



# Outages & Your Boiler Options

by Alex Taylor

It's no secret that many industrial facilities have an annual outage period, also referred to as a shutdown or a 'turn-around', during which production slows or ceases entirely and maintenance repairs take place across the entire facility. This can be an extremely stressful time for everyone involved in facility maintenance, operations, and even management. As the single, most expensive operating cost that the company will typically incur in a year, there is always pressure to reduce costs, and the outage's time length is a critical factor. No production means no revenue, so it is understandable that companies want down time kept to a minimum.

Since there is little or no production to worry about interrupting, it is tempting for many employees to add projects to the shutdown period that they were unable to complete earlier in the year. If this were a single occurrence, it might not be a big deal, but when multiple people start adding projects, it can very quickly extend the size and scope of your shutdown to the point where it delays getting the facility back online. Again, the more time that the plant can be generating revenue, the better, so any non-essential projects that are lumped in with the shutdown will extend the outage time and could therefore be considered wasteful.

If your facility uses steam or hot water, then performing maintenance on your boiler is probably considered a big item that is included in the shutdown. It is true that—like anything else mechanical—boilers need maintenance, and most jurisdictions require that your pressure vessels be inspected & have the safety valves tested on an annual basis, so the shutdown can also be the designated time to check these items off the list. However, if you are pressed to decrease your down-time or avoid tasks that could be completed later,

then there is another option available to you: renting equipment. By running your connections to a suitable outside location in advance, a rental boiler (or a deaerator, condensate return tank, etc.) can be set in place and quickly connected, allowing production to continue while you take care of maintenance or inspection items on your own equipment. Outside of your shutdown period, if you have a problematic part that is giving you cause for concern, the option to quickly tie in a rental unit while you take care of your service issues will also give you a means to keep everyone happy: you can perform your desired maintenance and the rest of the facility can keep on running as usual with no down time.

No matter what your role is within the organization, identifying and reducing waste is a responsibility that everyone shares, and making things run more efficiently pays off. Simply put, at the end of the day the goal is to keep production running so that your business can make money. So if you have the option to remove some stress & reduce down time during the planned shutdown periods, all while simultaneously ensuring that the necessary work on your equipment can get done, you may find that you save yourself a lot of trouble in the long-run. Consider all of your options and implement a solution that works best for you and your company.

**Check out WARE's video on Rental Contingency at [Youtube.com/user/wareboilers](https://www.youtube.com/user/wareboilers).**  
[Rental Boiler Contingency Plan](#)

## Summer Shut Downs Give Your Boiler a Mini Vacation

Ahh summer – the sun is out, the boat is uncovered and a trip to the lake or beach is imminent. Just like we need vacations to recharge the batteries and gear up for the next big push – so do your boilers. At least one time per year you should shut down your boiler and look for ways to increase its efficiency.

Poor maintenance is the primary factory leading to boiler failure. This fact makes it ever important to make your annual boiler shutdowns count. The following checklist is by no means exhaustive, but it will go a long way in increasing the useful life of your boiler and its efficiency for the coming year.

- ▶ Inspect all equipment in your boiler room, not just the boiler itself
  - Examine external piping, valving, pumps and seals
  - Check to make sure your water softener operates within its normal operating ranges
  - Check pump alignment and motor assemblies
- ▶ Once the boiler is safely shut down and locked out, look for evidence of tube scaling or corrosion
- ▶ Replace any dried or cracked gaskets – spare gaskets can be found in WARE's online parts store, BoilerWARE house.com
- ▶ Ensure there are no cracks in the refractory – if cracks are present repair as needed
- ▶ Check the furnace for cracking and missing chips
- ▶ Check the burner housing for any cracking or warping – replace baffles and diffusers if any cracking or warping is present
- ▶ Check and test flame scanner to ensure it is operating within normal parameters
- ▶ Check wiring and pressure controls for brittle or discolored wiring
- ▶ Closely examine the low water cutoff system, and make sure it is operating within normal ranges
- ▶ Check gauge glass for any cracking – replace as needed

If one of these check list items gets red flagged in your

boiler inspection, what should you do? Here are a few options to consider:

WARE service technicians have solutions to improve the reliability of your boiler and can be called on 24/7, 365 days per year.

