

Servo Electric Turbine Valve Actuators

Application Challenge: There are hundreds of steam turbines installed throughout the military and process industry that incorporate pre-1970 design. The valves on these turbines are predominantly operated by hydraulic actuators. Maintaining these hydraulic systems is costly with spare parts becoming more and more difficult to find. The control on these turbines in many cases is not longer adequate in today's marketplace.

Exlar Solution: Many plants that have older steam turbines are now upgrading them with digital controls and replacing the hydraulic actuators with all-electric servo actuators from Exlar.

Steam Control Valve

Steam turbines incorporate two basic arrangements of control valves – shell mounted and chest mounted. Shell mounted control valves are attached to the turbine shell. Some are modulated by a rack and cam arrangement. This valve operating method utilizes a common hydraulic cylinder to lift a rack of four to nine poppet valves in sequence. A fulcrum lever is used to multiply actuator force.



Rack Lift

Exlar directly replaces this main hydraulic actuator with a high performance servo electric actuator and positioner.

Model GSX60

- Thrust to 10,000 lbs
- Stroke 4" to 6"
- Speed <0.5 sec trip



GSX Series Actuator

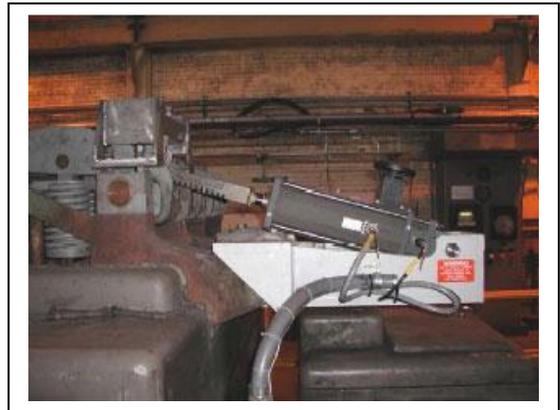


SV Positioner

Other turbines have an actuator for each governor valve. Operation is by a traditional servo valve or cylinder arrangement. In this case, an Exlar electric servo actuator is mounted on each valve.

Model GSM30/GSX30

- Thrust to 400 lbs
- Stroke 1" to 1.5"
- Speed <0.25 sec trip



Chest Mounted

Chest Mounted control valves are installed on a separate enclosure from the turbine. Control is typically performed by a series of levers and hydraulic amplifiers. The Exlar actuators modulate the pilot valve of each of the main hydraulic pistons.

Model GSM40/GSX40

- Thrust to 1000 lbs
- Stroke 2" to 3"
- Speed <0.25 sec trip

Each Exlar actuator, when supplied with Exlar's all digital positioner, will respond to command signal changes in less than 5 mSec. The speed of the response combined with the dynamic capability of the all-electric actuator delivers repeatability much greater than typical pneumatic or hydraulic cylinders and allows for end-to-end travel time of a typical 6 inch stroke actuator of less than 200 mSec. This performance makes Exlar's actuators the obvious choice for applications such as turbine controls.

Visit www.exlar.com for complete product information or call us at 952-500-6200. You may also email us at info@exlar.com.