# Metal Seated Butterfly Valve Improves Water Recovery Process at Copper Mine

## CHALLENGE

Within different mining processes, fluid recovery has become a fundamental way for mining companies to reduce their environmental impact, decrease their production costs, and optimize mining procedures. In this copper mining operation, recovered water from the tailings fields was being sent though a filtration system, stored in tanks, and reused in other processes. The tanks were located in an elevated area, using globe valves for flow and pressure control during the filling process.

The existing globe valves were not providing the necessary performance, with some only lasting one month. Some of the globe valve challenges included:

- Internal damage caused by the suspended solids. (Even filtered, the recovered water had between 5% and 10% solids.)
- Inability to properly fill the storage tanks at the required rate — caused by high pressure drops in the globe valves.

Ideally, valves in this application would last at least a year before requiring maintenance. A better valve solution was needed that could handle suspended solids, fill the tanks at the appropriate flow rate, and offer reliable and continuous service.

## SOLUTION

After a field visit, Bray suggested replacing the globe valves with our McCannalok Series 45 double offset butterfly valves. Key valve features to improve performance in this application included:

- Inconel® 718 metal seat and nitrided 316 stainless steel disc provide resistance to suspended solids and high flow rates.
- Contoured disc maximizes flow and minimizes pressure drop.
- Improved flow characterisitics (over globe valves) reduce cavitation and noise.
- Pressure rating up to 1440 psi (100 bar).

## RESULTS

The recommended valve package was installed in the filling lines of 3 storage tanks, immediately offering improvements that included:

- Resistance to suspended solids, providing trouble-free continuous service.
- Improved flow, allowing filling of storage tanks at the required rate — providing timely availability of water for use in other processes.

Impressed with the proven performance, the customer replicated the solution for their other 3 water lines, totaling 6 valve packages. After **more than 5 years** of continuous service, the Bray valves have provided outstanding results, including:

- **No valve failures** and **no required maintenance**.
- Extended process uptime, eliminated maintenance costs, and lowered overall operating costs.
- Supported mining operation in minimizing environmental impact.

## PROCESS CONDITIONS

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|---|---|
| **Industry** | Copper Mining |
| **Process** | Water recovery from copper tailings. (Tailings are the remaining portion of ore after the metal has been extracted.) |
| **Application** | Control |
| **Media** | Recovered water (up to 10% solids) |
| **Pressure** | 661 psi \| 46 bar |
| **Temperature** | 59°F \| 15°C |
| **Flow** | 19,953 $ft^3/hr$ \| 565 $m^3/hr$ |

## BRAY PRODUCT DETAILS

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|---|---|
| **Valve** | McCannalok Series 45 Double Offset Butterfly Valve, Lug Style |
| **Size** | NPS 12 \| DN300 |
| **Pressure Class** | ASME 600 \| PN63, PN100 |
| **Materials, Modification, or Upgrades** | Body: Carbon steel<br>Seat: Inconel® 718<br>Disc: 316 SS (Nitrided) |
| **Actuator** | Electric |

***The McCannalok metal-seated double offset butterfly valve has provided more than five years of continuous service, with no failures and no maintenance required.***