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FOCUS: Waste

Exploring waste to energy trends

by MAURA KELLER

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Waste to Energy (WTE) means many things to many people. Incineration dominates the industry today, which classically means the “mass burn” of unprocessed, unsegregated municipal solid waste (MSW). Simply defined, waste to energy is the process of generating electricity and/or heat from municipal solid waste.

The most common form of WTE is combustion, but there are other ways to turn waste into usable energy, namely anaerobic digestion (AD) and capture of landfill gas (LFG). AD is a process by which organic materials, such as livestock manure, food scraps and municipal or industrial wastewater are broken down by microorganisms in the absence of oxygen to produce biogas. LFG is a form of biogas produced naturally in all landfills by decomposition of organic waste. LFG can be captured and used for productive purposes instead of being vented or flared.

In fact, electricity generated from MSW emits half as many pounds of CO2 per MWh as coal plants. AD and LFG facilities also recover energy from waste that would otherwise be buried in landfills, thereby reducing the methane emissions that would be released in decomposition.

According to Robert Keough, vice president, communications at Advanced Energy Economy, the most common form of WTE is mass-burn combustion, in which MSW is burned “as is” to produce steam that spins a turbine attached to an electric generator.

“There is a small amount of ash – typically 5 percent to 15 percent of the volume of the processed trash – left over as a byproduct that is sent to a landfill,” Keough said. “Some WTE facilities sort out as many recyclable materials as possible prior to combustion, whereas others recover metals post combustion.

There are other WTE technologies as well, including modular systems, which are essentially the same as mass-burn combustion, only smaller, and refuse derived fuel systems. These systems shred the MSW prior to burning and remove non-combustible materials.

“Gasification is an alternative to direct combustion that offers some benefits with respect to emissions and efficiency,” Keough said. “The technology is well developed, but not in widespread use.”

Today, most biogas is burned to generate electricity onsite, but it can also be purified and made into a pipeline-quality substitute for natural gas. In the U.S., anaerobic digestion is most commonly used at municipal wastewater treatment facilities but is also found on farms, at industrial sites (e.g., food and beverage processing plants), and other locations.

As Bruce Rittmann, environmental engineering professor at Arizona State Uni-



A look at the internal workings of one of Waste Management's many LFG projects.

PHOTO COURTESY OF WASTE MANAGEMENT INC.

versity, explained, the main WTE technologies are incineration with heat recovery and anaerobic digestion to make methane.

Quite simply, incineration is viable solid waste that has high organic content and low water content. This includes paper, cardboard, and plastic. While wet material becomes a net energy consumer to drive off the water, significant pollutant removal is needed for the off-gas.

Anaerobic digestion works for the solid waste that has high organic content and is wet. This includes garbage (food waste) and certain types of yard waste.

“The most convenient way to do this is to add the material (normally after grinding) into the anaerobic digester at a local wastewater treatment facility,” Rittman said. “This augments the usual methane production and offers valuable economy of scale. It is possible to digest solid waste on its own too.”

According to Ibrahim AlHusseini, founder and managing partner of the Full-Cycle Energy Fund, which funds companies with the goal of turning municipal solid waste into clean energy, some incinerators take their waste after recyclates have been harvested, often due to regulations or municipal contracts that require they do so.

“We work the next generation of WTE, systems which gasify the waste and remove the impurities from the waste stream while it is in gas form,” AlHusseini said. “Unlike incinerators, gasifiers aiming to produce a high quality of syngas require sorting and segregation of waste, providing a natural point from which to harvest recyclates. Our gasification systems do not require plastics be left in. We generally try to avoid disrupting existing recycling ecosystems or we can alternatively harvest the recyclates ourselves. Our systems aim to take the residual fraction that does not

get recycled and convert it to power, chemicals, or a clean substitute for natural gas.”

The term waste to energy generally refers to incinerators or gasifiers, as described above. Pyrolysis is also sometimes lumped into the category, but it generally addresses only plastics and has modest yields.

“It could be perceived as a direct competitor of recycling,” AlHusseini said. “Similarly, anaerobic digestion is also in theory a source of energy from waste. Like pyrolysis, it too is a component solution, best adapted to homogenous and wet organics such as food processing or agricultural by-products. It is not a good fit for MSW generally, as the impurities in MSW frequently kill off the organisms, which produce the methane. Finally, there is landfill gas, which is just anaerobic digestion in situ at a landfill.

Impact on the Industry

So do WTE facilities adversely affect recycling rates? “They need not and should not,” AlHusseini said. As AlHusseini explained, ultimately, each component of the waste stream should go to its highest and best use, and the next generation allows for the harvesting of recyclates from the stream so that only the residual, which does not have a higher and better use, goes to energy.

“We think of this as recycling as well, as the hydrogen, carbon and oxygen elements within the waste stream are recycled into something useful, even if they do not retain the molecular form in which they were thrown away,” AlHusseini said. “Even countries that are the most advanced in recycling still have a substantial unrecycled residual, so both are needed.”

Keough agreed. “There’s no reason to think recycling rates are affected by WTE, in and of itself,” he says. “Recycling rates are influenced mainly by ease of recycling as well as rules and incentives. More materials get recycled under single-stream recy-

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Working to curb recycling violations



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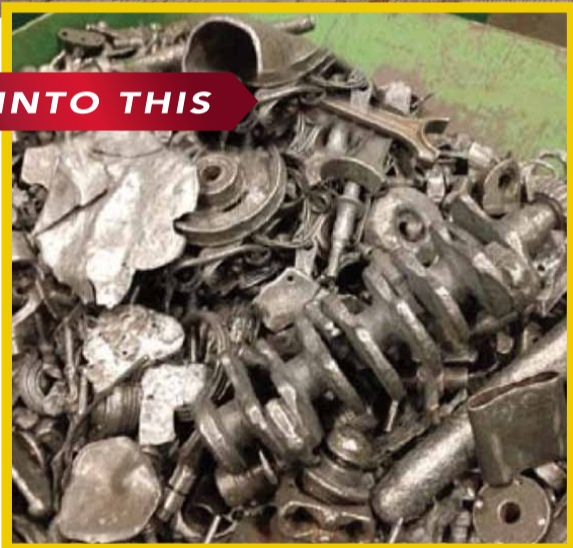
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Indy car to be sponsored by Bandit Industries

Mid-Michigan based Bandit Industries is returning to auto racing in grand fashion, sponsoring Rahal Letterman Lanigan (RLL) Racing's Spencer Pigot in the Verizon IndyCar Series for two racing events at Indianapolis Motor Speedway, including the 100th running of the Indianapolis 500. Bandit also sponsored Pigot for the Angie's List Grand Prix of Indy.

Spencer Pigot is a Florida native and the reigning Indy Lights champion. In 2014 he won the Pro Mazda championship with six wins, five poles and seven podium finishes as well as the Winterfest Championship. In 2015 he earned 6 wins, 4 poles and 10 podium finishes enroute to the Indy Lights Series title. Pigot completed his first Indy car race with RLL at the 2016 Grand Prix of St. Petersburg, finishing in 15th place overall. Bandit will be an associate sponsor for Pigot in the No. 16 car at both Indianapolis races.

