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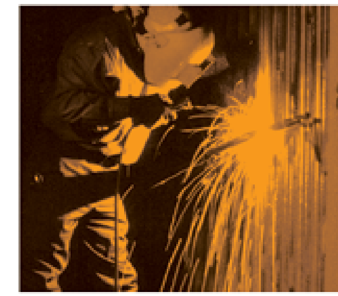


WARE Powerful solutions... Extraordinary results.

The GRIME

April and May 2012
Newsletter

Ware helps customers avoid downtime and end threat of outage

The Hilton Garden Suites in Lexington, Kentucky, had been operating for too long with the original Web and Jarco boilers that were installed when the hotel was built 25 years ago.

The Hilton management knew they were living on borrowed time with the two boilers. They had to cycle the boilers on and off in order to maintain the level of hot water they needed. With 174 guest rooms in a heavily utilized business and tourist area of Lexington, they knew they did not want to risk an outage that would mean weeks of lost revenue.

“Our old boilers needed to be reset constantly and were not supplying the level of hot water we needed,” said Alan Pritchard, maintenance supervisor at the Hilton.

The Hilton contacted Ware about new boilers after working with them for the past five years for regular maintenance and failure calls and replacement of parts like the circulation pumps.

Ware worked with Pritchard and his team to develop a plan for installing new boilers with as little down time as possible for the hotel. The timeline was to shut down the hotel to guests at Noon on a Sunday and reopen by 5 p.m. the next day.

“In order for this tight timeframe to work, we had to have everything fall into place perfectly,” said Brian Coolbaugh, engineering consultant for Ware.

Ware pre-fabricated some of the parts in their shop in Louisville in order to have everything ready for the quick turnaround.

“I don’t know how they did it as fast as they did,” said Pritchard. “Our corporate office set the timeframe of 29 hours and Ware was finished within 24 hours.”

Ware installed two RBI gas only, hot water boilers with 1.2 million BTUs and completed the project well within the hotel’s timeframe for reopening. Now, instead of the expensive habit of cycling boilers to maintain their hot water levels, one of the new boilers can now handle a majority of the load. In addition to eliminating all of their maintenance and repair costs, the Hilton is now seeing fuel savings.

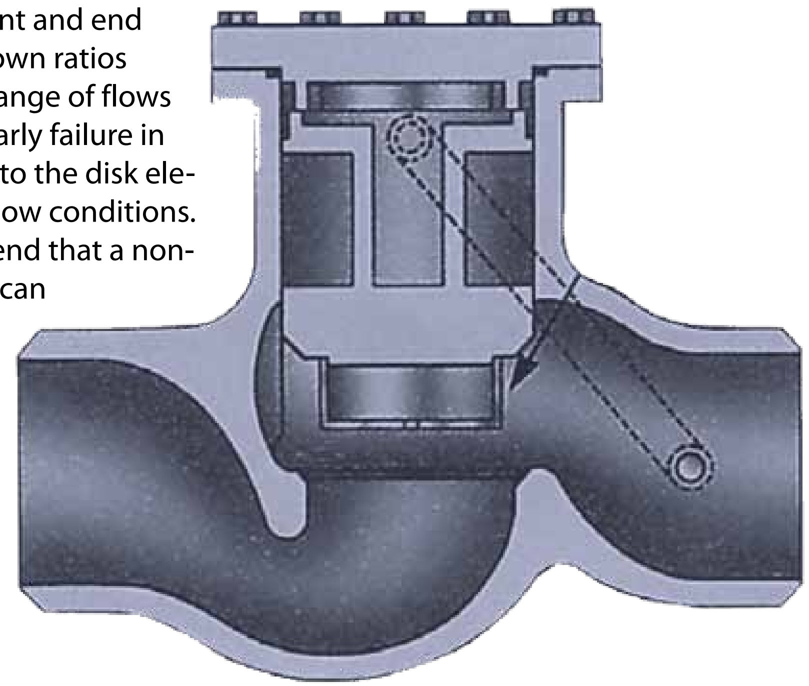
“Everything is working better now,” said Pritchard. “With our old boilers, it took 20 minutes to get hot water to the sixth floor, now it is instantaneous. And, now that our boilers run with independent pumps, if one fails, we have redundancy.”

As part of the value-add, during the process of planning for the new installations, Ware also helped the Hilton better configure the footprint of their boiler room for improved safety and efficiency.

In the next few months, Ware will return to the Hilton to replace their hot water storage. These two installations and reconfiguration of their boiler room will free up floor space, create some additional storage and free up space to more easily service other equipment.

“You couldn’t ask for a better group to work with than the people at Ware,” said Pritchard. “When Brian said something would be done, you could set it in stone and know that it would be done.”

