

PFA Lined Butterfly Valve Extends Service Life in Chlorine Dioxide Application



APPLICATION

Chlorine Dioxide service used in the bleaching process for white paper production—an aggressive chemical environment combined with continuous cycling.

CHALLENGE

This paper mill had been using an all-titanium, double offset high performance butterfly valve. While suitable from a materials standpoint, the valve repeatedly required rebuilding after approximately one year of service. In addition, full valve replacement carried a cost of approximately \$95,000 per valve, with lead times approaching one year.

The customer was seeking an alternative valve solution capable of achieving at least two years of reliable service, with reduced lifecycle cost and improved availability.

SOLUTION

Our experienced technical sales team recommended the **Amresist Acris® PFA lined butterfly valve** for this application, based on several key design elements including:

- > Titanium 7 shaft/disc for corrosion resistance.
- > PFA liner with FKM elastomer backup liner.
- > Optimized seat design that allows for tight shutoff even when the disc does not reach full closed.
- > Ability to interface with the plant’s existing vane actuators which were standard throughout the facility.

To further increase valve life in this high-cycle service, the valve was angle seated by adjusting the actuator travel stops. This limited disc travel to within 5 degrees of fully closed, reducing wear caused by constant cycling.

RESULTS

The first valve and actuator package installed in this ClO₂ application delivered performance beyond expectations. The valve remained in continuous service for **2 years and 4 months**, with a total cycle count of **1,224,648**. After proactively removing the valve, inspection verified continuous tight shutoff upstream, downstream, and through the shaft area.

The Acris® PFA lined butterfly valve exceeded the customer’s original lifecycle goal while delivering measurable benefits, including:

- > **Extended valve life (>2X)** in high cycle ClO₂ service.
- > **Significantly reduced cost of ownership** compared to all-titanium high performance butterfly valves.
- > **Significantly reduced product lead times** by using a standard valve design.
- > **Reduced maintenance and related costs** while improving operational confidence.

PROCESS CONDITIONS

Industry	Pulp & Paper Production
Process	Bleaching Process
Application	Chlorine Dioxide Service
Media	Chlorine Dioxide (ClO ₂)
Operating Pressure	80 psi 5.5 bar
Operating Temperature	Ambient
Cycle Rate	Once per minute, 24 hours per day
Cycles Required	-525,600 (Annual) -1,051,200 (2-year total)

KEY TAKEAWAY

These results serve as an example of how application knowledge, valve design, and operating strategy all play a role in long-term success—delivering longer valve life, lower costs, and more predictable performance.