

# *Eddy's Boilerhouse News*

## TIP OF THE MONTH FOR THE MAINTENANCE DEPARTMENT

By Eddy Emerson

### **Improve Boiler Efficiency**

#### **Oxygen Trim Systems**

I was asked if I had thought about oxygen (O<sub>2</sub>) trim systems. Yes, I have thought about them but I don't lay awake at night pondering their effect on my life as an adult male. But, as always I have an opinion.

Oxygen trim systems work and can really save on that fuel bill. But, they have a real down side. I know everything has a down side and it is called the bottom. I have been on the bottom of the barrel all my life so I know down sides well. To get back to the point, the down side is that they are a high maintenance item. They call that is placed in the stack along with the sensors, controls and logic systems added up to a maintenance nightmare.

The up-side is that there are many factors that can influence and introduce errors into the air/fuel ratio such as fuel property changes, air temperature, humidity, fan performance and dampers. All of these variables mean that we calibrate our burners with tolerances so that the change can happen and we will not soot up the boiler. The O<sub>2</sub> trim system will adjust for these changes automatically depending on the O<sub>2</sub> output in the stack. Without

oxygen trim, high levels of excess oxygen are necessary to compensate for the many sources of errors in the combustion process. This excess oxygen can waste a great deal of energy. Oxygen trim systems seek the most efficient operating level.

Again the problem is the high maintenance cost of the units. There is a cheaper and more reliable system that does 95% of what the O<sub>2</sub> system is trying to achieve. That is a parallel positioning system; like the Honeywell ControLinks™ system.

The largest source of error is the losses due to linkage wear and damper/actuator motor problems. Both of these problems are corrected with an electronic jackshaft. A damper motor is placed directly on the air damper, on the fuel valves (gas/oil) and even on the FGR (low NO<sub>x</sub> burners). This is then set up using a combustion analyzer and a PC. It works great, cost much less than an oxygen trim system and doesn't have the maintenance problems.

If you think I am sold on ControLinks™ you are finally right. Now don't let it go to your head that you are so smart. I used to be real smart then I started working with boilers and boiler guys and that would do anyone in.

Oxygen trim systems work well.  
They do what they are advertised to  
do and they do save money. I wish

my wife could save some money  
then I would have to write these  
news letters.

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