Bandit's sponsorship brings a taste of racing glory back to Bandit customers and the company's mid-Michigan community. After several years of success as a sponsor in NASCAR, Bandit took a break from racing in 2015 but never lost sight of racing at Indy.

Bandit's previous steps into racing generated a strong fan base around the world, creating excitement for the tens of thousands of Bandit customers and bringing local pride to Bandit's supporters in Mt. Pleasant, Remus, Shepherd, Blanchard, Weidman, Lake Isabella, and the many surrounding communities.

Fast food companies move toward improved package recycling

Chipotle, Dunkin' Brands, and YUM! Brands have made new commitments toward packaging recycling and composting, leading the shareholder advocate group As You Sow to withdraw proposals filed at the companies.

"We are pleased to see positive momentum at large fast food brands," said Conrad MacKerron, senior vice president of As You Sow. "As packaging is recycled in greater volumes, its market value as a reusable raw material is more likely to increase."

Fast food brand Chipotle announced a 50 percent food and packaging waste diversion goal by 2020. YUM! will adopt a diversion goal later this year, and Dunkin' will report on the feasibility of a future recycling program for its coffee cups.

Chipotle's action is the most significant, and is similar to a 50 percent

diversion goal announced by McDonald's in 2014. Chipotle says half of food and packaging waste from its restaurants will be diverted from landfill through composting and recycling. It estimates 875 locations (nearly half) already offer front-of-house recycling options for at least one packaging item, and 138 locations are composting organics. The company also says 80 percent of its restaurants have back-of-house cardboard packaging.

As You Sow also agreed to withdraw a proposal from YUM!, the world's third largest fast food chain, which operates KFC, Taco Bell, and Pizza Hut, after the company stated its intent to issue a food and waste diversion goal later this year; the goal is expected to focus on cardboard packaging, used cooking oil recycling, and food donation.

Dunkin' agreed to report on the feasibility of developing a recycling policy for on-site food and beverage packaging. The report will discuss adopting recycling and recycled content goals for food service packaging.

In 2014, Dunkin' announced it would find a replacement for its foam coffee cups, which have been criticized as environmentally unfriendly, aiming for a transition by the end of 2015.

Dunkin' recently said it expects to replace foam with a recyclable polypropylene cup, but postponed its rollout, citing customer concerns about the lid on the new cup, made from high impact polystyrene, which is not accepted in many recycling programs. The company is looking for a better alternative lid.

DTE Energy continues appliance recycling program

DTE Energy electric customers can save money by participating in its Appliance Recycling Program. The program provides free pick-ups of old, working refrigerators and freezers, which are recycled at no cost. Customers receive a \$50 rebate for each appliance. By removing inefficient units, customers can start saving up to \$150 a year on energy bills.

"Since the program launched in 2009, over 181,000 refrigerators and freezers have been recycled, saving customers more than \$28 million on energy bills," said Knox Cameron, DTE's Appliance

Recycling Program manager. "The removal of these old, inefficient appliances is an easy way to save energy, help the environment and lower energy bills."

To qualify for DTE's Appliance Recycling Program, refrigerators and freezers must:

- Range from 10 to 32 cubic feet in capacity.
- Be at least 10 years old.
- Be operational and empty at the time of pick up.

DTE Energy will pay an additional \$20 each for old room air conditioners

or dehumidifiers, when picked-up at the same time as the refrigerators and freezers.

To administer the program, DTE has partnered with SEEL, Solutions for Energy Efficient Logistics, to handle program pick-ups; and Goodwill's Green Works (GGW) will recycle the inefficient appliances. Located in Detroit, GGW will support recycling of collected appliances, safely dismantling and recycling the appliances in an environmentally responsible manner and keep them out of landfills.



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Safe Driver of the Year Award presented to Mark Withrow of Cohen Recycling

Mark Withrow of Cohen Recycling in Middletown, Ohio was presented with the Institute of Scrap Recycling Industries (ISRI) Safe Driver of the Year Award for completing 33 verifiable years of safe driving without a single preventable accident. During his career, Withrow has had the distinction of being the company's senior driver who has embraced the opportunity to mentor the company's younger and ever expanding inexperienced driving force. The award, now in its fourth year, recognizes outstanding drivers who have driven a commercial vehicle for at least 20 years without incurring a preventable accident.

"Driving a truck in stop-and-go traffic and around all types of heavy equipment is no simple task. Drivers who perform their job each and every day

while keeping an emphasis on safety deserve the highest recognition," said Commodor Hall, transportation safety director for ISRI. "For more than thirty years, Mark Withrow has been transporting goods in a safe and reliable manner, while ensuring the drivers under him do the same. He truly exemplifies the truck drivers who keep America's roads safe."

The Safe Driver of the Year Award is based on the following mandatory criteria:

- Nominations may be submitted only by ISRI members in good standing.

- Nominees must be full-time employees whose primary responsibility is to operate a commercial motor vehicle.

- Nominees must be current employees of the nominating member company,

and must be employed for at least 1 year (12 consecutive months).

- Nominations must be made by someone familiar with the nominee's work history, such as manager, safety director, etc.

- Nominees must meet the minimum requirement of 10 years of verifiable employment as a commercial motor vehicle technician.

Other criteria taken into account are the driver's contribution to highway safety (driver trainer), letters of appreciation, deeds of heroism on or off the job, and civic and fraternal organizations.

The second-place winner was Dan Storms of LP Padnos in Holland, Michigan, and the third place went to Sean Elliott of Schnitzer Northeast, in Concord, New Hampshire.

Rechargeable batteries from old batteries

Energizer Holdings, Inc. introduced a first with its rechargeable AA and AAA batteries made with recycled batteries. Energizer Recharge® batteries are made with 4 percent recycled battery material, provide consumers with long-lasting power that can be recharged hundreds of times, and reduce the impact on the planet.

"Our scientists partnered with rechargeable suppliers to build on the knowledge and experience from Energizer EcoAdvanced and identified a process to use recycled content in our rechargeable batteries without sacrificing performance, an idea previously not thought possible by industry experts," said Michelle Atkinson, Energizer chief consumer officer.

Energizer scientists worked with exclusive partners to discover a way to recycle the used batteries from high-efficiency vehicles by refining the material through a proprietary process. The refined, high-performance active ingredient is then used to help power Energizer Recharge. In addition to being the world's first rechargeable batteries made with 4 percent recycled battery material, Energizer Recharge also creates a world's first use of recycled materials from hybrid vehicle batteries to make new AA and AAA batteries.

Energizer Recharge has less environmental impact by reducing the amount of batteries consumers need to use to power

their devices and by requiring less mining of virgin material in the manufacturing process.

