

Cleaning with minus 79 °C

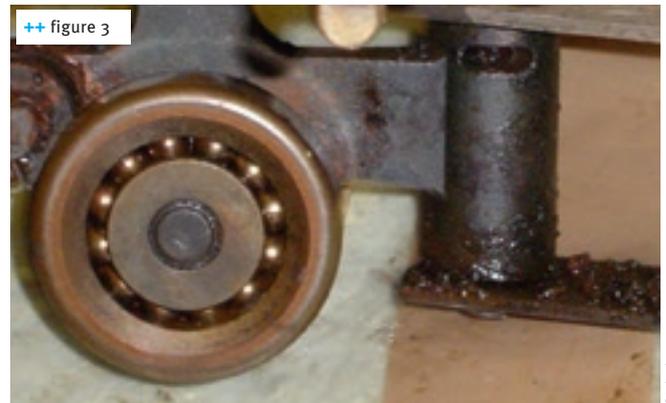
THE DRIVE CHAINS IN OVENS AND PROOFING PLANTS ARE EXPOSED TO ARDUOUS CONDITIONS WHEN OPERATING CONTINUOUSLY AS THEY DO AT THE WBACK GMBH. THE SOFT BREAD ROLL MANUFACTURER RELIES ON THE EFFECT OF A TEMPERATURE OF -79 °C TO CLEAN THE BELTS



++ figure 1
The oven chains are cleaned outdoors every two years

+ There are 300 m of drive chains in the oven and 900 m in the proofer. Grease, dust and abrasion debris are deposited and creep into the tiniest cracks and into the open ball bearings, where over time the mixture consolidates into hard, solid crusts – also made worse in the oven by the high temperatures. In a dilemma between the demand for high production availability and the requirement to prolong the useful lifetime of the drive chains by regular cleaning, Plant Manager Norbert Kugler decided in favor of cleaning by chilling.

Strictly speaking it involves using dry ice. Dry ice is frozen solid carbon dioxide (CO_2), which freezes only at a temperature of -79 °C . The oven chains are changed for cleaning every two years, and are cleaned in the open air outside the production building. The chains in the proofer are cleaned in situ once a year through the inspection flaps. The chains are cleaned by blasting them with dry ice pellets, during which the temperature and movement of the constantly impacting pellets contribute equally to the success of the cleaning. The dirt residues that fall off can be brushed together afterwards.



++ figures 2+3
A ball bearing from the steel chain before cleaning – and after

The Eiskalt Sauber GmbH manufactures the dry ice artificially and free from additives, and presses it into pellets. The dry ice pellets drop down from a storage container and through a metering device into an outlet bend. The negative pressure created in the blasting gun sucks the pellets in and

Eiskalt Sauber

Friedhelm Osada, owner of the Eiskalt Sauber GmbH, Mainhausen, Germany, learned about dry ice cleaning in the USA in the late 1990s and brought it to Germany. Today Osada employs 70 permanent staff at the headquarters in Mainhausen and about the same number of freelancer at ten other sites in Germany. Eiskalt Sauber specializes in cleaning production plant, bottling plant and ventilation and air-conditioning plant, some of it involving the use of robot techniques in places to which access is difficult. The company produces 3,000 t/year of dry ice at its total of four production sites. It uses around 2/3 of this for the cleaning itself, and the remainder is sold. +++

accelerates them to 300 m/s. The frozen CO₂ is then blasted through high performance nozzles and onto the surface that is to be cleaned. The dirt contracts during the contact time due to the intense cooling, and becomes brittle. As a result of the thermal stress thus created, the (dirt) layer separates from the underlying material, and the dirt is then completely removed by the speed of the subsequently impacting pellets.

According to Kugler, the process has many advantages. Cleaning proceeds quickly. The specialist staff that travel from Eiskalt Sauber need only around 4 h for the proofer belts and around 16 h for the oven chains. The method is also efficient, while at the same time it is gentle to the materials and safe. Dry ice has no abrasive effect, does not cause small scratches that encourage new deposits of dirt, and is neither combustible nor electrically conducting. +++

++ figure 4



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++ figure 4
Managing Partners Matthias Geissler (l.) and Dirk Hauer (r.)

++ figure 5



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++ figure 5
Production of another line of buns is planned in Bönen in late April 2014

Wback

Peter Wendeln and Willy Weiler founded the German Wback GmbH in Bönen near Dortmund in 2003. The company specializes in manufacturing hamburger and hotdog buns. A second factory in Leipheim, Bavaria, was added in 2008. Today Wback produces 300m buns per year in Bönen, and another 300m come off the belt annually in Leipheim. A third line will start up in Bönen in April 2014, which will increase the production volume there by a further 300m units per year. Although Bönen uses classical American technology to produce a varying product portfolio batchwise, the focus from the very start in Leipheim has been on the continuous manufacture of identical products, which is why, among other things, the first continuous mixing plant ever used on a bun line in Europe is located there. A total of around 150 employees work at the two sites. Wback expects sales of more than EUR 40m in 2013.

The two founders sold the business to a holding company in mid-2013. The Halder Beteiligungsberatung GmbH in Frankfurt, Germany, has been the majority shareholder since

then, owning more than 80%. Matthias Geissler (43, Finance and Sales) and Dirk Hauer (50, Production Management and Technology), who have worked for Wback since the business was founded, assumed overall responsibility and took a shareholding in the company. Peter Wendeln still owns a minority shareholding and is a member of the advisory board.

It's no secret that Wback's biggest customer is Burger King. The American fast food chain takes more than half of all the buns produced in Bönen and Leipheim. Conversely, this means Wback is also Burger King's biggest supplier of buns in Europe. The two factories currently supply Burger King restaurants in Germany, Austria, the Netherlands and Switzerland and, if bottlenecks threaten, other markets beyond those as well. Burger King has committed itself to further growth in Europe, so the signs also point to an expansion by Wback, with new locations in new markets. The investors behind Halder Beteiligungsberatung have already signaled their willingness to this. +++