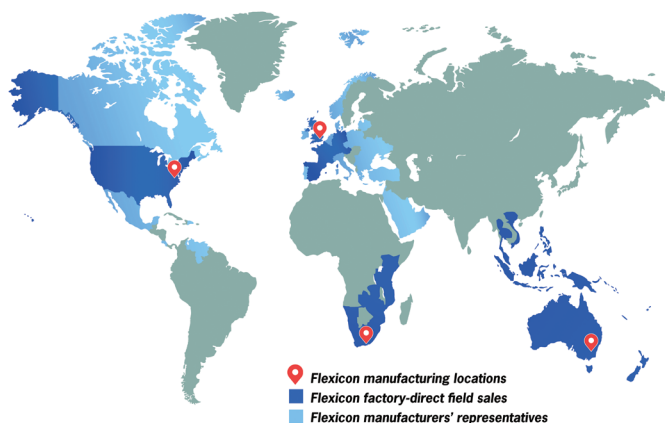




LangeTwins Winery Cuts Labor and Dust of D.E. Filtration with Flexicon Bulk Bag Weigh Batch Discharger

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ACAMPO, CA — The Lange Twins, Randall and Brad, trace their family history back five generations to their great-grandparents, Johann and Maria Lange, who emigrated from Germany to Lodi, California and rented a small country home with a few acres where they grew watermelons. As the family continued to expand, so did their property, which grew into a thriving vineyard from which grapes were harvested, crushed, fermented and filtered to produce wine. Today, Randall and Brad own and operate LangeTwins Winery & Vineyards (www.langetwins.com), located in Acampo, California, just a few miles north of Lodi.

Randall and Brad have automated the winemaking process, especially the filtration step, to produce a full line of rich, robust wines ranging from table varietals to Single Barrel vintages. Only the finest grapes are fermented and filtered to produce wine varieties from Chardonnay and Zinfandel, to Merlot and their award winning Midnight Reserve.

Once the grapes have been crushed and fermented, filtration removes dead yeast and solids known as “lees,” from the wine. Since some of these particles can be extremely small, diatomaceous earth (D.E.) is used as a filtration aid. D.E., also known as diatomite or kieselgur, is a naturally occurring, soft sedimentary rock that is easily crumbled into a fine, white to off-white powder. Particle sizes range from less than 39.4 μm (1 μm) to more than 0.39 in. (1.0 mm), but typically from 394 μm (10 μm) to 7,874 μm (200 μm). Consisting of fossilized remains of diatoms, a type of hard-shelled algae, it is very light and powdery due to its high porosity, which facilitates the generation of airborne dust when handled. Because of its absorbent qualities, it can also cause drying of the skin if handled without gloves.

Bulk bag weigh batch unloading system improves safety

D.E. is added to the unfiltered wine in any of three 300 gal (1136 l) holding tanks, and is then filtered out along with the fine particles of lees that adhere to it. LangeTwins Winery formerly purchased D.E. in 50 lb (23 kg) bags, which were emptied manually into the holding tanks. Repetitive lifting of the bags, and the possibility airborne dust from dumping and disposal activities posed potential safety risks.

To prevent these problems, while reducing D.E. material cost, the winery installed a bulk bag weigh batch discharger with integral flexible screw conveyor from Flexicon Corporation.

The system includes a bulk bag discharger frame with adjustable extension posts to accommodate bags up to 4,000 lb (1,814 kg) ranging in height from 36 to 84 in. (91.4 to 213 cm). A forklift positions a removable bag lifting frame with suspended bulk bag, onto a receiving cradle atop the discharger frame, and then attaches the bag spout to the hopper via a SPOUT-LOCK® clamp ring and TELE-TUBE® telescoping tube interface.



Diatomaceous earth moves from the bulk bag through the hopper, flexible screw conveyor and downspout to a 300 gal (1136 l) tank before filtration of the wine. The completely enclosed system eliminates dust and reduces costs from manual dumping of small bags.



Diatomaceous earth (D.E.) aids in filtration to remove solids from crushed and fermented grapes in 300 gal (1136 l) steel tanks before aging of the wine.

The SPOUT-LOCK® clamp ring makes a high-integrity, airtight connection to the bag spout, virtually eliminating airborne dust while the Tele Tube telescoping tube maintains constant downward tension on the spout as the bag empties and elongates, promoting complete discharge from the bag. Concurrently, FLOW-FLEXER® bag activators raise and lower the bag's bottom edges into a steep "V" shape, directing material into the outlet spout.

Flexible screw conveyor feeds D.E. to any of three tanks

The 9 cu ft (0.25 cu m) capacity hopper has a mechanical agitator that promotes the flow of material into the inlet of the 25 ft (7.6 m) long, 4.5 in. (11.4 cm) diameter flexible screw conveyor, which is connected to the outlet port of the hopper using a U-shaped charging adapter.

The conveyor rises to a height of 14 ft 7 in. (444 cm) at a 45-degree angle while the electric motor at the discharge end rotates a screw specially designed for this application, inside of a polymer outer tube. At the discharge end, D.E. gravity feeds from the conveyor, through a 66 in. (168 cm) long, 6 in. (15 cm) diameter flexible downspout that the operator clamps to the inlet port of the steel tank in use, allowing completely enclosed transfer of the potentially dusty powder.

System dispenses D.E. automatically by user-selected weight

Since the filtration takes place on an "as needed" basis depending on the volume of wine being processed, the system provides the flexibility to program varying amounts of D.E., accurately delivering the exact amount required for each batch. The entire bulk bag discharger rests on load cells that transmit loss-of-weight information to a controller that stops the conveyor once the preset batch weight has been discharged, and flashes "Batch Complete." A "Low Weight" indicator flashes when the bag is nearly empty and needs changing.

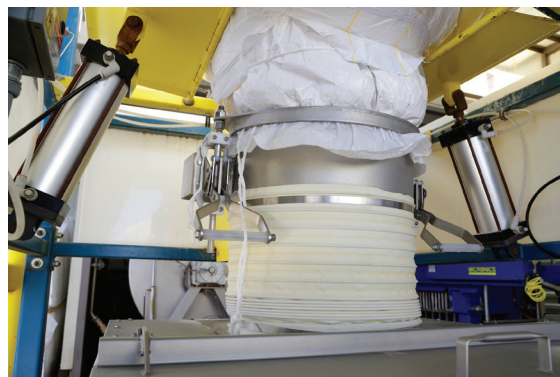
Once the wine has been filtered, it is aged in wooden casks in preparation for bottling. The lees are spread out over the vineyards where they help the earth retain moisture. "As a family and as a company, we are fully committed to the concept of sustainability," says Randall Lange. "Returning the filtered solids to the ground from where they originally came allows us to complete the cycle of nature."



Forklift positions the bulk bag lifting frame onto the cradle atop the discharger frame.



Diatomaceous earth flows from the bulk bag through the dust-tight bag spout interface, hopper and flexible screw conveyor to the holding tank. FLOW-FLEXER® bag activators on opposite bottom sides of the bag promote complete discharge. Load cells allow automated weigh batching.



The bulk bag spout attaches to the discharger inlet by means of a SPOUT-LOCK® clamp ring positioned atop a TELE-TUBE® telescoping tube, which maintains a high-integrity sealed connection to the bag spout, virtually eliminating airborne dust.



A light, powdery material, diatomaceous earth is prone to dusting when manually dumping it from 50 lb (23 kg) bags.



Lange Twins Winery & Vineyards produces varietal wines using an automated process, while maintaining a five-generation tradition of quality.

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