



# The GRIME

December 2011 / January 2012  
Newsletter

## Proper insulation can save thousands each year

Insulation is an important tool in reducing wasted energy by up to 90%. It is recommended that a survey of all steam distribution and condensate return piping be conducted and insulation installed where needed.

Steam and distribution and condensate return lines that are not insulated can consistently lose energy. All surfaces over 120° F – like boiler surfaces, steam and condensate return piping and fittings - should be properly insulated.

The insulation also needs to be maintained properly as it can become damaged. Often, damaged or wet insulation is removed and never replaced. To avoid compromised insulation, remove damaged areas immediately and eliminate sources of moisture prior to installing the new insulation. Leaking valves, external pipes and tubes as well as adjacent equipment can all be sources of moisture.

Another option is removable insulating jackets that are available for valves, flanges, steam traps and other fittings. It is important to note that a six-inch gate valve may have more than six square feet of surface area from which to radiate heat.

Once a steam line is insulated, changes in the heat flow can affect other parts of the system.

### Example

Heat Loss for 100 Feet of Uninsulated Steam Line				
Distribution Line	Heat Loss for 100 Feet of Uninsulated Line, MMBtu/year			
Diameter, Inches	Steam Pressure, Psig			
	15	150	300	600
1	140	285	375	495
2	235	480	630	840
4	415	850	1120	1500
8	740	1540	2030	2725
12	1055	2220	2910	3920

*Based on horizontal steam pipe, 75° F ambient air, no wind velocity, and 8,760 operating hours per year.*

In this example, the plant fuel cost is \$8 per million Btu (\$8.00/MMBtu). A survey of the steam system showed that there were 120 feet of uninsulated 1-inch diameter steam line and 175 feet of uninsulated 2-inch line. Both lines were operating at 150 pounds per square inch gauge (psig). In addition, 250 feet of uninsulated 4-inch diameter line was operating at 15 psig.

From the table above, the quantity of heat lost per year is:

For the 1-inch line: 1,120 feet x 285 MMBtu/year per 100 feet = 3,192 MMBtu/year

For the 2-inch line: 175 feet x 480 MMBtu/year per 100 feet = 840 MMBtu/year

For the 4-inch line: 250 feet x 415 MMBtu/year per 100 feet = 1,037 MMBtu/year

The total heat loss was 5,069 MMBtu per year. Given a boiler efficiency of 80%, the annual cost savings from installing 90% efficient insulation would be \$45,620.

Information for this tip was taken from The National Board of Boiler and Pressure Vessel Inspectors. More information can be found at [www.nationalboard.org](http://www.nationalboard.org).

## POWER FLAME PROJECT SHOWCASE

Over the years we have been asked to upgrade burners and controls on Cleaver-Brooks (CB) boilers. The integral blower/burner assembly and domed front door, characteristic of the CB design, has made retrofits especially challenging. The PFI Nova Plus retrofit package replaces the integral burner assembly and allows the re-use of the existing gas trains and blower assembly. Unfortunately, the blower assembly

is not always sized to allow for the higher excess air levels required for ultra low NOx operation (or use of FGR when

required) and the boilers have to be de-rated or a new blower assembly purchased from CB.

More recently, our approach has been to remove the CB front door and integral blower assembly and install a conventional, fire tube boiler front door. This provides two primary benefits: first, it allows the boiler to be fitted with a standard Nova Plus burner versus a custom fit retrofit package. Secondly, by eliminating the CB door and blower, the client no longer has to go to CB for replacement parts which we know can be extremely expensive due to proprietary nature of those components. We can



now offer full service and maintenance on all the boiler equipment (burner, blower, controls, door gaskets, etc...).

To facilitate the removal of the CB door and fabrication of the conventional door (two or three piece designs), we have developed a replacement survey packet that ensures we get the dimensions off the boiler to have a correctly fitting door and gaskets. Typically, we

have the door fabricated by a local metal fabricator and the final fit-up is accomplished by our mechanics/technicians.

We have found this approach to be less labor intensive than the kit ap-

proach and has far more benefits for the customer over the remaining life of the boiler. We are working closely with PFI to have them fabricate the replacement boiler doors with the burner, so the client gets a complete, factory provided retrofit package.

A similar approach can be used when retrofitting CB boilers with conventional gas/oil burners, such as C or Cmax, or the low NOx versions of these burners that require IFGR to meet sub 30 PPM on gas or sub 90 PPM on light oil. Combined with parallel positioning controls and O2 trim, and you can provide your clients with an energy saving package.

## Finally, something that will pay for itself

Gestra MK 45 steam trap saves you money now! The MK series pays for itself.

The MK 45 is available in Flanged, Socket-weld and NPT threaded connections which give you the flexibility to meet your specific system requirements.

Some of the advantages of the MK series steam traps are :

- The MK 45 has an integral check valve and strainer

Other products would typically require check and strainer.

