Segmented Control Valves Significantly Improve Production in Sugar Clarifying Application

KEY RESULTS

- Reduced maintenance shutdowns from once every 2 weeks, to once every 3 months — a 6X improvement.
- Improved productivity significantly.
- Simplified cleaning process.
- Minimized valve maintenance and repairs.

APPLICATION

Clarification shutoff and control at a sugar mill in the Americas.

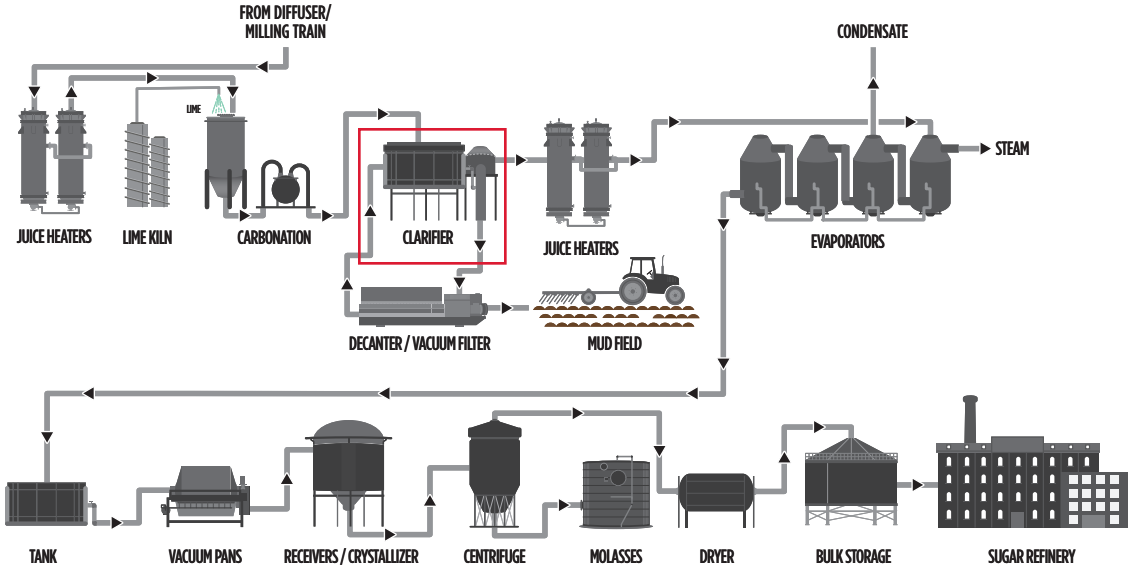
Clarifying is a critical step for producing high quality sugar syrup. The process reduces and removes undesired non-sugar solids from the sugar juice, improving purity before further processing.

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

OPERATING CONDITIONS

Process	Clarification
Application	Clarification shutoff & control
Media	Sugar Cane Syrup
Temperature	176°F (80°C)
Pressure	40 psi (2.8 bar)
Performance Requirements	Tortuous media; high abrasion; encrusting fluid; high cycles; shutoff & control.

TYPICAL SUGAR PROCESSING APPLICATION



CHALLENGE

During sugar production, the clarifying process routinely causes sugar crystals to form deposits on piping and equipment. At this sugar mill, the customers' existing metal seated butterfly valves were frequently becoming encrusted with sugar crystal deposits — causing a maintenance shutdown every two weeks during the production campaign. The resulting downtime, loss of production, and related costs had become unacceptable.

The existing butterfly valves showed frequent signs of damage from the harsh media, requiring shutdowns every 2 weeks for cleaning and repair.

SOLUTION

Bray engineers evaluated the process conditions at this sugar mill, and determined that a Series 19 segmented control valve was the best solution for this demanding application. The S19 valve is designed to handle viscous media and abrasive solids.

The quarter-turn rotary control valve features a segment with "shearing" action to cut through accumulated media, similar to a knife gate valve. This action serves as a self-cleaning characteristic when used in applications with the sugar syrup and encrusted buildup.

This butterfly valve, used for isolation, shows an example of the encrusted, abrasive media.

BRAY PRODUCT DETAILS

Size	NPS 6 (DN 150)
Valve	Series 19; CF8M Body; Metal Seat
Actuator	Series 92; Pneumatic
Controls	Series 6A Positioner
Qty	4 Units

Bray's control valve packages included S19 segmented control valves with metal seats, S92 pneumatic actuators, and S6A positioners.

RESULTS

Since installation, the Series 19 segmented control valves have reduced maintenance shutdowns from once every 2 weeks, to once every 3 months — **a 6X improvement**. Cleaning can now be achieved with hot water only. Additionally, there has been no need for repair kits during 3+ years of operation.

As a result of reduced downtime, maintenance, and repairs, the sugar mill's productivity has improved significantly.

To learn more about our full line of flow control solutions, visit BRAY.com.