

# Cold customers

What is driving the demand for Chart's liquid nitrogen dosing technology?

By Nick Parkinson

Chart Industries has seen an uptick in demand for its liquid nitrogen dosing technology driven not just by an appetite for nitrogenated beverages, but also by the impact of the coronavirus (Covid-19) pandemic.

When tap rooms, bars, coffee houses and restaurants shut down due to coronavirus restrictions earlier this year, and with things slowly creaking back to normal in some areas, people are increasingly consuming their drinks – whether it be soft drinks, nitro coffees, and beers – in cans at home.

Craft breweries were already widely using 16-ounce cans, but the pandemic has increased the demand for aluminum canning, which uses nitrogen dosers as part of the packaging process.

Juancho Tabangay, Director of Sales – Global LN2 Dosing at Chart, told *gasworld*, “The pandemic has had a very good impact on Chart’s liquid nitrogen dosers. All the restaurants, bars, clubs, are looking at deliveries, takeout and online purchases so they package their drinks now in aluminum

cans and there is a really high demand on canning lines and liquid nitrogen dosers. We are super busy right now – Covid-19 has given us an opportunity to sell more dosers because consumers are looking for more products that are in cans. Wine consumption has been very high because of the pandemic and it is packaged now in aluminum bottles and cans. Wine is still, so it needs liquid nitrogen dosing to rigidify for aluminum canning. There’s a trend now for craft breweries to package in aluminum cans because it’s cheaper than glass bottles.”

Chart’s 3,000+ installed dosing systems are used to pressurize and/or inert products and its packaging, with key benefits being package rigidity and extended shelf life. Another benefit is a reduction in plastic in the bottles as it provides the rigidity of a thicker plastic bottle.

The method sees a precise dose of liquid nitrogen delivered immediately before capping or seaming; the trapped liquid nitrogen then vaporizes, pressurizing the container, and so adds rigidity.

Sales of nitrogen dosers are also being driven by popularity of nitro-infused beers and coffees, which in turn is driving demand for liquid nitrogen.

“A major brewery typically has 11,000-gallon tanks dedicated for liquid nitrogen dosers,” Tabangay said.

“For those sized tanks they have deliveries twice a week and one tanker

is 7,000 gallons. That’s 14,000 gallons a week, 52 weeks a year. These major brewers are running can lines of 2,000 cans per minute and that’s 20% of our market. Craft brewers [which includes coffee] are 80% of our market and they usually consume two dewars a week, about 500 liters a week, 2000 liters a month, so they are smaller but more consistent.”

## Key drivers

Nitro coffee is now seeing a similar growth in popularity that craft beer and stouts have seen recently. Chart’s liquid nitrogen dosing technology provides the same cascading effect for cold brewed coffee served in cans as it does poured from a tap in-store, and is employed by coffeehouse giant Starbucks for its Nitro Cold Brew and Double Shot Coffee, which is sold and served in aluminum cans.

“If you go to a Starbucks store you find nitro coffee in aluminum cans which has been liquid nitrogen dosed,” Tabangay said.

“Starbucks Nitro Cold Brew is a product we support by providing the liquid nitrogen dosers, liquid nitrogen and nitrogen gas for the dispensers. When you open the can, the nitrogen bubbles release producing that same cascading effect when you pour a Guinness. Starbucks works with a lot of co-packers – they contract their packaging out to companies like Dairy Farmers of America. At Dairy Farmers

of America, we have multiple liquid nitrogen dosers in all of their sites.”

As well as Starbucks, Chart’s liquid nitrogen dosers are used by the likes of Black Rifle Coffee, La Colombe Coffee, Califia, Oskar Blues Brewery, Left Hand Brewing, Second Self Beer Company, Vault Brewing Company, Samuel Adams (flagship brand of the Boston Beer Company), Ballast Point Brewing (Constellation Brands), Firestone Walker Brewery, Anheuser-Busch (Budweiser), Molson Coors, and Labatt Brewing.

“We provide Sam Adams the whole package of the liquid nitrogen delivery system,” Tabangay said.

“We provide them with the engineering of where to position the liquid nitrogen doser, engineering of what doser to put in the specific canning or bottling line and training for installing and starting up the

doser. Every year we have been selling between 300 and 400 dosers and the majority go to craft brewers.”

Chart’s dosers are employed not just by beer and coffee creators.

“We are involved with the development of liquid nitrogen dosed low carbonated RTDs, or Ready-To-Drink seltzers,” Tabangay said.