- Sub cooled discharge allows for water seal resulting in no loss of live steam

- Automatic startup – Large cold-to-hot startup and running load ratios

- Not affected by ambient conditions

- Repairable via replacement seat and / or membrane

- 3 Year warranty on MK series traps

It is widely expected that it cost about \$1,000 to replace a trap and that the trap failure rates run about 5 – 10% annually. This makes the 3 year warranty offered by Flowserve Gestra an outstanding value. The typical failure rate of the MK series is LESS than ½ the rate of other leading brands not to men-

continued on pg 5





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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
SB29	1,200	1990	Johnston (Low NOx)	G/#2	Steam	200	IRI
496	800	1990	York-Shibley (Low NOx)	G/#2	Steam	200	IRI
634	800	1972	York-Shibley	G/#2	Steam	150	IRI
SB150	800	2011	Victory Energy (Low NOx)	G/#2	Steam	300	IRI
SB123	600	2008	York-Shibley	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-Shibley (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-Shibley	G/#2	Steam	150	UL/CSD1
SB144	175XID	2010	York-Shibley	G/#2	Steam	150	UL/CSD1
SB166	175XID	2010	York-Shibley	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
SB125	150	2008	Superior	G/#2	Steam	150	UL/CSD1
SB132	100	2003	Johnston	Gas	Steam/HW	15/30	IRI
SB131	100	2003	Johnston	G/#2	Steam/HW	15/30	IRI
SB158	100XID	2011	York Shibley	G/#2	Steam	150	UL/CSD1
SB159	100XID	2011	York Shibley	G/#2	Steam	150	UL/CSD1
SB165	70	2011	York Shibley	G/#2	Steam	150	UL/CSD1
SB167	50	2011	York Shibley	G/#2	Steam	150	UL/CSD1
SB145	50	2001	Cleaver Brooks	Gas	Steam	150	IRI
RB753	15	1986	Fulton	Electric	Steam	150	UL

Request a quote on-line at [www.wareinc.com](http://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
DH-01	100 Ton	Trane	480 v	3 ph	2008
DH-02	100 Ton	Trane	480 v	3 ph	2008
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
SSB16	70 hp	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB3	100XID	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB4	150	2011	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB5	175XID	2011	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

## Create your own opportunities and join Ware's Partner Program

Ware has been in business since 1952, and is a family owned and operated company. Throughout the past years Ware has established a reputation of the highest quality customer service which has allowed the company much success. Ware has grown and expanded its operation, and is currently one of the largest boiler rental companies in the United States.

Ware has taken great pride in creating and developing a TEAM concept. The Partner's Program began in 1988 due to the fact that many companies were impressed by Ware's TEAM concept approach, and wanted to get involved.

The Partner's Program is an opportunity for new businesses to take advantage of Ware's long standing experience and reputation in the industry. As a partner, businesses receive pricing advantages on Ware equipment,

and leads are referred to partners through mass marketing and a creative advertising program. Partners receive preferred access to Ware's boiler rental fleet as well as access to Ware's premier technical experience, and partners are assigned territories in which they receive a percentage of all rentals.

Ware is not only one of the largest boiler rental facilities in the United States, but also specializes in chiller rentals and maintains a valve shop.

The Partner's Program is a win-win situation. The strength of Ware coupled with the established client base of your company has the potential to create a phenomenal team.

For more information contact Chris Jones at 1-800-228-8861 or email at [chris.jones@wareinc.com](mailto:chris.jones@wareinc.com).

# ADVERTISEMENTS



This Month Feature on  
WARE's You Tube Channel

**AUTOFLAME**

Great Video - AutoFlame Control System with a Limpsfield Burner  
[www.youtube.com/user/wareboilers](http://www.youtube.com/user/wareboilers)



Check The Valve Shop out. They offer testing, diagnosis, maintenance and repair services for all makes and models of valves. All Valve Shop repair procedures strictly adhere to the industry standards and codes.



**SENSUS Gas Regulators**  
WARE has a large inventory of Sensus Gas Regulators Model 496, 143-80-2 and 243-8-2  
Call for more details 800-228-8861



## SteamWare T-Shirts

Ware donates all net proceeds from the sale of Steamware T-shirts to Kosair Charities. Where health care is provided to Children when there is no one else to turn to. [Check it out on www.4steamware.com](http://www.4steamware.com)

## BOILER TRAINING

### WARE BOILER UNIVERSITY 2012

- Jan. 17 - 19, 2012 / Chattanooga, TN
- Feb. 07 - 09, 2012 / Memphis, TN
- Mar. 13 - 15, 2012 / WKU, KY
- Apr. 17 - 19, 2012 / Jeffersonville, IN
- Aug. 21 - 23, 2012 / Jeffersonville, IN
- Sept. 18 - 20, 2012 / Chattanooga, TN
- Oct. 30 - Nov 1, 2012 / Chattanooga, TN
- Nov. 13 - 15, 2012 / Jeffersonville, IN
- Dec. 11 - 13, 2012 / Chattanooga, TN

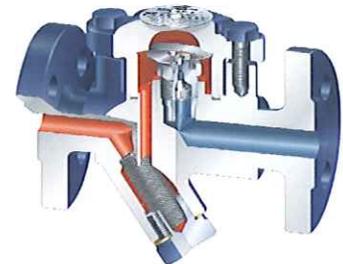
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Finally, something that will pay continued from pg2

tion the cost to operate other leading traps.

