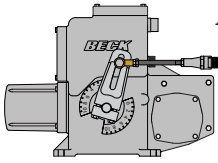


### Biomass Plant Implements Electric Actuator to Replace Unreliable Pneumatic



Biomass Power Plant  
Southern United States

Accurate and reliable control of a boiler's induced draft (ID) fan damper is critical to the efficient and safe operation of a boiler. A new biomass plant in the southern United States experienced this first hand shortly after start up.

After plant construction, but prior to start-up, new environmental regulations required the owner to add back-end pollution control systems. A large ID fan was installed to handle the added system pressure drop, along with a pneumatic actuator for damper control. Pneumatic actuators are often supplied with new systems due to their low initial price. But, as demonstrated at this plant, pneumatic performance is affected by friction, load dynamics, accessories, and instrument air quality.

Within a few weeks of start up, the pneumatic actuator did not immediately respond to an increase in the demand signal. When it did move, it overshot the set point by 20% resulting in a negative pressure excursion. The severe negative boiler pressure collapsed the boiler walls and damaged tubes.

The boiler manufacturer turned to Beck for a precision electric actuator (model 22-309) to replace the pneumatic. Beck actuators provide consistent control without dead time, coast, or overshoot. Following repair of the boiler, and installation of the Beck actuator, the biomass plant restarted



without problems.

As one of the most important damper applications on a power boiler, the ID fan requires accurate, reliable control. Besides the safety risk of implosion/explosion, the inconsistent performance of pneumatic actuators affects emissions, and can lead to reduced boiler operating efficiency (excess fuel consumption). The owner of this biomass boiler has found that the Beck actuator eliminated pressure fluctuations, and provides excellent furnace pressure control.



Figure 1  
ID Fan Damper - Beck Electric Actuator



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