

Contrac - Electrical actuators

Control of boiler startup valves



Double rated force applied as break-away force.
 Best in class control accuracy.
 Top control performance over a valve's entire range.
 Permanent self-monitoring.

Contrac

Introduction

Startup valves for boilers are used in the startup and shutdown phase, only. Consequently, the valves may stay in their end position, i.e. 0 or 100 %, over months. The resulting contact corrosion of the valve seats causes significantly increased break-away forces.

Any defects of actuators with self-locking gear and switchgear are only recognized when the actuator is supposed to move. This is in fact a bad moment.

A cautious heating/startup of the boiler requires very small steam quantities and, thus, high-accuracy control in a valve's disproportionate zone.

The most efficient solution of this problem is the use of a high-precision actuator. This method is equivalent to other alternatives like split-range arrangements or valves with pre-cones, but it is considerably more cost-effective.

The special demands on startup control valves imply special requirements on the electrical actuator. A reasonable technical design is, therefore, mandatory for economic operation.

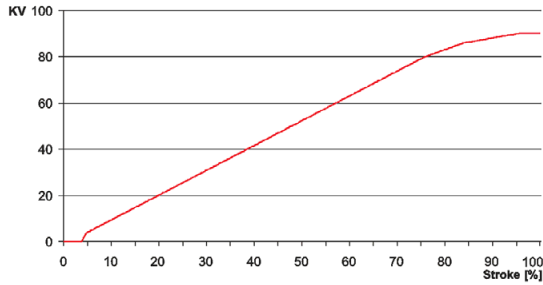
The solution

— 01 kv diagram of a valve

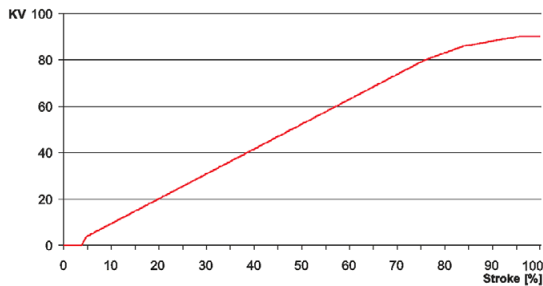
— 02 Overcritical positioning range

— 03 Contrac RSD20 – linear valve application

When using ABB Contrac actuators the valve seat corrosion is absolutely unproblematic, since the double rated force is applied as break-away force. Due to its high efficiency, the oil-lubricated spur gear used in conjunction with the ball bearing spindle does not produce own startup forces which would have to be overcome in addition.



01



02

Unlike continuous actuators, contact actuators have a dead zone in the range of ± 0.5 to ± 5 %. Therefore, they are basically not suited for small valve ranges, in which even small stroke causes pressure variation. Due to their control principle, Contrac-type actuators have a dead zone of only ± 0.05 %. This best in class accuracy provides top control performance over the entire range for all valve types.

In addition to its proven robust design and outstanding reliability, the actuator also offers an integrated self-monitoring function for the diagnosis of potential faults. If a fault occurs, the operator is immediately informed of this fact via a standardized communications connection. In addition, the 'control in end position' function of the Contrac actuator relieves the valve packed gland.



03

Components used

04 Contrac electric linear actuator in RSD design with EBN853 electronic unit



04

Designed for 10 years continuous operation without any maintenance under rough operating conditions.

Product-features:

- Oil-lubricated spur wheel gear
- Robust design
- Top control accuracy
- Double rated force applied as break-away force
- ± 0.05 % dead zone for continuous positioning
- Self-diagnosis
- Low lifecycle costs, as replacement of expensive parts is not required

Rotary actuator portfolio:

- with nominal torque of 100 Nm (73.76 lbf-ft) to 16000 Nm (11800 lbf-ft)

Linear actuator portfolio:

- with rated force of 4 kN (900 lbf) to 100 kN (22500 lbf)

Reliable frequency converter electronics

- integrated in the actuator
- field-mounted
- for rack mounting

Continuous positioning

Extremely low maintenance cost

- under rough operating conditions
- with many operating cycles (> 1200 cycles/year)

Self-diagnostics

Low lifecycle cost due to no replacement of valuable parts required

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