

Bon appe-tech

A Reading Bakery Systems' device helps ensure breads' correct core temperature.

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IT SEEMS that bakeries have an increasingly demanding appetite for devices to ensure that quality products emerge from ovens.

Since it secured a patent for the first commercially successful automatic pretzel-twisting machine in 1951, Reading Bakery Systems has become one of the world's leading manufacturers of innovative baking systems for the baked snack industry.

In 2012, the Robesonia-based company became a part of the Markel Bakery Group, which further expanded its baking systems to include equipment for bread baking.

Reading Thermal, a division of Reading Bakery Systems based in the company's South Heidelberg Township Science & Innovation Center, focuses its



READING EAGLE: LAUREN A. LITTLE

Richard Starke, director of Reading Thermal, South Heidelberg Township, talks about its new Pan and Dough Probe.

attention on engineering and consulting for thermal process equipment and commercial processing ovens.

Richard Starke, director of Reading Thermal, explained that his division became concerned with bread baking technology when Reading Bakery Systems became part of the Markel group.

In November, Reading Thermal introduced an innovative product for bread bakers known as the Pan and Dough Probe.

"One of the key things for commercial bread bakers is the core temperature of the bread, as it moves through the oven, to ensure consistent quality," Starke said.

Starke said existing probes on the market cannot provide accurate consistent data because they are hand-placed into a loaf or bun. In addition, the probes can be faulty because they can change position as the dough rises.

"You can't rely on hitting the center of the

dough," Starke said. "We came up with the idea to place the probe on the bread pan before the dough is added."

The device has a stationary vertical probe that is inserted at a fixed-penetration depth.

The innovative feature of the Pan and Dough Probe is that it is placed under the bread or bun dough and records both the core temperature of the dough as well as the pan temperature.

"Unlike cookies and crackers, bread dough is placed on a pan," Starke explained. "The surface temperature of the pan must be consistent for quality control."

The probes are custom-made for the products being baked.

The Pan and Dough Probe consistently yields what is known in the baking industry as a bake-cycle S curve.

In other words, when placed as points on a graph, the S-curve data indicate the critical internal temperature for yeast kill, at 140 degrees; gelatinization, when the dough becomes firm, at 170 degrees; and the arrival point, at 202 degrees.

"The baker looks for the yeast kill point when 40 percent of the baking is complete, and gelatiniza-

tion when 70 percent of the baking is complete," Starke said. "The Pan and Dough Probe gives accurate and repeatable data and takes the human error out of taking the measurements."

One Pan and Dough probe sells for \$500. But if the probe can prevent an error, resulting in dumping entire batches of bread in a dumpster, Starke said, the unit pays for itself in a very short period of time. Commercial bakers might be baking 12,000 pounds of dough per hour, Starke said.

"This can open eyes as to why things are not baking evenly," he said.

The Pan and Dough Probe connects to a temperature interface device that can accommodate five probes.

Software calculates the three S-curve data points.

Starke explained that the probe is just one component of the company's Scorpion 2 Data Logging Measurement System, which he said has become a standard in oven profiling.

The full kit, which sells for \$45,000, provides a complete measurement system to capture four key baking parameters: temperature, airflow, energy transfer and humidity.

The probe is too new to determine its desirability in the bread baking industry.

"We now need people to recognize and embrace this technology," Starke said. "It's a matter of getting the word out through e-blasts, trade shows and trade magazine articles."

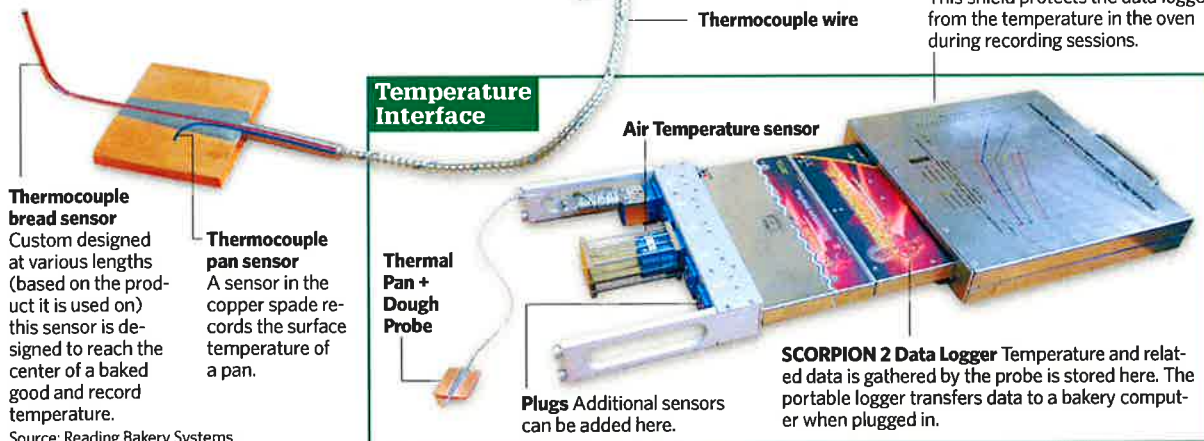
Starke said the Pan and Dough Probe has the potential to double the size of Reading Thermal.

"What's interesting to me is that we have a six-man company where we build everything right here and sell it all over the world," Starke said. "Think about it. We have a Berks County company selling electronic technology to China and Japan." ■

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Reading Thermal Pan + Dough Probe

Reading Thermal has designed a dual temperature sensing probe for baked goods. The device records surface, air and product temperatures ranging from -58°F to 662°F. The probe connects to the SCORPION 2 Data Logger and Temperature Interface computer to produce accurate repeatable data that bakers use when creating a variety of baked goods.



Thermocouple bread sensor
Custom designed at various lengths (based on the product it is used on) this sensor is designed to reach the center of a baked good and record temperature.

Thermocouple pan sensor
A sensor in the copper spade records the surface temperature of a pan.

Temperature Interface

Thermal Pan + Dough Probe

Plugs Additional sensors can be added here.

Air Temperature sensor

SCORPION 2 Data Logger Temperature and related data is gathered by the probe is stored here. The portable logger transfers data to a bakery computer when plugged in.

Socket
Plugs into temperature interface (below)

Hydrophobic Thermal Barrier
This shield protects the data logger from the temperature in the oven during recording sessions.

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