WARE
Powerful solutions...
Extraordinary results.

TheGRIME

October and November 2012 Newsletter

Regular boiler maintenance is crucial to safe operations

Statistics from the National Board's violation tracking system show that most reports of boiler violations come from the boiler controls, components and piping areas. Regular maintenance and proper inspection are crucial to ensure continuous, dependable operation with no accidents.

Different boilers have different inspection requirements.

Power boilers – where the steam pressure is set above 15 pounds per square inch – require an internal inspection annually. The inspection requires that both the waterside and fireside be opened and cleaned before a certified visual inspection. All plugs and caps to the water column piping and lower water cut off devices must be removed in order to prove that connections are free and clear of all impediments.

Steam heating boilers – where the steam pressure is set at or below 15 pounds per square inch – require an external inspection every 36 months. The inspection requires that a certified visual inspection be completed while the equipment is in operation. It is not a requirement to remove all plugs and caps to the water column piping and low water cutoff devices, but it is recommended.

Hot water heating boilers – where the set pressure is 0 – 160 pounds per square inch with a maximum temperature of 250°F – have the same requirements as the steam heating boilers above.

Remember that boiler owners and operators are responsible for obtaining and maintaining documentation on all equipment and assuring code compliance and safe operation.

For new installations, boilers must be certified by the American Society of Mechanical Engineers (ASME) and have proper stamping and identification. A contractor must submit an installation registration form. An inspection must be completed on the new boiler and the appropriate permit to operate submitted and posted.

Here are a few tips for making sure an existing boiler is maintained properly:

•Maintain a clean and orderly boiler room

•Mark piping systems with flow direction or post a piping diagram

•Properly insulate piping

•Maintain valves and fittings, making sure to allow for thermal expansion

•Repair leaking systems and connections immediately to minimize pump leakage

•Keep water supply to the boiler clean and protect floor drains

•Create easy access to the boiler area and any equipment needed to work on the boiler

•Maintain all clearances recommended by the manufacturer

•Assure sound boiler piping support, foundations and settings for all equipment

•Check fuel system regularly and test boiler safety per manufacturer

•Provide proper ventilation for all fired appliances in the boiler room

•Inspect exhaust venting and keep the breeching and chimney clean for proper draft to remove combustion gases

•Prevent corrosion, pitting and scale by conducting boiler water analysis and chemical treatment

•Lift safety and relief valves at least once a year to test

•Always maintain accurate and complete boiler operation log

•Always use the services of a trained boiler operator to train other operators

Ware was awarded a Major Fuel Saving Project

A year ago, Ware, in a partnership with L'Acquis Consulting Enterprises, was awarded a major fuel savings project for St. Vincent Hospital in Indianapolis, Indiana.

St.Vincent is a member of Ascension Health, the nation's largest not-for-profit Catholic Healthcare System. Our hospital system is the state's largest healthcare employer, with 20 health ministries serving 47 counties in central and southern Indiana.

The project scope included retrofitting a 30,000 pph Zurn watertube and two 24,000 pph Keystone watertubes.

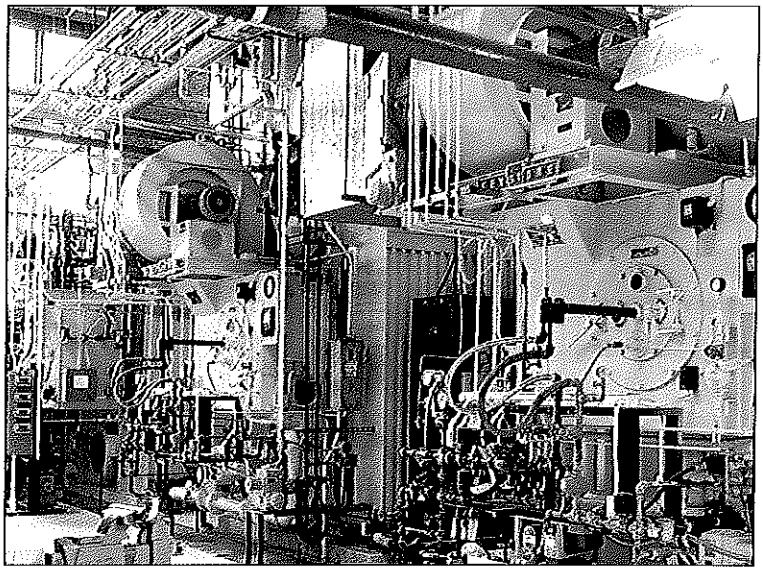
The customer expected the project to save a typical 13 - 15% for the type of equipment being installed.

