

eBOOK

Packaging

TECHNOLOGY TODAY

Embracing and Understanding Ultrasonic Sealing



BROUGHT TO YOU BY

 **TRIANGLE**
PACKAGE MACHINERY COMPANY
WHERE TECHNOLOGY + TRADITION MERGE

Contents

- 3** Produce Company Embraces Ultrasonic Sealing, Virtually Eliminates Package Rejects
- 5 VIDEO:** Triangle Technology Minute Ultrasonics
- 6 CASE STUDY:** The Oberto Sausage Company Seeks A Sealing Change
- 9 VIDEO:** Triangle VFFS Baggers with Ultrasonics
- 10** Improving Production and Efficiency with Ultrasonic Sealing
- 14** New Product Stager from Triangle Package Machinery Improves Produce Bagging Speeds, Efficiency

Produce Company Embraces Ultrasonic Sealing, Virtually Eliminates Package Rejects

By Kim Magon-Haller, Marketing Manager
Triangle Package Machinery Company

How to achieve continuous product quality improvement, labor savings, film and material savings ... these were some of the goals on the wish list of a California-based produce company when it turned to Triangle Package Machinery Company in Chicago.

With several plants across the U.S., the produce company's product line includes bagged salads, spinach, and lettuce. Packaging bagged leafy greens can be a labor-intensive process, as the plants had to rely on workers to visually inspect the bags. Bags that contained leaks or that contained product in the seal (PIS) were rejected, followed by additional time and labor to repackage the product.

This challenge led to discussions with Triangle Package Machinery about Ultrasonic welding. In 2012, Triangle introduced Ultrasonic welding as an option on its X-Series vertical form fill seal bagging machines. Because Ultrasonic welding uses sound waves rather than heat to seal a bag, product is pushed completely out of the



CHALLENGES

- ▲ **Provide continuous product quality improvement**
- ▲ **Reduce labor required to visually inspect packages**
- ▲ **Improve cost savings for material, film, and product**

seal area, resulting in 100% seal integrity. As an early innovator of Ultrasonic sealing in vertical form fill seal machines, the staff at Triangle was confident that the technology could help this customer achieve its goals.

After several months of evaluating their options, the customer chose Triangle's Model XYM11U vertical form fill seal (vffs) bagger with Ultrasonic sealing technology. Initially, the produce company purchased six Triangle X-Series VFFS baggers with

CASE STUDY

Ultrasonic sealing, and installed them in two of its facilities that packaged bagged lettuce and salad. Immediately, they began to realize the benefits of this decision.

With its ability to seal right through certain products, such as lettuce, package rejects due to poor seals were virtually eliminated. This meant considerable savings in labor and time, as bags with poor seals or product in the seal no longer needed to be taken out of production and reworked. In addition, the company saw significant savings in film, not only as a result of less rejected bags and scrap but because Ultrasonic welding provides a much narrower seal and less headspace than traditional heat seals.

With the improved results, the produce company soon replaced 12 more of their existing vffs baggers with Triangle's Model XYM11U baggers equipped with Ultrasonic technology, and installed them in three of its plants throughout the country.

With a primary goal of quality improvement, the customer has been very pleased with its decision. "We chose Triangle in part because they are an extremely established bagger manufacturer that has the resources to make modifications and work through engineering in a very fast and efficient manner to make this a successful program," states a company spokesperson. And, with headquarters in Chicago and sales and service locations throughout the U.S., Triangle was also able to offer solid U.S. service and support.

As of early 2016, Triangle has installed 28 vffs baggers

BENEFITS & RESULTS

- ▲ **Reduced labor required to visually inspect and rework packages**
- ▲ **Continuous product quality improvement**
- ▲ **Increased throughput**
- ▲ **Less wasted product – leakers virtually eliminated**
- ▲ **Improved cost savings for material, film, and energy**
- ▲ **Provided the opportunity for additional savings by enabling automated case packing**

equipped with Ultrasonic welding in various markets throughout the country, and is a market leader in providing Ultrasonic technology to the produce industry. In all cases, customers were able to use their existing laminate film structures and required no special film. And, with the ability to produce good sealed bags and no need for additional labor to check for product in the seal, the customers now have the opportunity to save even more by automating the case packing phase with robotic case loading.

Finally, the benefits of Ultrasonics extend beyond produce. Other industries that could benefit from this cold seal technology include confectionery, cheese, liquids, powders, and seafood.

For more information on Ultrasonic technology, improving your packaging lines, or solving a contamination issue, visit www.trianglepackage.com/ultrasonics.

