



Clayworks Kiln Maintenance & Repair

Just as you should do routine maintenance and repair on your car you should practice a similar routine for your kiln. How often to change the oil in your car depends on how many miles it has been driven. How often to do maintenance and repair on your kiln depends on the number of firings.

Each Firing

Vacuum out any loose materials on the kiln floor and in the elements.

Every 10 Firings

Reseat Elements. Elements expand when heated and contract when cooling but in time fail to contract as much as they expanded. They start to bulge out of the element groves. You should push any bulging elements back into the groves and hold in place with new element pins. Be extra gentle doing this. Kiln elements become brittle with repeated firings and can easily be broken. If the bulge is large enough to leave part of the element right out of the element grove you should heat it before pushing it back. Use a small handheld propane torch to heat the bulge until it starts to glow. That softens the metal. Use pliers to push it back into the grove and hold in place with an element pin.

Clean the thermocouple. It builds up small amounts of corrosion during the firing. Gently brush it with a soft wire brush.

Check for cracks that might start to appear. Cracks in the kiln floor are common. You can just leave these or use your fingers or a putty knife to fill them with kiln mortar. Cracks in the wall bricks or lid are a greater concern and should be fully repaired when they first appear.

Check the wall plug. Are there any burn marks? Is it fitting snug into the socket. Is the wire to it firmly connected?

Check the wire to the kiln. Are any of the wire connections loose? Loose connections can lead to short circuits.



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After 100 Firings

Replace elements. This is the usual number of firings when elements start to significantly deteriorate and take increasingly longer to heat up until they inevitably fail. Failing elements consume a lot more electricity. It's cheaper to replace a failing element they keep paying for more electricity waiting for it to fail.

Wiring connections come loose. Unplug your kiln and test each wiring connection with a gentle tug to see if they are loose. Either recrimp any loose connection or replace the connector.

Frayed wiring is dangerous. Replace any wiring that is frayed. **Relays** are the most likely component to fail. You could wait for one to fail and replace it or you could replace all relays. After 100 firings they've earned a retirement.

Thermocouples corrode and degrade from the moisture in the clay. Rub the end of the thermocouple to see if anything comes off. If so, replace it. For the cost of a new thermocouple and assurance of reliable firings maybe it's a small job and small cost.

Brick Replacement & Repair

Replacing relays, thermocouples and elements is relatively easy and something you can do yourself with only a few basic tools. Kiln bricks are soft enough they can be cut with wood working tools. Repairing cracks in bricks is usually done by applying kiln mortar to fill the crack - but replacing kiln bricks is a much more complicated and time consuming undertaking. If you're relatively handy you can remove any damaged bricks and replace them with new bricks – but, as is almost always true with repairs, assume it will take twice as long as you expected it to take.



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Prevention

Having your kiln fail is at best a minor inconvenience but if you're working on some important projects it can be a disaster. Following the suggesting routine for 1, 10 and 100 firings will reduce the likelihood of a problem but there are some other important prevention measures.

Keep spare parts. Relay, thermocouple and element failure is inevitable. Ordering replacement parts can sometimes take several weeks. Be smart. Don't wait for something to fail. Keep a supply of parts for maintenance and repair. In addition to replacement relays, thermocouple and full set of elements, you should also have a supply of element pins and kiln mortar.

Keep a kiln log. If you record how long each firing takes you will see a clear pattern with it taking increasingly longer to reach top temperature as the kiln elements begin to wear. This will give you a warning of when the elements are failing.

~ Prevention is better than repair ~

Controller Error Message

Take some time to learn what the different Error Messages are on your controller. Electronic controllers are set to turn off and send an error message if the kiln is unable to continue increasing temperature by 12°F per hour. For example, your kiln might easily heat to cone 5 (2200°F) but be unable to heat up to cone 6 (2250°F) and turn off with an error message. This can be a problem with a failed relay or damaged thermocouple but is most likely a failing or damaged element. It will consume a lot more electricity, but you can achieve enough heatwork for a cone 6 firing with a long hold at cone 5. Firing to 2200°F with a 50 minute hold will produce the same heatwork result as firing to 2250°F with no hold time.