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**Waste**

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# Processing Plastics

**Depending on one's MRF operation, the plastic bottle is either half-empty or half-full.**

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While some view dropping oil prices as decreased revenue opportunities for many material recovery facility (MRF) operations, others see opportunity. "Some say it depends on where you position yourself in the market," says Roland Zimmer, CEO, Zimmer America Recycling Solutions, a division of ZARS-USA.

The company represents the STF Group, the largest polyethylene terephthalate (PET) recycler in Europe for recycling plastic into high-quality flakes and granulates for other uses. STF also engineers and manufactures complete plastic sorting and washing plants, especially for PET post-consumer bottles.

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Markets for plastic develop as the need for the material grows, points out Sandi Childs, film and flexible programs director for the Association of Plastics Recyclers (APR). "For example, the polypropylene [PP] market is rapidly developing in response to need for post-consumer material," she says. "APR's 2014 Polypropylene Fit for Use survey documented a total PP PCR demand of more than one billion pounds per year within the next three years. In response, APR formed a PP market development committee to investigate ways to satisfy this demand."

In 2014, 27 US PET reclamation plants were operating with a combined capacity of 2,385 million pounds in contrast to the 14 US reclaimers operating with a capacity of 842 million pounds in 2007. Capacity nearly tripled in seven years.

"This indicates a healthy industry responding to market demand with significant investments," says Childs.

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Zimmer says there are two groups interested in recycling plastic: One sells whatever comes out of the process as flakes, and the other group utilizes it in-house. While the first group may be having a difficult time because of oil prices competing with other entities to sell the commodity, the second group is “very much motivated to increase the amount of recycled plastic in products they make,” says Zimmer.

“There’s always a way to increase value,” he adds. “Instead of just collecting post-industrial or post-consumer wastestreams and shredding them, washing increases the value. The next step is to extrude it to make marketable compounds. Canada Fibers is using a sophisticated extrusion machine with compounding capabilities for polypropylene. They cannot make enough right now. They are increasing the plastic processing capabilities.”

Canada Fibers in Toronto—Ontario’s largest single-stream municipal waste MRF operation—has been a classic fiber, paper, and cardboard recycler for 25 years. Company managers witnessed the trend of paper in the wastestream declining while plastic increased.

In response, Canada Fibers, in the spring of 2015, commissioned a 160,000-square-foot technologically advanced plastics recycling plant, Urban Polymers, in North Toronto.

The new venture focuses on creation of pure, homogeneous plastic materials from post-consumer and post-industrial waste, using state-of-the art equipment and additive formulations.

The operation turned to ZARS-USA to supply automated sorting and hot-wash technology and twin-screw extrusion technology and screening, designed to yield optimal mixing capacity for quality, purity, and consistency. Urban Polymers has a quality control laboratory staffed by chemistry professionals to ensure consistent quality output.

The line accomplishes two tasks: running PET for a week; and sorting, washing, and grinding it to make PET flakes used for many applications such as the bottom of a plastic bottle, film, food packaging, and extrusion for plastic pipes.

Urban Polymers also has a significant amount of mixed rigid plastic, so the line is built to handle either wastestream—not at the same time, but alternately, producing about 5,000 pounds of recycled PET an hour, says Zimmer.

Initially, Urban Polymers has focused on the production of PET flake material, as well as production of compounded polyethylene (PE) and PP in pellet form.

PET is the primary source of material for beverage bottles and single-serving food containers. PE and PP is utilized to produce packaging for other liquids, including household detergents.

Urban Polymers expects to process 25 million pounds per year of PET and 11 million pounds per year of PP/PE during its initial phases of development. The company points out on its website that producing prime or “virgin” plastic is resource- and energy-intensive with petroleum being the primary ingredient in plastic.

According to the company’s website, plastic is one of the most commonly used materials in many industries, including packaging, construction, and automotive, “yet the production of virgin plastics has detrimental ecological and environmental effects.” The use of recycled plastic in a manufacturing process can offer the organization cost savings and increase shareholder sentiment by “improving your corporate responsibility scorecard.”

“People in the industry realize the amount of paper in a MRF is going down, plastic is going up, and value of recycled plastic is higher than recycled paper, so they invest in plastic processing recycling lines,” says Zimmer.

