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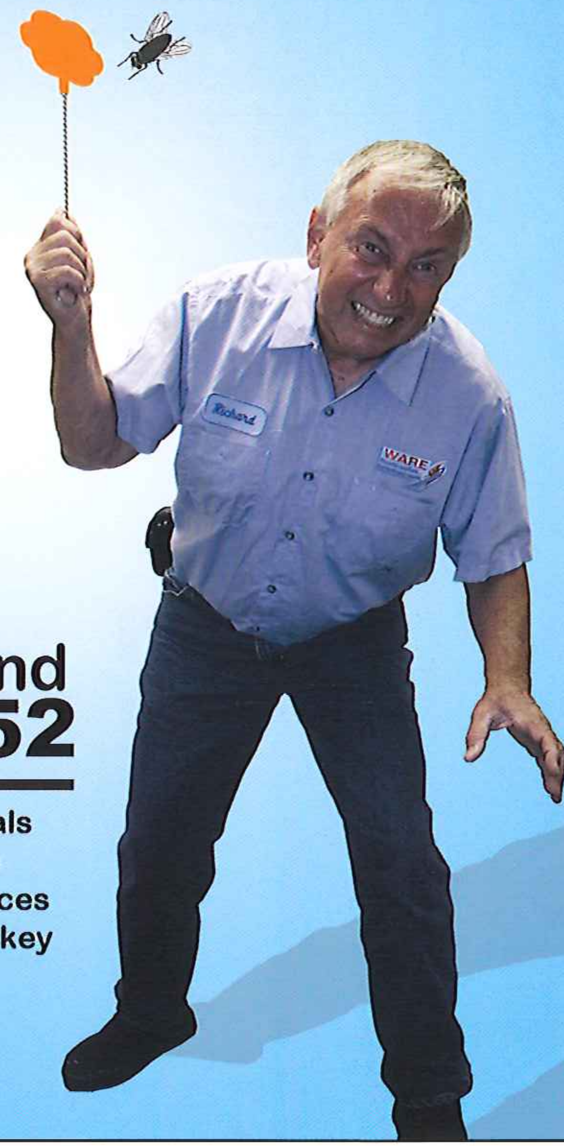

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The GRIME

August and September 2014 Newsletter

Electric Heat Tracing vs. Steam Heat Tracing

Heat tracing is a process that keeps up the temperature of pipes while fluids move through them in order to prevent the fluids from solidifying. This can be done by means of electricity or steam.

Electric heat tracing utilizes an electrical heating element that runs the length of a pipe. This heating element helps to keep the temperature high within the pipe so that the fluid maintains its desired liquid state.

Steam heat tracing utilizes a pipe containing low pressure steam attached to and insulated with the pipe containing the fluid. The heat from the steam-containing pipe is used to heat the other pipe, and thus, the fluid within it.

An electric heat tracing system is beneficial in a plant that has no access to steam and is looking for a smaller initial investment than installing a boiler system. Costs associated with electric heat tracing are only the control system and the electricity needed to run the system. Electric heat tracing systems are relatively easy to install and utilize energy very efficiently.

A steam heat tracing system is beneficial in a plant that already has access to steam via a boiler. Running a steam heat tracing system would then cost the plant much less money as the steam used to generate the heat is simply a byproduct of condensation from the plant's boiler processes. In plants where steam is already being generated, a steam heat tracing system is much cheaper than an electric heat tracing system.

Generally, a steam heat tracing system contains a boiler, steam header, steam manifold, condensate manifold, condensate header, and steam traps. An electric heat tracing system generally contains the control system and the cable element that heats the pipes. Electric heat tracing systems are the more expensive option of the two, but steam heat tracing systems require more labor to install. Steam heat tracing systems are much less likely to experience system failure than electric heat tracing systems.

Electric heat tracing systems offer more variety in the temperatures at which they are able to operate, can operate in a smaller temperature range than steam heat tracing systems, have lower maintenance costs than steam heat tracing systems, and can enable remote monitoring for the whole system. However, in some situations, especially where flammable substances are present, it may be impossible to use an electric heat tracing system, as they may be deemed unsafe for use in certain areas or plants by the National Electrical Code. In addition, electric heat tracing systems can start up slowly and if they are not monitored carefully, cables can overheat and cause damage to the system.

Steam heat tracing systems heat up more quickly than electric heat tracing systems, are considered intrinsically safe, and condensate produced from the heat tracing process can be reused at the boiler. The temperature of steam heat tracing systems often operates within a larger temperature range than that of electric systems. Steam systems generally require more routine maintenance than electric systems and operate best when used in short distances.

Each heat tracing system has its own benefits and drawbacks. When choosing between the two, it is imperative for plant managers to consider their goals and the resources available to them within the plant.

How Gas Trains Contribute to Safe Boiler Function

Boilers are great tools. They are able to generate steam in a manner that helps industrial and commercial industries flourish and keeps households comfortable. However, when not maintained or operated properly, boilers can be dangerous. One aspect of keeping a boiler safe is an effective gas train.