High Turndown Ratio Non-Return Valve Options



Today's higher efficiency burner management equipment and end user energy conservation practices often require Turndown ratios (max flow / min flow) to approach or exceed 10:1. The range of flows encountered usually will result in noisy operation and early failure in mainsteam non-return and feedwater check valves due to the disk elements making contact with the valve body seat at low flow conditions. Generic non-return valve manufacturers often recommend that a non-return valve not be operated below 50% disk lift, which can limit the valve turndown ratio capability to 2:1 or 3:1. More highly engineered non-return valve manufacturers are confident their valves can safely operate at disk lifts as low as 25%, which usually results in non-return valves having 4:1 to 6:1 turndown ratios. When 10:1 turndown is required, Flowserve's Edward Valves offers a disk skirt extension to their standard disk. The disk skirt acts like the flaps on an airplane wing, producing more lift of the disk at lower flows. Extensive testing conducted by Edward Valves substantiates both the high turn down capabilities of the disk skirted valve as well as predicted max flow pressure drop. The drawing below shows a typical disk skirt extension to the bottom of the disk on a check valve. There is about a 10-20% higher max flow pressure drop with a disk skirt, but that is usually an acceptable tradeoff to be able to achieve 10:1 or higher turndown ratio.

Flowserve offers an on-line valve sizing tool at www.flowserve.com/Applications/EvalSz-Application and their regional sales engineers are happy to size valves for individual customers. Below are two sizing charts for a typical package boiler application. The first shows the valve without and the second with a disk skirt. Note that adding the disk skirt increases max flow pressure drop from 3.8 psig to 4.6 psig, but improves turndown ratio from 5.1: to 13:1.

FLOWSERVE

EValSz (1.2)
Selection Program for Edward Valves

Single Valve Pressure Drop Calculations
3/8/2012

Size 8 Figure C303 (STD Class 300 Stop Check (Non-Return) Valve)

Valve Factors	Valve Options
Flow Coeff. (C_V): 858.8 @100% open Piping Geom. Factor (F_p): 1.00 Terminal Pressure Ratio (X_T): 0.23 @ 100% open	Inlet Pipe NPS: 8 Inlet ID: 8 in (VALVE ID) Outlet Pipe NPS: 8 Outlet ID: 8 in (VALVE ID) Valve Stem @ 100% open
Fluid Variables	**Pressure Drop**
Fluid Type: Saturated Steam Fluid Temperature: 375 F Upstream Pressure: 170 psig Flow Rate: 65,000 lb/hr Fluid Density: 0.4048 lb/cu ft Inlet Velocity: 128 ft/sec	The valve is 100% open. Valve pressure drop: 3.8 psig Flow Rate for 25% Open: 12,799 lb/hr Flow Rate for 100% Open: 32,117 lb/hr Choked flow rate: 144,770 lb/hr Flow Noise is approximately 72 dBA. Turndown Ratio: 5.1:1

FLOWSERVE

EValSz (1.2)
Selection Program for Edward Valves

Single Valve Pressure Drop Calculations
3/8/2012

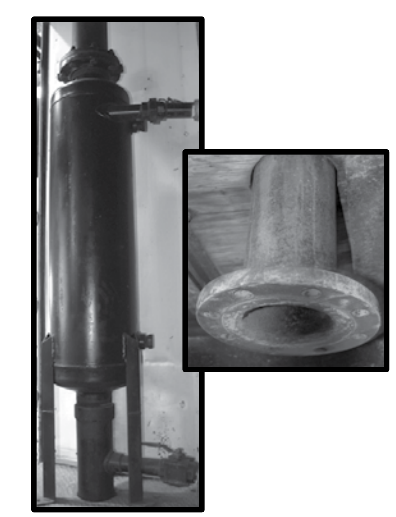
Size 8 Figure C303K (STD Class 300 Stop Check (Non-Return) Valve)

Valve Factors	Valve Options
Flow Coeff. (C_V): 858.8 @100% open Piping Geom. Factor (F_p): 1.00 Terminal Pressure Ratio (X_T): 0.23 @ 100% open	Inlet Pipe NPS: 8 Inlet ID: 8 in (VALVE ID) Outlet Pipe NPS: 8 Outlet ID: 8 in (VALVE ID) Valve Stem @ 100% open Results are for a valve with a Disk Skirt.
Fluid Variables	**Pressure Drop**
Fluid Type: Saturated Steam Fluid Temperature: 375 F Upstream Pressure: 170 psig Flow Rate: 65,000 lb/hr Fluid Density: 0.4048 lb/cu ft Inlet Velocity: 128 ft/sec	The valve is Fully Open. Valve pressure drop: 4.6 psig Approximate Turndown Ratio: 13:1

BLOWDOWN PROCEDURE

Did you know periodic blowdown is necessary to control conductivity levels, remove sludge and sediment, control high water levels or high chemical concentrations and to dump or empty a boiler. Never blow down a boiler while operating in a high-fire condition.

Check water level, then slowly open the blowdown valve until it is partially open. Once the purge is initiated, fully open the valve. Slowly close the valve when finished with the blowdown. Always remain at the valve until the task is complete; never leave a blowdown valve. Monitor the gauge glass and do not lower the water level to a dangerously low point.



WARE buys used boilers

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

Chillers

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
SSB16	70 hp	2012	York Shipley	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB19	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

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Equipment List

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

Boilers

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-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	2010	York-Shipley	G/#2	Steam	150	UL/CSD1
SB166	175XID	2010	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
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
SB171	100XID	2011	York Shipley	G/#2	Steam	150	UL/CSD1
SB174	100XID	2011	York Shipley	G/#2	Steam	150	UL/CSD1
SB165	70	2011	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
RB753	15	1986	Fulton	Electric	Steam	150	UL

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