

Kiln Corner

The Mystery of the Overfired Kiln

by Arnold Howard

Photography Courtesy of Paragon Industries, LP.

Though Arnold Howard works for Paragon Industries, L.P., the information here applies to all brands of glass kilns. Feel free to send questions for this column no matter what brand of kiln you own.

A customer's digital kiln fired perfectly for 20 years. Then it began to fire 150°F (83°C) hotter than normal. The customer took the kiln to her dealer, who replaced the thermocouple, the relay, and the temperature controller. These are the main components of the control box. The thermocouple senses the temperature in the kiln, the controller receives that temperature from the thermocouple, and the relay sends power to the elements when more heat is needed.

Long-Distance Troubleshooting

Even with the new parts, the kiln still fired 150°F (83°C) too hot. We asked the customer these questions by speaker phone: "How old is the kiln? When did it start overfiring? What colors are the thermocouple wires?" The wires were red and yellow, which is correct for her K-type thermocouple.

We eventually discovered through FaceTime that the thermocouple wires were connected to the wrong terminals on the back of the controller. The red wire was connected to the yellow terminal, and the yellow wire to the red terminal. Ordinarily that will cause the temperature in the controller display to go down as the kiln heats up and give an error message, but that wasn't happening. The temperature in the display window went up as the kiln heated and down as it cooled.

Discovering the Solution

What caused the overfiring? The thermocouple is attached to an oval, ceramic connection block inside the kiln's control box. The kiln was about 20 years old, and the red and yellow paint on the connection block had faded. The wires from the thermocouple had been connected to the wrong terminals on the ceramic block. This caused the temperature display on the controller to go down instead of up when the kiln heated.

The thermocouple wires had been connected to the correct terminals on the back of the controller, but because the temperature display was going down instead of up, someone reversed the wires. That made the temperature display go up as it should, but it introduced the 150°F (83°C) error. The kiln operated normally only when the thermocouple wires were placed on the correct terminals at the thermocouple block and at the back of the controller.



The thermocouple and the thermocouple wires going to the controller are color coded.



The thermocouple connection block is easy to find. Look for the thermocouple in your kiln. It is a small rod. The block is on the other side of the kiln wall.



This shows the back of the temperature controller. The thermocouple wires are at the bottom right of the photo. They give the controller a continuous temperature reading from the firing chamber.

Arnold Howard writes instruction manuals and advertisements for Paragon Industries, L.P. His hobbies are glass fusing and karate. He also enjoys studying history and watching classic movies. You can reach Arnold at ahoward@paragonweb.com with questions for future columns. Sign up for his kiln newsletter at www.paragonweb.com.



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