Eddy's Boilerhouse News

TIP OF THE MONTH FOR THE MAINTENANCE DEPARTMENT

By Eddy Emerson

Say, No!!! To That Water Hammer

Last winter (you remember that was the time when it was cold and the boiler didn't work) I was staying in an old hotel that still used steam heat. Talk about water hammer!! It was bad. When I mentioned it I was told, "It was steam heat and it's supposed to be that way." **Wrong, Wrong, Wrong.** Water hammer is a serious problem and needs to be addressed. It is almost as dangerous with low pressure steam as high pressure. Almost.

In Dan Holohan's book *The Lost Art of Steam Heating,* he has done a great job of explaining all the different causes of water hammer.

Water hammer happens when we have water in the steam line and it comes in contact with live steam. We call steam "live steam" and that causes me to wonder if steam is ever called "dead steam."
Just a question to ponder. Back to the water hammer problem, when the steam hits the cool water it condenses rapidly to 1/1700th its volume. This leaves a vacuum and the water gets sucked in to fill the vacuum and slams in to the pipe or fittings now the water heats up to steam temperature and starts banging. Now, all of this slamming and banging turns out to be what is called water hammer.

I have found that many of the problems are due to sags in the piping. Sags are caused by hangers or supports going bad or being moved. Someone lowers the hanger on a steam line to put in a new water line, gas line or something like that. We want to make sure our new line is straight and looks good so we lower the steam line just a little bit. Not a good idea!

Water hammer is also caused by poor piping practices. Someone uses concentric reducers instead of eccentric reducers where the steam line changes size.

The eccentric reducer allows the bottom of the pipe to remain at the same elevation. This means the condensate can flow towards the steam trap. Whereas, the concentric reducer will trap water in the line.

Another cause of water hammer we often encounter is when we have long steam lines with no drips or steam traps.

Dan Holohan says, "It is good piping practice to drip long mains to keep the condensate from building up. This is normally the responsibility of the design engineer. A good "rule of thumb" is to drain long mains (where the steam and condensate flow in the same direction) every 150 feet. If the condensate flows in the opposite direction from the steam you should

drip it every 50 feet." Good advise, Dan.

There are many more causes for water hammer and I would recommend that you gets Dan Holohan's book. You can get *The Lost Art of Steam Heating* by going to www.HeatingHelp.com or calling 1-888-853-8882 FAX 1-888-486-9637.

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