Zimmer says based on what Canada Fibers has done, he’s optimistic about similar projects taking place. “If you do it right, if your place is in the proper market section and if you have a high value-added plastic product, you will be doing well. The MRF is the place to start, because that’s where plastic is generated in the wastestream. I wouldn’t be surprised for other MRF operators to catch on to that and get away from just sorting it out to getting into the processing part of it as well.”

One industry observer notes solid waste operators may too often view plastics as a slice in the pie chart for solid waste composition but don’t pay much attention as to what that represents or the difficulty in recovering various plastic materials for beneficial reuse.

The AMUT Group encompasses divisions in extrusion, recycling, packaging film and converting, thermoforming, and waste sorting. Anthony Georges, president of AMUT North America, notes, “when you look at the oil prices and relate that to recycling, I think no matter what the price of oil is, it’s always less expensive to recycle.”

He estimates that recycling costs are nearly one-tenth the cost to make a new resin and create a new container from it, citing the costs involved in extracting oil from oil fields and processing it. “Recycling works—it just doesn’t work here in North America, it works around the world,” he says. “The bigger question is why doesn’t recycling work here in North America, as compared to other parts of the world? That is more the political dynamite that can blow up in such cases as the present case of Houston.” In early March, the City came to an agreement with Waste Management to continue recycling—with the exception of glass—after nearly nixing the program.

Georges says it's wrong to assume recycling doesn't work because of the low oil prices. "We see the closing of the loop of recycling throughout North America in many instances where it is successfully done and encouraged from local people, from the stores, individuals who are utilizing the products and turning them back into new products again and again."

Georges also notes a trend away from star screens and toward elliptical ballistic separators. "That helps a lot in the recovery of the containers," he says. "We're seeing a lot of bottles being lost in the star screen system, the old separation technology. We're seeing requirements in retrofitting of this new technology we've been introducing over the last few years."

Georges sees a positive development in near infrared sorting technology. "The problem is the stream of material that's coming through the plant isn't regulated properly," he says. "There's no constant flow. You have a lot of surges of material going through. In older MRFs, these surges really limit the amount of sorting you can do. That's something else we're working on—to improve the flow of the material as a constant solution through the whole line so sorting can be done much quicker and more efficiently."

Addressing why more plastics—especially film plastic—are not being recovered and how solid waste operations are dealing with it, Steve Viny, CEO of Envision Waste Services, says one of the problems is that MRFs have been relying for years on star screens.

The star screen, once regarded as the backbone of the single-stream MRF, is showing its technological and engineering sign of age, Viny contends. His company patented a new device replacing the star screen that does not rely on spinning shafts. "It cannot be plugged up, and it enables the separation of film plastics and lighter plastics like the new series of plastic water bottles, which we affectionately call water bags because once you take the water out, it's almost like a baggie," he adds.

The MiniMRF system relies on a different design that does not use star screens. "It can be used to recover a much wider variety of plastics without the problems of wrap, extensive maintenance, and other problems associated with star screens," says Viny.

All plastics are recyclable for beneficial reuse if separated in a meaningful way, he says, adding that the trend towards smarter, lighter plastic containers and metal containers poses significant challenges to existing MRF equipment.

Viny points out that while there are seven types of plastic resins, to date the recycling focus has been largely on HDPE and PET. "In the mid-1990s, recyclers began using the star screen as a means to liberate rigid containers such as plastic beverage containers, plastic detergent bottles, and aluminum and steel cans from limp objects such as mixed fiber," he says.

At that time, PET bottles had HDPE base cups and the wall thickness of liter bottles was quite thick, he says, adding that HDPE milk jugs also were quite heavy and rigid.

Viny credits bottle manufacturers for “having done a tremendous job creating strength through engineered shapes rather than by sheer material mass as before.

“Smarter, lighter plastic containers evolved and continue to evolve,” he continues. “As an example, today’s single serve water bottle uses the cap and the water inside the bottle as structural elements. Fully closed, the single serve water bottle feels rigid and strong in your hand. Yet, once the cap is removed, the bottle feels thin and weak.”

After the water is consumed, the remaining plastic bottle “feels almost like a plastic bag in your hand as it is so thin and light. So light, in fact, that the single serve water bottle starts to react much like paper in the star screen, which means that some PET ends up in the mixed fiber stream and may end up in the residue stream for discard or may cause the paper grade to be devalued.”

Film plastic causes a greater problem to the star screen commonly seen in single-stream MRFs in that it is not separated by the star screen, but instead wraps around its many shafts, Viny says.

