Kiln Controllers
by David Gamble

Computers make a lot of tasks in today’s world much simpler, and using one to fire a kiln is no exception. What can a computer controller do for you? Most importantly, it can save you time and energy and allow you to get consistent firings. You can choose a pre-programmed firing mode that allows you to determine how fast you want to fire, how long you want the kiln to preheat, which cone you want to fire to and how long you want to hold the kiln at its final temperature. Or you can elect to program every phase of the firing yourself for your specific needs.

ADDING A COMPUTER CONTROLLER TO AN OLDER KILN

When buying a new kiln, a computer controller is certainly worth the added expense. But if you want to keep your current kiln and it doesn’t have a controller, then a wall-mounted controller unit could be the update you need.

How it works:

• First, a kiln is plugged into the wall-mounted controller and the controller is plugged into the power source. This allows the controller to regulate the flow of electricity that goes on to power the kiln.

• The electricity flow is regulated based on temperature readings from a thermocouple, which comes with the unit and needs to be installed through the kiln brick wall so that it extends into the firing chamber. (Note: Some kilns have a small round hole in the metal casing of the kiln just for this purpose. The exposed brick can be easily drilled through to install the thermocouple.) For all kilns, be sure that the hole you create does not interfere with the elements.

• The thermocouple is secured in place with a flange so that the wire end extends about an inch into the firing chamber. The temperature reading is sent back to the controller, which compares it to the desired program and either increases or decreases the power to the elements.

• If your kiln has a Kiln Sitter, you will need to override it and the timer for the controller to work. Place a small cone in the sitter that is two cones higher than your target temperature and make sure the timer has enough hours on it to complete your programmed firing. (I’ve been victim to

COMPUTER CONTROLLED FIRING MODES

• Pre-programmed firing modes vary with different controllers and are influenced by the size of the ware load and the voltage. Larger loads and a lower range of required voltage both slow the firing. The controllers can be programmed to slow down at the right times for the bisque and incorporate a soak/hold at the end of the firing to allow glazes to smooth out.

• There are the customized programs you can create with specialized ramps and hold times—firing up or down—allowing you to fire something as complicated as zinc or iron crystals and even glass. Controllers can retain up to 12 custom programs, with the exact number varying between models.

• Many controllers also have a delay program that starts a firing at a designated time (even if that’s 2 AM), ensuring that you can be there to watch it shut off at the end of the firing, but that you don’t have to be there in the middle of the night to turn it on or up.
not placing enough hours on the timer and having it shut the power off before the controller’s programmed firing is complete.)

- Finally, set all the kiln switches on high before starting the firing, and the controller will do all of the actual switching from low to high. But note that wall-mounted controllers turn all the switches on and off at the same time, there is no zone control.

RECOMMENDATIONS

- First of all, for a controller to work properly, the kiln you install it on needs to be functioning properly. If it isn’t, you should replace the elements, check connections and relays and make sure the Kiln Sitter you’re going to override is set and properly calibrated. Problems with any of these components may cause the kiln to shut off before the controller finishes its firing program.

- If your kiln has a plug that can be pulled out from the wall socket, adding a controller is very simple. Write down the voltage and phase type (found on the kiln’s name plate) and look at the style of plug you have. Give this information to your local ceramic supplier and they can order a wall-mounted controller for your specific kiln type.

- If your kiln is direct wired, the conversion process is a bit more complicated and you may need to hire an electrician to wire the kiln into the controller and the controller into the power source.

- Wall-mounted controllers cost about $800 to $1000. Amaco, Olympic, Orton, Paragon and Skutt have wall-mounted controllers available, and other kiln manufacturers are currently developing their own or will recommend an acceptable supplier with models compatible with their kilns.

- Another alternative is to remove the Kiln Sitter and purchase a new control box with an electronic controller. However, this is relatively pricey and requires rewiring the kiln, which takes considerable time and more mechanical expertise. For direct-wired kilns, there is the additional cost of an electrician.

- For ease of firing and greater control, the wall-mounted controller unit could be just the update you need for your kiln. Balance the age of your kiln and how well it’s functioning plus the cost and installation of a controller against purchasing a new kiln with the controller option. And you could sell your old kiln, use it as a backup or perhaps strip out all the elements and convert it to a gas-fired raku/soda kiln adding to your firing options.

While most new kilns come with an automatic kiln controller, a wall-mounted kiln controller can be added to an existing kiln. You can use the firing programs that come with it or develop custom programs to suit your needs.

Check the electrical specifications for your kiln before you order anything. Note the amps, volts, watts and phase of your kiln as well as the plug/outlet configuration, which can vary widely, shown in the example illustrations above.