You can educate yourself and your team on how to troubleshoot and make routine boiler repairs. WARE's Boiler University, [www.wareboileruniversity](http://www.wareboileruniversity), is taught by boiler industry professionals and can teach you the skills necessary to maintain a healthy boiler.

Call WARE to execute your annual shutdown and service your boiler.

If you need replacement parts, check out BoilerWAREhouse.com.

[Check out WARE's videos on maintenance at Youtube.com/user/wareboilers.](#)

[Daily Boiler Maintenance](#)  
[Weekly Boiler Maintenance](#)  
[Monthly Boiler Maintenance](#)

## WARE was featured in

BOILERROOM EQUIPMENT INC's June 2016 newsletter, The Sponge, as their exclusive representative in Kentucky and other areas.

As one of our consistently highest producing representatives we have featured WARE before. What makes two of their recent projects special is that they are both going to bourbon distilleries. These two units are great examples of the diverse capabilities and ability to provide custom solutions we were able to offer our customers.

The first is a HeatSponge TITAN model sized for use on an industrial watertube boiler. Shown prior to final assembly this is a conventional HeatSponge design. That the distillery this unit is heading to just also happens to produce Vince's favorite bourbon is one of the things that keeps the job fun.

The other unit for a different distillery required old-school economizer skill. As an integral part of an older boiler BEI was tasked with recreating a decades old two-inch all welded economizer using a handful of very old construction drawings. BEI engineers were able to create an exact replacement for the failed original unit.

# HeatSponge

## Boiler Feedwater Sources - How to Keep your Boiler Healthy

When you go on a diet, what factors are important to you? If you are like most people, you probably focus on what you put in your body. When you eat bad food – it has ill effects on your body, but not all in the same way. Some foods are high in fat, some high in sodium, some have too many preservatives, but each food has different areas to consider when trying to clean up your diet. The same is true with boilerfeed water. Not all feedwater sources are the same, and depending on the source there could be different impurities to account for before using it in your boiler.

Water quality is the most critical factor that effects the useful life of your industrial steam system. There are various sources of raw water and each have a specific set of unique characteristics that should be accounted for in water treatment.

There are many sources for raw water; they most commonly include rivers, lakes, streams, reservoirs, and ground water from wells.

- **Lakes and Reservoirs:** Water from lakes and reservoirs generally contain suspended matter, dissolved solids and dissolved gasses. Natural water contains varying levels of soil, sand, turbidity, oil, industrial wastes and other suspended solid particulates. Sediment filtration is usually the first step in preparing this type of feedwater for treatment.
- **Rivers and Streams:** Raw water from rivers and streams is affected greatly by rainfall, soil erosion and industrial wastes. Though rivers and streams have greater variability in water composition it is typically softer water than that found in ground water sources.
- **Ground Water:** Generally ground water supplies have a more consistent water composition than that of rivers and streams. The water composition of ground water typically contains higher amounts of dissolved minerals which can also be detrimental to your boiler.

### What type of feedwater is best for my application?

The answer to this question is largely dependent on what type of raw water is available to you and your industrial operation. Even within the different types of raw water sources – each type varies greatly depending on factors like rainfall, geographic location, and the makeup of the soil. There are so many types of impurities that vary between regions, that it takes a feedwater specialist to ensure your boilers health. See the example below of how WARE came through for a recent customer. In addition to partnering with a boiler expert like

WARE, it is imperative to rely heavily on your chemical provider to give insightful direction on water treatment.

[Check out WARE's videos on water treatment at Youtube.com/user/wareboilers.](#)

[-What's in your water](#)  
[-Water softner resin](#)

### Case Study Preview

**Client:** Industrial Boiler Rental Client

**Core Challenges:** This rental client had access to raw water supplied by a nearby lake. This particular lake had heightened levels of silica. Unlike scaling that can be reduced using acid treatment – silica, when introduced into you boiler, acts like porcelain and is all but impossible to remove from heat transfer surfaces. The amount of silica present in the water source would have not only caused failure in the water softener – but would have had devastating effects on the boiler itself.

