

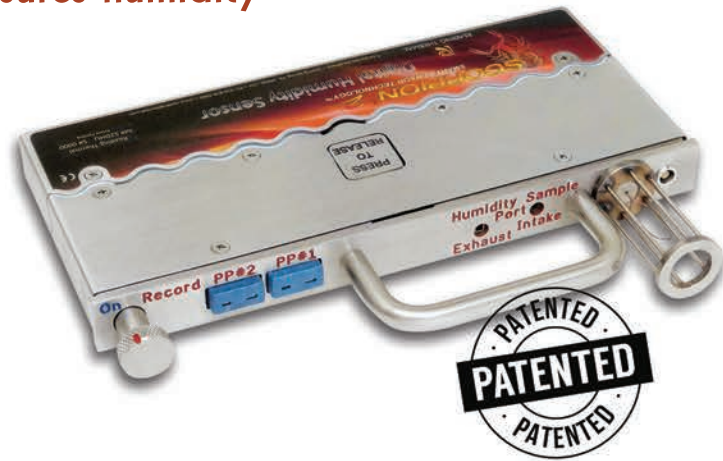


Bake Better Product and Improve Throughput

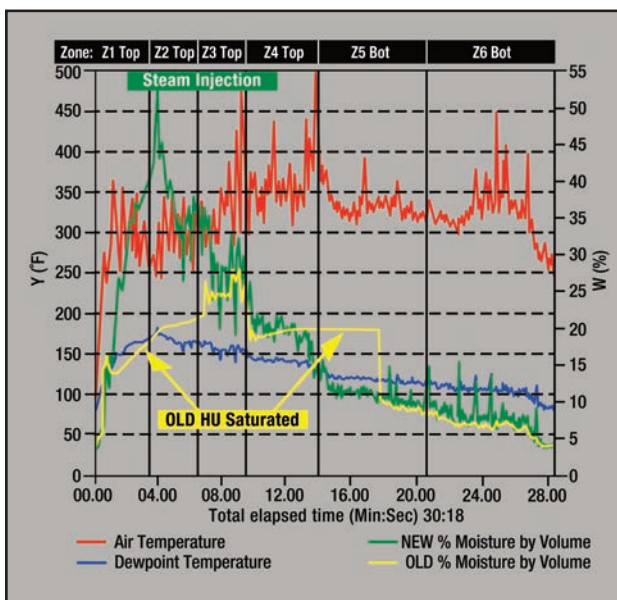
New patented digital technology measures humidity in all your baking processes

The new SCORPION® 2 Digital Humidity Sensor is designed to measure the absolute moisture content of the thermal environment in both heating and cooling processes. It is applicable to ovens, proofers, dryers and cooling tunnels and is unaffected by combustion gases. Moisture laden environments reduce baking efficiency and product quality. Understanding and controlling humidity greatly improves product consistency and throughput.

Mechanically, the Digital Humidity Sensor is comprised of a Bulk Air (dry bulb) temperature sensor, two inputs for Product Core Temperature Measurement and a proprietary humidity sampling system to measure Dew Point Temperature, Absolute Humidity and Relative Humidity. The sampling system contains patented Anti-Saturation Technology™ allowing measurements in very high dew point environments such as steam injection.



Humidity Sensor: NEW Digital vs. OLD Analog



The Digital Humidity Sensor is engineered to be compatible with all types of ovens, including direct gas fired (DGF) ovens. Unlike oxygen sensor technology, which can be off by as much as 25% due to combustion gases in DGF ovens, the accuracy of the digital humidity sensor remains the same regardless of the oven platform. The Humidity Sensor travels through the process with the product, yielding a precise profile of moisture experienced by the product.

How does humidity affect product quality?

Humidity in a thermal process interacts with the product. The moisture in the environment often comes from the product itself and represents a delicate balance affecting finished product quality in many ways. For example:

- The amount of moisture left in a product helps determine its shelf life.
- Reduced evaporation keeps the surface of a product moist, allowing it to stretch, preventing cracks.
- Low humidity in a cracker oven causes blisters leading to undesirable dark spots and excessive breakage.
- The lack of humidity in a cookie oven causes case hardening, preventing internal moisture from escaping leading to checking (the spontaneous cracking of the cookie after baking).
- High humidity in bread ovens produces the desirable glossy crust seen on many bread products. For this reason steam injection is often used.
- High humidity assists with the killing of pathogens, like salmonella, potentially found in surface toppings.

