



Application note

Ensuring consistent baking quality through precise dough temperature control

Sector

Food production –
baking and pastry

Application

Dough temperature
monitoring during mixing

Product

Exergen non-contact
IRt/c.5 sensors



Temperature control during dough mixing directly affects final product quality. Excessive temperatures cause over-rising, creating holes in baked goods. Insufficient heat prevents proper rising, resulting in flat, dense products. Traditional contact thermocouples present ongoing challenges with probe breakage and food contamination. These issues create waste, increase costs and disrupt production schedules.

Challenges

Contact thermocouples break frequently during the vigorous kneading process, requiring replacement and creating downtime. Broken probes can contaminate batches, leading to product rejection. The probes themselves generate measurement errors due to frictional heat where they contact the dough. Additionally, dough temperature varies throughout the mass, making single-point measurements unreliable. These factors combine to create inconsistent results and reduced profitability.

Solutions

Exergen IRT/c.5 sensors from CleverIR provide continuous non-contact temperature measurement throughout the mixing cycle. The sensor measures average temperature across a section of dough rather than a single point, accommodating natural temperature variations in the mass. Mounted on the kneader cover, lid or arm, the sensor monitors constantly without physical contact. Built-in air purge maintains lens clarity, eliminating cleaning requirements and ensuring consistent accuracy.

Benefits

Non-contact measurement eliminates probe breakage and contamination issues entirely. Fast response times of 100 milliseconds enable real-time process control, stopping the kneader precisely when target temperature is reached. Accuracy of 0.1°C (0.2°F) with matching repeatability ensures consistent results batch after batch. The sensor requires no cleaning or calibration, outlasting traditional PT100 probes significantly while reducing maintenance costs and production interruptions.



Non-contact IRT/c sensors eliminate probe breakage and contamination while ensuring precise temperature control for consistent, high-quality baked products.

Results

Integrating Exergen sensors optimizes dough production across quality and efficiency metrics. Consistent temperature control reduces waste from over-risen or under-risen products, directly improving profitability. Elimination of probe breakage and contamination cuts downtime and product rejection. Faster process control shortens total cycle times, increasing throughput. The maintenance-free design delivers long-term reliability while reducing operational costs compared to traditional contact sensors.

Conclusion

Commercial baking demands consistent quality and reliable production. Exergen infrared sensors provide the precision and durability needed to monitor dough temperature without the contamination and breakage issues of contact probes. Their non-contact design, fast response and maintenance-free operation make them ideal for demanding food production environments where quality and hygiene cannot be compromised.