

How to Maintain Your Infrared Oven

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Infrared oven systems are designed to operate efficiently with very little maintenance. Ceramic, T3 quartz tube, and gas catalytic ovens are used in many industries for countless purposes because of their cost efficiency, low maintenance and exceptionally long service life.

Infrared ovens play an essential role in the drying, curing, preheating and processing of wood, metal, leather, plastics, ceramics and chemicals. Scheduled preventative maintenance is crucial to prolong the life of major oven components. In terms of cost, this maintenance provides for reduced downtime for emergency repairs as well as longer, more reliable equipment life. While the maintenance of such an important piece of equipment is imperative, it is often overlooked because of its simplicity.



While routine preventative maintenance is crucial to prolong the life of your oven system, the task of maintaining a complex system like the combination oven is surprisingly simple.

Regular preventative maintenance is necessary for all types of infrared oven systems. The best way to schedule preventative maintenance is through an ongoing program utilizing a scheduling chart or a computerized tracking system. While general maintenance is quite similar for all types, some steps are specific to the type of oven you are using. Before getting into the specific maintenance concerns of the T3 quartz tube, ceramic and gas catalytic oven systems, here are some general tips and guidelines that should be followed to ensure maximum production capacity, optimum performance and a long oven life for all types of infrared oven systems.

- Only use the oven when necessary, while parts are ready to go through the oven cycle.
- Only use the portion of the oven that specific parts require.
- Never run the oven at higher power settings than absolutely necessary.

As general maintenance and repair require close contact with the oven, certain safety precautions must be observed:

- Remove all loose objects such as trash and rags from the work area. Keeping the area clean and free of obstructions is imperative and takes little time if done routinely.
- Do not work on any equipment until it has completed cycling and is shut down.
- Turn the oven power off before beginning any maintenance procedure, and always lock it out.
- Always wear eye protection.
- Never engage in or tolerate horse play in the work area. Many avoidable accidents occur due to operator negligence.
- Only qualified, trained personnel should perform maintenance procedures.

Regularly scheduled, routine preventative maintenance is crucial in prolonging the life of major oven components. Some of these maintenance procedures vary depending on the oven type.

Ceramic Oven System

Reflector Cleaning. Dirt, dust and other residue can build up on reflectors, so regular cleaning is necessary. The frequency of cleaning required depends on various factors, including the application in which the oven is used, efficiency of the exhaust system, and tidiness of the work area. In most cases, cleaning the reflectors every four months is sufficient.

When cleaning reflectors, several steps should be followed. First, make sure oven power has been turned off and locked out. Second, apply a small amount of ammonia cleaning solution to a lint-free cloth, then wipe the reflector with the cloth.

Third, when all residue has been loosened, use a clean, lint-free cloth to wipe away excess solution and particulate. Finally, remember that infrared generators are extremely hot. The operator or maintenance person must never touch a generator while it is on or cooling down, as doing so may result in severe skin burns.

To keep reflectors clean between the regularly scheduled maintenance period, an air hose can be used to blow off dust and dirt, or wipe the reflectors with a nonabrasive mild cleaner and a soft cloth. Any paint that gets on the reflectors can be removed with paint thinner using a soft nonabrasive cloth.

Ceramic Emitter Replacement. Due to filament breakage or failure, it may be necessary to replace an emitter. To replace an emitter, first be sure oven power has been turned off and locked out. Second, remove the sheet metal screws from the wire channel cover, which is vented. Third, unwire the emitter that needs to be replaced and remove the two bolts holding the emitter and plate onto the section. Fourth, pull the emitter and plate away from the section. Finally, unscrew the two bolts holding the emitter to the plate and remove the emitter from the plate. Reverse these steps to install the new emitter.

Quartz Tube Oven System

Here's how to maintain an infrared oven that has quartz tubes.

Bulb Cleaning. As in the case of ceramic emitter reflectors, regular cleaning of bulbs also is necessary. Again, depending on factors such as the oven application, efficiency of the exhaust system and cleanliness of the work area, cleaning the bulbs every four months is recommended.

