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Eccentric Disc Pumps Offer Reliability in a French Winery

These sealless pumps designed specifically for the food and beverage industry provide high flow rates and excellent product recovery.

BY **VINCENT LEJEAU**
MOUVEX

In the Yonne Valley near the village of Saint-Bris-le-Vineux, France, Bailly Lapierre is a producer of Crémant de Bourgogne, a white or rosé sparkling wine made predominantly from Pinot Noir and Chardonnay grapes.

As is the case with many European wineries and vineyards, Bailly Lapierre exudes history and tradition. Winemaking in this region can be traced back to the late Roman Empire, when vineyards first began to flourish here. The company's day-to-day operations are 165 feet underground in an ancient quarry that supplied the stone for some of the greatest works in France's architectural heritage: the Pantheon, Notre-Dame de Paris and Chartres Cathedral. The location was also used as a German airplane hangar during World War II and as a mushroom-cultivation center until 1970.

Inheritors of a long winegrowing tradition, the local men and women who founded Bailly Lapierre combined their winemaking efforts in 1972 to produce Crémant de Bourgogne. Since then, Bailly Lapierre has brought together 430 winegrowers, and more than 70 wine-growing families who devote themselves to the vines year-round.

The average annual production of Crémant de Bourgogne is nearly 3.5 million bottles (25,000 hectoliters) or roughly 290,000 cases. Additionally, a permanent stock of five million bottles is retained in the company's underground cellar.

A Traditional Process

With subterranean galleries that extend more than 10 acres, the location of Bailly Lapierre's winery serves the company well in its winemaking efforts because caves provide natural conditions ideal for the production of Crémants:

- A naturally cool temperature at a constant 12 C (54 F)

- A naturally high level of moisture (about 80 percent humidity at the heart of the cellars)
- Soft diffused light that helps preserve flavor and color

Inside the winery, the grapes are weighed and the quality of the berries assessed. The grapes are emptied into the designated hopper and channeled to the corresponding press. The presses, renovated in 2007, provide gentle processing.

"We have four presses with different capacities, between six and 12 metric tons," said Mathieu Cerveau, cellarman for the winery. "We can press an average of 250 metric tons a day, with each press devoted to a single grape variety. Completing the pressing process in a gentle manner is important because the different juices need to be kept apart. The cuvée (the juice from the initial pressing) is run into separate tanks from the juice of subsequent pressings, or *taille*. It is also important that we are able to drain all of the juice from the piping system. This juice is the lifeblood of the wine."

After the pressings take place, Bailly Lapierre makes its Crémants using the traditional method, the same method used for making Champagne. Known as "vinification," it is a long process that demands rigor and precision.

New Technology

While its Crémant de Bourgogne is produced in the traditional fashion, Bailly Lapierre prides itself on being a company of innovation. Within the last decade, it has overhauled its production facility, installing equipment that includes a variety of modern and automated machines. Not only does this equipment make the production process easier to complete, it does so in a more precise manner.



Image 1 (top). The pumps were specifically designed for use in the food and beverage industry, which requires exceptionally hygienic operations. Image 2 (bottom). The underground facility creates a sophisticated atmosphere for a tasting room and provides natural conditions ideal for the production of Crémants. In the tasting room, wines are poured by Bruno Denis. (Images courtesy of Mouvex)

“Some of our newer equipment was custom-built specifically for us,” explained Cerveau. “We use stainless steel equipment, as well. We do this for a variety of reasons, but one reason is because stainless steel is easier to clean. In addition, all of the equipment that touches the wine must be compatible with food products because making wine needs to be a flawless and hygienic process.”

Pumps are used for a variety of applications during winemaking and are critical to the process. “Pumps are important pieces of equipment for us,” said Cerveau. “Because we use our pumps in a variety of locations, we usually have a few that are mounted on a mobile cart so we can easily move them around the winery. We use them in our pressing center, where it’s a 24/7 operation, as well as around the winery to fill tanks or transfer wine from one tank to another. In addition, we use a pump to fill all of our wine bottles. If our pumps go down, the operation stops.”

When selecting pumps, wine producers like Bailly Lapierre must choose a pumping technology that offers the following attributes: gentle product handling, volumetric consistency, ability to recover expensive products and ingredients, and low slippage. After evaluating pumping technologies, Bailly Lapierre chose to install eccentric disc pumps.

The pumps were specifically designed for use in the food and beverage industry, which requires exceptional hygienic operations. What sets the pumps apart is a sealless design that incorporates a hermetic pump head with a self-adjustable eccentric shaft protected by a double-wall stainless steel bellows that ensure long life and product safety.

The pumps also reduce the risk of product contamination and costly leakage thanks to the way they are constructed, eliminating mechanical seals, packing and magnetic drives.

This design has helped the pumps earn certification from EC 1935/2004, EHEDG, 3A and FDA for use in food-processing applications.

The pumps offer benefits including strong vacuum and compression effect for enhanced line stripping and optimized product recovery; low shear rate; self-priming and dry-run capabilities; exceptional volumetric consistency; no slip; and almost completely pulsation-free operation. Because the pump includes only two wear parts, maintenance is easy and can be performed while the pump is inline.

“The high flow rates are a key feature; since we deal with big volumes of liquid, we need a big flow. Another great feature

is the strong suction,” Cerveau said. “Because the pump is located in the pressing area, it has to suck the liquid from a lower level and send it through about 40 meters of piping. This isn’t

possible with some other pumps. Additionally, just as we have designed our presses to handle the grapes as gently as possible, we love the fact that the pumps feature no excessive shear

that puts friction on the wine. But the best benefit for us is the higher rate of product recovery. The pumps can completely drain all of the juice from the piping and from inside the tanks.”

A key to the pumps’ enhanced product-recovery capability is their unique conveying principle. This principle is based on two stainless-steel components—the static cylinder and the moving piston—driven by an eccentric shaft, which generates a circular movement. Through this movement the inner and outer chambers are formed, which displace the liquid from the suction side to the discharge side with an impressively consistent and accurate flow. Given that the pump can run dry, the rotation of the parts creates a compressor effect that facilitates the stripping of discharge lines.

Conclusion

While Bailly Lapierre is a company that relies on history and tradition to bring its award-winning Crémant de Bourgogne to the masses, it’s also not afraid to implement new and innovative technology into its operation.

This new technology makes life easier for employees and helps ensure that each batch of Crémant sparkles in just the right way. ■

Vincent Lejeau is the regional sales manager—France for Mouvex and PSG, and can be reached at vincent.lejeau@psgdover.com. Mouvex, incorporated in 1906, manufactures positive displacement pumps, screw compressors and hydraulic coolers for use in a variety of industries, and is a product brand of PSG, a Dover company. For more information on Mouvex or PSG, visit mouvex.com or psgdover.com.