“This blinds the annular area between the stars and spacers on each shaft, reducing screen efficiency, and eventually inhibits the screen’s performance so much so that the plant must be shut down to allow the maintenance staff to cut away the plastic wrap,” says Viny, adding the task is tedious and must be performed every few hours.

Plastic banding and hose pose yet an even greater problem for the star screen, says Viny. “Their length, coupled with the material strength, can lead to shaft failure and breakage on the star screen,” he says. “Video tape and other tape products can easily find their way into star screen shaft bearings, causing premature bearing failure as well as increased maintenance cost and downtime.”

A typical single-stream MRF does not have a good solution for the recovery of plastic foams such as Styrofoam peanuts, rigid insulation, bead board, or other commonly used packaging materials, says Viny, adding that foam plastics are light and therefore voluminous relative to weight.

Multi-material plastics such as computers, televisions, play toys, oil and butter containers, and other such products that contain plastic but also other materials require special handling and are difficult and expensive to process, notes Viny. “A plastic five-gallon pail might have a metal handle but a plastic container,” he points out. “The computer has a plastic case and circuit boards made of plastic but other materials as well. A child’s toy might be a doll that is plastic but contains metal screws and cloth clothing. These multi-material plastic items need to be shredded for further processing.”

“Lightweight plastic bottles are not easily liberated and the recovery of plastic films is not possible,” he says. “The star screen in some cases can become an impediment to recycling due to material wrap.”

While Near Infrared (NIR) separators can be used to identify and eject plastics, the star screen’s limitations regarding current recyclable materials can lead to failure before the material reaches the NIR units, says Viny.

To that end, Envision Waste Services’ multi-stage ballistic separator is designed to not be affected by wrap or ‘smarter’ packaging and can liberate plastic films and foams, addressing the “rigors and challenges posed by today’s smarter and lighter plastic packaging as well as film, banding, and tape, etc.

Another solution to the challenge is to capture the lower value plastics—plastics other than #1 and #2—for their calorific value or value for conversion into oil or chemicals, says Viny. “Such conversion technologies are just emerging and we may see them play a larger role in the future,” he says.

The way Viny sees it, the challenge regarding plastics is not so much the evolution of their market as much as it is a matter of the recycling industry to be able to develop automated solutions to liberate plastics by individual resin code.

“I’m not suggesting that such solutions do not exist but merely that MRF providers often design for PET and HDPE rigid container separation alone,” he adds. “The star screen which has been widely used to liberate rigid plastic containers is no longer as efficient in its execution due to smarter, lighter packaging.”

Felix Hottenstein, Sales Director, MSS Optical Sorters and plastics recycling specialist for CP Group, says most of the company’s installations are for MRFs, with the biggest volumes in post-consumer plastics being the #1s and #2s, PET and HDPE. “MRFs are trying to get more of those materials into their plants, and that goes to the education of the consumer or the cities trying to make sure people are actually putting the plastics in the right bins,” says Hottenstein.

“If they want to improve the situation of either collecting more plastics or getting better quality, it starts on the front end of the collection portion,” he adds. “That is the first step to improve the situation as far as either a higher recycling rate or better quality of the plastics coming into the stream.”

Regional circumstances come into play. Consider Flint, MI’s drinking water crisis, which produced a significant influx of plastic through the increased use of bottled water. According to a January report in the Detroit Free Press, Flint’s residential recycling rate had been at 15% before the crisis, a number Republic Services Municipal Services Manager Gary Hicks reports is rapidly increasing through the company’s biweekly curbside recycling service. The plastic is compressed and trucked out for further processing and end-use markets.

Hottenstein points out recycled plastics are currently competing with virgin plastics because of low oil prices. “The virgin materials are very close or even less expensive than recycled materials, so it’s not easy right now to be price-competitive as a recycler,” he says. “It may be different for different commodities.”

PET is hit particularly hard, affected by both the price of oil and the virgin PET capacity coming online later in 2016 that will add more virgin PET to the wastestream, notes Hottenstein. “PET prices are probably going to stay low for quite a while,” he predicts.

MSW operations looking to extract the most value from a certain wastestream entering the facility are best served by investing in the equipment most suited to process it, says Hottenstein.

But not many operations are doing that “because they have a hard enough time making a profit selling what they have now. Additional capital for equipment purchases is difficult to justify at this point in time,” says Hottenstein.

