

An innovative product development delivers performance gains and cost reductions.

RESULTS

- Clarkson SU10R Knife Gate Valve lasts more than two times longer than competitors valve.
- Provided superior reliability in highly abrasive coal fines applications.
- Reduced Total Cost of Ownership by 44%
- Reduced service costs, the Clarkson SU10R was returned to service without any repairs being necessary.



APPLICATION:

Coal preparation plant, cyclone feed.

CUSTOMER:

Major global diversified mining company.
Producing high-quality metallurgical coal used for steel making around the world.

CHALLENGE:

Downtime in coal preparation plants costs producers money. While scheduled maintenance does come at a cost, it's an absolute necessity. It's when production halts for equipment failure that the costs can really start to bite.

It's at these times that producers look to their trusted equipment supplier partners to help resolve reliability issues and extend intervals between planned downtime.

That's where Emerson shines. Thanks to our product innovation, our valued customers benefit from longer product life - extending maintenance intervals reducing their total cost of ownership.

One global coal producer was battling an ongoing issue in their coal preparation plant. Their stainless steel cyclone feed knife gate valves were being prematurely destroyed by abrasive coal fines. As a result, the valves were failing in less than 12 months, the surrounding pipework was at the mercy of increased wear, and the increased demand for labour and parts was driving up production costs for the plant.

The Clarkson SU10R Knife Gate Valve more than doubled the performance of competing valves in cyclone feed applications. After 12 months of service, the valve was still in remarkably good condition. So good in fact that the valve was returned to service without any repairs being necessary.



SOLUTION:

Concerned with the rising costs, the customer approached Emerson to help find a solution. After a thorough investigation, Emerson’s engineering team concluded that the wear of valve components was inevitable due to the highly abrasive medium and design of the valves used in the application. But that didn’t mean improvements couldn’t be made.

The valves in use were not full bore valves, which are typically choked on the sides to improve gate support. This resulted in higher velocity and turbulence through the valves, which in turn was accelerating wear of the internal port area.

Applying their deep understanding of the customer’s challenge, Emerson’s engineering team developed a tailored solution from the ground up — the Clarkson SU10R Knife Gate Valve. This full round port valve, with superior design and material selection, correctly supported the gate and provided an extended service life even under this harsh application. The innovative design also incorporated sealing beads and flush out areas for a consistent, reliable seal.

Emerson’s engineers also incorporated a patented, fully replaceable, snap-in-place polyurethane liner in the design. The liner material was engineered for improved abrasion resistance and completely covered the exposed internals preventing wear.

Valves that don’t have a liner must be fully refurbished or replaced once they begin to show wear. However, with the Clarkson SU10R, the lining can simply be replaced. This gives the Clarkson SU10R an extended life and cost advantage compared to other valves.

RESULT:

The customer was so impressed with the valve’s ability to withstand the harsh coal fines, they commenced replacing other installed valves in the same application.

Not surprising, the Clarkson SU10R Knife Gate Valve has become the clear choice for extended life performance and value in highly abrasive coal fines applications.

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IN-SERVICE COSTS	URETHANE KNIFE GATE VALVE	CLARKSON SU10R KNIFE GATE VALVE
Price for 1 x DN 150 Urethane Knife Gate Valve Double acting pneumatic actuator and shroud	\$2,500	\$2,500
Cost to change out a valve after 12 months	\$2,500	N/A
Labour rate to replace valve - Assume 1 hour @ \$100/hr	\$100	N/A
Cost of 1 x Liner replacement	N/A	\$150
Labour rate to replace seat - Assume 2 hours to turn valve around (2 x \$100)	N/A	\$200
Number of valves required for 24 months	2	1
Total cost for 24 months in service	\$5,100	\$2,850

NOTE:

Previously installed valves needed to be replaced after 12 months. Whereas, the SU10R only required a liner to be changed out. Cost assessment exclude damages to adjacent installations, such as piping etc.