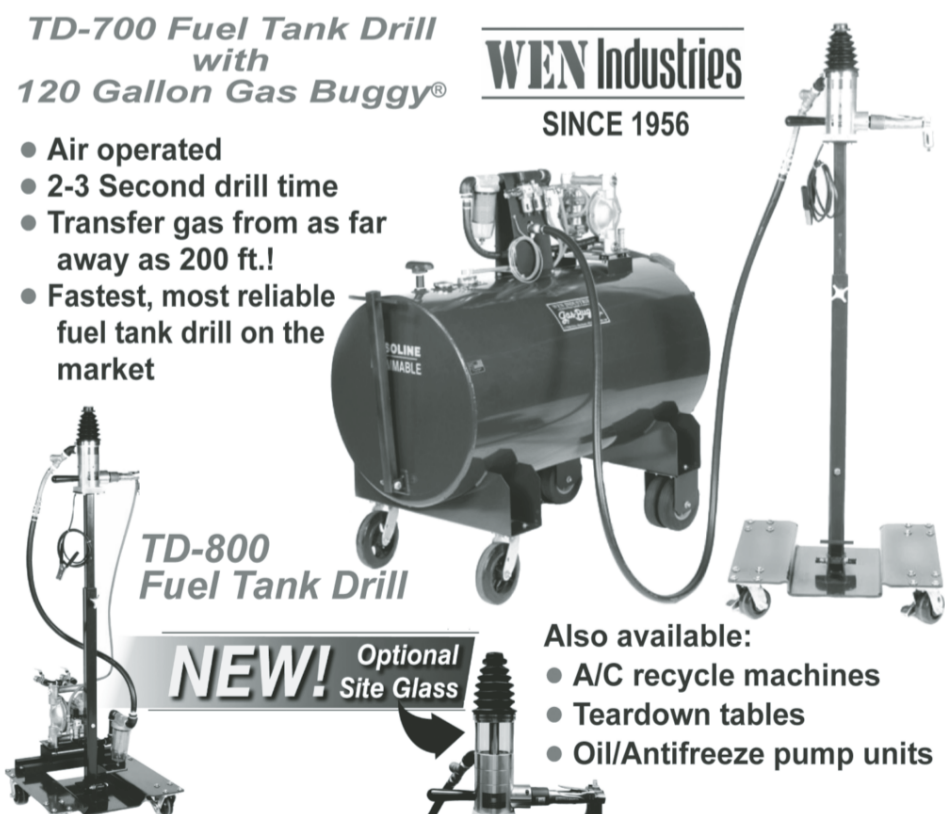
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Events Calendar

June 6th-9th

WasteExpo. Las Vegas Convention Center, Las Vegas, Nevada.
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June 20th-23rd

Air & Waste Management's (A&WMA) 109th Annual Conference & Exhibition. Hyatt Regency, New Orleans, Louisiana.
412-904-6003 • www.awma.org

August 15th-17th

Waste Conversion Tech Conference & Tradeshow. Hyatt Regency Mission Bay Spa and Marina, San Diego, California.
800-441-7949
www.wasteconversionconference.com

August 17th-19th

Agricultural Plastics Recycling Conference & Trade Show. Hyatt Regency Mission Bay Spa and Marina, San Diego, California.
800-441-7949 • www.agplasticconference.com

August 22nd-25th

WASTECON/SWANA. Indiana Convention Center, Indianapolis, Indiana.
800-467-9262 • www.swana.org

September 12th-14th

19th Annual Missouri Recycling Association Conference & Tradeshow (MORA). Sheraton Hotel, Westport Plaza, St. Louis, Missouri.
866-667-2777 • www.moraconference.org

September 19th-21st

26th Annual ARC Conference & Trade Show. Best Western Inn of the Ozarks Convention Center, Eureka Springs, Arizona.
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NewsVoice of Salvage, Waste and Recycling

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American Recycler is published 12 times per year, postage paid at Columbia, Missouri.

SUBSCRIPTIONS: Call our offices at 877-777-0043 or visit www.AmericanRecycler.com. US 1 year \$48; 2 years \$72.

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Energy trends

■Continued from Page 1

cling than if recyclables need to be sorted and separated, and even more under pay-as-you-throw collection programs, which incentivize recycling to the maximum extent. No matter what, there are non-recyclable residuals that need to be disposed of, whether deposited in landfills or converted to electricity by WTE.”

How Gasification Works

In the early days, mass burn incinerator plants earned a poor reputation for emissions.

Today, these types of plants now bring this into levels compliant with EPA or EU standards by way of huge investments in their backend cleaning systems.

Conventional gasification or staged combustion is not much different, since it too relies on contaminant removal from the exhaust.

When you remove its inert material impurities, municipal solid waste consists of pure energy: hydrogen, carbon, and oxygen. Gas cleaning systems are now available to enable the true potential of gasification.

“While there has been a lot of focus on gasification as the future of WTE, efforts to do so have been held back by the lack of an efficient means to clean the gas,” AlHusseini says. “This has limited most conventional gasification plants to merely burning their syngas, often in a different stage of the same vessel. The net result is not different from simple combustion and thus nothing close to gasification’s true potential.”

Unlike plasma, oil scrubbing systems are basically passive and consume little energy, scale easily, and work well under pressure. They are proven at scale over many years in the refinery industry and are capable of removing 99.9 percent of the problematic tars. This produces a pure gas suitable as a substitute for natural gas in combined cycle gas turbines, fully realizing the potential of WTE gasification for producing power.

As AlHusseini explained, alternatively, this gas is suitable as a substitute for natural gas in industrial processes or chemical production.

“This transforms the WTE focus from waste destruction to maximizing the useful energy, and it does so with an emphasis on clean emissions,” AlHusseini said. “While the best incinerator operators have invested heavily to clean up the exhaust streams of their plants, the exhaust is an expensive place to try and remove impurities. It’s also after the money making process, so in countries with more relaxed regulations, a less scrupulous operator of an incinerator conventional gasification plant actually makes more money if she or he does not install or maintain all of their exhaust clean-up equipment. In contrast, systems such as ours, which are based on purified syngas do not run—they lose money—if the impurities are not removed.”

Truly advanced gasification, which cleans the syngas to a stage that it can be used in an engine or turbine or for chemicals, has to remove the contaminants “before the money maker” or it will not make revenue.

These systems are very clean with an exhaust stream similar to natural gas,

except unlike natural gas, roughly 60 percent is biogenic. Only the portion based on plastics is of a fossil fuel nature.

“Moreover, unlike natural gas, diversion from the landfill keeps the MSW from emitting methane to the atmosphere,” AlHusseini says. “Some of this methane might be captured in a sanitary, well-constructed landfill, but some of which is always fugitive and considered 21x more harmful than CO₂ as a greenhouse gas.”

Advantages & Challenges

Traditional WTE produces heat and electricity while reducing waste. As of 2014, there were 84 WTE facilities in the United States. Located across 23 states, primarily in the Northeast, these facilities have a generating capacity of over 2.7 GW and process more than 30 million tons of municipal trash annually.

