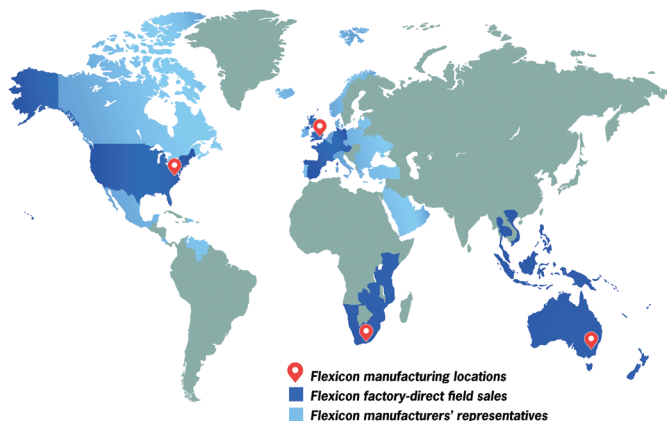




Yalumba Winery Converts to Bulk Bag Discharging of Granular Tartaric Acid

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Yalumba Winery Converts to Bulk Bag Discharging of Granular Tartaric Acid

ANGASTON, SOUTH AUSTRALIA — Australia's oldest family-owned winery, Yalumba Family Winemakers in 1849 began an unbroken record of success that speaks to its exceptional products and multigenerational knack for business.

Today's wine business is global and highly competitive, requiring successful wineries to respond not only to consumer preferences but also to unforeseeable fluctuations in the supply and market price of key ingredients. Such was the case in 2018, when Yalumba's managers learned that tartaric acid would double in price.

In response, they switched from purchasing tartaric acid as a liquid, to purchasing it in granular form supplied in 1 tonne (1.1 ton) bulk bags, requiring the installation of a bulk bag discharger with integral flexible screw conveyor.

Switching from bulk liquid to bulk solids

Tartaric acid enables vintners to adjust and maintain the pH of grape juice as it is transformed into wine. At the correct pH, bacteria cease to grow, allowing the yeast to ferment the sugars while keeping the wine fresh, lively and colorful. "It's a matter of getting that balance just right," says Luke Wilson, Yalumba's senior process engineer. But at twice the price, tartaric acid threatened to significantly impact the production budget.

Yalumba's supplier of tartaric acid also offered a granular product in 15 kg (33 lb) bags, but manual dumping posed occupational health and safety concerns. "It's labour-intensive to mix into the wine," Wilson says. "You've got an operator cutting open and emptying bags of 15 kilos. We purchase in the order of 100 tonne (110 ton) of tartaric acid, and that makes a lot of bags to carry and mix by hand."

However, tartaric acid in granular form was less costly, especially when purchased in 1 tonne (1.1 ton) bulk bags, prompting Wilson to research a bulk bag discharger to handle the material.

Among his prime concerns was the equipment manufacturer's experience at handling tartaric acid, and the ability of the equipment to operate with minimal human intervention.

Speed of delivery was also paramount, as the equipment needed to be operational prior to the harvest and crushing of grapes. "We need it when we crush the grapes because we want to make all our pH adjustments early to give maximum protection to the wine," Wilson explains.

Yalumba specified a BULK-OUT® bulk bag discharger with an integral flexible screw conveyor from Flexicon Corporation Australia. The system was delivered and installed within eight weeks of order confirmation, allowing the winery to mix tartaric acid granules with water prior to the grape-crushing phase of the process.



Operator secures bag to the lifting frame with Z-Clip™ bag strap holders, and then loads the frame and bag onto the main discharger frame.



Tartaric acid gravity feeds from the bulk bag into the hopper and is transported by the flexible screw conveyor into the mixing tank.



Operator pulls the bag spout into the bulk bag interface chute and unties the drawstring. A sealing ring, dust-tight door and filter sock contain dust.

Transferring contents of an entire bag to the mixing tank

The BULK-OUT discharger is a BFF model equipped with a removable bag lifting frame used to forklift full bags from the plant floor into the discharger frame.

The flexible screw conveyor, Model 1450, is able to transfer tartaric acid 3 m (10 ft) at a 48 degree incline at rates to 4.25 cu m (150 cu ft) per hour. All product-contact surfaces of the discharger and the conveyor are of 304 stainless steel with the exception of the polymer conveyor tube.

A forklift positions the lifting frame above a full bulk bag on the plant floor, allowing an operator to connect four bag straps to corresponding Z-CLIP™ bag strap holders. The frame with suspended bag is then forklifted onto spring-loaded POP-TOP™ bag extension devices atop the frame posts. A full bag compresses the springs, designed to progressively stretch the bag upwards as it lightens to compensate for elongation, promoting material flow through the bag spout.

To unload a bag, an operator pulls the bag spout into a hopper intake chute equipped with a side access door, sealing ring, and filter sock to contain dust. Untying the spout's drawstring allows material to fill a 110 litre (4 cu ft) capacity floor hopper with side wall angles engineered to promote flow into the charging adapter of the flexible screw conveyor.

"From an operations point of view, loading the discharger is quite simple," Wilson says, and the steady feed of tartaric acid mixes quickly and easily in the 2,000 litre (520 gal) tank aided by an agitator. "We don't require anything fancy and can mix a bulk bag in under an hour, which for us was important. We were able to exceed our production requirements."

At the conveyor's inlet is a capacitive proximity level switch with a food-grade Teflon shield, connected via a touchscreen PLC to a delay-off evacuation timer. Once the conveyor is started, it runs until the bulk bag is empty, stopping automatically after the level of tartaric acid falls below the low-level switch, and the delay-off time period has elapsed. This ensures that the full contents of the bulk bag are loaded into the mixing tank to achieve the desired 50-50 ratio of tartaric acid and water.

Flow promotion is achieved by the combined actions of the spring-loaded bag extension posts, and by FLOW-FLEXER™ bag activators that raise and lower opposite bottom edges of the bag with increasingly longer strokes as the bag lightens, raising the bag bottom into a steep "V" shape free of dead spots. "There's not really anything left in the bags at the end," Wilson observes.

The acid remains stable in the tank once it's mixed with water. "It's not going to fall out of solution or become microbially unstable," Wilson says. The vintner then transfers the solution to crushed grapes as needed in the same manner as with tartaric acid previously purchased in liquid form.

"Our business is making wine," Wilson notes. "We're not experts in powder handling and conveying, and because we were on a really tight timeframe, we relied on the expertise of the guys from Flexicon. The system is quite simple. It just works."



Tartaric acid helps adjust and maintain the pH of grape juice as it transformed into wine.

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