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- Clamshell Recycling Developments
- Innovations in RV Design
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At the start of my tenure as Chair of the Thermoforming Division, I’d like to be by thanking my colleagues, Bret Joslyn, Eric Short, and Steve Zamprelli, who demonstrated incredible patience and leadership during probably the most tumultuous 6 years in the Division’s history. Catastrophic events like Hurricane Irma and COVID-19 eliminated two of our annual conferences, forcing us to think hard about how and what to deliver to our members. But their diligent work resulted in a re-orientation of the Board to recommit and deliver on our original mission statement: To facilitate the advancement of thermoforming technologies through education, application, promotion, and research.

This work resulted in a healthy update to the Board structure and divisional bylaws. Initial efforts have delivered educational webinars, an R&D project testing the viability of the latest tool manufacturing methods, and more opportunities for our industry partners to promote thermoforming. And there is much more to come.

At the same time, your Executive Committee is learning how best to deploy Microsoft Teams to the entire Board to get out of the email trap and speed up our work regardless of when our next in-person Board meeting takes place. We have received several new expressions of interest from industry professionals in joining our Division. This is critical to the volunteer model and allows us to both turnover our board members and maintain institutional memory. See page 26 for more information about the current Division Board for the 2022-2024 term years.

In this edition of TQ, we are pleased to share an in-depth article (pp. 20-24) that will give encouragement (and send strong market signals) to those in our value chain who have been pushing for more recycled thermoform content. After fits and starts, it seems that California will lead the way (with help from Texas) in separate thermoformed PET collection and sorting. With demand soaring for PET bottles due to major brand commitments, over 1.5bn lbs of PET thermoforms go wasted every year. The Division has actively contributed to industry-wide efforts to improve this system. It is incumbent on our members – processors, extruders, label suppliers, toolmakers – to ensure that we are making products that can be easily collected, sorted, and recycled - economically. The long shadow of legislation looms if we do not improve the status quo.

The status quo in terms of perennial labor challenges is also being up ended as automation has (finally? definitely?) become necessary to running a successful thermoforming operation. Check-out some new developments in robotic sheet stacking in our Innovation Brief on pp. 13-15.

And finally, there’s no better place to take the pulse of the industry than at the triennial K Messe in Düsseldorf, Germany (October 19-26). We offer a tasting menu of booths to visit (pp. 16-18) for any our readers that are planning to attend. SPE will also be hosting a lunch reception on Sunday, October 23 in Hall 12, Booth F87. Be sure to stop by and mingle with your global SPE colleagues.
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Waveform Plastics Buys Shepherd’s Thick-Gauge Division

June 28, 2022 – Waveform will merge the new thick-gauge thermoforming activities with its existing operations in South River, Ontario.

South River, Ont.-based thermoformer Waveform Plastics Technologies Ltd. has acquired the thick-gauge division of Shepherd Thermoforming & Packaging.

The financial terms of the deal have not been disclosed.

“Waveform and the Shepherd facility have enjoyed a great ‘friendly competitor’ relationship over the past many years, and we look forward to providing quality products and seamless support to the Shepherd facility’s thick-gauge customers,” Waveform officials said in a June 27 news release.

Headquartered in Brampton, Ont., Shepherd designs custom packaging including engineering, mold production, and final product manufacturing for both thin-gauge and heavy-gauge applications. Shepherd was acquired by Vancouver-based Good Natured Products in 2020.

Waveform said that it will merge the new thick-gauge thermoforming activities with its existing operations in South River.

Waveform was founded in 1999 and is an ISO9001:2015 certified manufacturer of custom thermoformed products, with experience in product design, development, and manufacturing. The company has customers throughout Canada and the U.S., and serves the automotive, medical, marine, industrial, automation, consumer products, electronics and instrumentation, and advertising and signage industries.

PET Thermoformed Container Recycling Program Launches In Texas City

El Paso citizens will receive a cash incentive for their PET thermoforms through the pilot with Sam’s Club locations.

DeAnne Toto, Recycling Today

July 19, 2022 – A six-month pilot project to recycle polyethylene terephthalate (PET) thermoformed packaging launched earlier this month in El Paso, Texas. The program is a collaboration among Sam’s Club locations in El Paso, Texan by Nature (TxN) and Texans for Clean Water (TFCW) and is described as “a fundamental step in TxN and TFCW’s goal of reducing litter in waterways and roadways through community-driven recycling.”

In North America, 1.6 billion pounds of PET thermoformed containers are discarded annually, and only 10 percent are recovered, TxN says in a news release about the project.

El Paso residents will receive cash incentives for PET thermoforms dropped off at all four Sam’s Clubs locations in El Paso for recycling. PET thermoformed containers include clear fruit and produce containers, trays, tubes, cups, lids and plastic egg cartons, for example. Data and outcomes from the project will be shared with other retailers as a model for replication and an example of supply chain circularity, according to TxN.

During the pilot project, consumers will use the MeCycle App to drop off their PET thermoforms and will receive cash incentives that they can claim through Venmo or donate to an El Paso charity. Green Impact Plastics, Vernon, California, will recycle the thermoforms, and manufacturer D6 will use the rPET in new packaging. To help improve the circularity of its supply chain, Sam’s Club also will explore opportunities to use the recycled packaging for some of its products.

“Litter and illegal dumping cost the city of El Paso $6 million per year,” TxN CEO and President Joni Carswell says. “This pilot has a goal of recycling 110,000 pounds of PET plastics over six months, keeping it off roadways and out of waterways. This collaboration between the citizens of El...
Paso, Texans for Clean Water and Sam’s Club will build on prior models of providing financial incentives for material return that have been successful in reducing litter and waste.”

Fully funded by Texans for Clean Water, the project dovetails with other litter research initiatives and public policy outreach. TxN is managing the pilot and working closely with community partners on messaging, education and promotion of the pilot.