“Analysts estimate that WTE could replace nearly 5 percent of coal-fired generation capacity if all MSW were used for electricity generation,” Keough said.

Recent analysis estimates the total national economic impact of WTE to be \$5.6 billion with nearly 14,000 jobs created by the industry. WTE facilities also can play a strong role in local community economic development by providing high-paying jobs, enabling long-term savings in disposal fees, and injecting money into local economies.

“According to our ‘Advanced Energy Now 2016 Market Report,’ In 2015, U.S. revenue from installation of waste-to-energy, anaerobic digestion, and landfill

gas facilities totaled \$524 million, up from \$348 million in 2014,” Keough said.

“These effects are greatest in the developing world, where the baseline of existing sanitation is typically a very low standard,” AlHusseini said. “There are few disadvantages, as long as the incentives are aligned to keep the emissions of a plant clean. The technology we work with has such alignment and removes the impurities of the gasified waste stream before it is used.”

And while WTE is more expensive than open dumps, like those you find in many parts of the developing world, it is not inherently more expensive than new sanitary landfills of modern construction (e.g., compliant with the U.S. EPA).

“Once they become the new norm with the financial community and this is reflected in their cost of capital and plants’ scale, gasification-based WTE systems in the USA (or EU) should not require increases in tipping fees,” AlHusseini said.

Compared to a landfill, a WTE plant produces a valuable revenue stream from the sale of energy, in addition to providing a sanitary disposal of unrecycled waste. It creates more jobs and jobs of higher quality than a landfill, and it frees up land for higher and better uses.

“The advantages of WTE is that it allows us to gain the energy value of the organic material,” Rittman said. “And we reduce the amount of material for ultimate landfilling, while producing a soil amendment. The disadvantages include the capi-

tal cost required to start a WTE system and the ability to find a market for the energy products produced.”

On the Horizon

There is growing interest, at the state and municipal level, in source-separating organic food waste for composting and anaerobic digestion.

As Keough explained, a number of cities have begun voluntary or mandatory curbside compost collection, and Massachusetts has imposed a landfill ban on food waste, directed primarily at large wholesalers and retailers (i.e., supermarkets) and institutional food operations. Such policies will create market opportunities for developers and operators of anaerobic digestion facilities.

The next generation of WTE technologies have built demonstration plants and these have helped people focus on the technologies well-suited to delivering a cost-effective solution.

AlHusseini said the next step is building large-scale versions of this next generation and establishing it as the new norm.

“Waste haulers and recyclers have the opportunity to capitalize on this by helping to develop such plants after the reference plants are built,” AlHusseini said.

“Though providing electricity to the U.S. grid since the 1970s, WTE still has opportunities to expand,” Keough said. “With over 63 percent of waste still sent to landfills each year, MSW is an underused source of energy capable of producing baseload power to meet energy needs.”

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Freudenberg-NOK's facility uses aggressive recycling program

With landfill space at a premium throughout the world, a Freudenberg-NOK Sealing Technologies plant in Mexico is making an environmental difference every day by recycling nearly 100 percent of its industrial scrap and waste.

Freudenberg-NOK's Cuautla facility, in the state of Morelos, adopted an aggressive recycling program nine months ago in keeping with the company's overall push to embrace sustainability as a business objective. The plant had no recycling initiatives in place when it began development of the program and all of its trash was landfilled. Today the facility recycles approximately 17 tons – 99 percent of what it produces – in monthly trash.

The achievement represents a benchmark in recycling programs among the company's 21 industrial facilities in the Americas, said David Lawson, director of health, safety and the environment for Freudenberg-NOK. Where other recycling programs have addressed some plant waste streams, like packaging debris or paper and plastic trash, the Cuautla program is all encompassing and addresses every waste stream in the facility, from rubber and industrial scrap to paper, plastic, wood, metal, glass and even organic waste.

As part of the program, Cuautla has partnered with a vendor who uses its rubber scrap waste to produce mats and flooring for sports facilities. The rest of its waste stream – wood, metal, cardboard, glass and plastic – is also separated and sold, said Luis Medina, health safety and environment manager, Cuautla. Organic waste is composted on site and used to fertilize green areas around the plant.

The plant was awarded a "We All Take Care" award by Freudenberg-NOK for its achievement. The "We All Take Care" awards are a series of annual awards given by the company to its facilities and business groups who engage in projects that promote health management, safety, environmental protection, risk mitigation and corporate social responsibility.

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ALTERNATIVE ENERGY

The Caribbean's largest solar array goes live

Monte Plata, a 33.4 megawatt (MW) photovoltaic solar array located on the Dominican Republic was officially inaugurated.

The project is the largest in the Caribbean and was designed and deployed by Phanes Group, the international solar developer, asset manager and investment manager headquartered in Dubai together with its partners General Energy Solutions (GES) and Soventix. Monte Plata will deliver more than 50,000 megawatt hours (MWh) of clean energy to the country's grid annually.

Monte Plata's 132,000 solar panels triple the number of solar panels in the Dominican Republic. The project has created more than 300 direct jobs and 1,000 indirect jobs, with the majority being local jobs in Monte Plata. Once phase two of the project is complete by the end of 2016, the array's total capacity will rise to 67 MW, increasing the photovoltaic power output in the country fivefold.

"With much of the Caribbean challenged by expensive fuel imports, solar

has the ability to liberate these island nations from economic and energy dependency, increasing the energy security and reducing greenhouse gas emissions while helping elevate communities," said Martin Hapts, chief executive officer of Phanes Group.

Inadequate power supply has been a bottleneck for the Dominican Republic's economic development. Reliance on fuel imports drives prohibitively high electricity prices, and the government-led power subsidy programs total over \$1 billion annually in foregone income. High transmission and distribution losses in the country's aging grid system consistently exceed 30 percent. The nation has spent over \$4 billion annually on fossil fuel imports to run petroleum, coal, and natural gas-based power plants in the past few years.

The Monte Plata project represents the Dubai-based Phanes Group's first project completion in the Caribbean. The company expects to have an installed base of 500 MW of solar globally by 2018.



Florida's first CNG fueling station opens

TruStar Energy, a developer of compressed natural gas (CNG) fueling stations, has opened a company-owned public CNG fueling station at 5345 Dividend Drive, Fort Myers, Florida.

The 24/7 CNG fast-fill station is capable of fueling several hundred vehicles a day, delivering stable fuel cost and reduced transportation-related emissions for the Fort Myers area. This station also serves as a midpoint between Tampa and Fort Lauderdale for fleets travelling the I-75 corridor.

"Florida already has a high volume of CNG vehicles on the road today, and even with low diesel prices, we continue to see more fleets switching to CNG from diesel. CNG is cleaner, domestically produced and abundant, and resistant to price volatility," said Adam Comora, president of TruStar Energy. "Close to several major fleets, as well as a heavy traffic corridor, our new Fort Myers station will be a valuable and productive resource for businesses in the area."

Last year, TruStar Energy embarked on an accelerated strategy to open company-owned public CNG stations along high-traffic U.S. corridors.