Maximizing Throughput

Product throughput kg/hr (lb/hr) can also be affected by when and how much moisture builds in a process. Moisture laden environments reduce baking efficiency, thereby reducing product throughput.

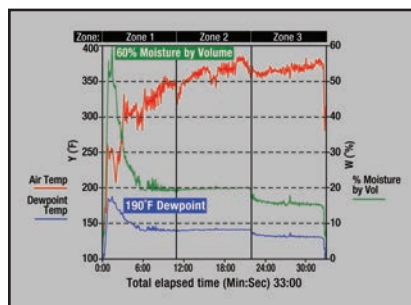


Analyzing the Results

Data is gathered as the digital humidity sensor travels through a process. This data is then downloaded for analysis using our proprietary software.

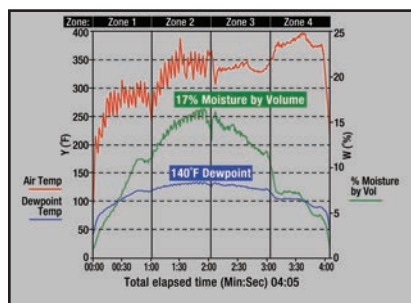
In high temperature applications above 100°C (212°F), absolute humidity is displayed. The user can choose between % Moisture by Volume or Humidity Mass Ratio (kg water/kg dry air or lb water/lb dry air). In low temperature applications below 100°C (212°F), % Relative Humidity is displayed. In both high and low temperature applications, the dew point temperature and dry bulb air temperature is displayed.

Humidity in ovens is generally controlled by extraction fans and dampers. Here the sensor is used to analyze the shape of the humidity profile as well as the peak moisture value obtained. In proofers, it is used to document the temperature and relative humidity of the proof cycle, and in cooling tunnels it is used to monitor dew point temperature preventing condensation on the product surface.



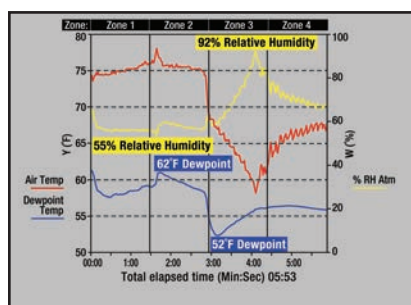
- Steam injection causes a high %Mv and Dew Point in the first zone.
- A glossy crust will be produced.
- High moisture will assist with killing pathogens found in surface toppings.

Bread Oven with Steam Injection



- A perfect bell shaped moisture curve is displayed.
- Case hardening leading to checking will be prevented.

Cookie Oven



- Dew Point is closely monitored to prevent surface condensation.
- Aggressive cooling is displayed in zones 3 and 4.

Cookie Cooling Tunnel

Technical Recommendation by Bill Hagan



Bill Hagan, technical sales manager for AB Mauri North America, has been profiling ovens, proofers and coolers using the SCORPION®2 Digital Humidity Sensor. Mr. Hagan said that being able to measure humidity throughout the entire baking process, particularly in the oven, allows him to give bakers information that was previously not possible. He further incorporated AB Mauri's knowledge base to assist and utilize the sensor for use in bread and roll production.

“Data from oven profiling provides absolute humidity measurements verifying steam applications and proper oven exhaust settings. Analysis of proofer data indicates relative humidity throughout the process, allowing the proper settings for optimal proof which yields the desired dough piece texture entering the oven,” Hagan said. “Profiling air-conditioned bread and bun coolers displays relative humidity through the cooler. This data can indicate too much evaporation during the cooling process, thereby drying out finished product prior to being packaged.”

Mr. Hagan recommends the SCORPION®2 Digital Humidity Sensor as an extremely versatile instrument used to document, troubleshoot and improve quality of the complete baking process.



For details, e-mail us at info@readingthermal.com or call 610-678-5890 ext. 2.



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