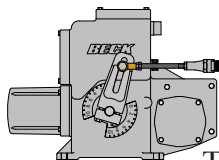


## Improved Reheat Furnace Control and Reliability



*Nucor Steel - Mississippi U.S.A.*

The Nucor facility in Flowood, MS was previously owned by the Birmingham Steel Corporation, and it was sold to Nucor Steel in November 2002. The site is a mini-mill that produces approximately 400,000 tons per year of structural steel including flat, angle and rebar products. Major equipment in the mill includes one electric arc furnace (EAF), one multi-strand continuous caster, and one rolling mill with a Bricmont reheat furnace. PLC controls are used in all operating areas.

From May 1980 to October 1992, a total of (10) Beck drives were purchased and installed in this facility for the melt shop area. Applications include the EAF fourth hole (water cooled) damper, baghouse ID fan dampers, and canopy hood dampers. The performance of the Beck drives is regarded as excellent.

In July of 2003, a total of (5) Beck model 11-156 and (3) 11-206 drives were purchased for all significant combustion applications on the Bricmont reheat furnace. Applications include the gas flow control valves, dilution air damper, hot air bleed damper, and the soak zone dampers. All of the Beck drives replaced Barber Colman electric actuators.

The Bricmont reheat furnace was supplied with Barber Colman model EA 75 electric actuators (108 lb-ft/57 seconds) as part of the original installation. The biggest problem with the Barber Colman electric actuators installed on the reheat

furnace zone fuel valves and combustion air dampers was the modulation rate. It was reported that after the actuators were originally installed, plant personnel tuned the controllers to try to minimize gas consumption while minimizing the amount of scale on the steel after it is treated in the reheat furnace. There were then several failures of the Barber Colman actuators because they could not handle the desired modulation rate, so the solution was to de-tune the system so that they would not constantly be replacing the equipment. When they did that, the gas consumption increased and they had more scale on the steel after it was treated in the reheat furnace.

Beck drives were purchased for replacement because they can modulate continuously while providing precision accuracy and repeatability for valve and damper positioning. The equipment was installed in October 2003. The Beck drives at this mill continue to be outstanding and many more drives were specified between 2004-2011.



*Typical Extractor Gas Valve, Beck linear 29-109*



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