Designed for future expansion and to provide easy access for commercial fleets, the new Fort Myers TruStar Energy CNG station has four traffic lanes and two dual-hose fast-fill fueling pumps. The station accepts commercial fuel cards such as Comdata or Fuelman, as well as all major credit cards.

The station currently includes two Ariel JGQ300—250 HP compressors, each generating 736 scfm of gas; one PBS dryer and two ANGI fast-fill dispensers.



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PAPER

AF&PA releases March 2016 paper reports

The American Forest & Paper Association released its March U.S. paper reports.

Containerboard

Containerboard production was 1.1 percent lower compared to March 2015. The month-over-month average daily production compared to February 2016 was 2.6 percent lower. The containerboard operating rate for March decreased to 94.4 percent and the year-to-date operating rate of 94.9 percent was 0.6 percentage points lower compared to the same period in 2015.

Kraft Paper

Total Kraft paper shipments were 147.6 thousand short tons, flat compared to March 2015. Bleached Kraft paper shipments decreased from 8.7 thousand short tons in February to 7.0 and unbleached Kraft paper increased from 131.1 to 140.6 thousand short tons.

Overall, shipments in the first three months of 2016 were 0.7 percent lower compared to the same period in 2015.

Total month-end inventories decreased to 70.3 thousand short tons.

Printing-Writing Paper Report

According to the report, total printing-writing paper shipments decreased 4 percent in March compared to March 2015. Total printing-writing paper inventory decreased 2 percent from February levels.

•Uncoated free sheet (UFS) paper shipments decreased for the first time in 2016, down 1 percent relative to shipments in March 2015. UFS imports were down 19 percent year-over-year in February.

•March coated free sheet (CFS) paper shipments decreased 8 percent compared to March 2015. Imports of CFS papers increased 12 percent in February with exports up 2 percent year-over-year.

•Uncoated mechanical (UM) paper shipments decreased 8 percent when compared with March 2015. Imports of UM papers were down 2 percent in Feb-

ruary while exports of UM in February increased 56 percent compared to the previous year.

•Coated mechanical (CM) shipments in March decreased 4 percent when compared to March 2015. Imports of CM decreased 14 percent in February compared to February 2015.

Boxboard Report

Total boxboard production increased 1.8 percent when compared to March 2015 and increased 6.6 percent from February.

Unbleached Kraft Boxboard production increased over the same month as last year and increased compared to February.

Total Solid Bleached Boxboard & Liner production increased when compared to March 2015 and increased compared to February.

The production of Recycled Boxboard increased compared to March 2015 and increased when compared to February.

INTERNATIONAL

Canadians recycle over one million kilograms of batteries

Canada's national consumer battery stewardship organization, Call2Recycle Canada, Inc., has collected over one million kilograms of batteries from January to date. This milestone signals that the Call2Recycle program is on track to surpass its 2015 total collections of over 2.4 million kilograms.

Serving as the provincially-recognized program in British Columbia, Quebec, Manitoba, and having signed official agreements with New Brunswick and Prince Edward Island, Call2Recycle has seen collections increase in those provinces collectively by 20 percent over the same time period in 2015. Most notably, Canadian provinces of Quebec and British Columbia grew collections by 27 percent and 13 percent, respectively.

The increase in collections also can be attributed to Call2Recycle's campaigns this year to raise consumer awareness and make battery recycling as easy and convenient as possible.

The organization has continued to enhance its collection network with municipalities, retailers and local recycling partners, resulting in over 91 percent of the Canadian population having access to one of Call2Recycle's 8,000 public drop-off locations within 15 kilometers of their homes.

Pratt opens fourth 100 percent recycled paper mill

Pratt Industries officially opened its fourth, 100 percent recycled paper mill in Valparaiso, Indiana, with a luncheon attended by more than 300 guests including Indiana Governor Mike Pence.

The new mill, which will produce 500,000 tons of the industry's best recycled paper at capacity, will supply

their rapidly expanding midwest box-making operations.

"This is the most environmentally friendly and modern containerboard mill in the world," said company chairman Anthony Pratt. "We're proud that we are the only major paper company that produces only 100 percent

recycled paper and these days this is very important to our customers."

The mill created more than 100 new jobs, bringing the company total nationwide to 5,800.

The mill, located 50 miles southeast of Chicago, is on the same site as Pratt's corrugated box plant.

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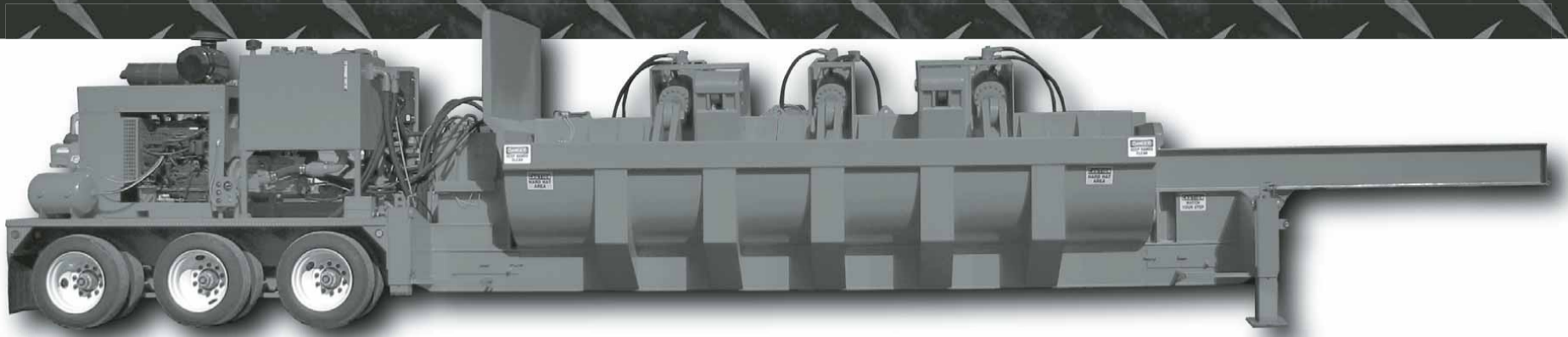
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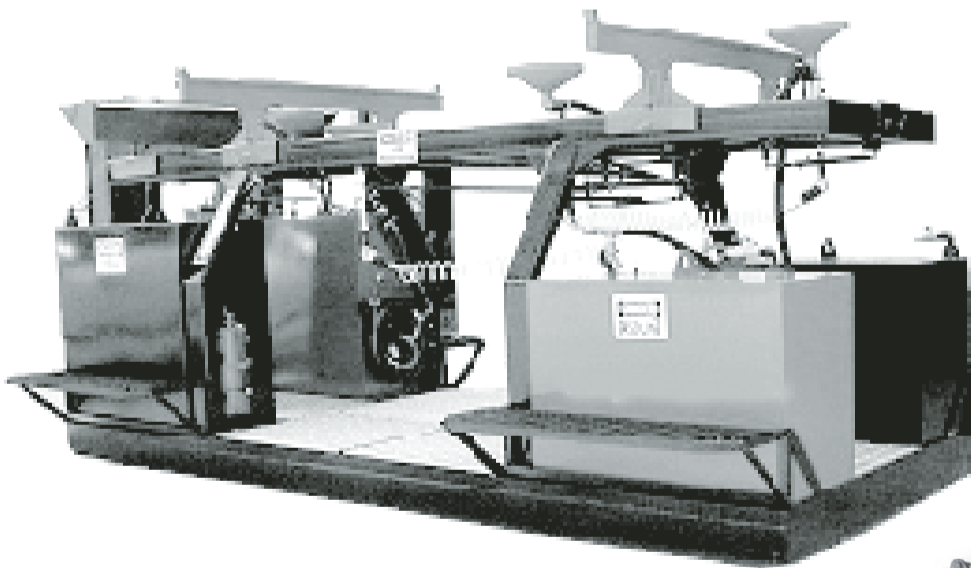
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INDUSTRY PROFILE