Regarding the energy saving aspect of the Flowserve Gestra steam trap. Testing was done on a test stand that was built and run with a process certified by TÜV in accordance with ASME PTC-39. The ASME specification lays out the process for testing steam traps for live steam consumption. During the course of the testing we tested thermodynamic steam traps and inverted bucket traps as well as Flowserve Gestra's products. Testing confirmed that the thermodynamic steam trap and inverted bucket trap technologies consume live steam during the course of normal operation; a figure of two pounds per hour per trap is what we use to calculate the savings by changing technologies to Flowserve Gestra's MK series thermostatic steam traps. Without knowing the exact number of inverted bucket traps and thermodynamic traps I cannot give you a figure, but the calculation is straight forward: cost of steam/1000 lbs x 2 lbs/hr cost to operate x hours per year of operation x number of traps installed.

Example:  $(\$10 / 1000 = .01) \times 2 \text{ pph} \times 8400 \text{ hours} \times 300 \text{ traps} = \mathbf{\$50,400}$   
**per year**  
**Just one trap could be costing you \$168 / year to operate.**





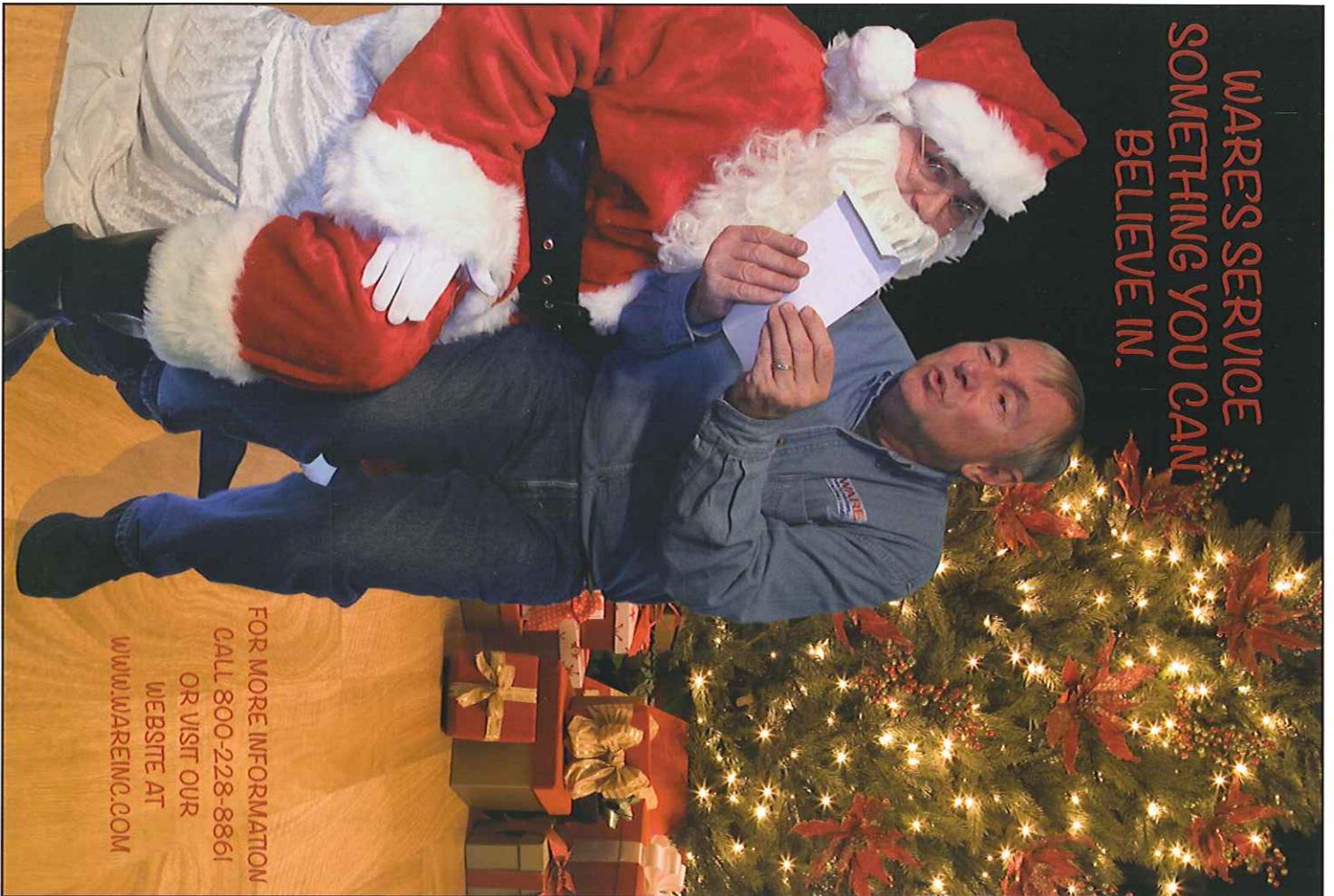
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