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The GRIME

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Newsletter

How to Not Destroy a Boiler

Although boilers are made of heavy-duty materials, they aren't as indestructible as they seem. Without proper care and maintenance, you can destroy a boiler. From fuel explosions to contaminated feedwater, we are here to give you some tips on how to not destroy your boiler.

First, let's talk about fuel explosions. One way to prevent a fuel explosion is to make sure that your fuel mixture is not too rich. A fuel mixture that is too rich can cause a buildup of unburned fuel, which can ignite and cause an explosion. Next, make sure your oil is being atomized properly. If it is not, oil can build up in the floor of the furnace and combust. Finally, purge your system when necessary to ensure that you do not have explosive levels of concentrated fuel in the furnace.

Moving forward, we will cover the issue of contaminated feedwater. Feedwater can become contaminated by oils, resin, oxygen, treatment chemical, metals, and other compounds. Oxygen is one big enemy here. Most boiler plants employ strategies to eliminate oxygen from tubes: a deaerating feedwater heater and a continuous feed of sodium sulfite are examples. Acid is another feedwater contaminant that can cause serious damage to a boiler. Prevent the introduction of acid into the system by performing regular maintenance to ensure that the system is not leaking, and use double block and bleed valves in places where regenerant chemicals are added to water that is used in the boiler. You must ensure that the feedwater is uncontaminated in order to keep your boiler functioning as effectively as possible.

Low-water conditions are another potential issue for your boiler. Water in a boiler keeps the steel that composes the boiler from melting. Prevent low-water conditions by regularly ensuring that your feedwater pump, control valves, drum level controller, and safety valves are working properly. In addition, make sure that the deaerator system receives a consistent supply of water, that the control valve actuator receives a consistent stream of air pressure and that the steam load for the boiler stays consistent. If you are using a trip circuit, check it regularly to ensure that it is working properly.

Next, perform blowdowns when necessary. Doing this will ensure that the water within the boiler does not contain an unacceptable number of solids, which can lead to sludge formation and corrosion.

When it comes to storing a boiler, store it in a hot standby whenever possible. This can be done by using mud drum heaters as well as sending the blowdown of a working boiler through the boiler being stored. This keeps you from running the risk of improperly warming up the unit.

In regards to warming up a unit that is coming out of storage, it is imperative to ensure that the warm-up process is completed slowly. All of the different components of a boiler heat up at different rates; by moving the boiler through a slow warm-up process, you prevent boiler damage in the immediate future and in the long run.

When employing the use of a sootblower, make sure that the jets do not blow directly on the tubes. If this does occur, the tubes can become damaged. If you use a sootblower with wet steam, ensure that condensate is removed from the steam lines by preheating the lines. It is important to understand that the tubes of a boiler are very fragile and can be damaged by seemingly miniscule impacts.

Finally, understand the capacity at which your boiler is operating. Most boilers can be operated above their Maximum Continuous Rated (MCR) capacity. However, this does more damage to the boiler and may require more short and long-term maintenance than operating the boiler at the MCR.

Boilers are not indestructible, but keeping yours working as effectively is not impossible. Keep these tips in mind, call in the experts when necessary, and be reasonable in what you demand of your boiler system, and it will reward you with a long and healthy life of service.

Ware Installing New Control System Technology at the University of Louisville

Ware is currently partnering with the University of Louisville to replace a control system in the University's Steam Plant. The system controls the boilers to heat the University's entire campus and makes use of a new technology within the control system industry.

The old control system, which was used for a coal-fired boiler and a newer gas fired boiler, resulted in water damage and caused the shutdown of the steam plant. The customer wanted to ensure this did not happen again and wanted redundancy of their control. The old control system was removed to make way for the new control system. The new control system provides Human Machine Interface (HMI) software, PLC, Autoflame Burner Management, and Yokogawa multi-loop controllers, all communicating with the HMI over Ethernet TCP/IP in the operators control room.

The system has multiple screens on a dual-monitor setup that reads hundreds of points throughout the boiler room. It displays and records real-time data, alarms, and failures. Steam Plant operators now have redundant control capability to be able to operate locally and remotely.

The major benefit of the new control system is that it provides the University of Louisville Steam Plant with redundancy control over their multiple boilers, which is rather important considering the system heats the entire campus.

Ware's own Barry Stanfield notes that Steam Plant workers now have the ability to view information locally, or by "reading it off the web, or sending it to their iPhones."

Mitch Kennedy secured Ware's role in the project through a bid in April. Following that, Ware engineered and recommended supplies for the project, which the University purchased. Then two members of the Ware team, Barry Stanfield and Matt Hogue, began work on the installation of the system.

Patience has been necessary on both Ware's side of the project as well as the University's. When Ware initially bid on the project, the old HMI software was still available. However, by the time the project PO was issued, the old software had been phased out by the supplier and new Point-of-View software had been implemented. While the learning curve with the new software has been a challenge, it is ultimately a benefit for both parties; the project demonstrates Ware's ability to adapt and make the necessary changes to deliver the customer's desired results. Meanwhile, the University has been given the opportunity to utilize one of the newest available HMI technologies.

Overall, the partnership has been an enjoyable process. Barry said, "They're really good people...and the steam plant superintend Dave was very patient and helpful."