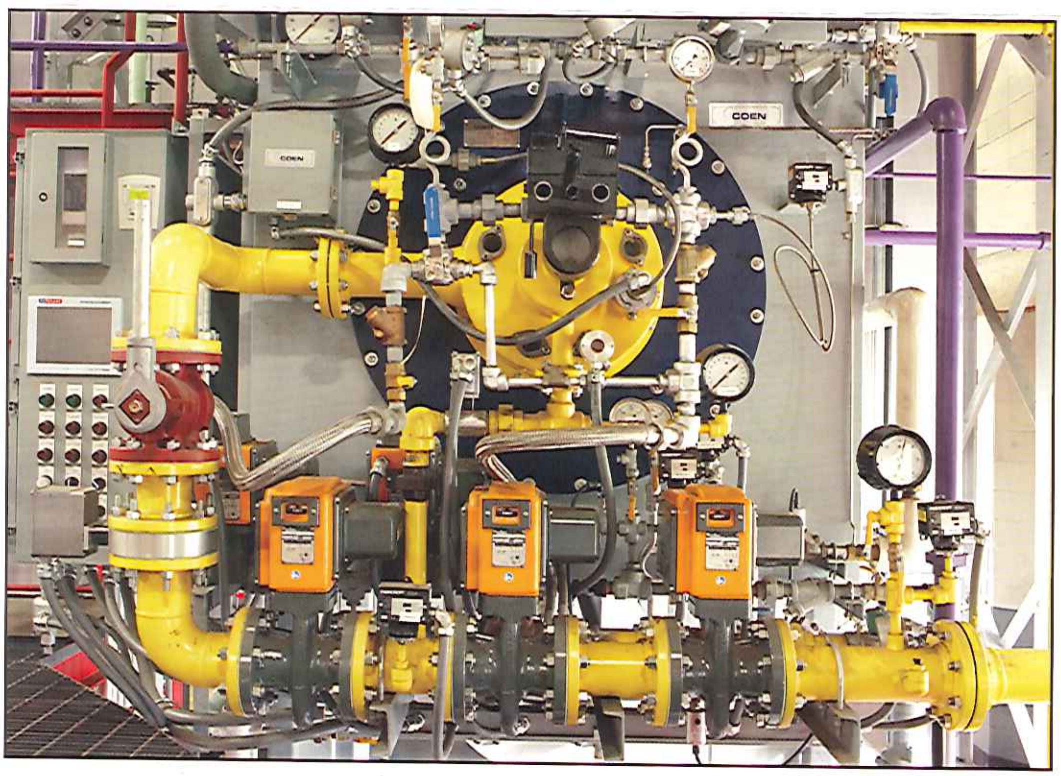
A gas train is the apparatus of a boiler that feeds fuel into the burner. Gas trains usually consist of multiple components. The first of these components is the sediment trap; it serves as a filter for the gas entering the gas train and traps any sediment or impurities so that they are unable to enter the boiler.

The gas train also consists of a series of valves and switches. The Manual Shut-Off Valve (MSOV) shuts down the fuel supply to the boiler so that maintenance may be done by boiler operators. The Gas Pressure Regulator ensures that the pressure of the gas is maintained at the manufacturer's recommended level. The Low Pressure Gas Switch lets the boiler operator know when the pressure of the gas in the boiler is below what it needs to be in order to operate. The Safety Shut-Off Valves (SSOV) work with the Vent Valve to ensure that gas cannot enter the boiler during emergency situations. The High Gas Pressure Switch automatically shuts down the burner when it senses that the gas pressure is too high. The gas train also contains Firing Rate Valves, which ensure that a steady amount of fuel is sent to the burner, and Test Valves, which enable the operator to test for leaks in the Safety Shut-Off Valves.

These valves and switches work together to ensure safety in boiler operation. They either enable the boiler operator to shut down operation or simply shut down operation on their own. Making sure that these components function properly is highly important to safety in any boiler room. This is because these components are often the keys to preventing a catastrophic boiler explosion.

For example: if the gas valves within a boiler do not shut off, they can leak gas into the boiler while it is not running. Then, when the boiler is started, the high amount of unnecessary gas causes an explosion. The gas train system also helps control the flow and pressure of fuel within the boiler. In doing this, it keeps the fuel pressure consistent, rather than unstable; an unstable

Continued:How Gas Trains Contribute pg 5



A GAS TRAIN IS THE APPARATUS OF A BOILER THAT FEEDS FUEL INTO THE BURNER

How Gas Trains Contribute pg2

fuel pressure can also lead to a boiler explosion.

Boiler operators can test to see if their gas train is functioning properly by administering a Leak Test or a Bubble Test. These two names describe the process of connecting a hose to a test valve, placing the end of the hose in a container of water, enabling pressure to come through the valve and counting the number of bubbles in the container of water. Generally, less than 5 bubbles per minute is considered safe; any more than that means that the valve is not functioning properly and needs to be repaired.

WARE is able to administer these tests for customers and provides this service on a set schedule for customers with whom we have a Preventative Maintenance contract. We are also able to test the High and Low Pressure Switches in order to ensure that they are operating properly. Conducting monthly maintenance on your gas train system will ensure that your boiler is functioning not only efficiently, but safely as well.

WARE will be exhibiting at the following trade show:

POWER GEN 2014
December 9 - 11 in Orlando, FL
and
AHR EXPO 2015
January 26 - 28 in Chicago, IL

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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
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
SB123	600	2008	York-Shipley (Low NOx)	G/#2	Steam	150	UL/CSD1
SB139	500	2001	Cleaver Brooks		Steam	150	
SB63	500	1985	Superior	G/#2	Steam	150	IRI
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
SB194	175XID	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB183	175XID	2012	York-Shipley	G/#2	Steam	150	UL/CSD1
SB191	150	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB196	150	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
SB193	150	2014	York-Shipley	G/#2	Steam	150	UL/CSD1
RB769	150	1998	Precision	Electric	Steam	150	UL
SB201	100XID	2011	York Shipley	G/#2	Steam	150	UL/CSD1
SB192	100XID	2014	York Shipley	G/#2	Steam	150	UL/CSD1
SB188	70	2013	York Shipley	G/#2	Steam	150	UL/CSD1
SB189	50	2013	York Shipley	G/#2	Steam	150	UL/CSD1

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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 SHIPLEY boilers available

Unit	HP/PPH	Year	Manufacturer	Fue	Type	Pressure	Controls
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
SSB29	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
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
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

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.