

## Challenge

The boot-style fuel gas regulators at Southern Power Company Plant Franklin, a combined cycle power plant, required a minimum of 2 replacements per year due to impregnation of hydrocarbons into the elastomers any time the gas was valved out. In addition to added maintenance costs, the failure of the elastomers resulted in operational challenges where the two parallel lines began to “fight” each other. The gas supply pressure then became unstable, resulting in a combustion turbine trip.

## Solution

Control Southern evaluated the existing gas flow, pressure requirements, and data sheets generated during initial design. The recommended solution for this fuel gas application was a 4," 600# EZH regulator. This regulator provides precise pressure, control, high turndown capability, easy in-line maintenance, and bubble tight shutoff. The EZH was also familiar to the plant, having been used successfully in its duct burner applications for over 6 years.



## Results

### Reduced Maintenance

The EZH regulator upgrade will greatly reduce maintenance events required in the combustion turbine fuel gas applications, which occurred as frequently as twice per year with the boot-style regulators at a cost of approximately \$1,500 per event. Conservatively, the EZH should require maintenance no more than once every 24 months.

### Unit Reliability

Stable pressure provided by the EZH delivers improved unit reliability, alleviating unit trips that can result in a start-up delay of 1 1/2 hours or more. For a 250 MW CT at an assumed rate of \$.08, the cost of lost generation for 1 1/2 hours would be as follows:

$$1.5 \text{ hours} \times 250,000 \text{ KW} \times \$0.08 \text{ per KWH} = \$30,000/\text{trip}$$



Figure 1. Type EZH Pressure Reducing Regulator