In order to provide the level of savings that the customer expected, Ware chose to install a Limpsfield low nox/low O2 combustion system with Autoflame combustion management. The system also had Autoflame 3 parameter trim and utilized the customer's data transfer interface.

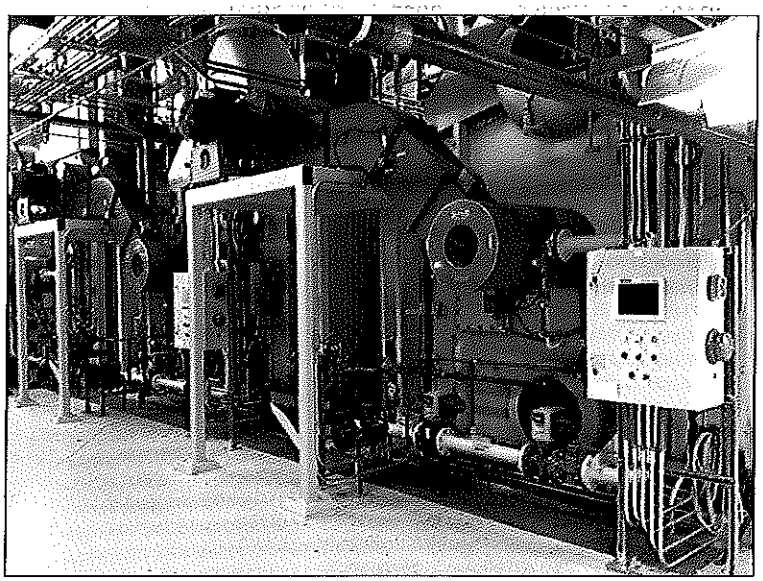
Traditional low nox systems sacrifice efficiency for nox control, but with the Limpsfield model and Autoflame combined enable the customer to not only lower nox to 30 ppm but also lowering CO below 10 ppm while maintaining 3% or better low O2 throughout the firing range.

"The Limsfield and Autoflame combination is really the best of both worlds," said Gerald Blain, Ware's Regional Manager.

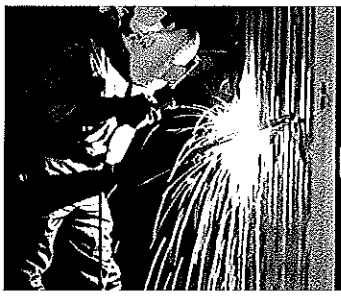
The third and final unit is about to be completed this month.



Before photo indicates original boiler manufactures burner and controls for Zurn and Keystone



After photo shows installed Limpsfield burners and Autoflame controls.



