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Branson Ultrasonics turns a production nightmare into an opportunity to dream big.

Background

When the founder of Pocket Shot Spirits, Jarrold Bachman, observed how farm workers celebrated payday by drinking liquor from small pouches, he realized there may be an opportunity to fill an unmet need in the spirits market for a small, unbreakable, easy-carry, easy-open, pocket-size bottle of spirits. He also knew that today's busy, on-the-go lifestyle was creating a growing demand for "single-serve" portions for many consumables. So, he decided to capitalize on this trend, identified a target audience of travelers, golfers, and other sports and outdoor enthusiasts, and developed Pocket Shot, a line of spirits packaged in unbreakable 50-ml, flexible-plastic packages.

Challenge

Pocket Shot's "bottle" is made from three laminated layers of plastic—one for strength, one for sheen, and one for printed graphics. It has an opening along the top edge that must be sealed once the package has been filled with product.

The top contour of the Pocket Shot package simulates a bottle top with a shoulder and simulated cap—a complicated geometry to seal. To avoid potential leaks, the sealing process needs to seal through alcohol caused by splash back on the sealing surfaces that occurs during filling. In addition, the seal process is temperature sensitive, requiring Pocket Shot to avoid heat levels that might trigger the flash point of alcohol.

Pocket Shot initially used a heat-seal process that first melted the plastic for joining, followed by a cold seal to smooth out voids and wrinkles created by the heat seal. The package seals proved adequate to launch the product. But once production volume reached the necessary high-speed levels of 30+ per minute, the hot seal/cold seal process resulted in frequent leaks, lost productivity, and product recovery costs that threatened the viability of the product.

The Pocket Shot founder was aware of Branson's reputation in ultrasonic plastics joining and asked for a recommendation.

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Solution

Branson conducted a thorough analysis of Pocket Shot's existing materials, package design, production requirements, and determined the proper pressures and ultrasonic specifications to create the necessary seal. Branson designed a unique horn (through finite element analysis software) and anvil that perfectly matched the contoured sealing surfaces of the package top. Prototype samples tested showed the ability of the ultrasonic sealing process to seal through the alcohol, producing a 100% clean, clear, contaminant-free seal. The ultrasonic action of the horn disperses the alcohol out of the seal area and allows the plastic to melt without the risk of triggering the flashpoint of alcohol. The prototypes also demonstrated the process could maintain the integrity of the seal under the high-volume cycle time of one seal every 2 seconds.

Branson's model ST 30 tube/pouch sealer was recommended and Branson then "jumped through hoops," according to Bachmann, to get the equipment installed on Pocket Shot's production facility in a third of the time he was anticipating.

Results

Pocket Shot is now up and running again in its production facility, successfully producing 30-35 packages a minute.

Pocket Shot founder Bachmann praised Branson for not only our technical ability to solve his problem, but also our responsiveness in meeting a challenging timeline to minimize his loss of production time. He expressed great relief knowing that, while his unique package presents a number of inherent challenges, he no longer has to be concerned about the integrity and strength of the seal. He'll soon be expanding his production and distribution to serve new markets in the US and Europe.

