Rotary Jet Mixer saves more than 190,000 bottles of premium beer

The Trappist Brewery of Westmalle, Belgium **Case story**

The Alfa Laval Rotary Jet Mixer effectively blended 320 hL of beer with sugar content too high for bottle conditioning with 320 hL of fresh beer, saving Westmalle Brewery more than 190,000 bottles of its premium Trappist Tripel ale.

When the Trappist Brewery of Westmalle, world-renowned for its handcrafted brewing heritage experienced issues in its beer production lines, its brewery professionals turned to Alfa Laval for help.

The issue: how to save a 640-hL batch of Westmalle Tripel Trappist ale with sugar content too high for secondary in-bottle fermentation.

The solution? Divert the batch to an interim tank and use an Alfa Laval Rotary Jet Mixer to remix the batch with fresh beer to lower the sugar content to the right specification levels.

The result: more than 190,000 bottles of the abbey's signature golden pale ale on the market for consumers to enjoy.

Priming sugar dosing error puts batch at risk

Craft beer production does not always go as planned. Many Belgian breweries, including the famous Trappist breweries like Westmalle, perform bottle-conditioning of their beer.

A priming sugar solution is added to the beer prior to filling, and the living yeast in the beer ferments this sugar in the bottle to finish and carbonate the beer.

The dosing of sugar must be precise: too little sugar results in beer that lacks carbonation and tastes flat; too much sugar results in over-carbonated beer that may explode while in the bottle or gush out of the bottle upon opening.

A batch of Westmalle Tripel mistakenly received a double dose of priming sugar required for secondary fermentation in the bottle while the batch was in the bright beer tank. The dosing error made the beer unsuitable for bottling. Thanks to critical control

> **"Westmalle recognizes Alfa Laval as our trusted partner as they quickly came up with the right solution. Thanks team Alfa Laval."**
>
> – Jan Adriaensens, Brewmaster of Westmalle

Westmalle Brewery production lines.

The abbey at Westmalle Brewery.

points positioned throughout the production lines, the bottling plant manager received a no-go alert and diverted the batch from the bottling lines to an interim holding tank to keep oxygen out of the beer.

Quick thinking, rapid response

The monks still run the brewery to sustain life at the abbey and donate all brewery profits to charitable causes and the local community. However, day-to-day brewery operations are now in the hands of professional brewers, and the entire brewery cold block cellar has Alfa Laval equipment in place.

The Westmalle brewers realized that homogenous blending of the high-sugar-content batch with fresh beer to lower the sugar content to the proper specifications was necessary to save the Westmalle Tripel batch.

Rudi Wuyts, Technical Director at Westmalle Brewery was quick to place a call to Alfa Laval based on a long-term partnership with the company. He knew that the Alfa Laval Rotary Jet Mixer was capable of diluting the batch by blending it with fresh beer at a ratio of 50/50.

“In less than a week, we had the Alfa Laval Rotary Jet Mixer on site, assembled and ready to mix the beers in a new bright beer tank as a ‘trial’,” says Wuyts. “Installation and operation were easy because Alfa Laval delivered the mixer with the right nozzle and up-pipe for our application.”

Once the mixer was installed, a portable pump was connected for leak test and circulation test. Thereafter, the tank and mixer loop were cleaned, and the tank pressured with CO_2 to prepare for product addition.

Smooth blending process

The full batch of overdosed beer was moved into an empty fermenter tank, and 320 hL of fresh beer was filtered and filled into the 800 hL bright beer tank (BBT) containing the mixer. Thereafter, 320 hL of the overdosed beer was routed to the centrifuge through an Alfa Laval Carboset™ module on site and into the BBT directly through the mixer. The flow rate from the centrifuge matched the desired circulation flow through the mixer, and the centrifuge discharge pump was just large enough to provide the required flow and pressure to fill the tank. Once the tank was filled, circulation was started through the mixer using a portable pump.

Successful homogenization after an hour of circulation

The Alfa Laval Rotary Jet Mixer began liquid mixing of the high-sugar content beer and the fresh beer. Within minutes, the high-impact jet stream reached all the way to the top of the tank, even though the mixer sits close to the bottom.

“Like Alfa Laval’s quick service in delivering and installing the mixer, the mixing itself was very quick and accurate,” notes Wuyts, who confirmed rigorous mixing through the sight glass.

After an hour of circulation, the sugar concentration was consistent throughout the tank. Samples from several locations during mixing confirmed that the beer now contained the proper concentration of priming sugar for secondary fermentation and was ready for bottling. After completion of the filling process, the tank and mixer loop were cleaned, and the blending process was repeated with the remainder of the batch.

Trusted partner

The brewery personnel were extremely happy with Alfa Laval’s fast response to the brewery’s emergency issue, and the effective performance of the Alfa Laval Rotary Jet Mixer system.

Impressed with the performance of the Alfa Laval Rotary Jet Mixer, Westmalle Brewery decided to purchase the system for use in either fermenter or bright beer tanks. At the brewery’s request, Alfa Laval also provided a centrifugal pump identical to one already in use in the cellar to give Westmalle more flexibility with spares.

Alfa Laval Rotary Jet Mixer effectively handle liquid mixing, gas dispersion, powder mixing, and tank cleaning while reducing mixing time, energy consumption and costs.

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com