**The WARE Solution:** WARE's team of boiler experts used a high micron filter upstream of the water softener to ensure the safety of the boiler system. This allowed WARE to provide quality steam to a rental customer who depended on it.



Informative  
**WARE**  
videos



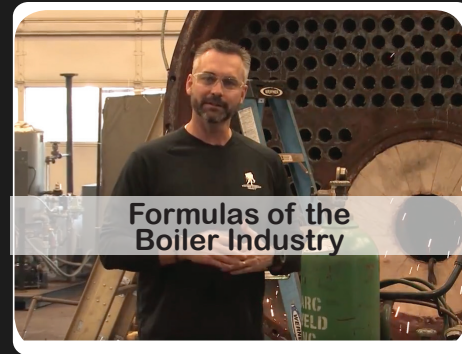
## BOILING POINT



Inside a Watertube Rental Boiler



Talking about Electric Boilers



Formulas of the Boiler Industry

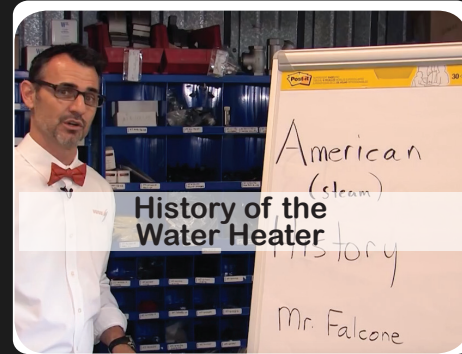
## STEAM CULTURE



Why are Boiler Rooms Spooky?



Water, Rust and Boilers



History of the Water Heater

### PRODUCT VIDEOS

HelioJet industrial cleaning technology - water jet

Heat Sponge

### CASE STUDIES

Heaven Hill -78,000PPH install

Amelin

EKU - 48,000 Coal Boiler Retube

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youtube channel

[youtube.com/user/wareboilers](https://youtube.com/user/wareboilers)

For more Boiling Point videos: [youtube.com/user/wareboilers](https://youtube.com/user/wareboilers)

**NEW VIDEOS UPLOADED ALL THE TIME.**

## WARE new and used List

All equipment listed is for sale or lease and subject to availability

Unit	HP/PPH	Year	Manf.	Fuel	Type	PSI	Ctrl.
779	82,500	2013	Victory Energy Limpsfield	G/#2	Steam	350	IRI
767	75,000	2011	Victory Energy	G/#2	Steam/SH	750/750	IRI
747	75,000	2000	B&W (Low NOx)	G/#2	Steam/SH	750/750	IRI
750	70,000	1996	Nebraska (Low NOx)	G/#2	Steam/SH	750/750	IRI
709	60,000	1979	Zurn (Low NOx)	G/#2	Steam	500	IRI
741	60,000	1979	Zurn	G/#2	Steam	550	IRI
795	40,000	1986	Cleaver Brooks	Gas	Steam	260	IRI
496	800	1990	York-Shipley (Low NOx)	G/#2	Steam	200	IRI
634	800	1972	York-Shipley	G/#2	Steam	150	IRI
SSB30	800XID	2014	York Shipley	(Low NOx) G/#2	Steam	250	UL/CSD-1
620	800	1975	York-Shipley	G/#2	Steam	250	IRI
SSB28	600XID	2012	York Shipley	(Low NOx) G/#2	Steam	250	UL/CSD-1
SSB15	500XID	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB139	500	2001	Cleaver Brooks		Steam	150	
SB226	400	2016	Victory Energy (Low NOx)	G/#2	Steam	150	UL/CSD1
SB138	350	1994	Cleaver Brooks		Steam	150	
SSB14	300XID	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB137	250	1994	Cleaver Brooks		Steam	150	
SSB36	250	2016	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD-1
415	250	1980	Eclipse	#2 Oil	HT/HW	954	IRI
SB216	250XID	2015	York-Shipley (Low NOx)	G/#2	Steam	150	UL/CSD1
SB148	200	1995	Kewanee	Gas	Steam	325	IRI
SB146	200	1995	Kewanee	Gas	Steam	325	IRI
SB213	175XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB220	175XID	2015	York-Shipley	G/#2	Steam	150	UL/CSD1
SB210	175XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SSB20	175XID	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB217	150	2015	York-Shipley	G/#2	Steam	150	UL/CSD1
SB224	150	2015	York-Shipley	G/#2	Steam	150	UL/CSD1
769	150	1998	Precision	Electric	Steam	150	UL