“We’re excited to play a role in making recycling more accessible for the El Paso community,” says Christopher Poulin, vice president, regional general manager of operations, at Sam’s Club. “This pilot aligns with our goals to become a regenerative company, and we’ll be exploring ways to use the recycled materials collected to make packaging for some of the products we sell.”

“This pilot is focusing on PET thermoforms, but it could be translated to other materials,” adds Maia Corbitt, president of Texans for Clean Water. “Point being, people don’t toss loose change out car windows and will still stop to pick up a dime off the sidewalk. Plus, getting this material back supports Texas’ recycling industry, and we’re proud to champion projects that are a win-win for the environment and economy.”

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Article length: 1,000 - 2,000 words.
Look to past articles for guidance
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Artwork: hi-res images are encouraged (300 dpi) with appropriate credits.
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Each quarter, PLASTICS publishes an industry outlook that covers materials, molds, and machinery. The following excerpts are from the July report and are published here with permission from The PLASTICS Industry Association.

The plastics industry outlook for the remainder of 2022 is mixed. Balancing between strong plastics demand and lingering supply chain issues against the backdrop of rising costs will continue to be the main challenge of the industry. While revenue growth is still expected this year and next year, uneven production growth rates are projected across the industry. Plastics molds production is projected to increase by 9.5% this year. Plastic materials and resin production could increase by 4.0% and plastic products manufacturing is expected to increase by 4.7%. Plastics machinery production is now projected to grow by 1.5% in 2022.

**Plastic Materials and Resins**

The production of plastic materials and resin decreased by 1.8% in Q1 2022 following an 11.4% increase in Q1. Production could expand in Q3 and Q4 by 2.9% and 4.3%, respectively, in response to strong demand. All told, production is expected to increase by 4.0% this year and 1.7% next year. After a projected 1.9% increase in Q1 2023, production could increase by 1.7% in Q2.

**Plastic Products**

A 4.7% increase in plastic products manufacturing is now projected in 2022. Manufacturing increased by 5.2% in Q1 2022 and 7.2% in Q2. For the remainder of 2022, a 3.9% increase in Q3 and a 2.2% increase in Q4 can be expected. However, the current forecast calls for a modest increase of 0.8% in plastic products manufacturing next year. Moreover, plastic products manufacturing could move sideways by 0.8%.

**Plastics Machinery**

Machinery production is now projected to increase by 1.5% this year. While production increased by 6.4% in Q1 2022 and 4.1% in Q2, data suggest that Q3 and Q4 production could decrease by 0.5% and 3.2%, respectively. Plastics machinery production will adjust to a slowdown in capital expenditures as interest rates continue to rise. The demand for equipment is projected to decrease along with the slowdown in manufacturing. It is now expected the plastics machinery production will increase by 0.6%.

Employment in plastics machinery manufacturing could increase by 0.3 (thousand) in 2022. A tight labor market resulted in moderate job gains in Q1 2022 and Q2 of 0.5 and 0.4, respectively. It is estimated that employment gains will increase by 0.2 in Q3 and 0.1 in Q4. Plastics machinery manufacturing will continue to compete for limited skilled labor supply from the economy’s manufacturing sector. Hiring will continue to be challenging and employment gains will remain moderate in the foreseeable future. It is estimated that plastics manufacturing employment in 2023 will remain at 11.4.

**Plastic Molds**

Industrial mold data were used as a proxy in forecasting plastic mold production, employment, and producer prices. It is now expected that mold production will increase by 9.5% in 2022. Production rose by 9.3% and 12.3% in Q1 2022 and Q2, respectively. Production is expected to grow by 9.7% in Q3 and by 6.8% in Q4. Consistent with the overall plastics industry trend of moderating growth, mold production could continue to increase in 2023 but at a slower pace of 2.3%. After a 3.0% increase in Q1 2023, mold production is projected to increase by 2.5% in Q2.

**Plastics Trade Update**

It is now projected by the World Trade Organization that global trade (goods and services) will increase by 3.0% this year. Data from January to May shows U.S. plastics exports totaled $32.1 million and imports totaled $31.4 million resulting in a $675 thousand trade surplus. The U.S. plastics trade could return to a surplus this year after two years of trade deficit.

**Employment**

Based on the Bureau of Labor Statistics’ employment cost index, labor costs will increase by 4.8% this year. The employment cost index rose by 4.5% and 5.0% in Q1 2022 and Q2, respectively, from a year earlier. It is projected that labor costs will increase by 4.2% in 2023, starting with a 4.5% increase in Q1 followed by a 4.2% increase in Q2.

**INDICATORS - Manufacturing**

The U.S. manufacturing sector is still likely to expand by 5.0% this year. While this is lower than the 6.8% growth in U.S. manufacturing last year, the outlook remains optimistic despite rising borrowing and input costs and lingering supply chain issues. The 5.0% and 5.3% increases in the industrial production index of manufacturing in Q1 2022 and Q2, are expected to be followed by a 5.4% increase in Q3 and 4.5% increase in Q4. The manufacturing sector remains the primary market of the U.S. plastics industry. Moderating economic growth notwithstanding, these growth projections should reflect a stable business environment for the plastics industry this year. A 2.5% increase in manufacturing is now projected for 2023, starting with a 3.8% increase in Q1 and 2.5% increase in Q2.
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This installment of Designer’s Corner can be filed under “new and notable”. This is the most recent example of work we are doing in the heavy gauge thermoforming arena. The part in question is Entegra Coach’s “Safe View Dash”. It is in their high-end line of luxury, Class-A Recreational Vehicle’s (RV).