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Equipment List

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

Unit	HP/PPH	Year	Manufacturer	Fuel	Type	Pressure	Controls
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
752	60,000	1980	B&W	G/#2	Steam	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
SB80	40,000	1986	Cleaver Brooks	Gas	Steam	260	IRI
615	40,000	1975	B&W	G/#2	Steam	325	IRI
496	800	1990	York-Shipley (Low NOx)	G/#2	Steam	200	IRI
634	800	1972	York-Shipley	G/#2	Steam	150	IRI
SB150	800	2011	Victory Energy (Low NOx)	G/#2	Steam	300	IRI
SB123	600	2008	York-Shipley	G/#2	Steam	150	UL/CSD1
SB149	500	2011	Victory Energy (Low NOx)	G/#2	Steam	250	IRI
SB139	500	2001	Cleaver Brooks		Steam	150	
SB63	500	1985	Superior	G/#2	Steam	150	IRI
SB152	400	2011	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
719	250	1987	Superior	G/#2	Steam	150	IRI
SB148	200	1995	Kewanee	Gas	Steam	325	IRI
SB146	200	1995	Kewanee	Gas	Steam	325	IRI
SB147	200	1995	Kewanee	Gas	Steam	325	IRI
SB170	250XID	2012	York-Shipley	G/#2	Steam	150	UL/CSD1
SB172	175XID	2012	York-Shipley	G/#2	Steam	150	UL/CSD1
SB176	175XID	2012	York-Shipley	G/#2	Steam	150	UL/CSD1
RB769	150	1998	Precision	Electric	Steam	150	UL
SB163	150	2001	Miura	G/#2	Steam	170	UL/CSD1
SB164	150	2001	Miura	G/#2	Steam	170	UL/CSD1
SB132	100	2003	Johnston	Gas	Steam/HW	15/30	IRI
SB131	100	2003	Johnston	G/#2	Steam/HW	15/30	IRI
SB178	100XID	2011	York Shipley	G/#2	Steam	150	UL/CSD1
SB177	100XID	2011	York Shipley	G/#2	Steam	150	UL/CSD1
SB179	70	2012	York Shipley	G/#2	Steam	150	UL/CSD1
SB167	50	2011	York Shipley	G/#2	Steam	150	UL/CSD1
SB145	50	2001	Cleaver Brooks	Gas	Steam	150	IRI

Request a quote on-line at www.wareinc.com or call 800-228-8861

WARE buys used boilers

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

Unit	Size	Manufacturer	Voltage	Type	Year
RC-24	30 Ton	Mc Quay	480 v	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

New YORK SHIPLEYS AVAILABLE

Unit	HP/PPH	Year	Manufacturer	Fuel	Type	Pressure	Controls
SSB12	50 hp	2011	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
SSB22	100XID	2012	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
SSB6	250XID	2011	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
SSB8	400XID	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
SSB17	600XID	2012	York Shipley	(Low NOx) G/#2	Steam	250	UL/CSD-1
SSB11	800XID	2011	York Shipley	(Low NOx) G/#2	Steam	250	UL/CSD-1

How to determine if a sight glass is full or empty

When no water level shows on a sight glass, you can quickly tell whether it is completely full or completely empty. Hold a pencil, or equivalent, against the far side of the sight glass tube at an angle of approximately 45°. If the image of the pencil viewed through the glass appears to run across the glass and changes no matter what the angle of the pencil, the glass is full.

If the image viewed through the glass runs up and down the glass at a sharper angle than the actual angle of the pencil, the tube is empty.

Practice this procedure with the normal water level by viewing through the sight glass above and below the water line. Thick wall tubing gives a less pronounced difference, but the difference is still obvious.

Preventing Iron Oxide Problems

Iron oxide is a common, but often neglected, boiler problem. Formed by the reaction of iron (steel) and oxygen, iron oxide is often called "red iron rust".

It forms on boiler tubes and tube sheets from dissolved oxygen coming in with the feedwater. Iron oxide forms a deposit layer on the tubes and inhibits heat transfer. This reduces the overall efficiency of the boiler and causes more fuel to be used.

Iron can also enter the boiler in the form of dissolved iron in the feedwater (from well water high in iron or from return condensate high in iron).