“In concept nitrogen bubbles are finer than CO<sub>2</sub> bubbles. On your tongue a smaller bubble can get in better than a bigger bubble and opens up your palette so you can taste the drink much better. That’s the benefit of liquid nitrogen dosing, it enhances the taste of fruit-forward flavored low-carbonated drinks.”

Chart’s nitrogen dosers are also used in the packaging of drinks like bottled water, juices, teas, wine, and food ingredients like vinegar and edible oils.

“We are allowing the packaging

process to move forward by adding pressure,” Tabangay said.

“Carbonated soft drinks have that pressure that pressurizes the can. Water and coffee don’t have CO<sub>2</sub>, some beers which have low CO<sub>2</sub> do not have enough CO<sub>2</sub>, and food additives like chocolate syrup, sauces and gravy don’t have CO<sub>2</sub>. All of these products need pressure and liquid nitrogen is the best medium because it expands 700 times and does not affect the taste of the product. In fact, if you increase the nitrogen percentage you increase the shelf life because it removes the oxygen. Oxygen is oxidizing the food product which causes it to get stale. Those are the two key benefits of liquid nitrogen dosing: shelf life extension and also pressurization for the packaging process.”

For preservation and modified atmosphere packaging (MAP) ▶



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“Starbucks Nitro Cold Brew is a product we support by providing the liquid nitrogen dosers...”



► applications, the rapidly expanding gas is allowed to escape before the product is sealed, flushing out oxygen, and extending product shelf life. According to Chart, “documented studies show a 26% increase in shelf life and 95 to 98% reduction in headspace oxygen compared to traditional gaseous nitrogen purging”. The US-based cryogenic equipment manufacturer also claims that there is a “46% reduction in nitrogen consumption using a Chart doser in lieu of traditional nitrogen gas purging”.

#### Expectations of growth

Chart’s three dosers – CryoDoser FleX®, UltraDoser®, Inerter™ – are suited for various applications. The UltraDoser® LN2 Dosing System dispenses a precise dose of liquid nitrogen into every container just before the can or bottle is sealed at a brewer. The liquid nitrogen travels from the cylinder to the Chart dosing unit by a vacuum insulated hose and flows into the dosing head. The vacuum insulated hose helps maintain the temperature of the liquid nitrogen and prevents boil off or heat leak. A sensor detects the speed of the production line, and a second sensor detects the presence of a container. The dosing head opens and dispenses the exact amount of pure liquid nitrogen. Winemakers have also been turning to the Chart dosers as dosing removes the oxygen from the bottle and extends the shelf life.

The dosers are also employed to surface freeze products such as the chocolate coating in dipped ice cream cones. Chart has been partnering with retail ice cream shops to quick-freeze customized desserts with liquid nitrogen to enhance the taste and texture.

Chart has been involved with liquid nitrogen dosing for over two decades and believes it is the market leader.

“Not everybody can provide a

complete liquid nitrogen dosing system solution from the bulk storage tank all the way up to the doser,” Tabangay said.

“Imagine injecting a drop of nitrogen into a conveyer that is running 2,000 cans a minute. There has to be precise, reliable mechanisms and engineering on the liquid nitrogen doser vessel, the vacuum insulated pipes and the bulk tank to ensure you always have liquid nitrogen consistently and efficiently.”

What growth does Chart expect for dosers going forward?

“Before coronavirus most of our sales of liquid nitrogen dosers was for bottled water and juices,” Tabangay said.

“Those have remained the same but the alcoholic drinks have increased – craft beer, wine, cocktails. Coffee has also increased. We’ve not lowered our dosers sales projections for 2020 even in the midst of the pandemic. Even though some markets are slowing down, some are increasing, so we have

“Documented studies show a 26% increase in shelf life and 90 to 95% reduction in headspace oxygen...”

the confidence we are on plan. Year over year we anticipate a minimum growth rate of 5%, and we are trying to stick with that.”

Tabangay says such growth could be driven by other beverages turning to nitrogen dosers.

Tabangay said, “We have been exploring kombucha and cocktail drinks in cans which are growing right now. Another big growth area for us is CBD-infused drinks in areas where cannabis is legal. CBD-infused drinks are not carbonated so they need liquid nitrogen dosing.” <sup>GW</sup>

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**Chart’s liquid nitrogen dosing systems** nitrogenate packaged cold brew coffee. Pouring the coffee into a tall glass creates cascading effects from the release of nitrogen bubbles. This gives it a velvety-smooth mouthfeel without the cream and a naturally-sweet taste without the sugar. An all-natural and satisfying nitro cold brew coffee to lift spirits and enjoy!

Learn more at [www.ChartDosers.com](http://www.ChartDosers.com)  
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