



BrewMonitor® at Froth Technologies

Real-Time Fermentation Monitoring Powers Maximum Production Efficiency for New Zealand's Only Local Yeast Source

Blazing Trails as New Zealand's First Domestic Liquid Yeast Grower

As proclaimed on their website, Froth Technologies is "passionate about all things fermentation," and this is reflected in their success as New Zealand's first and only domestic yeast provider. More specifically, they are dedicated to unlocking the flavors of New Zealand, "through an extensive R&D project, harnessing previously undiscovered yeasts from our natural wildernesses and putting them into [brewers'] pints." Despite being less than 18 months into full operations, the Froth Technologies team has leveraged both their passion for helping New Zealand's

"I can't remember what life was like before BrewMonitor!"

- Ryan Carville

brewers and their skillful, "custom designed propagation process," to quickly become a mainstay yeast supplier to their country's growing craft beer scene. Froth distinguishes itself by focusing on rapid service, extremely fresh and healthy yeast, an appealing choice of strains, and large enough quantities so brewers can directly pitch into their tanks rather than requiring additional propagation first. Offering the country's only fresh yeast has helped elevate the flavor profiles for an increasing number of New Zealand breweries of all sizes, earning Froth's customers some prestigious industry awards. And Froth Technologies itself has been honored in 2021, receiving two finalist nods from the NZ Food Awards, and an "Emerging Gold - Product" prize at the Wellington Gold Awards.

The Challenge: Top Quality and Efficiency in Yeast Propagation

As "Co-Founder/Left Brain" of the organization, Ryan Carville manages Froth's three-person production team, which includes brewing, lab work, time management, and of course janitorial work. As he explains, their yeast propagation operation looks a lot like a beer brewing operation, but it's separated into two main operational areas: the lab, or "yeast nursery," where the yeast are grown on agar plates from just a few cells, and then transferred to increasingly larger volumes of media; and next, the production tanks, where a sterilized growth medium is employed to propagate the yeast, and finally, cooled prior to packaging. The team has three fermentations



Benefits

- ✓ BrewMonitor provides critical visibility into fermentation tanks, enabling accurate timing for each stage of yeast propagation
- ✓ Efficiencies from real-time fermentation monitoring increase yield from each batch up to 15% (NZ\$30,000 per year) as well as saving 5-6 hours per week in labor
- ✓ BrewMonitor increases confidence and provides clear records of yeast quality for customer service and disputes, as well as supporting the company's brand message as a leading-edge yeast producer
- ✓ BrewMonitor reduces commutes to the production facility each week, significantly lowering carbon footprint and improving work-life balance

It's all about consistent ingredients and consistent process. With BrewMonitor we are able to make sure that the fermentations are following the same curves and we're hitting the same amount of dissolved oxygen at the time of pitching yeast each time. So, just knowing that each fermentation profile is as expected and working to these sort of metrics means that our customers are getting a more consistent product, batch to batch. That means our customers can then produce more consistent beer, batch to batch.

- Ryan Carville, Co-Founder/Left Brain, Froth Technologies

BREWMONITOR® SYSTEM

running at any given time, with one in the lab, one in the initial propagation tank, and one in the final tank, and as each stage ends in one area it starts in the next – “a three-batch, continual process,” as Ryan put it.

The key to keeping this symphony playing is in the timing. As Ryan explained, “The first thing that happens when I walk in the morning is checking out the propagations or the fermentations and our tanks, and that involves taking gravity samples, pH samples, counting our cells, checking the viability of those cell populations. Once we get those cell counts, I’ll be determining the volume of food or growth medium the yeast needs in the next stage.” In this way, each of the three current batches are assessed every day as Ryan’s team makes decisions about ways to maintain, increase, or slow the speed of growth to keep the production line flowing. He said, “It’s quite a juggling act, making sure everything is operating at optimal efficiency because we work in just one set of tanks, so everything is coming up behind. It’s like a constant conveyor belt.”

The biggest challenge to accomplishing this is visibility into the fermentation tank: “You’re working with this living organism that’s inside of a stainless steel tank, so it’s all about knowing where they’re at, in order to determine how quickly it’s going or when the yeast is ready to go to that next stage, which then determines when the next batch is ready to come through.” He added, “Making sure that we’re not pushing things through too fast or too slowly, and making sure that if there are any problems, we’re able to detect them early – these are all very important for us to maximize our production.”

The Solution: How Real-Time Fermentation Monitoring is Helping Froth Technologies

Froth Technologies’ co-founder Simon Cooke discovered BrewMonitor as part of a search for instruments that would help them understand what was happening inside their fermentation tank, and both founders immediately understood what real-time monitoring could mean for operations. As Ryan describes it, “Prior to BrewMonitor, we were relying on the two samples we were taking every day – gravity, pH, temperature, and cell density and viability – but we knew that in between those times there is a massive potential for change. And so, we were looking for a device that could provide us with real-time, in-tank data.”

Adding real-time data enabled a much smoother, tighter, and more reliable process. Ryan explained, “BrewMonitor

has really been a catalyst for us being able to run these batches so back-to-back. Before, we needed to allow more wiggle room, maybe an extra day of deep tank time, because we didn’t have the insight to be confident in making sure we could push through the batches quickly.” He noted that optimizing tank time has increased yields up to 15% for each batch of yeast they produce.

BrewMonitor helped eliminate much of the trial-and-error processing that was required previously: “Prior to BrewMonitor we did have to dump some batches. With those manual counts, you’re only getting a tiny insight into what is going on, and only at one particular time, whereas using BrewMonitor gives you the ability to have that constant eye on the ball to make decisions. Now, instead of driving half an hour to the facility on the weekend to check where the propagation is at, we can sit at home, check to make sure the fermentation is where it should be, and flip the cooling on with our WiFi-controlled temperature relays. Two less driving trips each week has significantly reduced our carbon footprint, which is very cool, and has made our lives a lot easier.” Ryan estimated that BrewMonitor saves Froth 5 to 6 hours in labor each week.

Increased production efficiency has also made their new equipment investments more valuable and has been a key component of the company’s ability to expand operations and grow. As Ryan put it, “Before BrewMonitor we were certainly restricted. But by honing these efficiencies, it’s given us more capacity to go out and get more clients because we know we have the stock to service them. And now, it’s gotten to the point where we’ve got enough clients that maybe we need to get another tank so we can keep pushing and growing.”

Further, he pointed out how cost-effective BrewMonitor has proven to be: “We were looking around for most of the key analytics that BrewMonitor offers, but the traditional form they come in is one-by-one. It was looking like an expensive endeavor but one that needed to happen, so we were extremely happy to find that there was a solution that we could use, and it wasn’t going to break the bank.”

Lastly, using BrewMonitor has improved the team’s work-life balance. Ryan concluded, “As a small startup business, you have to put in the hard yards early on, but just being able to take those two days off and still keep production on track – it has really been a big improvement in quality of life for us, as well as supporting the business.”



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