We are always asked by our non-automotive transportation clients to make the designs for their products “more automotive”. At Tangent, we have determined that to mean the following: good ergonomics, on-trend style, use of different materials, refined fit and finish, and ease of assembly. This would be no problem if these non-automotive transportation clients had the same budgets for design, engineering, and tooling as the large auto manufactures. Typically, designing for auto manufactures requires design thinking in terms of tens of thousands of parts per year, say 10,000-30,000. In this case, designing a dash for the RV industry means that you need to think in terms of 300 to 3,000 parts per year. The economies of scale are vastly different, therefore the manufacturing methodologies for 300 parts will likely not be suitable for 30,000 per year. For example, injection molding may be a suitable solution for most of a car’s main dash structure and trim panels, but not an appropriate solution for the dash of an RV. This is where heavy gauge thermoforming comes in as an appropriate solution for an RV dash. The inherent design challenge then becomes, how do you obtain the aesthetic crispness and features of an injection molded automotive part out of a heavy gauge thermoformed part? The answer is, you don’t!
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Because of the nature of pulling a sheet of plastic over a mold, you can never have a tighter outer radius than the thickness of the sheet itself. This is a problem injection molding doesn’t have. Over time, Tangent has learned that you can’t fight the materials for what they can’t do, while you must embrace each for what they can do. Knowing that we will never achieve automotive tight radii and crisp forms from a heavy gauge thermoformed part, we look to other materials and process to use in conjunction with the thermoformed parts. In this RV dash example, we incorporated aluminum (instrument panel, center stack, and other touch points), other smaller off-the-shelf injection molded parts (air vents), and other decorative panels (wall console control panel) to enhance the base thermoformed dash parts. The non-thermoformed parts now carry the desired characteristics of sharp radii and crisp forms. Those secondary non-thermoformed components trick the eye into perceiving an elevated level of quality (“more automotive!”) for the full dash assembly even though the majority of the dash is actually thermoformed.

Tangent’s nearly 20 years of experience designing for heavy gauge thermoformed parts and assemblies is why this could be achieved. Also, since we have design and engineering experience with a wide variety materials and process from various industries, we are able to leverage all of our experiences for creative new solutions to solve a client’s problems. In this case, making an RV dash “more automotive”. |
Extruded Plastic Sheets Palletized by a Robot

Steven Cranston, Alliance Automation

The company has developed an automated robotic sheet stacker at the end of sheet extrusion lines for the thermoforming industry.

THE PROBLEM

A typical environment for a plastic thermoforming plant that extrudes its own plastic includes ambient temperatures that can exceed 95°F.

Two operators unloading freshly-extruded 80lb to 150lb sheets at 300°F and placing them on a pallet can be a very demanding and challenging task. In the current labor market, this is not a position that is easy to fill.

EXISTING EQUIPMENT

Alliance Automation, LLC in Flint, MI, was presented with this opportunity to develop an automated solution to solve this problem.

EXEMPLARY SHEET VARIATIONS

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There are two significant obstacles when looking at automating this process. The first consideration is the large variety of sheet sizes. The second is handling the scrap material. The system has to adapt and pick only the main sheet and ignore and dispose of the scrap material.

Another obstacle is integrating a new robot system with an old extrusion line. Communication between the systems can be difficult and requires some innovation.

SOLUTION

Alliance Automation developed and integrated a robot system at the end of the extruder line to automatically unload and stack the sheets onto two pallets.
The system consists of a custom conveyor, robot system, scrap conveyor, two pallet stations, and safety devices.

The conveyor is 120” wide and designed to reach the back end of the extruder right against the shear mechanism. At the end of the conveyor is a pop-up mechanism to stop the sheet and scrap pieces. Presence sensors are integrated on the shear and on the conveyor to track the sheet as it moves through the system.

A Fanuc M-900iA/260L robot with a 3.1m reach and 260kg payload is located on the side of the conveyor. On the end of the robot is a custom end-of-arm tool equipped with multiple rows of suction cups, 13 individually controlled valves, laser sensors, and a retractable fail-safe mechanism.

The robot loads two pallet stations. This allows the robot to continually stack one side while the other side can be unloaded and loaded with a new pallet by a forklift driver. Sensors built into the pallet stations verify that a pallet is loaded and when a pallet is full.

**CYCLE**

A complete cycle starts with the shear mechanism that cuts a sheet, the pop-up stop is activated, and the conveyor speeds up. The sheet and scrap then run into the stop and wait for the robot. The robot determines what valves to use and only picks up the main sheet, leaving the scrap. The robot moves up, and the pop-stop retracts, allowing the scrap pieces to continue onto a scrap conveyor into a bin. The robot then moves to one of the active pallet stations and stacks the sheets. This operation will continue until the stack height reaches 36”. An audible alarm alerts the forklift driver that a pallet is finished and needs to be replaced. The system repeats this cycle, providing full pallets of stacked plastic sheets.

**CUSTOMER BENEFITS**

Automating this process gives the immediate customer benefit and an improved bottom line. The return on investment (ROI) for this type of system is dependent on labor rates and number of shifts. Assuming average labor rates and two shifts per day, the breakeven point is approximately one year. This ROI estimate doesn’t include efficiency improvements and other beneficial metrics that can vary by company.

In a labor shortage, this isn’t about replacing employees with automation. However, it allows the company to use the employees elsewhere to keep up with production. There is a detrimental cost to not running because there is a lack of employees.
The customer also realizes increased throughput and more consistency. The extruder can run at capacity, while the robot can easily keep pace. The pallets are stacked quickly and identical to one another.

The more automation that a customer implements, the more skilled and comfortable employees get with automation. Growth in production technology and employee knowledge of that technology has benefits that will be realized long term.

FUTURE FOR THERMOFORMING

With demand remaining high for custom thermoformed plastic products and an unpleasant production environment for a dwindling workforce, automation projects like this are necessary to stay competitive. Installing an automated robotic sheet stacker system can be an excellent solution.

