

WIRELESS MONITORING OF CERAMIC FIRING TEMPERATURES TO ENSURE PRODUCT QUALITY

GRANT SQUIRREL PORTABLE LOGGER RELIABLE IN KILN APPLICATION



CAS provided the temperature monitoring solution for [Heath Ceramics](#), an innovative manufacturer headquartered in Sausalito, California. Heath's products are handcrafted in small runs by skilled artisans in the Bay Area. With showrooms in Los Angeles and in San Francisco, their products are favorites of hotels, restaurants, museums, and homes around the world. Heath Ceramics needed a wireless temperature monitoring system to collect data during the kiln process, including ceramic firing temperatures and to help establish a temperature profile for future runs.

This product quality solution also had to feature multiple inputs for temperature sensors, along with easy to use software to analyze results.

TEMPERATURE MONITORING FOR PRODUCT QUALITY

Peter Berg, Ceramic Technician at Heath, explains, "We produce tableware and ceramic tile for consumer and architectural use. In the ceramic process, kilns are used to retain heat and create an environment for the ceramic to harden and for the glazes to mature.

“In terms of heatwork, we fire to Cone 03 which is approximately when the ware has reached an internal temperature of ~1086 Degrees Centigrade. Typically the kiln reaches 1100 Degrees Centigrade to achieve that amount of heatwork. When the ware goes over that temperature, the glass coating can boil, blister, or burn. In that event, the clay body, or glass substructure, can begin to bloat and may undergo pyroplastic deformation, or warping.”

“If you go under that ceramic firing temperatures, the glass coating will feel and appear rough to the touch and will be more prone to hydroxyl or ion attack (basically acid attacks), and the body will remain porous rather than vitrified. A porous body is more prone to breakage from mechanical shock, and has more potential for breakage from moisture expanding in the pores of the body.”

To help prevent such results, the business needed an accurate, reliable temperature recorder.



INSTALLATION

We provided Heath Ceramics with a versatile wireless solution: the [Grant Squirrel SQ2020 WiFi Portable Wireless Data Logger](#). The Grant Squirrel series are robust, high-accuracy portable systems, popular for their ease of use and standalone operation independent of a PC.

The Grant SQ2020 is a universal input logger featuring 8 true differential or 16 single-ended universal analog inputs which can be used with thermistors, thermocouples, 2, 3 or 4 wire RTD temperature sensors and 4-20mA signals. Its clear LCD and simple 4-button user interface make it easy to configure on a job. Integral Wi-Fi Ethernet networking is standard.

AUTOMATED ALARMS

Heath Ceramics is using the SQ2020's wireless communication over their own wireless network. This fully automates data retrieval and ensures fast data transfer. Peter Berg continues, "To ensure the highest-quality product, tight controls over our ceramic firing temperatures are necessary to ensure that each and every product coming out of the kilns meets our strict standards for excellence.

"Our kilns are still manually controlled, so our process demands a skilled operator and a high level of precision. We have alarms to warn when the kiln is nearing completion based on past models of firings, but afterward we rely on the operator to complete the firing.

"By using the Grant Squirrel data logger, we're now able to adjust the temperatures across the kiln to make sure that the distribution of heatwork is as close as possible in all corners of the kiln. This minimizes the skill needed and the operator's need to balance out any temperature discrepancies across the kiln."

TEMPERATURE PROFILE SOFTWARE

"We've utilized the [Grant SquirrelView software](#) to analyze the heatwork being generated from the beginning to end of every firing in real time. The collected temperature data from the Grant Squirrel logger allows us to make adjustments as the firing is occurring to reduce loss of product, to improve our yields, and to ensure that the quality and care that goes into the production of every piece is maintained throughout the firing and then delivered into our customers' hands."

BENEFITS

Summing up the business benefits of the new system, Mr. Berg concludes, “The Squirrel datalogger is working great. It’s also added a whole new level of detail that will assist us in the future as we further refine our kiln process.”

Bill Hoon, Applications Specialist with CAS DataLoggers, summarizes, “Many of my clients are searching for a WiFi device to monitor temperature of their products or environments. For these applications I recommend the Grant Squirrel series as a multi-channel solution with reliable standalone operation.”

For further information on [Grant Squirrel Series Data Loggers](#), ceramic firing temperatures or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at (800) 956-4437 or www.DataLoggerInc.com.