

The Locomotive

Are There Red Flags in Your Boiler Room?

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Introduction

Often we see indications that something isn't quite right — and these may be referred to as red flags. While conducting jurisdictional boiler examinations, Hartford Steam Boiler inspectors encounter many examples of conditions that cause that red flag to go up. As a boiler owner, operator, service technician, municipal code enforcement official, or insurance professional, you can learn to recognize them, too.

Here are some red flag indicators of problems that, if left unattended, can result in a boiler breakdown and expensive property and/or business income losses.

Where are the Lights?

Just getting to the boiler may be a hazard in and of itself. Do you have a “bulb snatcher” in your business? Sometimes it seems the boiler room is a good source for spare light bulbs — after all, who needs to go in there?

When the boiler room is not lighted or is poorly lit, how can it be expected that anyone is taking care of the equipment? Certainly no one wants to be injured when trying to walk down an old wooden staircase to an unpaved basement with

a low overhead while carrying a clipboard, tools, flashlight, and other gear. Who wants to risk the workers' compensation claims and lost employee time?



Remember, you need to see clearly in order to regularly examine and service the boiler, so be sure to install adequate lighting and replace those burned out or missing bulbs promptly. Make sure the light switch is easy to see and reach.



Hartford Steam Boiler

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All recommendations are general guidelines and are not intended to be exhaustive or complete, nor are they designed to replace information or instructions from the manufacturer of our equipment. Contact your equipment service representative or manufacturer with questions.

A Boiler Room is Not a Storeroom

When a boiler room becomes the storage area, routine visual examination and servicing of the equipment is in serious doubt. Boilers and their supporting machinery, controls, piping and valves need to be checked and maintained regularly. If you can't get to the equipment, how is that being done?



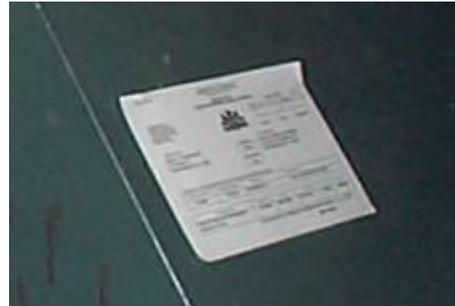
Boiler breakdowns can result in thousands of dollars in charges for equipment repairs as well as hundreds of thousands of dollars for additional property damage and business income losses while the recovery process is completed.

Remember to keep the boiler and associated system components readily accessible and don't store items nearby. Also, items stored near equipment fueled by gas, oil, coal, or wood can contribute to an additional, and totally unnecessary, source of combustion. No combustible materials should be stored within 10 feet of the boiler.

Where's the Certificate?

In general, jurisdictional boiler operating certificates are required to be posted near the equipment. This is similar to the certificates that you see in most elevators. Boiler operating certificates let people know that your equipment has been inspected and that the certificate is current.

If it has expired, call your insurance agent for assistance as your insurance "boiler inspector" might be able to inspect your boiler without additional charge. There may be a state fee for issuing the jurisdictional certificate. Keep in mind that not all insurance companies include jurisdictional inspections in their coverage.



Remember, if an operating certificate is not posted, fire department and municipal code enforcement officials, or inspectors with the U.S. Department of Labor's Occupational Safety & Health Administration (OSHA) may be prompted to look closer at compliance in additional areas of your business. Posted boiler operating certificates help inform the public and government agencies that you are taking care of your equipment.

Open Control Panels

A key indication that something may not be quite right is to see any of the following: an open boiler control panel; a boiler access panel removed; an electrical junction box cover missing; or boiler circuit wiring in disarray.



There may be explanations for these conditions; however, the fact is that service work was not professionally completed since some tasks were left undone. It also begs the question: "What was done and who did the job?" Open covers and panels, or messy looking control service may pose worker hazards or result in potential boiler breakdown and significant business interruption.

Remember, boiler control panels and access panels must be put back in place when the job is done. Any electrical work needs to meet the applicable National Electrical Code® (NEC) guidelines and should be completed only by authorized licensed personnel.

Wet Floors

"Where did all of this water come from?" It's a commonly asked question when seeing water around or near the boiler. In fact, it may be due to storm water runoff or drain backup and not be caused by an equipment or system leak, but it points out that there is a very high moisture concentration in the boiler area.

Significant water accumulation must be addressed. Floor drains and sump pumps should clear water from an area in a timely fashion — otherwise high moisture will result in mold, mildew, corrosion and general boiler deterioration, thereby reducing its anticipated service life. In severe cases, several inches of water may cover the floor and pose a potential risk for injury or even death from electrocution. In addition, a high water level may compromise the boiler's combustion components.