ABOUT THE INTEGRATOR

Alliance Automation, LLC is a robot systems integrator located in Flint, MI USA and specializes in various automation applications. For more information about robotic plastic sheet stacking, please contact Alliance Automation at (810) 953-9539 or visit www.allianceautomationllc.com.
Location of Exhibitors

Editor’s Note: It’s almost that time again... the plastics world will descend on Dusseldorf on the banks of the Rhine for an 8-day extravaganza of learning and shopping for resin, machinery, tooling, and ancillary equipment. For those who are planning to attend K2022 (October 16-23), we’ve prepared a non-exhaustive summary of thermoforming-related companies and their respective booth locations. SPE will host a luncheon reception on Sunday, October 23 in Hall 12, Booth F87. Be sure to visit the booths of our magazine and conference sponsors in particular. All that walking will have you ready for the classic Dusseldorfer “Altbier” and “Schweinhaxen” in the Old Town. See you there!

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Driscoll’s (and its suppliers) Propel Thermoform Recycling

Published: July 13, 2022
Jared Paben

Editor’s Note: This story originally appeared in industry trade journal Plastics Recycling Update. Find more at resource-recycling.com/plastics.

Clamshell containers used by berry brand Driscoll’s last year contained an average of 9% RPET sourced from used thermoforms.

That post-consumer resin (PCR) percentage didn’t happen by chance. Instead, it was the result of demand pull by the brand owner, investments by reclaimers, and an open-mindedness on the part of materials recovery facilities (MRFs). Driscoll’s and other thermoform users are also feeling increased policy pressure in California to align thermoforms with existing recycling infrastructure.

Camille Herrera, packaging development and sustainability manager for Driscoll’s, says the family-owned company has looked to leverage its role in the supply chain to push for closed-loop recycling of PET thermoforms. The company has long used RPET from bottles in its clamshells, but securing RPET from thermoforms means overcoming unique challenges.

And after years of effort, the company’s recycled thermoform efforts are now bearing fruit.

Tackling a variety of barriers

In 2020, Watsonville, Calif.-based Driscoll’s challenged its clamshell suppliers to boost their average percentage of RPET derived from thermoforms from 0% to 10% by the end of the year. They succeeded, with some reaching 25%.

“While Driscoll’s is driving this, there’s no way on Earth we could do this without our suppliers,” Herrera said, adding that Driscoll’s Americas’ business buys about $200 million a year in packaging across its portfolios. “They could have all said no. But they’ve all seen that it’s going to be beneficial to their business in the long run and have been really dedicated.”

Driscoll’s Packaging Development & Sustainability Manager, Camille Herrera, shows off baled thermoforms ready for reprocessing.

But it would not have been possible without the willingness of other stakeholders to play ball too.

“We could not have done this without the MRFs that have been adventurous and stepped up,” she said.

Still, challenges remain to continuing to grow thermoform recycling efforts, even as clamshells and tubs become increasingly common on store shelves. Food packaging isn’t part of bottle deposit programs, so thermoforms must be recovered through curbside collection and other channels. But most MRFs sort them into PET bottle bales, not thermoform-only bales, or they landfill them.

Additionally, thermoforms made of lookalike polymers can complicate sorting; thermoform labels, inks and adhesives can gum up the shredding and washing/drying processes; and thermoform flakes tend to be more brittle and generate more fines. Additionally, thermoform PET does not have the intrinsic viscosity needed for bottle production.

For a long time, these realities were not understood by brand owners, Herrera acknowledged. “I think like many brands, we thought our material was getting recycled. We didn’t realize there was any problem,” she said.

In 2016, Californians Against Waste (CAW) Executive Director Mark Murray pointed out that the berry industry’s thermoforms, by and large, aren’t getting recycled, Herrera said. That led Driscoll’s and several other companies – a salad company, another berry grower, a plastics reclaimer,
a MRF operator and packaging suppliers – to establish a small coalition called the Alliance for PET Thermoform Recycling (APTR) in 2018, Herrera said. The goal was to study the barriers standing in the way of thermoform-to-thermoform recycling.

APTR found three main issues, she said: paper labels that sank with PET flakes in reclaimers’ float-sink tanks, adhesives that weren’t separating from the plastic and PET reclaimer equipment lines that are generally set up for bottles, not thermoforms, she said.

Driscoll’s and other industry players are working on solving the issue of problematic labels.

The Association of Plastic Recyclers (APR) in recent years has provided design guidelines for washable labels and adhesives, helping to bring additional recycling-friendly label products to the market, she said. (APR owns Resource Recycling, Inc., publisher of Plastics Recycling Update.)

Driscoll’s fully switched to recycling-friendly biaxially-oriented polypropylene (BOPP) pressure-sensitive labels for new packages, which means that, starting in 2025, all Driscoll’s clamshells will use the new labels.

APTR also learned that MRFs tend to include PET thermoforms in bottle bales. The Plastic Recycling Corporation of California (PRCC) conducted a 2020 study that found bales from MRFs with automated sorting technologies averaged about 20% thermoforms.

Herrera and the PRCC report both noted that California’s container redemption program incentivizes MRFs to include PET thermoforms in PET bottle bales. This is because MRFs can qualify to receive commingled redemption payments based on the weight of PET bottle bales they produce. Even though thermoforms are not part of the deposit program and the commingled rate factors in the presence of non-deposit material in bales, including thermoforms in the PET bales adds to their overall weight.

Herrera also hears MRF operators say they’d have to rely on less efficient manual sorting to remove clamshells from the PET stream, or they’d have to make space in their system and buy robots. But even with the investments in robots, many MRFs may not have available bunker space to store thermoforms. A letter last year from MRF operators to California lawmakers noted that MRFs may have to store thermoforms for up to a month to accumulate enough to ship to a plastics reclaimer.

“All for MRFs that want to do this, there are existing challenges that need to be addressed for their own infrastructure,” Herrera said.

Connecting with a variety of recyclers

Armed with information gathered for the APTR, Driscoll’s in 2020 asked its packaging suppliers to not just provide RPET content but to ensure a certain percentage was derived from scrap thermoforms, Herrera said. Specifically, Driscoll’s asked suppliers to go from 0% thermoform content to 10% by the end of that year.

