

Non-stop precision

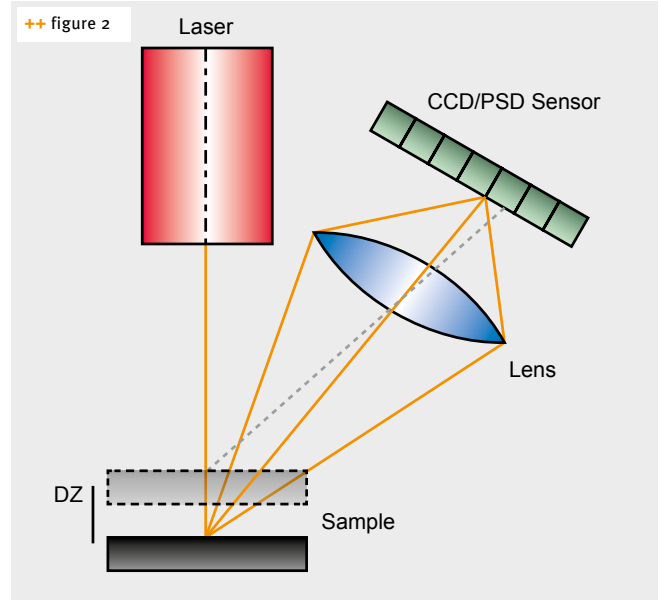
WERNER & PFLEIDERER WILL LAUNCH THEIR INNOVATIVE DELTA CUTTING ROBOT WHICH IS A DOUGH STRAND DIVIDER WITH THE PRECISION OF A POCKET DIVIDER AT EUROPAIN IN PARIS

++ figure 1



@ For more in-depth information, visit: www.bakingbiscuit.com

++ figure 2



+ The production of rolls, baguettes and bread from a dough strand has many advantages. One example is that it allows the processing of soft dough that has had hours of proofing time. The structure, and with that, the irregular pore pattern of the dough are not stressed by the dividing and shaping process and the dough piece does not require so many resting phases. Up to this point, however, there was one serious disadvantage, namely, that if the gas bubbles remain in the dough, the weights of the dough pieces vary despite their

uniform physical size as sometimes there are more gas bubbles in the dough and sometimes there are less. The difference can easily make up 20% in weight. This means that for packed finished goods the filling quantity must be increased in order to ensure the compliance with the labeled weight. The engineers and technicians at Werner & Pfleiderer have reacted to complaints regarding this system-related overflow and are now presenting a solution to this problem. The density of the dough strand will be measured and then calcu-

