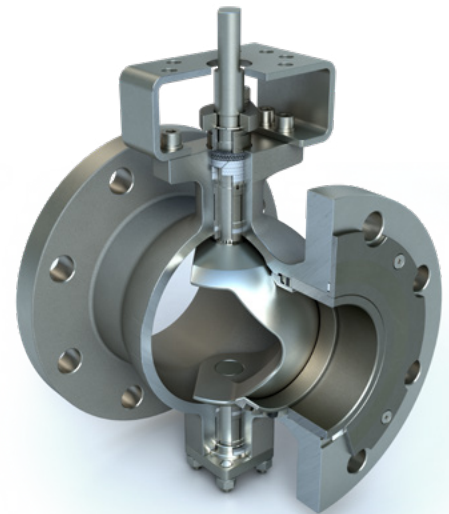


# Control Valve Design Greatly Improves Service Life in Pulp & Paper Application

## KEY RESULTS

- > Valve service life was increased 800%, improving uptime and production.
- > Optimized design and materials eliminated impacts of erosive media.
- > Estimated savings of \$27,000 per valve over 1 year.



S19L Segmented Ball Control Valve

## APPLICATION

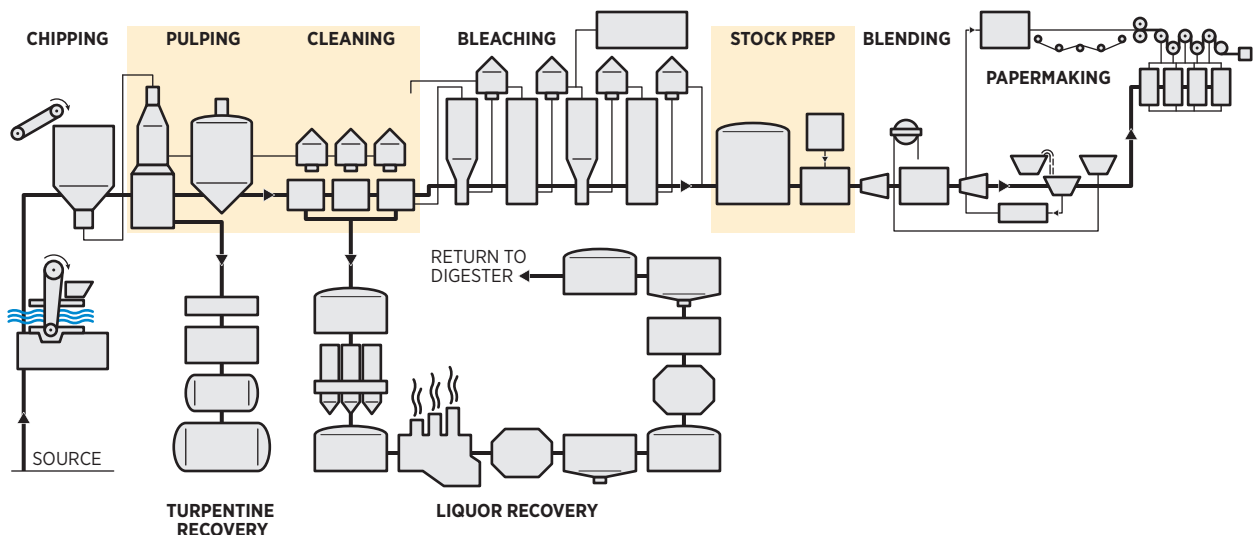
The **recycled paper production industry** involves very demanding processes that require minimal plant downtime for optimal efficiency. These conditions place valves, actuators, and flow control products in harsh applications. In recycled paper plants, one of the key applications that places the most wear and tear on control valves is in the **cleaning stage** — utilizing cleaners and screen systems to remove the rejects from the pulp stock.

During operation, high-density and forward cleaners are used to separate and remove large, heavy contaminants — such as glass, metal, and sand. A screen system is also used to supplement the cleaners by removing smaller, lighter contaminants — such as plastics, fiber bundles, waxes, and ink. The recycled media in this process is extremely abrasive. If the valve package is not properly optimized, the abrasive media consistently leads to valve failure caused by body and segment erosion.

## PROCESS CONDITIONS

<b>Customer</b>	Recycled paper plant
<b>Industry</b>	Pulp & Paper
<b>Process</b>	Cleaning Stage: High-density cleaners, coarse and fine screens.
<b>Application</b>	Control
<b>Media</b>	Rejects: Sand, glass, metal, wax, staples, nails, etc.
<b>Operating Pressure</b>	25 to 100 psi 1.72 to 6.90 bar
<b>Operating Temperature</b>	100°F to 110°F 38°C to 43°C

## PULP & PAPER PROCESS



## CUSTOMER SUCCESS

### CHALLENGE

In this application, control valves were expected to last a minimum of 8 to 12 weeks. However, the competitor control valves were experiencing frequent failures, with a lifespan of 3 to 6 weeks. Abrasive media was causing erosion of the body wall, segment, and flange. These failures were resulting in extended periods of downtime, loss of production, and valve replacement costs.

### SOLUTION

Bray's Technology Group evaluated the competitor valve failures by performing a physical site inspection and a CFD analysis. The Bray Series 19L Segmented Ball Control Valve was recommended as a direct replacement, due to its key design features that were created specifically to prevent valve failure in severely abrasive applications. Some of the design features include:

- > Reversed flow direction to minimize erosion on the valve wall and face of the ball segment.
- > Utilize a solid tungsten carbide seat and downstream bore liner to provide erosion protection.
- > Add proprietary tungsten carbide-based coatings to prevent erosion on the segment.

The Series 19L valve's reverse flow installation directed the abrasive media flow into the ultra-hard downstream bore liner, rather than the body wall — ensuring that the valve would not experience internal erosion.

### RESULTS

The recommended S19L was installed as a trial valve to replace one of Bray's top competitors. Throughout monthly inspections, the valve showed no signs of erosion. After 16 weeks in service, Bray had exceeded the customer's expectations by over 100%. At that point, it was suggested that the valve's seat and soft goods be replaced to extend the product's lifespan.

After routine maintenance, the valve was placed back in service, and has performed continuously for **24+ months with zero leakage**. During a 24-month period, the plant has saved over **\$54,000** in valve material costs alone, by switching to the Series 19L Segmented Ball Control Valve.

Bray provided the customer with a cost-effective solution that extended the control valve's service life by **more than 800%** — becoming the partner of choice for this demanding cleaning application.



*Inspection of a competitor's failed control valve shows signs of extensive erosion of the body wall, segment, seat, and flange area.*



*After 24 months in service, inspection of the S19L showed no signs of erosion on the ball segment, seat, body walls, or liner.*



*Bray's Series 19L has performed continuously in the harsh operating environment for more than 24 months.*

**To learn more about our full line of flow control solutions, visit [BRAY.com](https://www.bray.com)**