All Driscoll’s suppliers hit the goal for at least one month, she said.

“They were able to do 10%, and some of them technically tested at higher percentages, at 25%,” she said.

Driscoll’s let the suppliers figure out how to accomplish the goal. She said Driscoll’s didn’t pay a higher price for RPET derived from thermoforms, allowing suppliers to use their buying power to stimulate demand for recycled thermoforms.

Driscoll’s suppliers include two vertically integrated clamshell suppliers that own their own wash lines, as well as a number of packaging producers that buy recycled resin from reclaimers.

The vertically integrated suppliers are Direct Pack, Inc. (DPI) and Plaztek. DPI opened a PET thermoform plant in Mexicali, Baja Mexico, Mexico last fall. DPI already had plants operating in Sun Valley, Calif.; Rockingham, N.C.; and Guadalajara, Mexico. The company’s Mexican facilities recycle thermoforms into new thermoforms for sale to Driscoll’s, which won a 2021 award from the Sustainable Packaging Coalition (SPC) for sourcing the RPET for clamshells from used clamshells.

On the U.S. side of the border, PRCC has been instrumental in helping to educate California MRFs about the value proposition of sorting thermoforms from PET bottles, she said. A supplier of PET bottle bales, PRCC wants to boost the quality of bottle bales by removing thermoforms, she said. Some MRFs are already providing thermoform-only bales, including Recology’s technologically advanced Pier 96 MRF in San Francisco. Another is the Monterey Regional Waste
California farm workers carefully pack fresh berries in RPET clamshells.

Management District (recently renamed ReGen Monterey), which opened an advanced MRF in 2018.

Some non-vertically integrated reclaimers are also able to supply Driscoll’s packaging vendors with RPET that contains some percentage of thermoforms, Herrera said. One of those is Green Impact Plastics’ plant in Ciudad Juarez, Mexico. That plant produces RPET 100% derived from thermoforms, she said.

Herrera said other suppliers are selling RPET with some level of thermoform content. One of them is Turlock, Calif.-based Peninsula Plastics Recycling, a subsidiary of Merlin Plastics that’s providing an RPET blend of 70% bottles and 30% thermoforms. Another is Perris, Calif.-based Global Plastics Recycling, which received a $1.6 million CalRecycle grant last year after taking out a $2 million low-interest loan from the state of California the year before. Global Plastics Recycling supplies an RPET blend of 80% bottles and 20% thermoforms, Herrera said.

Looking at today’s larger RPET market, however, challenges include competition for material and other market factors, she said.

“There’s definitely a lot more competition for PCR these days, just in general,” she said.

Beverage brands have pledged ambitious use of PCR in their bottles, and some governments, including California, Washington state and New Jersey, are beginning to mandate RPET in bottles.

Still, Herrera said she’s happy with the thermoform recycling results so far. In 2021, Driscoll’s clamshells averaged 80% recycled content. The composition breaks down to 40% pre-consumer content (also known as production scrap), 31% PCR from bottles, 20% virgin plastic and 9% PCR from thermoforms.

“For this being a new market, this is doing amazing,” she said. “It’s not even two years old.”

Collaboration, not market differentiation

These thermoform recycling efforts come in the context of a fast-changing policy landscape in the Golden State.

Last year, Gov. Gavin Newsom signed Senate Bill 343, which will prohibit the use of the chasing arrows symbol on packaging unless the state determines the package is recyclable. For thermoforms to meet the definition, recycling programs covering 60% of the state’s population will need to access thermoforms, and the package must be sorted by MRFs into “defined streams for recycling processes,” according to the bill.

More recently, Newsom in June signed a bill ushering in what’s being called the toughest extended producer responsibility (EPR) law for packaging in the country. In addition to requiring producers to finance the recycling system, the bill mandates reductions in single-use plastics, product recyclability and the achievement of a set recycling rate for all plastics.

Against this backdrop, Driscoll’s is asking suppliers to aim higher in future years. Specifically, the company wants to boost its clamshells’ thermoform content to 25% by 2025, she said.

Herrera estimated California currently has over 75 MRFs, and although the number actively sorting thermoforms into discrete thermoform bales fluctuates, it tends to hover between about 10 and 15. Generally, independent MRFs have been more active in providing thermoform bales than the large waste and recycling corporations, she said.

She also said there is value to thermoform-only bales, noting that although they were trading for less than 5 cents a pound at the beginning of 2020, they’ve increased since then. According to RecyclingMarkets.net, in California, PET thermoform bales have traded in recent months for about 25 cents a pound, on par with California’s curbside PET bottle bales.
Because of California’s deposit program, Driscoll’s may be running up against the limits of available thermoform bales there. In non-deposit states, the financial proposition can look better, she said.

“There’s definitely financial value in including them in some way, shape or form,” she said.

**Rethinking collection and sortation**

The brand owner is also engaging recycling companies with alternative collection models. For example, Driscoll’s has worked with Replenish on a pilot project in Oklahoma, with another planned. Driscoll’s has also been talking with Ridwell, which runs a doorstep collection service in the Pacific Northwest.

Additionally, Herrera cited a six-month pilot project now collecting thermoforms at four Sam’s Club stores in El Paso, Texas. Backing that project, which is providing a cash incentive for PET thermoform drop-offs, are the environmental groups Texan by Nature and Texans for Clean Water.

Texans for Clean Water is led by Maia Corbitt, who has pushed state lawmakers to pass a deposit-like program in Texas to reduce litter. Materials collected through the pilot project will go to Green Impact for recycling, according to KTSM.com.

Technology could also unlock supply. New labels from Driscoll’s incorporate Digimarc invisible barcode technology, which is also being used by packaging giant Berry Global. Optical sorters can be retrofitted with scanners to read the Digimarc barcodes, which are imperceptible to the human eye, to identify recyclables on a conveyor belt.