A Closer Look

by Donna Currie

CW Mill Equipment

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Tim Wenger, the vice president and sales manager of CW Mill Equipment, is part of the second generation of ownership of the company that's known for the Hogzilla name. Wenger's brother, Jim, is the president, and their father, Clyde, started the business.

When the company started about 50 years ago, it specialized in equipment for pelletizing alfalfa hay, and about 17 years ago, the company diversified by adding a wood grinder to the product lineup.

Customers prompted that new product – they started using the alfalfa pelletizers for wood, but they weren't perfect for the job. So the Wengers looked into what needed to be changed to make the machines ideal for wood.

Wenger came up with the name Hogzilla when a customer mentioned to him the machines were "monsters" and he thought of Godzilla combined with the word "hog" which was a slang name for the wood grinders.

Clyde wasn't particularly fond of the name, but no one could think of anything better, so the name stuck. Now, the name Hogzilla is associated with heavy-duty industrial wood grinders.

The only time Wenger has been away from the family company was when he took a year off to go to college. He had planned on staying in college, but returned to work when the company got very busy in 1977. He ran the shop while his father was "the outside sales guy." Later, Wenger took over the sales job. "I spend about half my time on the road," he said. He feels it's vital to talk to customers in person.

Wenger said, "I consider myself more of an engineer than a salesman." Rather than trying to sell an off-the-shelf machine, Wenger asks, "How can we fix a customer's problem?" He spends his time listening to what customers need and figuring out how to build a better grinder that will help those customers as well as future buyers. "I try to engineer with my ears as best I can," he said.

Years ago, the company sold its products through distributors, but now they've gone to a factory-direct model, "so there's one less mouth to feed." The downside to this arrangement, Wenger said, is that some customers want to trade in used machines when they buy a new one, but they would need to be refurbished. "We didn't recover our investment," Wenger said. "We just decided we're not going to get into that."

They still help customers by trying to find buyers for the old equipment. Wenger said that the hard part is finding a customer who wants the used machine at the same time a new machine will be delivered to the Hogzilla customer.

"Every deal is important to us," Wenger said, so they try to make all the buyers happy. Meanwhile, they build each machine one at a time, and engineer the machines to fit the customer's needs. "If the grinder can't sell itself," Wenger said, "I can't force them to buy."

Some customers are opting to buy machines with electric motors. Wenger said that the electric motors first became popular when diesel fuel was more expensive, but they've continued to be popular for customers who don't need to move the machines around.

Besides the fact that the electric machines don't need to be refueled, the maintenance is easier since there are no radiators or air filters.

Some customers are opting to convert their diesel machines to use the electric motors, particularly when they're in need of a rebuild. Not only does CW Mill sell new equipment, but they do rebuilds for customers. Sometimes they even work on competitor's products that their customers own. Right now, the business is about half sales of new equipment, and half repairs and conversions of older machines.

"Our customers feel we provide pretty good service," Wenger said. There are "service guys" who travel coast to coast to do repairs and upgrades, but maintenance on the machines is easy enough for customers to do the work themselves. CW Mill has parts that customers can order if customers prefer, or they can buy things like bearings from their local parts suppliers.

While most of their business is wood grinders, a few customers have used the machines to grind tires, and Wenger is working with them to build machines that are ideal for that application.

At one point, the company had about 70 employees, but that dropped to about 30 employees in 2007 when there was a downturn in the business. In 2008, the company started buying CNC machines to improve efficiency. "One door closed but it opened the door to do our own machining," Wenger said. Now, there are about 40 employees, including Wenger's two daughters and their husbands. "Bigger is not always better," he said.

Bigger grinders, however, is what Hogzilla is about. "You can have a pickup truck or a semi, depending on what you want to haul," Wenger said. "We make the semi-truck." Many customers say they want to wait until they have enough material to warrant a Hogzilla, but Wenger said that customers often tell him that buying the machine helped them increase their business and become more profitable.

"People look at our machines and say, 'You guys solved my problem,'" Wenger said. "We don't need to sell the most. We sell the best. We have some that have been working for 30 years."

PLASTICS

Unilever promotes equal treatment of all recyclables

When it comes to recycling, soda bottles and shampoo bottles are not treated equally: only 14 percent of Americans are recycling their bathroom bottles, while more than half of American households are recycling their kitchen items. That is why Unilever is reprising Rinse.Recycle.Reimagine, a campaign designed to rally Americans to reassess their recycling habits and treat their Unilever bathroom empties the same way as their kitchen counterparts.

The campaign will feature engaging, socially-driven content aimed at educating Americans on how empty bath and beauty bottles should be recycled equally as often as their kitchen counterparts. Using attention-grabbing imagery, Unilever bottles

will take a stand – and take up picket signs – to demand equality in recycling.

Unilever will also ask Americans to vote for what recycled plastics can become. To showcase the amazing things bath and beauty bottles can become when they are recycled, Unilever will create coats for kids, school supplies or playgrounds from recycled plastics in partnership with Keep America Beautiful. Nominate your reimagined recyclable on Twitter.

This marks the second year for the Unilever Rinse.Recycle.Reimagine program, which began as an extension of Unilever's national sponsorship of the "I Want To Be Recycled" public service campaign.

