

## Actuator Application Brief - Burner Tilt Drive Unit - Electric Utility Application



### Industry Parameters

Fossil fired utilities of any megawatt size with CE boilers.

### Contacts

- I & C Superintendent/Supervisor
- Performance Superintendent/Supervisor
- Results Superintendent/Supervisor

### Background

CE boilers are classified as single or twin furnace types. There are typically four burner tilt drive units per furnace with one drive unit on each corner. The burner tilt drive unit controls the fuel and air nozzles to raise and lower the flame in the furnace. The pattern of the flame in the furnace is very important in achieving an efficient burning process and also to reduce polluting emissions. The normal full rotation of a burner tilt is 76°, 38° above the horizontal and 38° below the horizontal. The typical torque required for this application ranges from 1000 to 4000 lb-ft. The rotation speed for full travel can be very slow and 60 second would be the speed selected for a HercuLine® 011280A Actuator model. The drive units are floor/pedestal mounted. It would be a benefit to use the full of 1000 rotation of the HercuLine® 011280A Actuator because it would give you close to a 30% mechanical advantage in torque.

Since the burner tilt application is tied into the burner management system, there would typically be a 4-20 mA input signal and a 4-20 mA feedback signal for position. Some utilities have a cascading signal set-up through all four units. The 4-20 mA input signal would be sent to the burner tilt drive unit on corner #1, then the feedback signal from corner #1 would be sent as an input signal to the drive unit on corner #2 and so on. Finally the feedback signal from corner #4 drive unit would be sent back into the control system to close the loop. This insures that all the drive units are synchronized in position.

Another scheme has the control system send out one 4-20 mA input signal to a remote resistor assembly which converts the signal to 1-5 Vdc. The 1-5 Vdc signal is then sent in parallel to each of the four drive units for control and the feedbacks are returned to the control system individually. This scheme insures that all the drives are positioned the same and that all operate autonomously.

### Selling HINTS

The HercuLine® 011280A Actuator is very suited for a burner tilt application. It has all the features necessary to perform well in the application. Positioning accuracy, torque and temperature limits are the most important specifications in selling the customer. The positioning accuracy of the HercuLine® 011280A Actuator in the application would be 0.2% of span which would actually be +/- 0.15% of span on the burner tilt itself. The temperature of the boiler where the burner tilt is located is typically 140°F to 150°F and the 011280 Actuator can withstand temperatures up to 150°F. The slow rotation speed, simple design, and reliability of the HercuLine® 011280A Actuator are the other features to sell on.

### Competition

The main competition in this application will be against Beck and Jordan. Beck has made a specific drive unit for the burner tilt application which has 5200 lb-ft of output torque and rotation times of 108 and 180 seconds (Model 11-438). Jordan fits well into this application because they have high torque drive units with slow rotation speeds. The common drive units that are being replaced in the burner tilt application are Bailey and Parker-Hannifan pneumatic cylinders. The cylinders range in size from 8-10" in bore diameter and have typical strokes of 12".

### **More Information**

For more information on Herculine Actuators, visit [www.honeywellprocess.com](http://www.honeywellprocess.com), or contact your Honeywell account manager.

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