These steps should be followed to clean the bulb. First, as always, ensure that oven power has been turned off and locked out. Second, apply a small amount of denatured alcohol to a lint-free cloth. Third, using one hand to support the reflectant side of the bulb, with the cloth in your other hand, wipe the emitter side of the bulb. Finally, when all residue has been loosened, use a clean lint-free cloth to wipe away the excess.

To keep all reflectors clean between regularly scheduled maintenance, use an air hose to blow off or nonabrasive cleaner to remove dust. Remove paint with paint thinner, using a soft nonabrasive cloth.

Bulb Replacement. Because of quartz failure or filament breakage, it may be necessary to replace a bulb. Proceed to change a bulb in the following manner. First, make sure that oven power has been turned off and locked out. Second, remove sheet metal screws, then remove the mesh bulb guards. Finally, remove the bulbs by holding firmly at both ends and pulling uniformly, freeing them from the clips. Reverse these steps to install the new bulb. Do not touch a bulb with your hands or fingers as it may reduce the lifetime of the bulb. If you happen to touch the bulb, you should clean it as described above.

These precautions must be taken when handling bulbs:

- Remember that the infrared bulbs are very hot. The operator or maintenance person must never touch a bulb while it is on or cooling down. Doing so may result in severe burns.
- As the bulbs are quartz glass and fragile, care must be used in handling them or breakage may occur.
- Handle the bulbs only by the ends. Applying pressure at the center of the tube while installing or replacing may break the bulb and cause injury.

- When handling the quartz tubes, always use clean cotton gloves or nonabrasive paper towels. Do not touch the bulbs with your bare fingers.

Regular preventative maintenance on the control panel cabinets, blowers and exhausters is the same for both ceramic and quartz tube oven systems.

Control Panel Cabinets. The control panel should be kept free of dust. Using compressed air, blow out all dust from the panel on a monthly basis. Check all wires to ensure that they are securely attached to the components. Look for any frayed or otherwise damaged wires and replace them if necessary. Check the vent filters on the cabinet and replace them if need be. Be sure to lock out power when performing any maintenance on the control panel.

Blowers and Exhausters. Blowers are factory checked and serviced before installation. After the first eight hours of running time, add three shots of high-temperature lithium grease to the grease fittings on the blowers and exhausters. The, periodically check the blowers and exhausters, adding grease as necessary. Because the blowers and exhausters run at extremely high temperatures, they should always be monitored closely. In fact, these maintenance procedures should be repeated every 30 days. In addition, on a semiannual basis, check the blowers and exhausters for loose bolts. And, in the case of the quartz tube oven, periodically blow out the squirrel cage and check it for tightness.

Gas Catalytic Oven System

As the gas catalytic oven system differs from electric infrared oven systems, preventative maintenance requirements also differ. Generally, this type of oven system requires lower maintenance than the other systems discussed. The following tasks should be implemented into a routine maintenance checklist.

Weekly. Several procedures should be completed weekly. First, ensure that pressure gauges are in operating condition. Second, be sure the thermocouples are seated securely and inserted in back of each emitter. Third, if using propane, ensure that the supply is topped up. Finally, to burn paint or powder that might have possibly accumulated on the surface of the emitters, it is recommended to run the oven at 100 percent for one to two hours.

At Least Once a Month. In addition, perform these procedures at least once a month. First, inspect the gas supply line and gas components for leaks. Second, visually inspect all emitters, noting any damage. Third, check that the temperature controller-sensing bulb is securely mounted to the face of the emitter. Finally, inspect air-moving equipment and lubricate, clean and secure loose ducting.

Every Two Months. Finally, several procedures should be performed once every two months. First, check the gas pressure at each emitter (refer to the information on the serial plate). For natural gas, the most common pressures are 3.5 and 7 in. w.c.; for propane gas, the most common pressure is 11 in. w.c. Second, inspect wire connections throughout the system, looking for loose or damaged areas. Third, inspect gas valves and components looking for damaged or missing parts. Finally, inspect the control panel for damage, paying close attention to switches, lenses and labels.

While routine preventative maintenance can be performed by qualified and trained on-site personnel, heavy maintenance procedures should only be performed with the help of the oven system manufacturer. Contact the company that provided your oven system before performing any heavy maintenance on any of the major components.