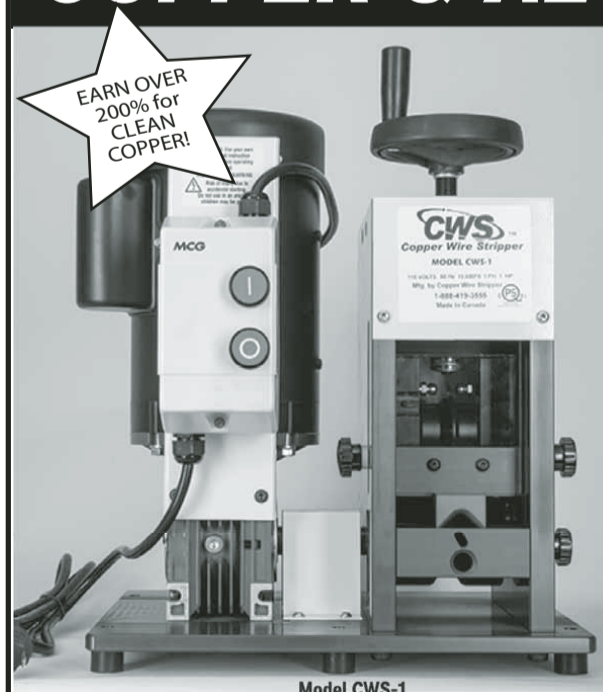
DaVinci Roofscapes recycled 800,000 pounds of polymer in 2015

DaVinci Roofscapes, a leader in synthetic slate and shake roofing tiles, disclosed that it almost tripled the amount of processed polymer it recycled in 2015 over the previous year.

DaVinci Roofscapes produces polymer slate and shake roofing tiles. Each time the manufacturing operation changes color runs, there is a transitioning between colors. Those transition tiles are off spec and are recycled. These tiles are segregated by color and then ground up and molded into starter shingles, which are generally unseen on the roof.

"Because every roofing tile we create is 100 percent recyclable, our operations are extremely environmentally-friendly," said Bryan Ward, vice president of operations. "In 2016 we'll take our commitment to recycling a step further by investing in a new grinding recycling system that handles purge (melted chunks of polymer that can weigh approximately 50 lbs.) as well as off spec product. With this new piece of equipment, we anticipate recycling more than a million pounds of polymer a year going forward."

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PLASTICS

Pacific Allied Products presented with recycling award

Pacific Allied Products, a plastics manufacturer located in Oahu, Hawaii, has been presented with the EPS Industry Alliance's 2016 Excellence in EPS Recycling Award. The award, created in 2013, is given to a company or organization that has proven their commitment to expanded polystyrene (EPS) recycling.

Pacific Allied Products is the only EPS manufacturer in the State of Hawaii, producing roofing and construction products as well as shape molded insulated containers for the aquaculture and recreational industries. Through their program, the Hawaiian Recycling Initiative, Pacific Allied Products has greatly increased the recycling production of EPS in their state over the past decade, now totaling 775,000 pounds of foam per year, currently gathered from 54 different companies. They have accomplished this by investing in an EPS densifier machine, while also reusing the EPS resin bead sacks to ship the then densified foam out of the state, where it is repurposed to make picture frames and other plastics products. For their efforts, Pacific Allied has been issued a permit by the State of Hawaii to become a certified approved recycling center for EPS foam.

"Manufacturing on an island in the middle of the Pacific presents its own unique challenges and we needed to

find a solution for the disposal of our foam waste that would be both cost-effective and environmentally friendly," said Pacific Allied Products president Bernie Coleman, "It's a win-win for everyone."

Other nominees for the award this year were celebrated for their contributions to the recycling community. They include the City of Airdrie in Alberta, Canada, who collected EPS by tractor trailer loads and demonstrated a method to bale the EPS for more economical transport; Buckeye Industries in Cleveland, Ohio, for providing vocational training to adults with developmental disabilities to assist in EPS recycling; the University of Wisconsin, Madison, for their program Boxable, which established a reuse and recycling system for EPS that has spread to the University of Illinois Urbana Champaign and the University of Washington in St. Louis; and Sedona Recycles in Sedona, Arizona, for diverting EPS from landfills through use of a densifier.

The Excellence in EPS Recycling Award recognizes the achievements of the companies and organizations that work towards advancing and improving EPS recycling through innovation and expansion.



RUBBER

Pennsylvania DEP cites illegal tire dump



The Department of Environmental Protection (DEP), partnering with the municipality of Penn Hills, has cited Monster and Mom and Bobo's Car Wash LLC, for illegally storing an estimated 50,000 waste tires.

Penn Hills Police discovered the tire dump, which is adjacent to a daycare center. The operators of the tire dump solicited the waste tires from throughout the area.

Penn Hills Police filed summary criminal charges against the owners of Monster and Mom in the Penn Hills District Justice's Office. After a hearing, the District Justice found Monster and Mom guilty and imposed a fine. In addition to the Penn Hills Police court action, DEP issued an order requiring the immediate cleanup of the site and the proper recycling or disposal of the tires. An investigation into other incidents of illegal tire dumping at the site is continuing.

Pennsylvania regulations require an operator of a waste aggregation and storage facility to first obtain a permit from the Department. A review of DEP records showed that Monster and Mom

does not have a permit to store, collect, process or dispose of waste. Monster and Mom has a Waste Tire Hauler Authorization which authorizes only the transportation of waste tires from a source to a permitted recycling or disposal facility.

Recently, local environmental officials have noted an increase in the number of illegal tire dumps in Pittsburgh and the southwest region. These tires that should be recycled are dumped over hill sides. Unlicensed tire transporters and aggregators dump tires on vacant or private properties.

Waste tire sources, like gas stations and tire retailers, have the responsibility of consigning their tires to permitted haulers and disposal facilities. These waste tire generators also must keep records documenting the proper handling of all waste tires.

DEP regulations require that all tires should be sent for recycling or energy recovery.

For additional information, view this article on www.AmericanRecycler.com.

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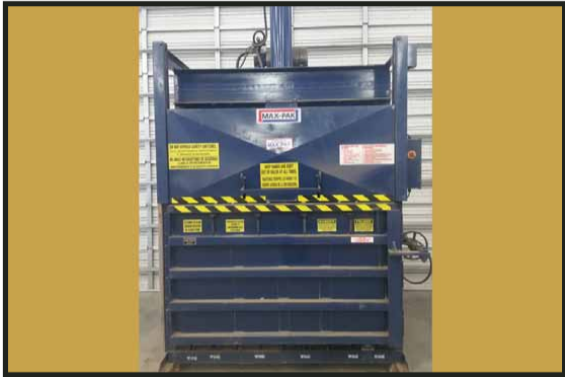
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METALS

Steel imports increase 13 percent in March

U.S. IMPORTS OF FINISHED STEEL MILL PRODUCTS BY COUNTRY OF ORIGIN (Thousands of Net Tons)

	MAR 2016	FEB 2016	2016 Annualized	2015 Full Year	% Change 2016 Annual vs. 2015
SOUTH KOREA	278	376	3,586	4,854	-26.1%
TURKEY	276	208	2,915	2,823	3.3%
JAPAN	148	114	1,805	2,259	-20.1%
BRAZIL	72	59	1,140	1,437	-20.7%
GERMANY	72	81	1,095	1,515	-27.7%
CHINA	69	81	967	2,374	-59.3%
VIETNAM	50	77	757	222	240.8%
All Others	1,129	1,103	13,431	15,960	-15.8%
TOTAL	2,097	2,099	25,696	31,445	-18.3%

Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the U.S. imported a total of 2,569,000 net tons (NT) of steel in March 2016, including 2,097,000 NT of finished steel (up 12.9 percent and down 0.1 percent, respectively, vs. February final data). Year-to-date (YTD) through three months of 2016 total and finished steel imports are 7,493,000 and 6,424,000 net tons (NT), down 36 percent and 34 percent respectively, vs. the same period in 2015.

