

Butterfly Valve Solution Improves Reliability 1200% Over Existing Pinch Valve

KEY RESULTS

- > Eliminated costly shutdowns required to replace failing pinch valves, saving **\$16,800 annually per valve**.
- > Flow rate **increased 25%**.
- > Valve service life was **extended by 1200%**.
- > Bray valve solution was **less costly** and **delivered quickly**.
- > Bray S31 butterfly valve package became the customer's new standard specification, replacing nearly 20 pinch valves.



CUSTOMER

A major battery manufacturer in the Southeast United States.

APPLICATION

Pressurized tank bottoms for Manganese Dioxide (MnO_2) powder.
(MnO_2 makes up the positive electrode in an alkaline battery.)

CHALLENGE

As part of the battery making process, MnO_2 powder is stored in tanks and pressurized to 30 psi (2.1 bar). A made-to-order pinch valve, with EPDM sleeves, was being used to drop the pressurized powder into bags — which were then taken to the battery assembly lines.

The MnO_2 powder is highly abrasive and, after pressurization, would tear through the pinch valve's EPDM sleeve rather quickly. On average, the sleeves would last about a month before needing replacement — which required a shutdown of at least half a day.

The customer needed a more reliable method to bag the MnO_2 powder, without costly downtime for frequent valve sleeve replacement.



Existing pinch valve with EPDM sleeves that were tearing frequently.

To learn more about Bray's solution, continue reading on page 2.

SOLUTION

Bray recommended an initial solution for evaluation that would be more cost effective than the pinch valve, and could be delivered quicker as well. The configuration consisted of a Series 21 butterfly valve with a cast iron body, Teflon™ coated 17-4 disc & stem, and a Teflon™ coated EPDM seat. To provide valuable monitoring data, the assembly also included a spring-return Series 93 actuator, a Series 63 solenoid, and a Series 54 proximity sensor.

Bray's butterfly valve package provided **three months** of continuous service, compared to one month for the existing pinch valves. Even though this was considered a great success, further evaluation revealed that material upgrades could potentially provide an even longer service life. The valve was changed to a Series 31 butterfly valve with 316 stainless steel disc and wear-resistant polyurethane seat — with all other components remaining the same.

RESULTS

The Series 31 valve & automation package — with optimized polyurethane seat — provided **one full year** of continuous service, while also increasing the flow rate **25%**. The customer was so impressed with this tremendous success, it became the new standard specification — replacing approximately 20 pinch valves with Bray's solution.

Overall, the customer realized several benefits, including:

- > Eliminated costly shutdowns required to replace failing pinch valves. (Annual savings of **\$16,800 per valve.**)
- > Flow rate was **increased 25%**, based on optimized material performance.
- > Valve service life was **extended by 1200%** — 12 months vs 1 month.
- > Bray's valve solution was **less costly** and **delivered quickly**.

UPDATE

Bray's impressive valve performance in the Manganese Dioxide powder lines led to opportunities for replacement valves in other areas of the battery making process.

Existing valve assemblies for the anode powder tanks were spilling product and creating safety concerns, presenting an opportunity for Bray to provide 50 replacement valve assemblies (Series 31 butterfly valves with Series 93 rack & pinion actuators).

BRAY PRODUCT DETAILS

Valve	Series 31 resilient seated butterfly valve; 316SS disc; polyurethane seat.
Size	NPS 6 DN 150
Actuator	Series 93 pneumatic, spring return.
Controls	Series 54 proximity sensor; Series 63 solenoid.



The Bray automated valve package (above and below) performed with impressive results, and has now replaced more than 20 pinch valve assemblies.



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