

POUCH FILLING

# FILLING THE FITMENT GAP

Pouch filling equipment revs up as fitments, functionality and sustainability spur flexible packaging growth in foods and beverages. / by MEGAN WAITKOFF, Senior Editor

Pouches have a lot of things going for them. They take up less space than rigid containers, both before they're filled and when they're discarded (which adds to their environmental appeal). They're often less expensive, on a per-unit basis, than rigid containers. And in many applications, especially for beverages, they have a novelty that can create considerable shelf appeal.

But one of their biggest drawbacks is product security, in several forms: opening them safely and easily, dispensing products (especially liquid products) from them accurately and reclosing them.

Fitments, with screw tops or other closures, are a way to overcome this disadvantage. Until recently, filling pouches with fitments was one of the toughest challenges in using pouches. But alternatives in machinery have

made filling pouches with fitments much more reliable, in terms of both handling and ultimate product quality.

#### Marrying fitments with filling versatility

According to Charles Murray, chief executive officer at PPI Technologies, manufacturers can fill pouches that have fitments through a number of different methods:

- put the fitment on the corner of the pouch and fill alongside it (the most common filling method in North America);
- fill through the pre-placed fitment;
- fill with a wide filling tube through a large gap in the pre-formed pouch, then the fitment is applied and the bag is sealed.

The ultimate goal is to have zero head space that could collect or cultivate gases or chemicals that could contaminate the product. And a tamper-evident feature on the fitment is something consumers demand.

"The biggest secret here is to virtually marry the laminate to the material and get it to work around the fitment," he says. "When you get it to no gap, you virtually control the dispensing world."

PPI Technologies has developed three-way technology for sealing pouches that use fitments with carrying rails. The pouches are loaded onto a carrying rail and delivered to the filling machine. They're then filled while they're still flat. Excess product on the outside of the pouch and fitment can literally be washed off.

PPI's new LCM 500-spout fitment form-fill-seal machine caters directly to the pasteurized and aseptic packaging market. The eight-lane machine uses three steps to seal the spout to the package—heat, pressurize, then cool, each in one-second intervals. The machine safely runs 65 packages per minute per lane, so at total capacity, throughput speeds can reach up to 500 packages per minute.

In addition to welding the spout fitments, the LCM also gas flushes the pouch. The system offers two fill-



The FLUPP system allows consumers to break internal seals and mix two or more components of a beverage or other liquid product.



ing options: creating the pouch from rollstock, then pushing it through continuous-motion filling with liquid nitrogen, with the sealed fitment placed on top of that and the entire package then pasteurized; or forming the pouch, dropping in the fitment first, filling through the fitment and pulling it out through a vacuum for limited headspace.

### Multi-chamber mixing

Packaging that lets consumers mix a product before dispensing is a hot trend, and Germany's new FLUPP system extends this concept to pouches with fitments.

The FLUPP pouch is divided into two or three components, each with a separate ingredient of the product, such as a cocktail with liquor and mixer. The consumer squeezes the pouch to rupture the internal seals and mix the product, then dispenses the mixed product through a central fitment.

Filling is done through the fitment for one component, and through the flexible top prior to sealing for the other chamber(s). The FLUPP system, marketed by s-designteam GmbH and filled with machinery by Hensen Packaging Concept, can be used for applications like mixed drinks, baby formula, dairy beverages and other beverages and liquid foods that require mixing at the point of consuming.

### Wine producers have their fill

DuPont's new Crystalon system for wine producers goes beyond filling through fitments to a new approach to filling.

For typical bag-in-box wine operations, the bag is pre-made on a line that takes two webs of film and uses a patent sealer to stamp them together. The spout is then inserted into a small hole in the bag and sealed. The tap is applied to the spout.

But this method allows for headspace to gather at the top of the bag, allowing for the collection of oxygen and possible contamination of the wine.

With the DuPont Crystalon vertical form-fill-seal machine, the bag is manufactured around the product and is formed, fitted and filled in one continuous operation. This eliminates the manufacturing step of pre-formed bags.

The process accommodates a much smaller fitment opening, further reducing the possibility of contamination. The headspace can be flushed continuously with an inert gas like nitrogen, and air can be evacuated much more efficiently.

"If you're trying to evacuate air, or even replace the air that's going to be naturally in the spout with an inert gas, the very action of inserting and removing a fill nozzle



The Crystalon system from DuPont uses form-fill-seal principles for bag-in-box wine, allowing for easier fill operations, smaller fitments and greater versatility.

limits your ability to flush it," says Bruce George, technology director for DuPont Liquid Packaging Systems. "If you're doing it continuously, a fill nozzle never moves in or out and you can control this much better."

The Crystalon system also allows producers to have more flexibility in bag size and tap and spout types.

"You can manufacture what you need, when you need it," George says.

Speed, of course, is an obvious advantage with a vertical form-fill-seal machine. A typical strip filler that fills through the spout might run at a top speed of 15 bags per minute. The Crystalon runs at 25 bags per minute.

George says the next step would be to create a filling operation that would eliminate all manufacturing holes until a pierce at first use. But this filling operation is still in development and is not expected to be released for the next few years.

Professionals who supply and work with pouch filling equipment agree that reclosable fitments will increase in popularity, and that customers will need fast, accurate and safe filling of pouches with fitments. **F&BP**

### FOR MORE INFORMATION

**DuPont Liquid Packaging Systems**  
905-666-7013;  
[www2.dupont.com/Liquid\\_Packaging\\_Solutions/en\\_CA/index.html](http://www2.dupont.com/Liquid_Packaging_Solutions/en_CA/index.html)

**Hensen Packaging Concept**  
+49-4231-98 47 0;  
[www.hpc-machines.com](http://www.hpc-machines.com)

**PPI Technologies**  
941-359-6678;  
[www.ppitechnologies.com](http://www.ppitechnologies.com)

**s-designteam gmbh+co.kg**  
+49 (0) 5231 / 9707-0;  
[www.s-designteam.de](http://www.s-designteam.de)