▶ Video



Triangle Technology Minute Ultrasonics

The Oberto Sausage Company Seeks A Sealing Change

When you're packaging a product like beef jerky, the last thing you want to see is product getting caught in the seal of the bag and impacting product freshness. This was the challenge faced by Oberto Sausage Company of Kent, WA.

Oberto offers 400 varieties of dried meat products like beef jerky, as well as pork and turkey jerky, and snack sausages. The company, which will celebrate its 100th anniversary next year, offers such brand names as Oberto, Cattleman's Cut, Pacific Gold and others. The products are packaged in 1.25-ounce to 15-ounce bags and are carried in supermarkets and club stores nationwide.

When Oberto reformulated some of their beef jerky products, it ran into issues with smaller product particulates getting caught in the seal area, thus causing leakers and rejects. More workers were needed to inspect the bags, which slowed down production speed.

To solve production challenges, Oberto turned to Triangle Package Machinery Company (trianglepackage.com). A long-term customer of Triangle, Oberto has utilized several Triangle heat-seal baggers for the last 15 years. Triangle proposed the Model XYS08 vertical form fill seal (VFFS) bagger with an ultrasonic sealing system provided by Herrmann Ultrason-



Ultrasonic sealing prevents product from getting caught in the seal of the bag.

ics (herrmannultrasonics.com), along with an Ishida (ishida.com) radial scale Model RV-214W-1S/30-WP.

"Ultrasonic technology seemed to have a much cleaner seal that would allow us to deliver quality products to our customers," states TJ Bollinger, sr. project engineer, Oberto.

CASE STUDY

TRIANGLE



Triangle proposed the Model YYS08 VFFS bagger with an ultrasonic sealing system provided by Herrmann Ultrasonics.

Although ultrasonic sealing was a new technology for this customer, Oberto's VP of research & development, Mike Tull, embraced the idea from the start. Fortunately, his early adoption paid off when Oberto saw success as early as initial test runs.

Immediately, the new equipment was able to seal through fines of beef jerky and virtually eliminate leakers. In fact, the ultrasonically sealed bags were able to pass a two-hour test at 25 inches of vacuum from the start. And, the fact that the ultrasonic seal is hermetic significantly improved product freshness.

In addition, ultrasonic seal jaws decreased seal surface from 1.25 inches to less than 0.25 inches. Added benefits included reducing the amount of packaging material needed and doubling production speeds. Bagging speeds went

HOW ULTRASONIC SEALING WORKS

Ultrasonics works by introducing vibrational energy into the area to be sealed. The ultrasonic principle is to convert voltage into vibrations of 20-35 kHz, which will melt and bond the film material (20 kHz is 20,000 movements per second). This also explains why it is possible to seal through product residues. The mechanical vibrations will literally shake away all remains in the seal area. Compared with conventional heat sealing, where heat jaws transfer the heat from the outside into the film, ultrasonic technology generates the required temperature for the sealing process from the inside out. The ultrasonic tools stay cold and the thermal load for fill goods and material is very low. Cycle times are typically between 80ms and 200ms. Systems can be operated immediately, with no ramp up or start up process time required. By storing the sealing parameters in the memory of the ultrasonic generator, it is possible to switch automatically between parameter sets. The changes take effect immediately with the start of the next sealing operation, which means no lost production time due to product or material changeovers.

from 35-40 bags per minute to 75 bags per minute.

"We were able to decrease the spoilage rate and run at a higher speed," says Mike Eads, maintenance supervisor at Oberto's Kent, WA facility.

The Triangle integrated solution allows for complete control of the ultrasonic system through the bagging machine's HMI. Triangle also provided a combination of in-house and onsite training.

CASE STUDY



The Triangle integrated solution allows for complete control of the ultrasonic

Ultrasonics: An Alternative to Heat Sealing

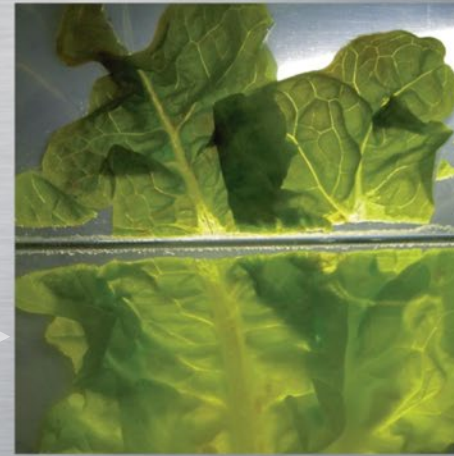
Ultrasonic sealing has become a trusted alternative to traditional heat sealing over the last two decades. Because the ultrasonic system is based on vibrational energy, not a conductive heat process, the ultrasonic tools remain cold and have basically no thermal impact on material and fill goods.