Remember to keep floor drains clear. The drier the area, the more likely someone will care for the boiler.

Cobwebs Everywhere

There are instances where there are so many cobwebs and so much dust located on and around the boiler that you just know instinctively that no one is looking at the equipment. Poorly maintained boilers cannot be expected to provide you with the type of service you expect. In addition, who wants to work on the boiler in such unpleasant conditions?

Remember, you should keep the boiler and surrounding system components clean. Let the spiders live elsewhere.

Discarded Parts

"What's all this stuff!" you shout as you walk into the boiler room. On the floor or on top of the boiler are found discarded water level controls, old replaced relief valves, empty cans of boiler chemicals used to control water chemistry. Seeing these items may give an indication of poor quality make-up water, dirty/rusty heating system piping, ongoing system leaks, or less than adequate maintenance practices. Any of these conditions may result in a higher probability of premature equipment failure.

Remember to verify the cause of the condition that led to work being needed on your equipment. Has that cause been corrected or is this going to result in another perhaps more serious repair in the near future? Also, a good service technician with professional work practices would remove non-functioning parts and repair debris when the job is finished and put away new or reusable spare parts.

How to "Sense" Trouble

Use all five of your senses when you check for red flags. Most of our discussion has focused on visual (sight) clues that may give you cause for concern. However, don't forget to use your ears, nose, taste and touch for additional clues:

1. **Sounds** – does the boiler sound strange or different? Do the fans, burner, circulating pump, condensate pump, and feed pump sound OK? Is there a loud banging of the heating system (water hammer)?
2. **Smells** – are there any unusual odors in the boiler room? Is there a smell of gas or oil? Does the equipment smell hot? Is there an "electrical arcing" odor in the air?
3. **Taste** – is the equipment room atmosphere extremely dry, or is there excessively high moisture content? Does the air have a sulfur, sooty, or smoky taste to it? Are chemical compounds (for example chlorine or ammonia) contaminating the air and perhaps posing a threat to the machinery's proper operation and service life?

4. **Feel** – is there excessive vibration in the machinery? Does the piping system move violently when the feed pump turns on? Is the motor too hot to touch? Could someone get burned on uninsulated piping?
5. **Sight** – as we have already discussed, pay close attention to conditions in the boiler room and with equipment. It's easy to become so accustomed to your surroundings that you fail to notice gradual changes, but pay attention to basic maintenance, housekeeping and operation so you can spot a red flag.

Remember to use all of your senses. Contact the appropriate service professionals to investigate further and take corrective action when needed. Your senses may tell you that something is different than what is normal and requires immediate attention.

Logs and Manuals

Ask your maintenance personnel for a look at the boiler logs and operating manual. Are they unable to produce them? If they are embarrassed, they should be.

Maintaining equipment logs helps to avoid being surprised by slowly developing trends that could result in a serious equipment breakdown unless they are identified and addressed. In addition, log readings enable equipment operators to get familiar with “normal” conditions and help alert them to abnormal sounds, smells, temperature/pressure readings and visual clues.

Just knowing where the operating manual is located is a positive step — at least you have one. Using the equipment manufacturer's operating manual helps to avoid poor operating and maintenance practices and can assist you as you adopt proper procedures.

Remember to use and record readings, where appropriate, of your equipment. Make sure the operating manual is readily available, or obtain one as soon as possible to help minimize your loss exposure. Boiler and air conditioner logs as well as additional loss prevention reference information are available in the Equipment Care section of HSB's Web site (www.hsb.com/information.asp?id=182).

In Summary

Visit your boiler room area frequently. Taking a close look can help you understand the proper care of your equipment and how to recognize those things that are not quite right. Several indications of future problems can be readily observed — so look for the red flags and call a professional qualified service technician when necessary.

The article discusses some red flag indicators of problems that, if left unattended, can result in a boiler breakdown and expensive property and/or business income losses. These include:

- Inadequate lighting that makes it difficult, even dangerous, to examine and service the boiler properly.
- Clutter and disorder that result when the boiler room becomes a storage area. If you can't get to the equipment, it's probably not being checked and maintained.
- Failure to post the operating certificate, which can invite attention from fire and code enforcement officials, even federal inspectors.
- Open control panels — a key indication that something may not be quite right.
- Wet floors that can cause a boiler breakdown and discourage employees from performing maintenance.
- Cobwebs and dust that signal to you that no one is looking at the equipment.
- Discarded parts, which indicates problems and often results from sloppy service work.

About the Author

James (Jim) F. Wainwright is an inspector with The Hartford Steam Boiler Inspection and Insurance Company (HSB). Jim came to HSB from the U.S. Navy in 1973. He has served in several engineering loss control support capacities over the past 32 years with HSB and currently resides in Altoona, Penn.