

Precise Continuous Control of Spraywater Control Valves on Steam Boiler with Superheater Using Contrac Electrical Actuators



Power/Steam Generation

Instrumentation Solutions



- High-temperature version up to 85 °C
- S9-100%ED operation for motor and electronics
- Precise control of the injected water through high-precision positioning
- Oil-lubricated spur gear with ball bearing spindle ensures wearless operation, even with any number of positioning cycles and a very narrow operating range

1 Problem

Spraywater valves on steam boilers control the cooling water quantity that is injected into the superheated steam in the superheater and reheater. The injected water quantity is decisive for the steam temperature inside and at the output of the superheater.

Injecting too much water in this process will result in excessive steam cooling with a negative effect on the efficiency. If, however, not enough water is injected, this will lead to an excessively high steam temperature and pressure, raising the risk of damage to the superheater, the turbine and their downstream components.

Optimal superheater operation using the lowest possible steam cooling and the maximum admissible hot steam temperature first of all requires continuous and precise mass flow control of the injected cooling water.

Depending on the operating state, this requirement means the supply of very small water quantities and, thus, high-precision positioning in a valve's disproportionate zone.

The operating environment is extremely rough. Additionally, very high ambient temperatures may occur in the superheater area.

2 Solution

Using Contrac continuous electrical actuators ensures ideal positioning of spraywater control valves.

S9-100%ED operation is possible without any restrictions, even with the high-temperature version for an ambient temperature of up to 85 °C.

Due to its special design with oil-lubricated spur gear and electrical components suitable for S9-100%ED operation the Contract actuator allows for highly precise and really continuous positioning of spraywater valves.

A deadband of only ± 0.05 % results from the Contract actuators' special construction and operating principle. This precision provides for high-accuracy positioning of all valve types over the entire range.

All components have an IP66 protection and can be used even under the roughest environmental conditions.

3 Features of the used components


Instrumentation	
	<p>Contrac, electrical linear actuator RSD, with integrated power electronics unit</p> <ul style="list-style-type: none">• Oil-lubricated spur gear with ball bearing spindle• Maximum operating temperature 85 °C• Robust design• Best in class control accuracy• Protection IP66• S9-100%ED operation

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