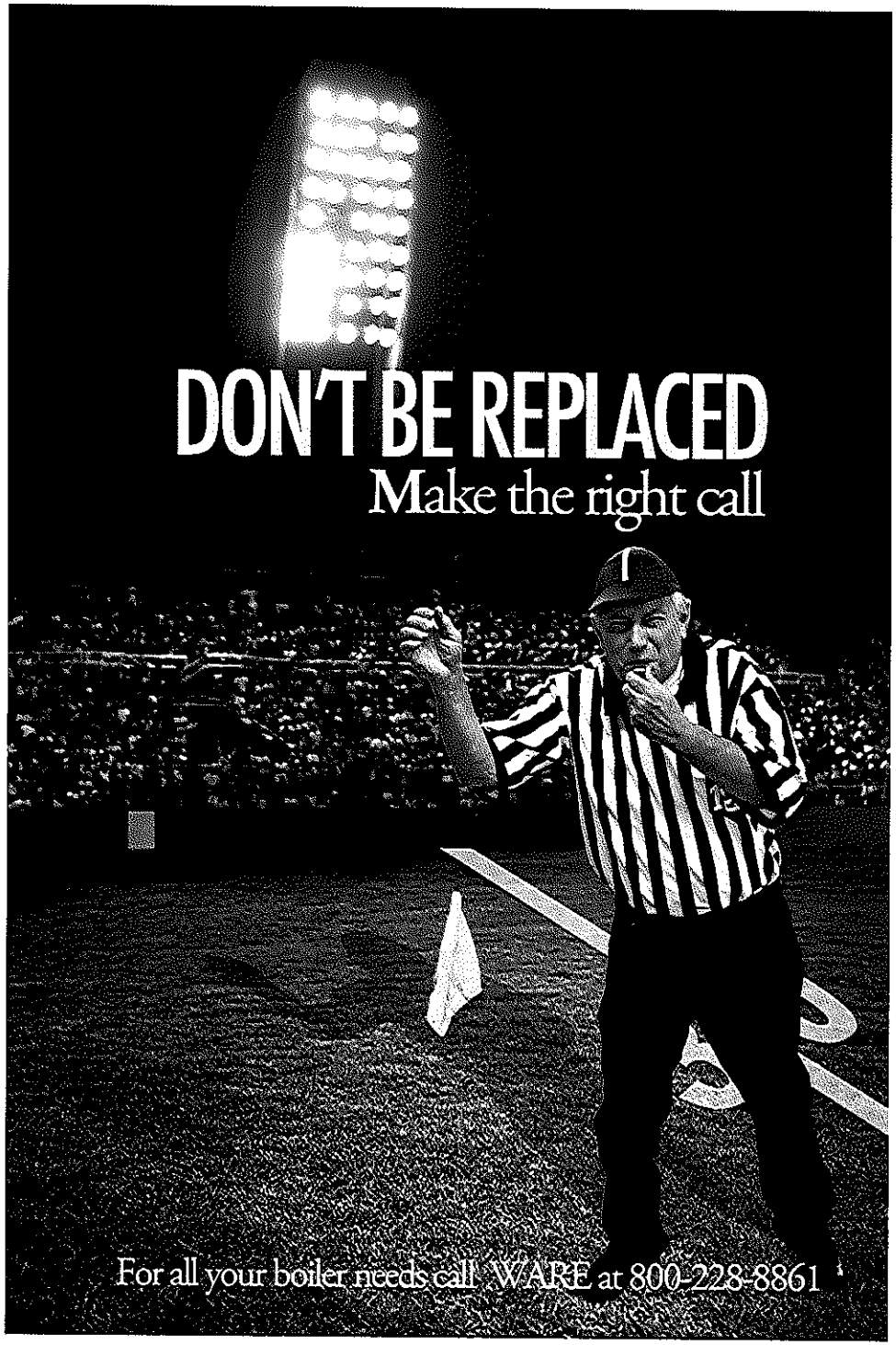
When this type of iron oxide mixes with highly alkaline boiler water, it reacts with hydroxide to form iron hydroxide. This gelatinous precipitate can stick and cook onto boiler tubes. This can badly damage the tubes and lead to costly equipment downtime.

How can you prevent such problems? Proper blowdown is critical for removing iron sludge from the boiler. Using an oxygen scavenger formulated with sodium sulfite will remove oxygen and prevent the chemical reaction that produces iron oxide.

A boiler system dispersant can also be highly effective. It will prevent the iron oxide from sticking to boiler tubes. It lifts and suspends iron oxide, mud and silt so that they can be removed during normal blowdown.

Information was taken from CHEM-AQUA's Water Trends newsletter.

Get a quote on-line at www.wareinc.com/boilers



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