



# EQUIPMENT CARE BULLETIN

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## Maintenance and Water Treatment for your Process Boiler

### INTRODUCTION

Every year The Boiler Inspection and Insurance Company of Canada (BI&I) investigates numerous boiler failures. The principal causes of process boiler failures are overheating due to low water level, scale deposits on the waterside surfaces, and corrosion. The main reasons for these failures are poor or non-existent water treatment and little or no preventive maintenance for the boilers.

To help you achieve reliable and uninterrupted service from your process boiler, we are offering the following comments.

### WATER LEVEL

Boiler controls are used to see and monitor what is happening inside the boiler. Daily and weekly checks of controls can help your process boiler operate safely and reliably. Gauge glasses must be clean to indicate the level of water inside the boiler.

Low water controls are designed and installed to minimize overheating to boiler parts. Low water cut-offs are designed to shutdown the burner equipment in the event the water level falls below a specific point.

Periodic draining and testing of the low water cut-off and gauge glass will confirm reliability of these controls. Draining the water chamber of the low water cut-off removes sludge and sediment as well as simulating a low water condition to shutdown the burner.

### PRESSURE

Steam gauges let the operator know what pressure is in the boiler and steam system. Inaccurate or broken steam gauges must be replaced. Safety valves are designed to lift in the event the boiler pressure reaches the safety valve set point. Properly set and operating safety valves will prevent a boiler from exploding due to an overpressure condition.

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## **MAKE-UP**

**Question:** How much water in the steam system is lost for production?

**Question:** How much water is lost through leaking packing, fittings, and piping?

**Question:** What is the quality of water being added to the steam system?

Feedwater controls and water treatment programs are essential to boiler operation. The make-up water and condensate return must be treated to remove scale and sludge producing elements.

## **SCALE**

Scale deposits adhering to waterside surfaces will insulate boiler steel and cause overheating. Scale deposits will also cause the boiler to operate in-efficiently by using more fuel to produce the steam your process requires, resulting in higher fuel costs.

## **COST**

- Even if boiler insurance is available, the deductible will still account for expensive out-of-pocket costs.
- Welded repairs and tube replacement are expensive and will include boiler and production downtime.
- Having insurance may be of little comfort when your boiler is down and customers are waiting for service.
- In addition, if you are trying to run a business, your customers or employees may not be too happy to hear that the system is down from minor maintenance oversights.

## **PLUS**

- Boiler operators must have a working knowledge of the controls and how the controls affect the operation of the boiler.
- Boiler logs and maintenance procedures vary with boiler type (firtube or watertube).
- Remember process boilers require reliable operating controls, a water treatment program and knowledgeable operators.
- Your process boiler is a very important part of your production process. If you take care of it, your boiler will take care of you.

Our advice is intended to complement the equipment manufacturers' recommendations - not replace them. If you have doubts about any particular procedure, contact your equipment service representative.

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