

# Kiln Corner

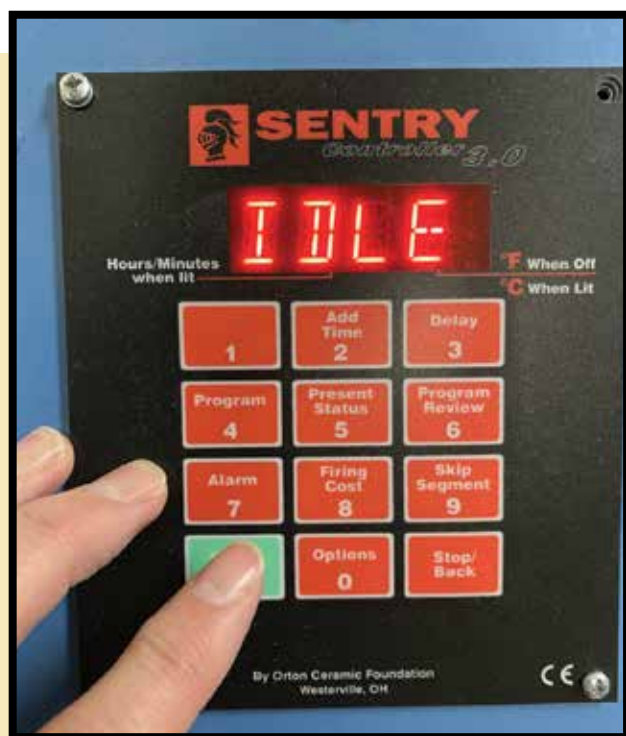
## Kiln Errors—Mechanical or Operator?

by Arnold Howard

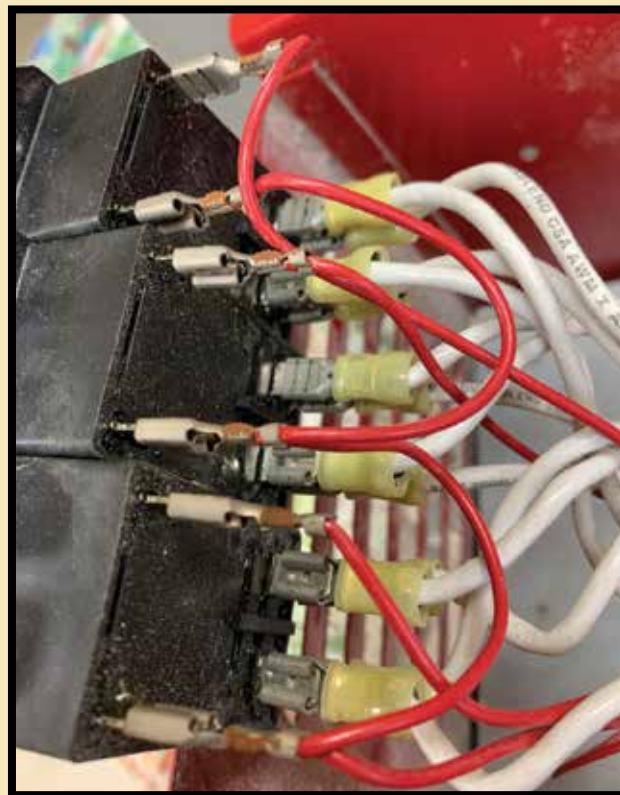
Kiln owners have the tendency to assume the worst when their kilns stop working. For instance, when an owner worries that the kiln needs a new controller, the real problem is often only a loose wire. Sometimes nothing is wrong with the kiln, but the problem is instead an operator error, and this can confuse even master artists. Here are examples.

### Firing Rate

If the programmed firing rate is faster than the kiln is capable of heating or cooling, the kiln will flash an error message. For instance, yesterday I performed preventive maintenance on a kiln that had flashed an error message. The customer didn't remember which error had appeared. I tested the amperage and the relays, tightened the thermocouple wires, and checked for loose connections. I also examined the location of the wires inside the switch box and checked the heating rate shown in the display with a calculator to be sure it was the same as the programmed rate. Then it dawned on me that the programmed rate was too fast for the kiln. The rate was 600°F per hour to 1450°F. Another common error is programming a cooling rate that is faster than the kiln's natural cooling rate.