The barcodes could help the machines properly sort thermoforms, but they also enable some detailed cataloging capabilities for specific products. For example, Driscoll’s may someday be able to identify geographies where a lot of its berries are purchased but few of its clamshells are recycled, allowing for targeted recycling system interventions.

In the meantime, improving thermoform recycling will require collaboration among many companies. She expressed excitement at The Recycling Partnership’s recent launch of the PET Recycling Coalition, which will provide funding to improve PET sorting and recovery.

Collaboration also extends to berry-growing competitors, which need to succeed in thermoform recycling too, she said. She noted that when Driscoll’s began working to source thermoform RPET from Green Impact, it didn’t try to insist on any exclusive sales relationship.

“When we do want to tell the story to our customers, it’s not about making this the market differentiator,” Herrera said.
PET Thermoforms: Good Things Worth Knowing

Editor's Note: Our friends at NAPCOR (National Association for PET Container Resources) continue their good work advocating for improved thermoform clamshell recycling. We all know about bottles, but structural changes in the market are forcing a closer look at the investments required to get more PET thermoforms into the recycling system.

PET thermoform packaging—also known as clamshells, trays, tubs, clear egg cartons, lids and cups—is molecularly equivalent to PET (polyethylene terephthalate) bottles. So it shares the same #1 resin identification code, usually surrounded by the chasing arrows. It’s also safe, lightweight, shatter-resistant and exceptionally clear. This makes it an excellent choice for packaging fresh fruits, produce, salads, baked goods, takeout foods and a myriad of other products. And because thermoforms are made of PET, they’re part of the family of the world’s most widely recovered plastic.

**PET Thermoforms Are a Preferred Packaging Material**

- FDA approved for food contact.
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- Chosen by leading brands to package produce greens, fruits and salads.
- Chosen by retailers for fresh bakery and produce items.
- Part of the California Strawberry Commission’s 2025 goal to use 100% recycle-ready clamshells.

**Over Three Decades of Proven Use**

Since the 1990s, postconsumer recycled PET has been used in PET thermoforms for both food and non-food packaging. Over the past five years, the number of PET thermoforms recycled has continued to grow. In 2018, the U.S. recycled 139 million pounds of PET thermoform packaging.

**Advantages of PET Thermoforms**

Pound for pound, PET thermoforms deliver higher value at lower cost, and with lower greenhouse gas emissions, than many other packaging alternatives, including laminated cartons, bagasse (pulp), and paper- and wood-fiber molded materials. PET thermoforms typically have thin but strong and durable sidewalls, saving material and weight. They are often designed with easy-to-open as well as tamper-evident features—aiding in the recycling process.

Here are more of the many benefits of PET thermoforms:

- **Transparency:** Clarity of PET permits people to easily view food items inside.
- **Contamination protection:** Edges can be sealed if airtight protection is needed.
- **Freshness:** PET thermoforms help keep foods fresher, reducing spoilage and waste.
- **Multiuse:** Unlike single-use packaging, PET thermoforms can be cleaned and reused, reducing their environmental footprint. And they can be recycled! Check locally.
- **Versatility:** Can be custom designed to accommodate products of any size or shape.
- **Ruggedness:** Can survive impact and handling during transport.
Recycling Facts

PET thermoforms are an important end use for postconsumer recycled PET. Each year, the U.S. turns more than 139 million pounds of postconsumer recycled PET into new thermoforms, used to protect and transport food and other important products to consumers.

A full-circle value chain for PET thermoforms continues to expand, including everyone from package manufacturers and retailers to recycling collectors and MRF operators to PET reclaimers to recycled PET end users.

Reclaimers representing the majority of U.S. capacity report they routinely process PET thermoforms with PET bottles.

Since 2016, PET thermoforms have experienced a 68% growth in collections for recycling.


Challenges We’re Addressing

- Increasingly adopting best practices to address design-for-recyclability issues.
- Making labels less difficult to remove or sort from PET.
- Supporting equipment innovations with advanced recognition capabilities to enhance auto-sorting.
- Supporting MRF infrastructure retention and investment

Learn more about the positive benefits of PET plastics at PositivelyPET.org.

Join Us!

If you are an educator, student or advisor in a college or university with a plastics program, we want to hear from you! The SPE Thermoforming Division has a long and rich tradition of working with academic partners. From scholarships and grants to workforce development programs, the division seeks to promote a stronger bond between industry and academia.

Thermoforming Quarterly is proud to publish news and stories related to the science and business of thermoforming:

- New materials development
- New applications
- Innovative technologies
- Industry partnerships
- New or expanding laboratory facilities
- Endowments

We are also interested in hearing from our members and colleagues around the world. If your school or institution has an international partner, please invite them to submit relevant content. We publish press releases, student essays, photos and technical papers. If you would like to arrange an interview, please contact Conor Carlin, Editor, at cpcarlin@gmail.com or 617-771-3321.
Danbury, CT (July 13, 2022) – At its recent Board of Directors meeting in Fort Myers, FL, the SPE Thermoforming Division elected new officers.

Ed Probst of Probst Plastics Consulting LLC is the new Division Chair, replacing Stephen Zamprelli, Vice President of Formed Plastics. Zamprelli, who served as Division Chair for the past two years, will now serve as Prior Chair for the Division.

In addition, the Division elected Paul Uphaus as Chair Elect, and Gordy Murphy accepted his appointment as Secretary. Renee Vinsick was also elected to the Division’s Board of Directors.

**Chair**
**Ed Probst**

The new Chair of the SPE Thermoforming Division, Ed Probst is Principal of Probst Plastics Consulting based in Milwaukee, WI. Ed has 38 years of experience in the heavy gauge custom thermoforming industry. For 28 years he worked at Profile Plastics Corporation, Lake Bluff, IL in manufacturing, engineering, design, and sales. During that time, he had the privilege of working for and with three SPE Thermoformer’s of the Year: John Grundy, Steve Murrill, and Stephen Sweig.