Triangle has embraced ultrasonic sealing with cold tools for various markets like leafy produce, powders, meat products and seafood. The company's X-Series VFFS baggers help improve OEE and even offer the flexibility to easily switch between ultrasonic cross seals and traditional heat seals if material properties dictate that. Herrmann Ultrasonics is an industry supplier of ultrasonic sealing modules for flexible bags and pouches as well as carton packaging, blisters and capsules.

Oberto is Pleased with the Project Outcome.

"The bagger creates a consistent seal that increases the quality of the products that our customers enjoy and expect from our company. We have seen great results in seal technology, while increasing our performance," says Bollinger.

"Ultrasonic sealing ... is well worth the investment," agrees Eads.



X-Series VFFS Baggers with Ultrasonic Welding Technology

Triangle VFFS Baggers with Ultrasonics



IMPROVING PRODUCTION AND EFFICIENCY WITH ULTRASONIC SEALING

By Joan Mantini

Triangle Package Machinery Company (Triangle) is a third-generation, Chicago-based manufacturer of vertical form fill seal (vffs) baggers, combination weighers, tray loaders and horizontal cartoning/bag in box systems. In business for 95 years, the company has built its reputation in building durable, rugged solutions that not only stand the test of time but are continuously evolving with new technologies to help make its customers more efficient and more productive. This is done by offering state of the art sanitation, quick and easy changeover features and constantly improving technology such as Ultrasonic sealing.

With most of Triangle's customers being in the food industry, sanitation is a critical concern. The company's baggers are designed for easy cleaning and maintenance and can even meet 3A and USDA sanitation standards. Its clean, accessible machine designs not only offer peace of mind, they also save customers hours of cleaning time.

Kim Magon-Haller, marketing manager at Triangle, recently took some time to answer a few questions on how the company has evolved over time with new technologies and how



Triangle's Model YYS08/7U helped one beef jerky manufacturer improve product quality, reduce material costs, and double their bagging speeds.

Ultrasonic sealing is proving beneficial to customers. What follows are her responses.

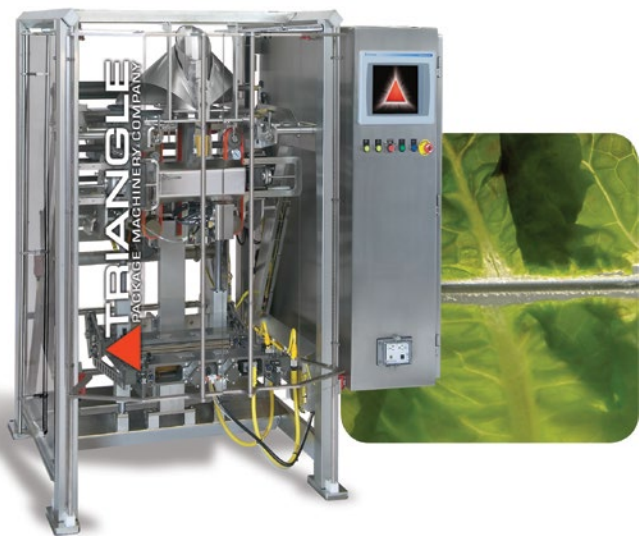
What technology do you offer to help your customers improve production?

Magon-Haller: We are always looking for ways to help customers improve production. For example, we offer var-

ious quick changeover features that allow packagers to run multiple bag styles or film structures quickly and easily. Our bagging machines also offer several different sealing options for both laminated and poly film structures. With traditional heat sealing, we've improved our sealing jaws so that they can be easily interchanged in less than two minutes, to accommodate different bag sizes or film structures. For customers who run poly film, we are able to seal, cool and cut the film faster than any other option on the market, which translates to higher bagging speeds. This technology has helped customers in the rice industry, for instance, run 1-lb bags at 100 bags per minute when previously they could not surpass 85 bags per minute.

Another technology we offer to help our customers improve production and efficiency is Ultrasonic sealing. Also known as Ultrasonic welding, this cold sealing technology uses sound waves rather than heat to seal a bag, creating a seal from the inside out as opposed to heat seal systems, which create a seal from the outside in. There's less cycle time because you're not waiting for heat to seal film from the outside to the inside. Perhaps more important, with Ultrasonic welding, product is pushed completely out of the seal area, resulting in 100 percent seal integrity and other benefits, such as reduced rejects, improved production and OEE, and labor, material and energy savings.

