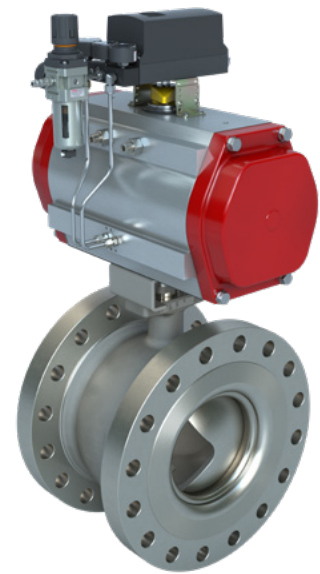


Segmented Control Valves Improve Performance and Productivity at Sugar Mill

KEY RESULTS

- > Frequent shutdowns caused by Evaporator Level Control valve failures were eliminated.
- > Consistent uptime provided increased profitability.
- > Cost of spare parts and repairs were minimized.
- > Control performance was greatly improved.
- > Control valve package has performed without failure for three complete sugar campaigns.



APPLICATION

Evaporator level control at a sugar mill in the Americas.

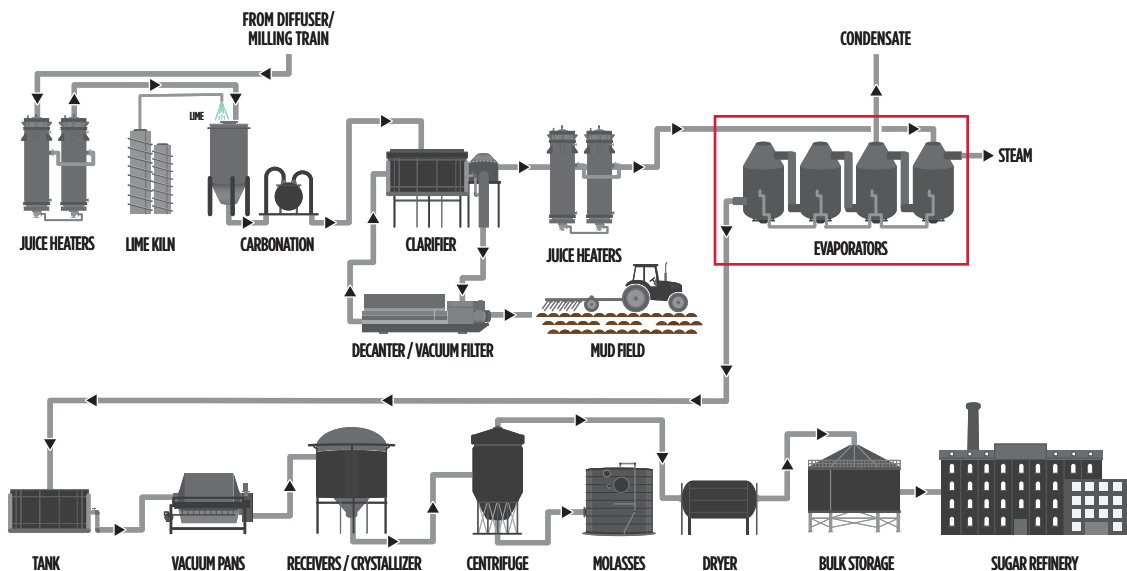
Sugar mill evaporators condense thin sugar juice into high brix sugar syrup. The evaporators utilize steam to heat the water content, causing the water to evaporate from the thin sugar juice — resulting in a thick, viscous sugar syrup.

For this project, the sugar mill required three automated control valve packages to replace the existing butterfly valves.

OPERATING CONDITIONS

Process	Evaporation
Application	Evaporator Level Control
Media	High Brix Sugar Syrup
Temperature	200°F (93°C)
Pressure	22 psi (1.5 bar)
Performance Requirements	Improve control; avoid incrustation at the valve.

TYPICAL SUGAR PROCESSING APPLICATION



CHALLENGE

During sugar production, the evaporator process routinely causes sugar crystals to form deposits on piping and equipment. At this sugar mill, the competitor's butterfly valves were becoming encrusted with deposits, causing frequent seizing during the production season. As a result, shutdowns were required every 15 days to free the inoperable valves of crystal deposits. The continuous production losses were resulting in high operation costs and low product yield. This, with the additional high cost of spare parts and repairs, was becoming unacceptable.



The existing butterfly valves showed signs of heavy sugar crystal deposits, making the valves inoperable after as few as 15 days of service.

SOLUTION

Bray engineers evaluated the process conditions and determined that the existing butterfly valves (NPS 8; DN 200) should be replaced with Series 19 Segmented Control Valves (NPS 10; DN 250). The size change was necessary to accommodate the flow requirements of the process.

The Series 19 Rotary Control Valve offers the features and performance of three valves in a single solution:

- > Shearing action of a knife gate valve.
- > Control performance of a globe valve.
- > Sealing performance of a ball valve, with an uninterrupted flow path.

In addition, it operates with lower torque than many other control valve designs.



One of three automated control valve packages, consisting of an S19 segmented ball control valve, S92 double acting pneumatic actuator, and S6A positioner.

BRAY PRODUCT DETAILS

Size	NPS 10 (DN 250)
Valve	Series 19; Stainless Steel Body; Metal Seat
Actuator	Series 92; Pneumatic; Double Acting
Controls	Series 6A Positioner (4 to 20 mA)
Qty	3 Units

RESULTS

Since installation, the Series 19 rotary control valves have operated continuously for three full sugar campaigns, without requiring a single shutdown event. Benefits to the customer include:

- > Downtime was eliminated, allowing increased profitability.
- > Costs of spare parts and repairs were minimized.
- > Control performance was greatly improved.
- > Maintenance has been reduced to zero hours over three complete campaigns.



After 6 months of service, the Bray S19 valve inspection showed no signs of sugar crystal deposits, and continued trouble free service for a full 3 campaigns.

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