Ed is a Senior Member of the Society of Plastics Engineers and is a member of the Thermoforming Division, European Thermoforming Division, and Product Design and Development Division. Over the years he has served SPE as Chairman of the 2001 SPE Thermoforming Conference, Technical Program Chairman of the 2005 SPE Thermoforming Conference, Technical Program Co-Chair of the 2012 SPE Thermoforming Conference, Presenter at the SPE Thermoforming Conference in Cincinnati, OH and European Thermoforming Division Conference in Ghent-Belgium, SPE Product Design and Development Division (PD3) Board Chair and Treasurer, Co-Chairman of the 2003 SPE PD3/Rotomolding Topcon in Cleveland-OH, and Co-Chairman of the 2014 SPE PD3 Design TOPCON.

**Prior Chair**
**Stephen Zamprelli**

Coming off his two-year stint as Chair of the SPE Thermoforming Division, Stephen Zamprelli will now serve as Prior Chair. Steve is the Vice President of Engineering & Product Development at Formed Plastics. He joined the New York City area-based organization in 2011. Formed Plastics, nearing its 75th anniversary, specializes in thermoforming, rotational molding, fabrication, and injection blow molding.

Steve has 20+ years of expertise in designing and manufacturing products utilizing various processing methods. His broad technical background, artistic influence, and readiness to accept new challenges has afforded him many diverse opportunities. Steve’s prior experience enables him to approach issues from the customer’s point of view, assisting SPE to bridge the gap between the OEM and supplier.

An active member of the SPE Thermoforming Division, Steve joined its board of directors in 2013. He previously served as Secretary, Communications Committee Chair, Parts Competition Chair and 2019 Conference Co-Chair, and currently holds the position of SPE Thermoforming Division Chair.

**Chair-Elect**
**Paul Uphaus**

Paul Uphaus is the new Chair Elect of the SPE Thermoforming Division. He moves into this new role after serving as Secretary of the Division for the past two years. Paul is the Director of Applications Development & Technical Services at Primex Plastics Corporation, joining the company in August of 1989. Paul has 32 years of technical experience in the plastics industry and manages a team of five product spe-
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**Secretary**

**Gordy Murphy**

Gordy Murphy is the new Secretary of the SPE Thermoforming Division. As Director of Operations at LINDAR Corporation, Gordy is directly responsible for overseeing the engineering, capital planning implementation, information systems, and technical aspects to support the ongoing growth of the company.

Gordy has over 32 years of experience in the Thermoforming industry spanning both the Heavy Gauge and Thin Gauge industries. His past positions have included direct involvement with sheet extrusion, tool design and implementation, high-speed labeling, printing, as well as recycling of plastic materials.

During the 2021 SPE Thermoforming Conference in Grand Rapids, MI, Gordy served as a round table moderator and shared his expertise on ERP systems during the Executive Forum. He has attended SPE Thermoforming Division Board Meetings and actively participated in committee meetings for the past two years.

**Member, Board of Directors**

**Renee Vinsick**

Renee Vinsick is the newest member of the SPE Thermoforming Division Board of Directors. Renee is the Business Development Manager for SIMONA Boltaron, a division of Germany-based Simona AG, a leading global thermoplastic manufacturer for the aerospace and mass transit industries, among other markets.

Renee has participated on the SPE Thermoforming Division’s Education Committee and has been involved in the plastics industry for over 30 years. Renee’s passion within the thermoforming industry is to continually work within the market bringing new opportunities to facilitate growth in all industries that thermoformers serve. She has and will always encourage membership into the SPE organization.

The Division recently announced that its next conference will begin later this year, and registration details will be posted to the SPE Thermoforming Division’s website, [https://thermoformingdivision.com](https://thermoformingdivision.com), in the coming months.

**About SPE Thermoforming Division**

THE SPE THERMOFORMING DIVISION is a technical division of the Society of Plastics Engineers, based in Danbury, CT. The Thermoforming Division’s mission is to facilitate the advancement of thermoforming technologies through education, application, promotion, and research. The Division hosts a biennial educational conference and publishes an award-winning technical journal, SPE Thermoforming Quarterly®. The Division has also funded over $275K in equipment grants and tens of thousands of dollars in undergraduate scholarships since it was first formed. For more information, please visit [https://thermoformingdivision.com](https://thermoformingdivision.com).

**FOR FURTHER INFORMATION CONTACT:**

Greg Hannoosh, Next Step Communications Inc., (207) 703-0343 or ghannoosh@next-step.com, or Shameka Jennings, CMP, CAE, (240) 393-6567 or info@thermoformingdivision.com |
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Board of Directors

EDUCATION COMMITTEE
Robert Browning
McConnell Company
P.O. Box 45063
Atlanta, GA 31145
T: 770.939.4497
robert@thermoformingmc.com

Evan Gilham
Productive Plastics
103 W. Park Drive
Mt. Laurel, NJ 08054
T: 856-778-4300, x225
EGilham@productivecompanies.com

Travis Kieffer
Plastics Unlimited, Inc.
303 1st St. N.W.
Preston, IA 52069
T: 563.589.4752
TravisK@plasticsunlimited.com

Stephen Murriell
Profile Plastics
65 S. Waukegan
Lake Bluff, IL 60044
T: 847.604.5100 x29
smurriell@thermoform.com

Ed Probst
Probst Plastics Consulting
P.O. Box 26365
Wauwatosa, WI 53226
T: 414.476.3096
ed.probst@probstplastics.com

Dan Sproles (Chair)
Sproles Business Consulting
5210 Canton Street
South Bend, IN 60071
T: 574.747.7997
dan@sprolesbusinessconsulting.com

Steve Zamprelli
Formed Plastics, Inc.
297 Stonehinge Lane
Carle Place, NY 11514
T: 516.334.2300
s.zamprelli@formedplastics.com