*Program Review is one of the most important features on a digital controller. In this controller, pressing 6, either during a firing or at idle, will start Program Review.*



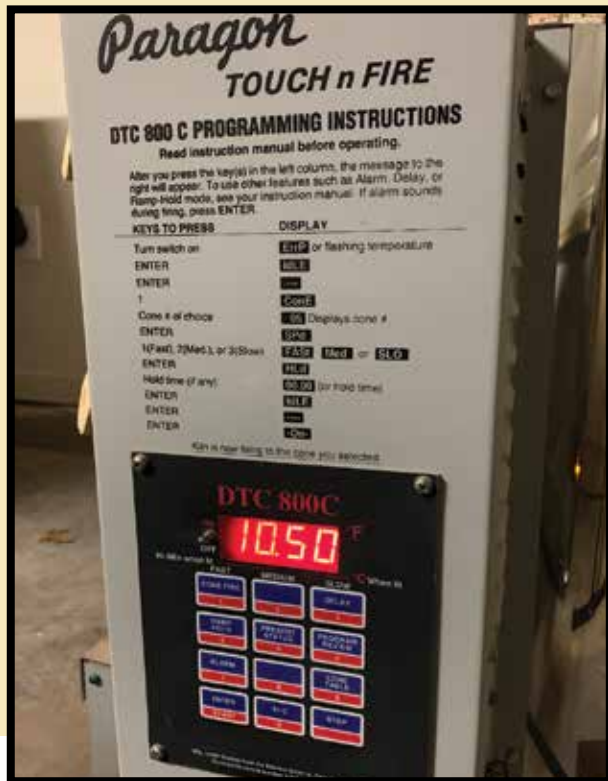
*People sometimes replace relays only because of an inadvertent extended hold time, which causes the kiln to fire longer than expected.*

### Hold Time

A high school near Dallas, Texas, called me to check a kiln that kept firing long after it had reached the programmed temperature. It wouldn't shut off. (Note: Sometimes kiln owners replace relays when this happens.) The first thing I checked was Program Review. The teacher had programmed 10 hours of hold time (displayed as 10.00) instead of ten minutes (00.10). Nothing was wrong with the kiln. Believe me, even the most experienced kiln experts can make this type of mistake, so use Program Review before every firing. Compare the display with a written copy of your program.

### The Wrong Target Temperature During a Cooling Segment

If the target temperature of a cooling segment is lower than the kiln is capable of reaching, you will get an error message. For instance, if the target temperature of the last segment is 70°F yet the kiln can cool only to 100°F, the kiln may flash an error message.



Time is displayed on most temperature controllers as hours to the left of the decimal and minutes to the right. That makes it easy to inadvertently enter 10 hours instead of 10 minutes.

## Objects Too Close to the Thermocouple

A customer complained about the kiln shutting off with an error code. This started happening when the kiln manufacturer upgraded their controllers. The newer, more advanced controllers kept shutting off below 500°F, and he had to repeatedly turn the kiln back on. The problem? Kiln posts were placed too close to the thermocouple (temperature sensor) inside the kiln. This prevented heat from reaching the thermocouple, causing a slow response time. When the customer moved the posts farther away, the kiln stopped shutting off.

This particular customer is probably the most experienced of any I have met. He had fired his kilns many hundreds of times each, yet even he made a mistake. This a great reminder that operator error can happen to anyone.

GPQ

While Arnold worked at Paragon Industries, he saw kiln controls evolve from switches to touch screen displays, tested early glass kilns, and wrote instruction manuals. In September 2019, Arnold started Howard Kilns, LLC, a kiln repair and sales business, to serve the Dallas-San Antonio, Texas, area and works on all brands of kilns. Feel free to contact him at [arnoldhoward@gmail.com](mailto:arnoldhoward@gmail.com) or call/text 972-333-1437.





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VOLUME 10 ISSUE 1-4 | 2022 | \$9.00