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
SB79	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
620	800	1975	York-Shipley	G/#2	Steam	250	IRI
SB139	500	2001	Cleaver Brooks		Steam	150	
SB200	400	2014	York-Shipley (Low NOx)	G/#2	Steam	150	UL/CSD1
SB138	350	1994	Cleaver Brooks		Steam	150	
SB137	250	1994	Cleaver Brooks		Steam	150	
415	250	1980	Eclipse	#2 Oil	HT/HW	954	IRI
SB148	200	1995	Kewanee	Gas	Steam	325	IRI
SB146	200	1995	Kewanee	Gas	Steam	325	IRI
SB170	250XID	2012	York-Shipley(Low NOx)	G/#2	Steam	150	UL/CSD1
SB213	175XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB194	175XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB210	175XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB204	150	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB196	150	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB209	150	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
RB769	150	1998	Precision	Electric	Steam	150	UL
SB212	100XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB202	100XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB208	100XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB206	70	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB207	50	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB211	50	2014	York-Shipley	G/#2	Steam	150	UL/CSD1

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continued

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.
SSB23	50 hp	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB21	70 hp	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB31	100XID	2014	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB18	150	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB20	175XID	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB25	250XID	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB14	300XID	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB15	500XID	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB28	600XID	2012	York Shipley	(Low NOx) G/#2	Steam	250	UL/CSD-1
SSB30	800XID	2014	York Shipley	(Low NOx) G#2	Steam	250	UL/CSD-1
Unit	**Size**	**Manf.**	**Volt.**	**Type**	**Year**		
RC-24	30 ton	Mc Quay	480v	3 ph	2000		
RC-21	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

STEAM IN CINEMA

When you watch a movie, isn't there something that you are able to recognize or point out—something that most of your friends probably wouldn't notice? If you are car enthusiast, don't you enjoy recognizing classic cars or the nuances in their modifications? If you have a flair for men's fashion, aren't you more prone to identify the watches or sunglasses that James Bond happens to be wearing? We all have something that triggers our interest and grabs our attention. Since we are in the business of providing steam, here at WARE we tend to notice boilers (more than we would like to admit) when they show up outside of our normal work environment, and the silver screen is where they tend to do this the most.

Steam has played a role in many feature films over the years, and since the Halloween season is fresh in our memory, where better to start than with horror movies? Most of you are probably familiar with a film called The Shining. If it has been a while and you're having trouble remembering, here's something to jog your memory: at one point, Jack Nicholson's character uses an axe to chop an opening in a door and sticks his face through before saying those immortal words, "Here's Johnny!"

Is it all coming back to you now? The haunted Overlook Hotel tries to persuade Jack Torrance, a man with a history of abuse and

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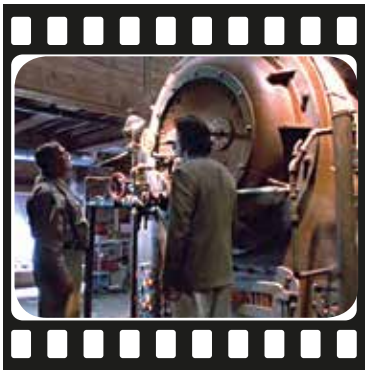
Steam in Cinema continued from Pg 4

drinking problems, to murder his wife and telepathically-gifted son. Stanley Kubrick's film certainly has its fair share of unforgettable scenes, but it strays from the book in some key details. In fact, Stephen King was so displeased with the dissimilarity between his book and the movie that he actually went back and re-made the story as a television miniseries! In Kubrick's version starring Jack Nicholson, Jack's character is ultimately turned into a human icicle after freezing to death in the snow, and the haunted hotel lives on. But did you know that in the original story, Jack perishes in a boiler explosion? We only briefly see two boilers in Kubrick's film, though there was only one in the book. Wendy is shown monitoring them, and they appear to be fairly modern, but ultimately they do not feature in any significant role for the duration of the movie.

In Stephen King's miniseries, on the other hand, the boiler is a critical part of the story. Supposedly the boiler is very old and has a malfunctioning relief valve, and if it is not manually dumped on a daily basis, it will build enough pressure to explode and destroy the Overlook Hotel. As you can see, the unit they feature looks almost alien compared to modern designs:



The boiler serves as a metaphor for Jack, as his madness is like the pressure on that boiler, slowly building and building, rising to dangerous levels before it ultimately ends in a catastrophe. As you have probably guessed, his maniacal pursuit of his wife and son distracts him, and he forgets to relieve the pressure, ultimately bringing about his doom and the destruction of the evil hotel. Aside from the story, it serves as a firm reminder to mind your equipment and address safety issues immediately—if maintained and operated properly, scary boilers should stay in scary films. The next time you are out at the movies or watching TV at home, see if you can spot some steam in cinema!

For those who are curious, Stephen King's inspiration for the book—as well as the filming location for both the movie and the miniseries—was none other than the Stanley Hotel in Estes Park, CO.

2015 Class Dates and Locations

Eastern Kentucky University
March 10 - 12, 2015

Chattanooga, TN
July 14 -16, 2015
December 8 - 10, 2015

Jeffersonville, IN
May 5 - 7, 2015
September 15 - 17, 2015

for more details:
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