

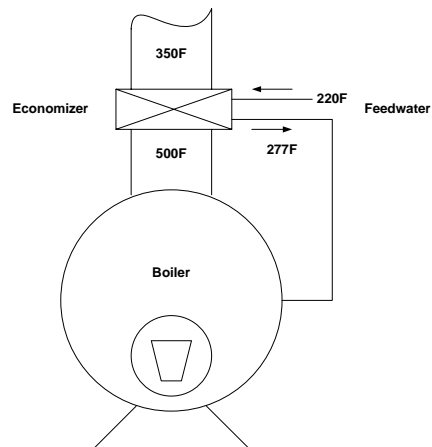
# *Eddy's Boilerhouse News*

## TIP OF THE MONTH FOR THE MAINTENANCE DEPARTMENT

By Eddy Emerson

Will I hope all of you had a great holiday. I would ask what Santa brought you but he knows who has been naughty and who has been nice. Therefore, none of you are eligible for gifts this year or next.

But, since we are all broke again, it is time to start looking at saving a little money in that boiler room. That flue coming off of the boiler has a lot of energy in it and it is all going outside. If it would warm things up on these cold days we would be happy but it doesn't do that or any good. One of the most effective ways to recover energy from flue-gas is to use an economizer to heat the feed water going into the boiler. At 100 PSIG the temperature of the steam and water in the boiler is about 334 degrees F. The temperature difference between the flue gas to steam temperature ranges for 50 to 200 degrees F, depending on the firing rate and boiler/burner configuration. This can result in a stack temperature of 385 to 530 degrees F, providing a good source for heat recovery.



Hot flue gas contains a lot of wasted energy and it is very beneficial to put this energy back into the boiler with heat recovery equipment. The rule of thumb for reducing stack temperature is: for every 40 degrees F the temperature is reduced, a 1% efficiency increase occurs. In this case lowering stack temperature 150 degrees F will result in an efficiency increase of approximately 3.75%.

Preheating the incoming feed water also improves efficiency. The usual temperature of incoming feed water is 212 to 220 degrees F. This water can be heated in the economizer improving efficiency on the water system side.

The rule of thumb here (use have to use the other thumb) for water heating that applies is: for every 11 degrees F you raise the feed water entering a boiler, the efficiency goes up by 1%. So, if you can take water from the deareator and heat it form 220 to 277 degrees F, a 5% fuel savings can be produced (good deal on a cold day, but so is hot apple pie).

Now I can see it in our eyes (even though they are a little blood shot after that new years eve party you went to), you just added all this up and you came up with an 8.75% savings, didn't you. Sorry, we will come up with a 3.5% to 5% savings. This is like all those ads for fuel savings in the auto magazines, where you add them up and get 100% saving in gas. I never have to by gas for my car again. Won't happen, but it is a great deal.

Now for the bad news, you knew the round man would have a bad side (if I am round how do I have a side). Economizers are fairly expensive but once installed, they are usually trouble free and require little maintenance. If the stack temperature or incoming economizer water temperature is too low, an acid formation problem may develop.

May 2003 be a great year.

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