

Contrac - Electrical actuators

Consideration of the lifecycle cost



High level of availability while keeping maintenance costs low

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Contrac

Introduction

The necessity of service and maintenance is a controversially discussed subject in the industrial goods industry. One approach is to use the equipment until it fails instead of repairing or replacing it. The extra risk regarding the plant availability is accepted in this case.

The – often cost-intensive – alternative is routine maintenance according to the suppliers' specifications.

For components used in hazardous areas even exploring this issue is inadmissible. This is because if an Ex component is not serviced and maintained in accordance with supplier specifications, its

Ex approval will be invalidated.

In operating manuals of competitive products you can find the information that electrical actuators must be serviced in dependence of their load and number of operating cycles. With an average number of less than 700 operating cycles/hour [c/h] a maintenance interval of seven months is required.

If the plant operator strives for longer maintenance intervals of two years, for example, this will reduce the permissible average number of operating cycles down to 125 to 250 per hour, i.e. 2 to 4 cycles per minute. The control algorithms of many process control systems take this into account. The controllers are not optimized for optimal process control, but for adherence to the permissible number of operating cycles of the used actuator technology. As shown in the diagram below, this results in extremely high maintenance cost which may soon exceed the asset cost many times over, while the cost of plant downtimes due to maintenance are not taken into account.

Sliding movements which are typical for the worm gear pair used in many competitive products cause more wear than the movements of Contrac's spur gears. As a result, the maintenance work of competitive products often includes the expensive replacement of gear components.

The solution

— 01 Estimated lifecycle costs of electric linear actuators

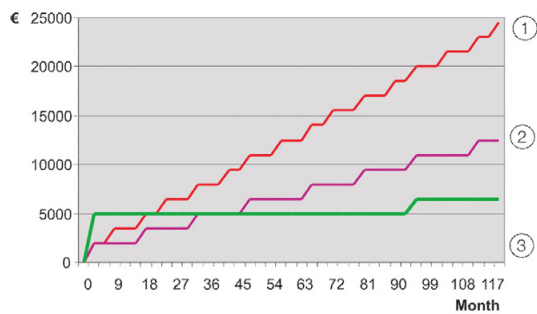
— 02 Examples of Contrac applications under harsh environments

Contrac electrical actuators are designed for 10 years of maintenance-free operation. Special operating conditions, like extreme ambient temperatures, may however limit the service life of elastomers and lubricants. As a result, the integrated maintenance microprocessor may in some cases recommend a maintenance operation after less than 10 years.

Comparison of required maintenance work on an electric actuator during an operating time of 10 years

	Competitor			Contrac		
	simple	medium	high	simple	medium	high
Demand regulation						
Operating cycles / hour	300	700	>1200	300	700	>1200
Screws	7.2	15.4	not possible	1	1	2
Maintenance *						

* in accordance with manufacturer data sheet



- ① at > 700 cycles / h
- ② at > 300 cycles / h

- ③ Contrac > 1200 cycles / h

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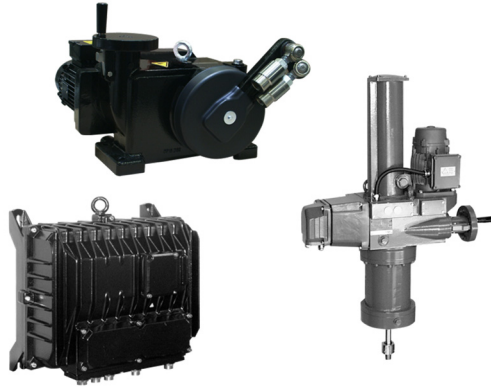
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Benefit analysis

The use of Contrac electrical actuators is recommended for all applications with considerable operational demands which require high plant availability.

Components used

03 Contrac, electric actuators with integrated or separate electronic unit



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Designed for 10 years continuous operation without any maintenance

Rotary actuators

- with rated force of 100 Nm (73.76 lbf-ft) to 16000 Nm (11800 lbf-ft)

Linear actuators

- with rated force of 4 kN (900 lbf) to 100 kN (22481 lbf)

Reliable converter electronics

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

Continuous positioning

Robust design

Oil-lubricated gear

Extremely low maintenance cost

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

Self-diagnostics

Low lifecycle cost

No replacement of valuable parts required

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