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Cask's Flow Control vs Counter Pressure Filling

This is an issue that we're hearing a lot about lately because it seems that our competitor's sales people are hitting the phones and talking to many of the same breweries we are. The standard line they are passing around is that because our system does not use a counter pressure filler, our air levels can not be as low as their air levels. Very often this is a statement made without the benefit of any field testing or actual knowledge of what the head space air levels are in the beers that our customers are packaging.

There is also some considerable irony in that line of thinking which, to appreciate, we have to know a bit about the history of the technology. Firstly, there is a misconception that "counter pressure" as a fill method was invented to reduce air pick up. The purpose of counter pressure was actually to reduce foaming and CO2 loss during filling so that beers or soft drinks could be filled at higher speeds with higher CO2 content. It has been in use long before the beer industry became aware of how harmful packaged air content actually *was* in beer.

Once air pick up did become a technical issue, one very clear fact came to light (and herein lies the irony): counter pressure, as a filling method, was a complete disaster when it came to air content because it actually *forces* air into solution in the product. ***Counter pressure is not the solution to air pick up problems. It is the cause.***

Since that discovery, much has been done to try alleviate the problem of air pick up created by counter pressure. Pre-evacuation, double and triple pre-evacuation , nitrogen or CO2 pre-purging, etc... With these added techniques the filling industry has managed to reduce (but never eliminate) the problem of forcing air into solution in the beer. The central problem of the technology remains because of its very nature: the first step in a counter pressure filling line is sealing the bottle or can and *trapping* air inside the container. The container is then pressurized to the same level as the beer in the tank. There is now a mix of CO2 and air in the can (or bottle). In a 'pre-evac' system the pressure will be released and then re-pressurized - as many as 3 times in the most expensive and elaborate systems. Each time the pressure is released more air is removed. It is never completely removed however. The mix of air and CO2 in the can is being vented through a very small aperture in the fill head. In many systems this mixture is being vented into the head space of the tank the beer is in!

When we set out to make our system, our goal was to produce something that was small enough, both physically and in terms of capital cost, that it would be suitable for the small to medium size microbrewers that had never considered beverage cans before.

I would like to say that we sat down with a team of aeronautical engineers and scientists and refused to let them leave the room until they came up with a filling system that would make it easier to keep air contents low in cans. But that's not what happened. Our filling system was adapted from our smaller table top version that had proven so reliable, effective and low cost. To our great astonishment, when we began field testing air contents on our customer's beer, we got readings that were too low for our equipment to even measure. We bought better testing equipment. We had Ball Corp verify the results. We were in fact, according to Ball, getting air contents as low as any recorded in the beverage filling industry. We began to realize we had stumbled on to something that was much better than we thought.

Those results have been repeated, on site, at every installation that we've done since then. Furthermore, our customers are able to achieve exactly the CO2 contents they require in their beer - from 1.9 up to 3.0

volumes - and even (just this week) 4.0 volumes for a rum and coke mix we prepared at the request of the worlds leading alchohol drinks company.

In short, our air contents are low. They will be lower than any offered by our competitors, large or small. Rather than talking about it, we'll prove it. Take a Zahm & Nagel headspace air tester on-site to one of their customer's facilities (if they'll let you). Measure the headspace air (this measurement, as you know, has to be done on site right after the beer is packaged to be meaningful). And then take the same measurement from one of our customers. We'll even provide you with the name of our nearest customer.

Here are the reasons why our air contents are so reliably low when compared to the conventional counter pressure systems:

1) At no time do we trap air in the can prior to filling
2) We "pre-fill" the can with CO2. The air faces no restriction so it is free to leave through the wide open top.
3) This pre-fill lasts a minimum of 5 seconds. Long enough to ensure there is no air left on the bottom of the can when filling starts.
4) We 'long tube' fill. Beer enters at the bottom of the can and is covered by the blanket of CO2 with which the can was previously filled.
5) We have "foaming" valves in each of the 5 fill heads, which are operator controlled, to allow for varying CO2 contents and dispense temperatures in beers. These valves will create the desired quantity of foam on beer so that the beer is still foaming actively as it approaches the lid applicator.
6) Our lid applicator: (this one IS actually our own ingenious design - although no rocket scientists were harmed during its development). It injects CO2 into the small concave space under the lid and keeps it there until the lid is pulled into place on the can. CO2 is furthermore cascading down from the lid applicator onto the beer as the lid is being applied.
7) A lid 'tamper' then presses the lid into place squeezing out the remaining foam and ensuring that there is no chance for air to invade on the way to the seamer.

Despite what some of our competitors may say it is a reliable technology. The air content is lower than it is in conventional Counter Pressure systems. It is field tested. And we're fully prepared to prove it. Furthermore we're prepared to guarantee the results will meet *your* targets, in both CO2 and air content, in *your* brewery.