PROMOTIONS COMMITTEE
Jim Arnet
Hagans Plastics Co.
121 W. Rock Island Road
Grand Prairie, TX 75050
T: 972.974.3516
jarnet@hagansus.com

Todd Harrell (Chair)
Plastics Machinery Group, Inc.
5455 Perkins Road
Bedford Heights, OH 44146
T: 440.498.4000, ext. 117
toddh@plasticsmg.com

Steven Clark
Monark Equipment
PO Box 335
4533 S. Garfield Road
Auburn, MI 48611
T: 989.662.7250
sclark@monark-equip.com

Jim Lyon
LINDAR Corporation
7789 Hastings Road
Baxter, MN 56425
T: 314.630.8384
karig@mathelinbay.com

Laura Pichon
Ex-Tech Plastics
PO Box 576
11413 Burlington Road
Richmond, IL 60071
T: 847.829.8124
lpichon@extechplastics.com

R&D COMMITTEE
James Alongi
MAAC Machinery
590 Tower Blvd.
Carol Stream, IL 60188
T: 630.665.1700
jalongi@maacmachinery.com

Juliet Goff
Kal Plastics
2050 East 48th Street
Vernon, CA 90058-2022
T: 323.581.6194
juliet@kal-plastics.com

Brian Golden
GN Thermoforming Equipment
345 Old Trunk 3 Road
Chester, NS BOJ 1J0, Canada
T: 989-424-9477
bgolden@gncanada.com

Roger P. Jean
Simona PMC
PO Box 1605
2040 Industrial Drive
Findlay, OH 45840
T: 567.208.9758
Roger.Jean@simona-pmc.com

Phillip Karig
Mathelin Bay Associates LLC
11939 Manchester Road #148
Saint Louis, MO 63131
T: 510.651.9996
karig@mathelinbay.com

Dennis Lemmon
Cascade Engineering
1701 Magda Drive
Montpelier, OH 43533
T: 519.485-1110, ext. 7380
Dennis.Lemmon@ckttech.biz

Ian Munnoch (Chair)
MSA Components, Inc.
N7908 Dahlk Road
New Glarus, WI 53574
T: 812.322.5080
imunnoch@msacomponents.com

Gordy Murphy
LINDAR Corporation
7789 Hastings Road
Baxter, MN 56425
T: 218.829-3457
gordy@lindarcorp.com

Eric Short
SIMONA PMC
2040 Industrial Drive
Findlay, OH 45840
T: 567-525-4924
eric.short@simona-pmc.com

Paul Uphaus
Primex Plastics
4164 Lake Oconee Drive
Buford, GA 30519
T: 1.800.935.9272
puphaus@primexplastics.com

DIRECTORS EMERITI
Lola Carere
153 Gardens Way
Apartment D
Blairsville, GA 30512
T: 770.883.7055
carerelola@comcast.net

Richard Freeman
221 Coldbrook Lane
Soquel, CA 95073
T: 510.651.9996
rfree@freetechplastics.com

Steve Hasselbach
CMI Plastics
222 Pepsi Way
Ayden, NC 28513
T: 252.746.2171
steve@cmiplastics.com

Donald Hytton
McConnell Company
646 Holyfield Highway
Fairburn, GA 30213
T: 678.772.5008
don@thermoformingmc.com

Roger Kipp
Roger C. Kipp Consulting
3C Owens Landing Court
Perryville, MD 21903
T: 717.521.9254
srkipp@msn.com

Gwen Mathis
6 S. Second Street SE
Lindale, GA 30147
T: 706.346.2786
gmathis224@aol.com

PROMOTIONS COMMITTEE
Jim Arnet
Hagans Plastics Co.
121 W. Rock Island Road
Grand Prairie, TX 75050
T: 972.974.3516
jarnet@hagansus.com

Todd Harrell (Chair)
Plastics Machinery Group, Inc.
5455 Perkins Road
Bedford Heights, OH 44146
T: 440.498.4000, ext. 117
toddh@plasticsmg.com

Steven Clark
Monark Equipment
PO Box 335
4533 S. Garfield Road
Auburn, MI 48611
T: 989.662.7250
sclark@monark-equip.com

Jim Lyon
LINDAR Corporation
7789 Hastings Road
Baxter, MN 56425
T: 314.630.8384
karig@mathelinbay.com

Laura Pichon
Ex-Tech Plastics
PO Box 576
11413 Burlington Road
Richmond, IL 60071
T: 847.829.8124
lpichon@extechplastics.com

R&D COMMITTEE
James Alongi
MAAC Machinery
590 Tower Blvd.
Carol Stream, IL 60188
T: 630.665.1700
jalongi@maacmachinery.com

Juliet Goff
Kal Plastics
2050 East 48th Street
Vernon, CA 90058-2022
T: 323.581.6194
juliet@kal-plastics.com

Eric Short
SIMONA PMC
2040 Industrial Drive
Findlay, OH 45840
T: 567-525-4924
eric.short@simona-pmc.com

Paul Uphaus
Primex Plastics
4164 Lake Oconee Drive
Buford, GA 30519
T: 1.800.935.9272
puphaus@primexplastics.com

DIRECTORS EMERITI
Lola Carere
153 Gardens Way
Apartment D
Blairsville, GA 30512
T: 770.883.7055
carerelola@comcast.net

Richard Freeman
221 Coldbrook Lane
Soquel, CA 95073
T: 510.651.9996
rfree@freetechplastics.com

Steve Hasselbach
CMI Plastics
222 Pepsi Way
Ayden, NC 28513
T: 252.746.2171
steve@cmiplastics.com

Donald Hytton
McConnell Company
646 Holyfield Highway
Fairburn, GA 30213
T: 678.772.5008
don@thermoformingmc.com

Roger Kipp
Roger C. Kipp Consulting
3C Owens Landing Court
Perryville, MD 21903
T: 717.521.9254
srkipp@msn.com

Gwen Mathis
6 S. Second Street SE
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