How have your various sealing solutions evolved over time and what innovations have helped make it possible? What role did your customers feedback and suggestions play in its evolution?



With Ultrasonic sealing, product is pushed completely out of the seal area.

Magon-Haller: After working closely with Herrmann Ultrasonics, Triangle became an early innovator of Ultrasonic welding in vffs machines and added the technology as an option on our X-Series vffs baggers in 2012. The technology is ideal for companies in the produce, confectionery and cheese industries, and some of our most successful installations have been in the produce industry, where we are now a market leader.

With traditional heat sealing, packaging bagged leafy greens, such as lettuce or spinach, is a very labor-intensive process. Workers must visually inspect bags for leaks. Bags that contain leaks or that have product in the seal (PIS) are rejected, which also means more time and labor is required to repackage the product. When a major produce company was looking to improve product quality and reduce rejects, Triangle suggested our Model XYM11U baggers equipped with Ultrasonic technology. With its ability to seal right through certain products, such as lettuce or spinach, package rejects

due to poor seals were virtually eliminated. This meant considerable savings in labor and time, as bags with poor seals or product in the seal no longer needed to be taken out of production and reworked. In fact, the amount of rework required on their lines is now less than 1 percent. In addition, the company saw significant savings in film, not only as a result of less rejected bags and scrap but because Ultrasonic welding provides a much narrower seal and requires less headspace than traditional heat seals. (On average, traditional heat seals measure 3/8", while Ultrasonic seals can be as narrow as 2 mm – a potential savings of 50-80 percent in the sealing area alone.)

This achievement led to similar installations at another produce company, which experienced similar success. By eliminating the need to visually inspect bags for leakers and rework any rejects, the company was able to save even more by automating the case packing phase with robotic case loading.

Feedback from our customers and other partners is always helpful, whether we're designing cleaner machines, new technology to speed up changeover time, or ways to improve our customers' success with Ultrasonic sealing. In one case, one of our produce customers asked if there was a way to reduce the top skirt (the area just above the seal) on their bagged salads for aesthetic reasons. Our engineers were able to tackle this challenge and reduce the top skirt to 1 mm or less.

We've also worked closely with Aurizon Ultrasonics to add a rotary Ultrasonic back seal, so customers have the option of a completely Ultrasonically sealed package. This is especially beneficial to companies in such industries as cheese, confectionery or liquids.

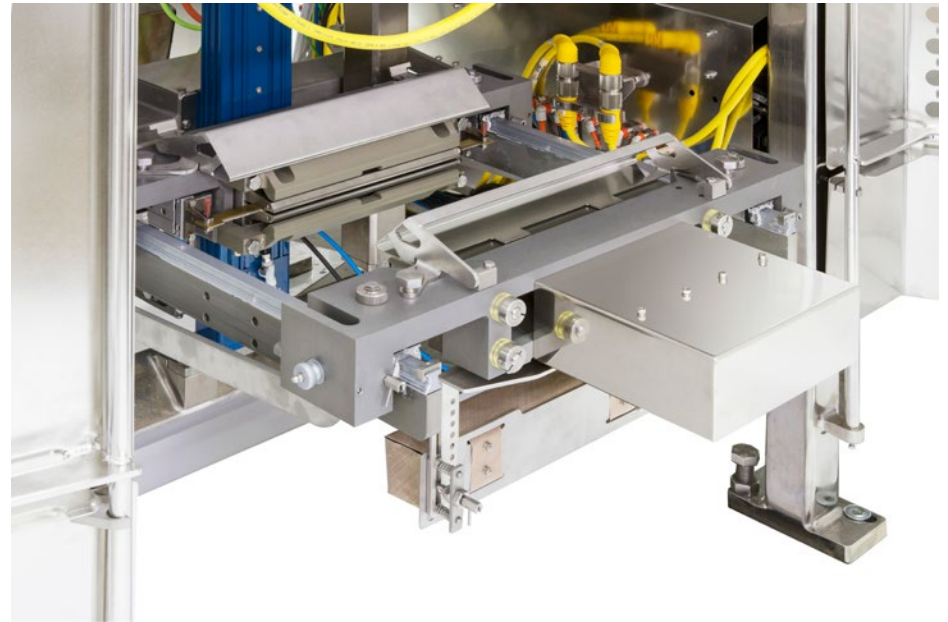
How has Ultrasonic sealing improved product quality?