“We expect film packaging material or flexible packing material is going to dramatically increase over the next five to 10 years. Consumer companies such as the big packaging companies or the big brands like Proctor & Gamble are telling us that a lot more goods will be packaged in flexible packaging, so we’re expecting to see a lot more of the flexible packaging in the recycling stream.”

That will call for equipment investments to capture it mechanically versus manually sorting it from the wastestream and keep it out of the landfill to retain as a commodity, he adds.

Matthias Erdmannsdoerfer, president of National Recovery Technologies (NRT), agrees that the plastics market is slow. End users of his company’s equipment are “distressed and concerned” about feedstock pricing, he says. “We deal with a lot of secondary plastic processors who have the same worries in the market. Commodity pricing is a concern for the whole recycling part of the plastics industry right now.”

While most plastics are recyclable, “the bottom line is always the bottom line,” notes Greg Parent, Canadian sales for Vecoplan. “If the specific plastic stream does not have enough value to justify processing, then the processors will either avoid the material all together or will need to find a way to make it economically viable.”

A primary difficulty with post-consumer film packaging is that it is often highly contaminated, making it a low-value material in the end market, Parent says.

“To increase the value of the film, it must be cleaned and reduced to a particle size that is saleable or even converted to plastic pellets for resale,” he adds.

With the current market environment where baling and shipping overseas is a much less viable option, a processor must add value to the material in order to justify recycling the film, says Parent.

The first step in the process is to clean the film to an acceptable level for the end user. Parent points out that film has always been a difficult material to clean as it is often folded and crumpled, which traps dirt in the material and doesn't allow access for it to be properly cleaned.

"To access this dirt, the film must be opened during the cleaning process," he says, adding that Vecoplan's Plastic Cleaning Unit is designed to open the material so higher levels of cleanliness can be achieved.

Once cleaned, it must be either size-reduced to the required size of the end customer or pelletized. "Film's very low bulk density makes it expensive to ship if it has not been pelletized as it becomes difficult to maximize the weight on the truck," says Parent. "Depending on the distance to the end customer, the added value of the clean film may be enough to justify the project. If distances are larger, the processor may need to consider pelletizing the plastic in order to complete the value add process to the end customer."

Dana Darley, national sales manager for Vecoplan's plastics division, notes that food packaging films are often multi-layer with materials that are not compatible if re-melted. "These materials cannot be recycled and are only good for their BTU value," says Darley.

Parent says an MSW operation cannot address the market without technology. Traditionally, plastics have been a "very fast market to adapt to recycling due to the abundance of material and the value it can provide," he notes.

"Recently, the low cost of oil has reduced the price of virgin resin to a point where the price advantage of buying recycled plastics has been reduced," he adds. "This reduces the price a recycler is able to charge for their recycled material and squeezes margins."

Depending on one's outlook on the price of oil, this should be a "somewhat temporary situation," says Parent.

"Those who invest in machinery like optical sorters, wash lines, and shredders now, while it's a buyer's market, will be positioned well when petroleum prices go up again," he adds.

Additionally, "plastics continue to have a poor public perception in many parts of the country and this can slow the use of plastics in new products and applications, even though they are the best choice based on price and performance," notes Darley.

Childs notes that historically, the MRF has never been the key to the supply chain for film plastics as it has been for rigid plastic containers. Film recyclers source post-consumer supply from a number of sources, but rely on the network of retail stores that provide dropoff centers for customers, she adds.

“According to the Flexible Film Recycling Group of the American Chemistry Council [ACC], more than 18,000 retail stores in the US accept clean and dry film plastics from customers,” she says. “This includes carry-out bags and other wrap materials such as towel and tissue overwrap, food storage bags, newspaper bags, and similar packaging. The ACC reports that 248 million pounds of this material was recycled in 2013, up 37% from 2012. APR is working on several fronts to increase this recovery.”

Still, Childs notes that MRFs are much more technically advanced than they were even five years ago, with the addition of multiple optical sortation machines to automatically sort and separate plastic resin grades and an increase in single-stream MRFs with “much higher efficiency. MRFs report that plastics account for a large share of their revenue compared to volume.”

“What I have seen to date is that MRFs have focused their attention on the back end with NIR sorting devices; however, they may have ignored the real problem of the upstream processing,” says Viny. “I have not seen MRFs in operation that effectively liberate all plastics.

