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May 2nd ~ Monday Morning Minutes:

The V-Series Rotary Air Dampener

- By Joe Smolinski

We all know the importance of maintaining proper O^2 levels with burners. Newer controls and linkageless controls definitely have improved your ability to control O^2. Advances have also been made with O^2 trim, and the O^2 sensors have become more reliable and a little less costly. Therefore, the burner manufacturer has the ability to make improvements in the basic design of the air dampers to make a huge improvement in operation.

Being hydronics people, we all remember seeing a V-port ball valve for the first time. We will not explore the more linear nature of this design over the standard ball valve, but air foil air damper technology is similar.

Consider a typical flat damper O^2 curve. When the dampers first open, there is a big inrush of air, causing percent O^2 to increase. By simply changing these dampers to a rotary drum damper, or even more cost effectively, by utilizing an airfoil design damper, this inrush of air is minimized.

Remember, few boilers operate at 100% load – and often run at 25%-50%, so the goal should be to optimize O^2 at those operating points. You can see on the Airfoil blade curve, O^2 levels immediate start to decrease as the damper opens, while the flat blade damper immediately starts to increase.