent test conditions for the new **Blue e+ cooling units from Rittal.**

Text: Dr. Jörg Lantzsch

A wonderful aroma of bread fills the air. Every day, the ovens at Harry-Brot in Soltau turn out products including some 180,000 sandwich loaves. Freshly baked, they make their way through the production section and are then packaged and loaded into lorries to embark on their journey to supermarkets across Germany. The country's biggest manufacturer of bakery products is a household name, with a range that includes everything from brown and wholemeal bread to sliced loaves for making toast and sandwiches.

To ensure everything goes like clockwork, systems need to be in continuous operation. It hasn't always been that way, however. Heat-related breakdowns used to be a regular occurrence at the plant. These were mainly caused by the failure of control technology installed in enclosures, and the consequences were huge. "When our systems go down, it also brings our lorries to a standstill, and we are unable to deliver our bread. That's a big problem, because our customers expect to find fresh bread on the supermarket shelves every day," explains Björn von Frieling, the site's Workshop Manager.

Even though temperatures outside the enclosure can often reach 45 degrees, temperatures inside are much, much higher. They have been measured at between 60 and 70 degrees in the past – hardly the ideal conditions for sensitive electronics, especially when installed in relatively small compact enclosures. Rather than climate control units, Harry-Brot had simply been using fan-and-filter units for these enclosures.

Do you have cooling problems in production, and are you looking for other ways of cutting energy consumption?

"Our systems are reliable, and we have roughly halved our energy consumption."

Björn von Frieling, Workshop Manager at Harry-Brot in Soltau

The reason for this was simple. "Cutting-edge, energy-efficient Blue e+ cooling units from Rittal were previously only available with high cooling outputs of at least 1.6 kW – definitely too high for our purposes," explains von Frieling. He was therefore delighted when Rittal launched the new Blue e+ S-units with lower cooling outputs. "These are ideal for the levels of heat generated by our application. In consultation with the Rittal sales team, we agreed on a trial here at the plant to put the units through their paces in our operation," he says.

SURPRISING TEST RESULT

Besides ensuring high system availability, Harry-Brot also considers reducing the company's carbon footprint to be a top priority and therefore prefers to invest in energy-efficient technologies. Accordingly, it used the trial to compare a new energy-efficient Blue e+ S cooling unit with a Blue e unit that had also previously been available with a lower cooling output. For both units (500 W), the energy consumption was measured continuously during the trial.

Image above:
Every day, the ovens at Harry-Brot in Soltau turn out products including some 180,000 sandwich loaves – a real climate control challenge for equipment and systems.

Top-left image: Bread dough moving along a conveyor belt. If systems go down, this also brings the lorries to a standstill, and no bread can be delivered.

Top-centre image: Rising summer temperatures have made the role of cooling units even more important.

Top-right image: The trial produced a surprising result. The new Blue e+ S cooling units consume 60 per cent less energy.

The result for the first five months surprised von Frieling. "I wouldn't have expected a result like that," he reveals. The Blue e+ S unit consumed just 248 kWh of electrical energy, compared with 626 kWh for the Blue e unit. This corresponds to savings of 60 per cent over the entire test period and 884 kWh for the year as a whole. Based on an average industrial electricity price of around 26 cents per kilowatt-hour, Harry-Brot can thus achieve an annual saving of around 230 euros per cooling unit. What's more, Blue e+ S units come with integrated condensate evaporation. Excluding the proportion of energy consumption accounted for by this function, the saving is over 260 euros per cooling unit.

BREAKDOWNS SOON A THING OF THE PAST

Even more important for von Frieling, though, is the higher availability that can be achieved with enclosure climate control. Effective climate control in enclosures means production systems break down less often. "That will make it easier for us to guarantee the delivery of fresh bread," he insists. Production stoppages due to excessive enclosure temperatures are also bad for sustainability. Components need to be replaced or repaired, which requires manpower and materials. The new enclosure climate control system will ultimately mean these resources are not called upon. Dozens of enclosures at Harry-Brot are therefore set to be equipped with Blue e+ S cooling units in the near future.

New technologies for greater sustainability

Harry-Brot was established in 1688 as a small artisan bakery in the Altona district of Hamburg. In the 334 years that followed, it has gone on to become one of Germany's biggest market players – thanks to a corporate philosophy that focuses on the systematic use of new technologies and on sustainable business practices. "Efficiency is the name of the game at Harry-Brot. New technologies such as Rittal Blue e+ S cooling units help ensure continuous improvement in terms of the quantities we produce and our green credentials," says Norbert Lötz, Managing Director for Production and Technology.

FURTHER REDUCTION IN ENERGY CONSUMPTION

The high energy efficiency of enclosure climate control is contributing to a long-term corporate strategy that has already been initiated for the entire production operation. Between 1999 and 2018, the energy consumption per metric ton of flour fell from around 1200 kWh to just over 800 kWh. The Blue e+ S units are helping reduce this figure further. As a result, von Frieling can imagine the system also being used at other company sites in the future. ■

FIND OUT

VIDEO-INTERVIEW
with Björn von Frieling

Teamwork: Workshop Manager Björn von Frieling from Harry-Brot in Soltau (front) and Rittal Product Manager Stefan Eibach are delighted about their shared success.

Heat pipe and inverter control is key

Users of Blue e+ S units can cut their energy consumption by an average of up to 75 per cent. This is made possible by the innovative technology installed in the units, which combines a heat pipe with a separate inverter-controlled compressor. The heat pipe itself works without its own compressor, an expansion valve or other regulating elements, so it uses no power. In situations involving limited amounts of heat or a regular ambient temperature, this means the heat pipe can take care of cooling in a very energy-efficient way. Additional compressor cooling support is only necessary if the amount of heat to be dissipated or the ambient temperature is very high. The compressor's inverter-controlled drive means the speed can be tailored to requirements. This results in lower cooling hysteresis, better energy efficiency and a reduced carbon footprint for the company.