“If the star screen sends flattened light single serve plastic beverage containers into the mixed fiber stream, then the plastic will likely be handled as residue,” he adds. “The star screen cannot liberate plastic film, banding, hose, or tape. I have not seen NIR units used to recover plastic foams, although it is possible to do so.”

While Erdmannsdoerfer agrees that part of the solution lies in the hands of MRFs being able to sort materials to where they can meet recycling issues, he sees the overall issue being larger. “There is an overcapacity of virgin material—especially if you look at PET—which is driving the market, and the oil prices are driving the price of the plastics market down,” he says. “China has overcapacity in refineries and PET virgin production; same in North America. That is all hurting the recycling industry.”

It’s also putting a lot of pressure on the MRFs, he adds. “A big part of their income is from selling recycled plastic—mainly PET and HDPE with HDPE natural to secondary processors for further processing of these materials,” says Erdmannsdoerfer. “They all are struggling because PET in some cases dropped from more than 20 cents a pound, to maybe five to nine cents a pound over two years. That’s a significant drop everybody is struggling with.”

While it may seem counterproductive, one approach would be to invest in automation, in facilities and production equipment that improves efficiency and the quality of the material, he says, adding that in this distressed market, one can only succeed by improving a plant’s efficiency and product quality.

“We all hope and assume the oil price will go up again and that it’s not going to remain at the low level, which definitely will help the recycling part of plastics because they need a higher oil price than what it is right now,” says Erdmannsdoerfer. “Otherwise, it’s very difficult for recycling material to compete on a price level.”

The American consumer needs to demand more recycled content, he says, adding, “I think it’s important for environmental reasons, political reasons, and industry reasons. Compared to Europe, we’re still far behind in plastics recycling in North America—we’re in the low 30%, versus some countries in Europe in the ’80s and China in the ’90s. I think there’s still a lot going into landfill.”

If plastics markets are slow and MRFs run on a business model, there is incentive to ramp up processing if there is no money to be made, Erdmannsdoerfer points out.

“If brand owners such as Nestle, Coca Cola, and PepsiCo don’t see that recycled content helps them sell, they have no incentive to buy the recycled material,” he adds. “The public needs to be educated in demanding recycled content, which then brand owners will increase the recycled content in their plastic bottles and plastic containers in general.”

Improving current equipment in a MRF can improve efficiency and recycle rates, Erdmannsdoerfer says. “Some old optical sorters have a 60 to 70% recovery efficiency, versus our latest models that work in the mid- to high 90s,” he says.

Parent notes that the majority of MRFs separate plastics to sell to recyclers for further processing, and given that cleaner material has higher value, there is a trend where more operations are looking further down the chain to provide washing and shredding prior to selling the material. “These processes can help ensure that the end user is receiving clean, non-contaminated material,” he says. “By bringing these processes in house, a MRF has the ability to make both the profit from their traditional activities of recovering plastics from MSW, baling and shipping it, plus the profit from processing this recovered plastic into flakes or pellets that can then be sold to be recycled into new products.”

Quality sorting continues to be a challenge, Darley points out. “There is a lot of pressure placed on the MRFs by the recyclers to provide better-sorted, higher-quality bales,” he says. “Incompatible plastics and foreign materials, such as metal that gets mixed in with the bale, can cause the re-processor major issues with their recycling process. With price margins being at all-time lows, even the slightest upset can cause a loss instead of a profit.”

Those who do take the extra steps of washing and shredding are finding profitable markets, says Parent.

Georges contends that the challenge with plastics recycling is in the MRFs themselves. “The MRF is trying to find a needle in the haystack,” he says. “Looking at the percentage of plastic coming into the MRF, we’ve definitely seen exponential growth over a decrease in paper and cardboard, factors that these MRFs were set up for originally.”

That calls for evaluating the optimal MRF size, Georges says, adding that he’s seen MRFs shut down. “We have to re-evaluate the whole MRF operation and say if the MRF is going after high commodity value items—the steel, the aluminum—rather than try to incorporate a complete sorting operation of organics, paper, cardboard, ferrous metals, non-ferrous metals, individual plastics—separate out the plastic stream from the other streams of higher value from the MRFs point of view and send the plastic to a Plastics Recovery Facility [PRF].”

Georges sees the growth of PRFs—a smaller footprint, higher specialized operation—especially on the East Coast getting good yields from bales produced by MRFs. “One of the big problems we’re seeing is what the MRF is really producing as a quality bale,” he adds. Some of the companies that utilizing AMUT equipment—such as Custom Polymers and Wellman Plastics Recycling—are deriving a 55% yield from a PET bale.