Magon-Haller: Because Ultrasonics offers 100 percent seal integrity, the packages are airtight, and the product is better able to retain freshness. Virtually all of our customers who purchased an Ultrasonic bagger have seen improvements in product quality and a significant drop in customer complaints. One customer, a spice manufacturer, had such positive results they purchased a second system a year later to keep up with increase in production!

Another customer in the beef jerky industry turned to Ultrasonics when they were having an issue of particulates getting caught in the seal area, thus causing leakers and rejects. More workers were needed to inspect the bags, which slowed down production speed. The new system, a Model YYS08 vffs bagger with Ultrasonic sealing, was able to seal through fines of beef jerky and eliminate leakers. The fact that the ultrasonic seal is hermetic significantly improved product freshness. Added benefits including doubling production and reducing the amount of packaging material needed, as the seal surface went from 1.25" to less than 0.25". Bagging speeds went from 35-40 bags per minute to 75 bags per minute.

What types of packages or markets can benefit most from your sealing solutions?

Magon-Haller: In many cases, the film a company uses also plays a big role in the success of Ultrasonics. Laminated film structures work much better than poly film, although we are continuing to test various film structures and make adjustments where possible. We've also done a lot of testing in



Ultrasonic sealing jaws.

the shrimp market, where Ultrasonics can seal right through brine.

Ultrasonic sealing offers benefits for certain industries, but it's not the best option for all. In our experience, companies that have seen the most success are those in the produce industry – particularly leafy greens, as well as liquids such as soups and baking mixes. Because it doesn't use heat, it's also a viable option for companies in the cheese and confectionery markets.

If you're looking for ways to improve production and OEE on your bagging line, we invite you to visit our website at www.trianglepackage.com to learn how we can help you meet your goals. ■

► New Product Stager from Triangle Package Machinery Improves Produce Bagging Speeds, Efficiency

Available on heat seal or Ultrasonic vffs baggers

CHICAGO – Steve Jobs said, “Innovation distinguishes between a leader and a follower.” With thousands of machine installations throughout North America and the world, Triangle Package Machinery Company has a reputation for applying state of the art innovation to help its customers become more competitive. Many of our innovations have come from listening to our customers and helping them solve new challenges. Triangle’s new product stager is one such innovation. The product stager is a new technology now available on all Triangle X-Series vffs bagging machines, including heat seal or Ultrasonic baggers.

The challenge? How to eliminate or reduce product in the skirt (the top or bottom seal area of a bag), which was an issue faced by packagers of products like leafy greens or hash browns. Depending on the orientation of the product as it is discharged from scale to bagger, it may fall flat or on edge into a bag and through the bagger’s sealing jaws. Mounted above the sealing jaws, the product stager closes on the film before the sealing jaws to catch product which would otherwise be stuck in the cross seal. This reduces



leakers by reducing the occurrence of product in the seal.

Triangle’s product stager can be installed with heat seal or ultrasonic seal jaws. With Ultrasonic sealing technology – a cold seal technology – the sealing jaws seal right through product, which eliminates product in the seal (PIS) by pushing it completely out of the seal area. In some cases, however, this can lead to product in the skirt. The stager allows users to close off the stream of product and catch any stragglers before the jaws close.

In heat seal applications, the stager has helped customers improve production by increasing bagging speeds 20 – 50 percent. One produce customer, for instance, saw bagging speeds increase from 50 to 75 bags per minute. Similar successes have been achieved with Ultrasonic sealing applications.

To learn more about Triangle’s new product stager or other packaging solutions – including vertical form fill seal (vffs) baggers, combination weighers, tray loaders, and the new Triangle/JDD Pouch Machine, visit Triangle at the United Fresh Show, Booth 16015, June 11-12, 2019, or online at www.trianglepackage.com.

State-of-the-Art Sanitation



Ultrasonic Superiority



Quick & Easy Change Overs



Less downtime, rugged designs, accessible machines, superior service and a tradition of technology for over 95 years makes Triangle your choice for value-added packaging machinery.

UNITED FRESH
PRODUCE ASSOCIATION

**COME SEE US IN
BOOTH 16015**



TRIANGLE
PACKAGE MACHINERY COMPANY

WHERE TECHNOLOGY + TRADITION MERGE

800.621.4170 | trianglepackage.com

VFFS BAGGERS | COMBINATION WEIGHERS | CARTONERS & TRAY LOADERS