One hour quote on-line at [www.wareinc.com](http://www.wareinc.com) or call 800-228-8861

*continued*  
**WARE**  
new and used  
*List*

# WeRentBoilers.com

All equipment listed is for sale or lease and subject to availability

Unit	HP/PPH	Year	Manf.	Fuel	Type	PSI	Ctrl.
SSB32	150	2015	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB-232	100	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-231	100	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-228	100	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SSB37	100	2016	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB-230	70	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-229	70	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SSB35	70	2016	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB-234	50	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-227	50	2016	Victory Energy	G/#2	Steam	150	UL/CSD-1
SSB33	50	2015	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
Unit	Size	Manf.	Volt.	Type	Year		
RC-24	30 ton	Mc Quay	480v	3 ph	2000		
RC-26	40 Ton	Mc Quay	480 v	3 ph	1999		
RC-1	60 Ton	Mc Quay	480 v	3 ph	1995		
RC-2	60 Ton	Mc Quay	480 v	3 ph	1995		
RC-13	60 Ton	Trane	200-230 v	3 ph	1989		
RC-5	95 Ton	Mc Quay	480 v	3 ph	1995		
RC-6	105 Ton	Mc Quay	480 v	3 ph	1995		
RC-8	155 Ton	Mc Quay	480 v	3 ph	1995		
RC-10	195 Ton	Mc Quay	480 v	3 ph	1995		
RC-11	195 Ton	Mc Quay	480 v	3 ph	1995		
RC-25	300 Ton	Mc Quay	480 v	3 ph	2003		

Chillers

## WARE BOILER UNIVERSITY

Next Available 2016 Classes

Chattanooga, TN    Jeffersonville, IN  
November 8 - 10    September 20 - 22

For more details visit [WAREBOILERU.COM](http://WAREBOILERU.COM)



All net proceeds from the sale of SteamWARE T-shirts go to Kosair Charities, where health care is provided to Children when there is no one else to turn to.

[4STEAMWARE.COM](http://4STEAMWARE.COM)



Contact your local representative  
(800-228-8861)  
for Steam Studies

## GET SOCIAL WITH US



## ABMA Announces 2016 Randy Rawson Scholarship Recipients

ABMA is pleased to announce the recipients of the 2016 Randy Rawson Scholarship. These students have expressed an interest in the boiler industry and we are pleased to support their educational endeavors.

**Thor Brockman** – Computer Engineering –  
Clemson University - Sponsored by Victory Energy

**Tobias Dwyer** – Chemical Engineering –  
University of Arkansas-Fayetteville - Sponsored by Victory Energy

**Dylan Funk** – Mechanical Engineering –  
Pittsburg State University - Sponsored by Chanute Manufacturing

**Lauren Herrington** – Mechanical Engineering –  
University of Tulsa - Sponsored by Cust-O-Bend

**Klaryssa Huessmann** – Business/Marketing –  
Oklahoma Wesleyan University - Sponsored by Victory Energy

**Kolby Kiesling** – Engineering –  
Abilene Christian University - Sponsored by Applied Heat Recovery

**Charles Lefebvre** – Mechanical Engineering –  
University Laval - Sponsored Cleaver-Brooks & NATCOM

**Mark Martinez** – Engineering -  
Abilene Christian University - Sponsored by Applied Heat Recovery

**Nathan McDonald** – Electrical Engineering –  
Illinois State University - Sponsored by Karl Dungs

**Emily Ruble** – Exploratory Engineering –  
Western Kentucky University - Sponsored by WARE

**Cody Shults** – Civil Engineering –  
Oklahoma State University - Sponsored by Victory Energy

**Vincent Souza** – Mechanical Engineering –  
Monterey Peninsula College - Sponsored by Nationwide Boiler

**Brandi Young** – Business Administration –  
Southwestern College - Sponsored by Webster Combustion





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