“That means there’s 45% non-PET going into that bale,” adds Georges. “That is a lot of waste that the MRF is not sorting out. Why are these MRFs giving yields of 55%? Because they’re running inefficiently.”

Georges adds that it is not necessarily to ship bales overseas, as there is a “huge market” in North America for them. “You just have to make a better quality bale, which will drive up the price,” he points out. “If I have an operation and I know my yield is only 55% or 65% on a good day, then why would I want to pay for garbage? I have to have the equipment now that the MRF should have to sort out that garbage, and then I have to recover the good material from the bad material. Those are all operating costs that the washing lines have to incur to make money.

“And then I either have to find a buyer, or dump excess waste. If I dump the waste, it’s another cost I have to incur. It’s the greatest hindrance to recycling right now in North America.”

There is a big demand among companies to have recycled content on their shelves, Georges points out. “These companies can get recycled material for a lot less money than virgin. So why would they not want to have the recycled content?”

Measures that can be taken to improve recycled content include solid-state post-condensation (SSP), a process that further condenses polyesters such as PET to increase their molecular weight and eliminate them from contaminations, says Georges.

Operations use AMUT's washing lines to make high-quality material used by such companies as Earthbound Farms, which uses 100% recycled material when making a new thermoform container.

In California, Global uses 100% post-consumer bottles to make new thermoform containers, notes Georges. "This trend is very productive," he adds. "Almost everything they can find is put back into new packaging in California. Same on the East Coast. There are pockets where recycling doesn't work because there's not enough material to be taken back. Where we do have that, we'll see that continued."

The future for plastic recovery has never been brighter, says Viny. "The equipment available today is more sophisticated and efficient than ever before," he says. "However, it does require a major redo for single-stream MRFs that are based on star screens and negative sorting techniques."

Today's conversion technologies have the ability to accept a wide variety of plastics for conversion into oils and chemicals, Viny points out. "This opens new opportunities, which can lead to more lofty recycling achievement," he says, adding that his company is currently working with such operations.

"Ultimately, cost-effective high diversion mixed waste processing systems coupled with conversion technologies can compete cost effectively in many markets with 'haul and bury'. The lines of intersection have simply never been closer. We are at a more dynamic time in the waste industry than ever before and I am extremely invigorated by the technical solutions that exist today."

The wastestream of the future will include more flexible plastics packaging, says Hottenstein. "The existing plastics that are being collected and recycled are here to stay," says Hottenstein. "Oil prices are going to go up and then obviously it will become a little more viable. We expect either different plastics or different types of packaging or more of those to come into the recycle stream and more equipment will be able to help extract those from the recycle stream and make them a valuable commodity from there."

"The future looks very green to me," says Georges. "We're seeing more environmental awareness in the marketplace and more individuals ask about the recycling bin and compost bin. Where does this material go to make recycling work? Where does this go to encourage more growth in this market? I see a huge development coming in this area."

The path forward will focus on young people, he says. "The more we can educate the youth to understand the whole point of recycling and environmental awareness, we're going to see greater things happen in North America to encourage recycling."

Case in point: Unifi selected AMUT Spa and Bulk Handling Systems (BHS) to provide the technology for a multimillion dollar expansion to increase its capacity to turn PET

bottles into recycled fibers for apparel and automotive products at its Reidsville, NC, facility. “It’s going to be one of the largest single lines for PET and recycling,” says Georges.

AMUT designed, constructed, and assembled a new PET washing plant, with the company’s dry de-labeling system removing shrink sleeve wraps from post-consumer bottles.

BHS designed, manufactured and installed a front-end PET purification system with nine optical sorters by National Recovery Technologies, with a system that includes screens and air-sorting technology.

Non-PET content is removed and PET is converted from bottles to flake, used to make polyester yarns and fibers.

Plastics are here to stay, notes Parent, adding that, “the properties of plastics and its uses in modern products and packaging are not easily replaced. As such, plastic recycling will always play an important role in the industry. Profitability may fluctuate based on oil and resin prices, but we don’t foresee a significant reduction in recycling activity.

“Environmental concerns alone will always ensure a place for plastic recycling and as new technologies emerge which are able to process plastics in a more efficient manner, it will be a thriving business into the future.”

MSW