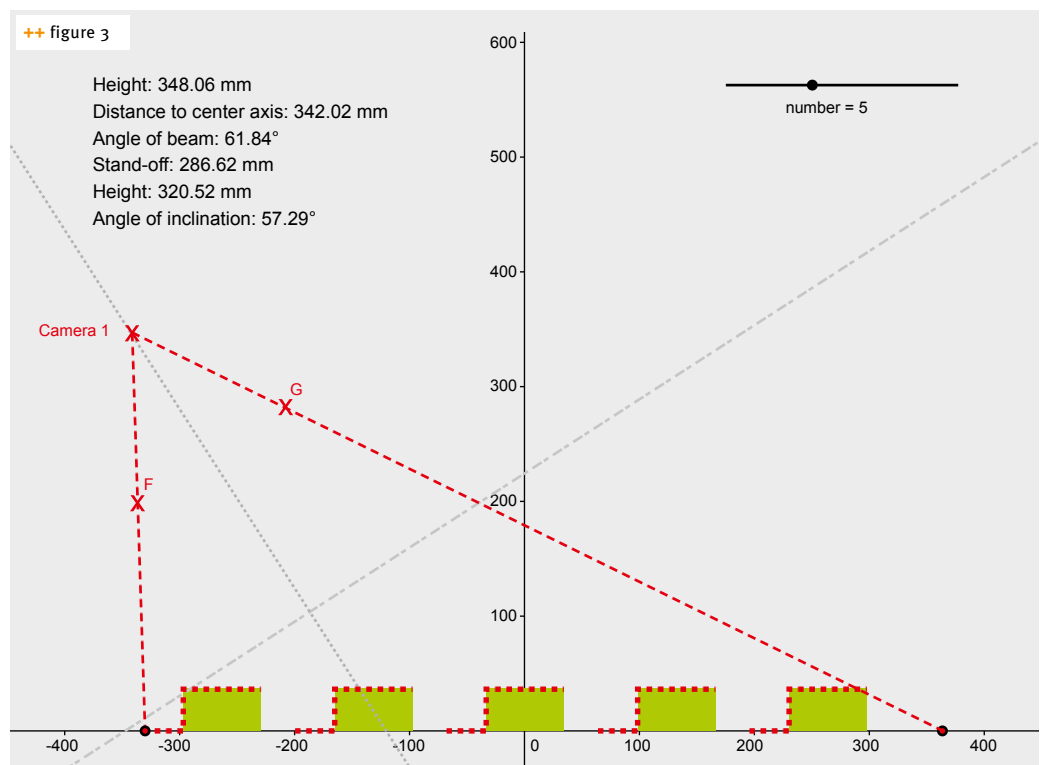
++ figure 1
Robot arm

++ figure 2
Principle

++ figure 3
Adjustment of image processing

++ figure 4
Slashing with maximum accuracy

++ figure 3



lated as to how large a certain dough piece should be in relation to its weight.

The core part of the equipment is a robot arm positioned above the dough strand. It can move in three space axes and guide a movable hand. It cuts each dough strand into pieces of identical weight. In doing so it jumps over the entire width of the conveying belt in order to cut exactly where needed.

The decision on where to cut is made based on the previous measurement of the dough density and the recognition of deviations by two cameras that scan the entire geometry of the dough strand with a laser while compiling a positioning table. This is the basis for the work of the robot arm. Currently, a research program at the Technical University of Munich, Germany, is underway exploring the density measurement of the dough by acoustic waves.

The robot arm is able to cut triangles, squares, diamonds and similar shapes, allowing for variable length, from a dough strand under consideration of the desired weight of the dough piece.

Other than a traditional guillotine, the robot arm with the cutting device – which can be a common blade or an ultrasonic cutter – receives individual signals for the cutting of each dough strand. If, for example, a certain dough strand has distinctive bubbles or deviates in other aspects from the defined standard geometry, it will probably be cut at another point than the neighboring strands. According to Dieter Knost, Development Manager at WPIB, the weight precision achieved in this way is 98-99%, similar to the result of a pocket divider, even with dough that has had 2 hours batch proofing.

After portioning, the dough pieces are slightly compressed as is often done during manual dough division and then aligned in precise rows.

One single robot arm is able to perform up to 100 so-called standard picks per minute (Dy: 1", Dx: 1ft, Dz: 1"); its working range is an area with a diameter of 800 mm and it is able



to jump over obstacles with a maximum height of 200 mm. If needed, it does all this in the conveyor tracking mode which means that it moves along at the same speed with the belt. In this way, it is possible to cut up to 12,000 rolls from one dough strand, says Knost. It is also possible to install several robot arms parallel to each other and they can then operate together over the entire belt width.

The cutting of dough pieces from dough strands is undoubtedly the main application of the Delta Cutting Robots, but not the only one. The robot can also be used to slash soft pretzels and applies precise decoration slashes even if the dough pieces are not aligned accurately on the belt. In this case, the laser controlled position determination unit makes sure that the robot arm knows where the dough piece is and how much it is possibly out of alignment. The robot will then also turn its blade accordingly to apply the pattern. Every dough piece will come out with exactly the same pattern.

For more information on this innovation by Werner & Pfleiderer please visit their stand at Europain or our websites www.backwelt.de or www.bakingbiscuit.com. +++



The World's Leader in Bread Slicing for over 75 years.

- BREAD AND BUN BLADES
- LATTICE AND GUIDES
- AUTOMATIC HONES

- RECIPROCATING BLADES
- CONVEYOR CHAIN
(MULTIFLEX & MONOFLEX)





Toll Free: 1-800-553-4992 • Fax: 563-386-7707 • sales@hansaloy.com • www.hansaloy.com