



## Boiler Operations Overview

The failure of a heating boiler can be costly. A primary cause of breakdown is an inadequate water treatment and preventative maintenance program. While not intended to be all inclusive, the following reviews are recommended minimum requirements for maintaining boilers.

### PREVENTATIVE MAINTENANCE

Anyone responsible for maintenance of your facilities should have a good working knowledge of what is needed to maintain your equipment. The best reference you can use is the boiler manufacturer's operation and maintenance manual. This manual should be used as a guide to develop a proper maintenance and testing program.

Low pressure cast iron boiler systems should be checked at least once every 24 hours while in operation. You should blow down the boiler and check all safety devices at least monthly to ensure proper operation. Also, check for any signs of a water or fuel leak.

Low pressure steel boiler systems should be checked at least twice every 24 hours while in operation. You should check all safety devices at least monthly to ensure proper operation. An example would be to check the pressure relief valve every month by pulling the lever to the open position with the boiler at operating pressure. Let the lever snap shut to seal the valve closed. Also, check for any signs of a water or fuel leak.

Another important test is the low water fuel shutoff. Each month, the low water fuel shutoff switch should be tested for proper operation. This is usually done by carefully reducing the boiler water level while the boiler is in operation. The water level should be reduced to the point at which the fuel to the burners cuts off or should cut off. It is important to remember that you are reducing the water level in the boiler to the MINIMUM SAFE operating level so this test must be done using extreme caution. At no time should the water level be allowed to drop out of sight in the water gauge glass.

The low water fuel shutoff should be dismantled for inspection and overhaul. Please follow the manufacturer's recommendations for this work, which usually occurs annually during the off season. Only a qualified boiler maintenance company or technician should perform this maintenance.

The burner equipment, heating surfaces, firebox, ash pit, casings and ducts should be cleaned of all deposits and debris. Lack of this type of maintenance can lead to a waste of fuel and extensive damage to the boiler.

We emphasize the importance of following the instructions in the boiler manufacturer's operation and maintenance manual when completing tests and maintenance.

## **WATER TREATMENT**

A large number of boiler failures can be attributed to an inadequate water treatment program. Before the heating season, a sample of water must be sent for testing to get a basis for start-up water treatment. This will tell you the materials and chemicals suspended in your make-up water and the alkalinity of the water. Once the water has been analyzed, a plan can be developed as to how to treat your boiler water.

Once your water is treated, continued monitoring is still necessary. Is additional make-up water needed during the heating season? How much water do you add to the system? Are there any leaks in the piping, pumps, or other parts of the boiler system? The more water you add to the system, the more contaminants are added and the more diluted the treatment chemicals become. For cast iron boilers, it is recommended that the water be retested at least every two months during the heating season. Steel boilers should have a sample of the water tested at least once per week. The water should be tested more often if you have to add make-up water to the system on a continuing basis to ensure that the water chemicals remain within the specifications needed to protect the boiler.

If you do not have trained staff to properly supervise the water treatment program, it is recommended to contract with a qualified company to supervise the program. An effective program will ensure efficient operation of the boiler, extend the service of the system, and reduce the chance for a sudden and untimely breakdown.

## **RECORD KEEPING**

It is important to document all safety and maintenance checks. This will serve as a record of inspections, as well as indicate a potential problem for a change in readings or other information.

Maintenance logs and schedules are available free of charge from Hartford Steam Boiler Inspection and Insurance Company. Have these records available to your boiler maintenance contractor and to the boiler inspector for their review and assistance in maintaining your boilers.

A boiler inspection certificate must be posted in the boiler room in a visible location near the door. It can be placed in a frame or even a clear plastic zip-lock bag, as long as it is protected and visible for inspection to ensure that the certificate is current.

## **LOCKOUT/TAGOUT POLICY**

The Occupational Safety and Health Administration (OSHA) requires that any equipment and machinery must be shut down and locked against being re-energized while any maintenance or repairs are being completed on equipment. This is called "Lock Out – Tag Out" (LOTO). The purpose is to prevent injuries to employees while they perform maintenance and repair work on equipment. All individuals should be aware of and implement these important safety procedures. Even if you have maintenance work completed by a contractor, you must have a written policy in place.

## **FAX-ON-DEMAND**

Hartford Steam Boiler Inspection and Insurance Company can provide you with any of the forms you may need to keep good records of inspections and repairs to your boiler and boiler system. They also provide a wide variety of safety and loss prevention material for your use. This information is available through a program called FAX-ON-DEMAND. If you have a fax machine and need safety information, just call 1-800-716-7874, anytime, 24 hours a day. This is an automated call, just use your touch-tone telephone to answer the questions and you will be sent the information in less than a minute.