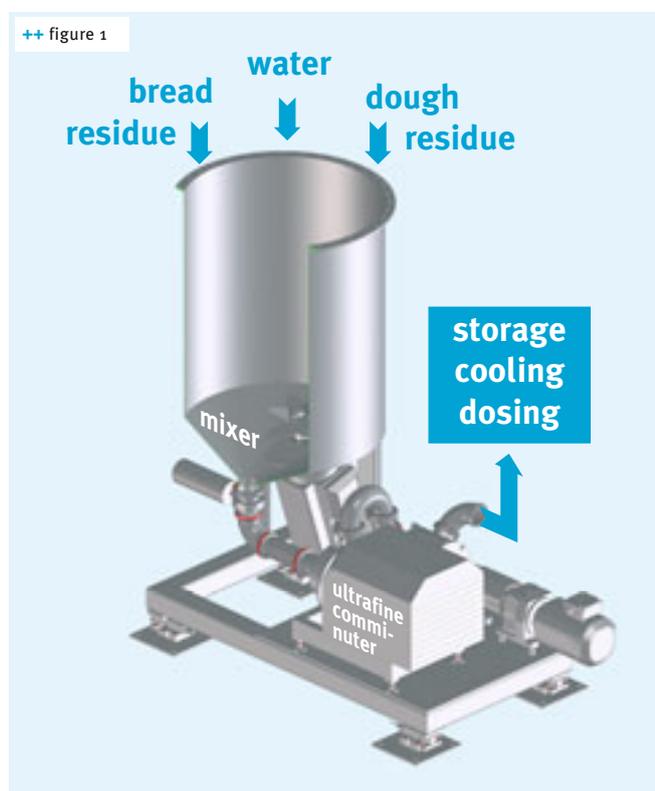


Fine, finer, ultrafine

THE GERMAN SUBSIDIARY OF DAXNER HAS DEVELOPED AN ULTRAFINE PULVERISATION PLANT TO RECYCLE RESIDUAL BREAD AND DOUGH, WHICH IS NOW ALSO AVAILABLE FOR ARTISAN BUSINESSES. IT WORKS WITH A ROTOR-STATOR SYSTEM



++ figure 1

The ultrafine comminuter is suitable as homogenizer for bread residues or as pre-mixer for all-in-batters



++ figure 2

The mash is sliced by the cutting movement of the knife

+ Processing bread residues and dough residues is nothing new in the baking industry. For a long time now, comminuted granulates or pasty mixes of bread residue and water in a ratio of 1:2–2.5 have been produced and then recycled into the dough preparation stage. What is new, however, is the way the Daxner International GmbH Company in Lauda-Königshofen, Germany, has devoted itself to this topic. For this purpose, the subsidiary of the Daxner GmbH Company, Wels, Austria, which has specialized in the construction of pre-dough and sourdough plants, silo installations, yeast dissolvers and bread residue mixers in the bakery technology, has developed a special technique for ultrafine comminution in a rotor-stator system that is now also being used in artisan bakeries. First of all the bread residue, either as whole bread or shredded, is liquefied with a minimum amount of water for 5–6 minutes in a mixing vessel to form a pre-mix. In this case the required proportion of water is only 1.5 times the bread residue, which has the advantage that it basically limits the amount of water in the dough. In the next step the mixture is fed through a pipe into the ultrafine comminuter, which consists of a powerful 15 kW AC motor with an impact knife stirrer and a slip-ring seal. The moving knife corresponds to the rotor and the 150 mm diameter cutter ring is the stator.

The system's pumping action pulls the pre-mixed mash through the cutting gap, which can be 0.3–3 mm wide depending on the customer's requirements, and it is simultaneously sliced by the cutting movement of the knife (at 3,000 rpm). This produces an extremely fine 80–120 µm suspension. Firstly, it is pumpable and secondly, it no longer demixes because the large number of ultrafine particles in the mix can bind more water due to their larger surface area. Moreover the bread particles are not destroyed, since the mix is merely cut and not pressed. According to Daxner's Project Manager Ulrich Huhn, "This yields two important advantages: retention of freshness is prolonged as a result of the larger amount of water that can now be absorbed. Also the end product has more flavour because due to the bread residue a significant proportion of crust, and with it the aromas, is included in the grinding. The ultrafine comminution process has already been used industrially by Daxner for a few years, because the rotor-stator system was originally used in the meat and convenience sector. The company is now addressing a new target group, the artisan bakers, who are now using the special process in smaller machines. The test plant for artisan bakeries was presented for the first time at the südback 2011 trade fair – and according to Huhn it was immediately sold to a baker with a



++ figure 3
The comminuter takes up the space of 2 m²



++ figure 4
The mash is very fluid and it no longer demixes

daily flour consumption of approx. 500 kg. This baker had previously cut the bread into small pieces, dried it and then ground it, whereas now he reports that he has a not inconsiderable saving of time as a result of fewer operating steps. According to Huhn, the same daxRec technical model can also be used to recycle dough residues. For example, approx. 30–40 % of residual dough is formed in a single work operation when producing pizzas and other punched-out baked products, and these quantities cannot be reused due to the risk of the

dough “shrinking”. Ultrafine comminution enables the whole of the residual dough to be recycled (always in a ratio of 35–40 litres of water to 100 kg of dough). Daxner offers the bread/dough residue system in modular form: there is a manual model for artisans, which can be supplied with or without a storage tank. For large bakers the system can be expanded up to a fully automated model with an automatic bread/dough feeder and dispensing system that can easily be integrated into the existing production plant. +++

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