Key finished steel products with a significant import increase in March compared to February are reinforcing bars (up 35 percent), sheet and strip all other metallic coatings (up 24 percent),

cut lengths plates (up 21 percent) and wire drawn (up 11 percent).

In March, the largest volumes of finished steel imports from offshore were from South Korea (278,000 NT, down 26 percent from February Final), Turkey (276,000 NT, up 33 percent), Japan (148,000 NT, up 30 percent), Brazil (72,000 NT, up 23 percent) and Germany (72,000 NT, down 11 percent).

For three months of 2016, the largest offshore suppliers were South Korea (896,000 NT, down 52 percent), Turkey (729,000 NT, down 27 percent), Japan (451,000 NT, down 29 percent), Brazil (285,000 NT, down 27 percent) and Germany (274,000 NT, down 35 percent).

MPCA moves to shut down a Minneapolis shredder

The Minnesota Pollution Control Agency is taking legal steps to stop operations at Northern Metal Recycling. The unusual legal steps are underway because MPCA officials say Northern Metals provided misleading information in the process of getting its air quality permit in 2012, and as a result is polluting the air in north Minneapolis.

The facility, which operates a metal shredder at the site, is believed to be a primary source of particulate emissions that have repeatedly violated state air quality standards near the site since 2014, when the MPCA began operating air monitors near the facility.

In another legal step, the MPCA filed a motion for temporary injunction in Ramsey County District Court to immediately stop the activities at the site that are believed to be contributing to the violations. If the court grants the injunction, the company must cease shredding operations at the site.

"Based on our investigations and discussions with the company over the last year, we believe either the company did not truthfully disclose its emissions from this facility when it was last permitted, or that it has added or changed emission sources since the permit was issued without informing us, or both," said MPCA assistant commissioner David Thornton.

"Either of these conditions is a serious violation of state and federal air

quality laws and cause for permit revocation," Thornton said. "The revocation process takes some time to play out, so while that's underway we are also asking the court to enjoin Northern Metals from further operations. The violations of air quality standards that have been occurring in this area must be stopped."

"We use many strategies in our efforts to make permitted facilities comply with the environmental protections we're charged to enforce," Thornton said. "Moving to close a facility and revoke their permit is a very rare step for the MPCA."

Thornton said if the permit is revoked, the company would be free to reapply for another one but that a new permit would have to properly account for and control emissions.

The MPCA began monitoring air quality near Northern Metals after the permit was issued in 2012. The monitors began detecting elevated particulates almost immediately, at levels that have frequently exceeded state standards. Analysis of a year's worth of data the MPCA recently completed also found that levels of airborne heavy metals near the site are near or above health benchmarks.

Thornton said the MPCA has tried to negotiate with the company and has been in and out of court with them for more than a year, but the company has been uncooperative in addressing the problems.

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METALS

Steel import market share at 25 percent in April

Based on the Commerce Department's most recent Steel Import Monitoring and Analysis (SIMA) data, the American Iron and Steel Institute (AISI) reported that steel import permit applications for the month of April total 2,449,000 net tons (NT). This was a 20 percent decrease from the 3,057,000 permit tons recorded in March and a 5 percent decrease from the March preliminary imports total of 2,569,000 NT. Import permit tonnage for finished steel in April was 2,047,000, down 2 percent from the preliminary imports total of 2,097,000 in March. For the first four months of 2016 (including April SIMA and March preliminary), total and finished steel imports were 9,942,000 NT and 8,471,000 NT, down 35 percent and 33 percent, respectively, from the same period in 2015. The estimated finished steel import market share in April was 25 percent and is 25 percent year-to-date (YTD).

Finished steel imports with large increases in April permits vs. the March preliminary included hot rolled bars (up 40 percent), line pipe (up 30 percent), cold rolled sheets (up 21 percent), structural pipe and tube (up 17 percent) and standard pipe (up 13 percent).

In April, the largest finished steel import permit applications for offshore countries were for South Korea (317,000 NT, up 14 percent from March preliminary), Turkey (178,000 NT down 36 percent), Japan (138,000 NT, down 7 percent), Germany (89,000 NT, up 23 percent) and China (74,000 NT, up 7 percent). Through the first four months of 2016, the largest offshore suppliers were South Korea (1,214,000 NT, down 49 percent from the same period in 2015), Turkey (906,000 NT, down 26 percent) and Japan (589,000 NT, down 32 percent).

Ferriola of Nucor named 2016 AIST Steelmaker of the Year

John J. Ferriola, chairman, chief executive officer and president, Nucor Corp., will be named Steelmaker of the Year at AISTech 2016 – The Iron & Steel Technology Conference and Exposition, managed by the Association for Iron & Steel Technology (AIST). The Steelmaker of the Year Award is presented annually by AIST to recognize notable leaders for their impact on the steel industry.

Ferriola is being recognized for his leadership and strategic vision in growing Nucor Steel and maintaining its profitability in an economically challenging steel market. His contributions go beyond Nucor as a voice for the entire industry, articulating to policy-

makers the problem of unfair trade that is plaguing the U.S. market and advocating for the strengthening of U.S. trade laws and their enforcement.

Ferriola began serving as chairman of the board of directors for Nucor in January 2014 and as chief executive officer in January 2013. Previously, he served as president and chief operation officer from 2011 to 2013. Prior to this, he served as chief operating officer of steelmaking operations from 2007 to 2011. He served as an executive vice president of Nucor from 2002 to 2007 and was a vice president from 1996 to 2001, with extensive experience in prior years.

Interstate Batteries and Aqua Metals form partnership

Aqua Metals, Inc., which is commercializing a non-polluting electrochemical lead recycling technology called AquaRefining™, has signed a definitive agreement with Interstate Batteries. Interstate Batteries has the largest independent battery distribution system in North America and is the country's leading battery recycler.

Upon the closing of these agreements, Interstate Batteries has agreed to supply more than a million automotive and other lead-acid batteries as feedstock for Aqua Metals' AquaRefineries. This partnership will start with Aqua Metals' first AquaRefinery, which will be located in Nevada's Tahoe-Reno Industrial Complex and is set to open in July 2016. Interstate Batteries will also make a strategic investment of approximately \$10 million into Aqua Metals.

With a nationwide network of more than 200,000 dealers returning battery cores, Interstate Batteries recycled more than 24.9 million automotive batteries in 2015, which is more than it sells. In the automotive industry alone, Interstate Batteries sells more than 17 million automotive batteries annually in addition to powering everything including marine and heavy equipment, golf carts, lawn and garden care equipment, data center cloud infrastructure and security systems.

"Interstate Batteries seeks out innovation, pursues opportunities and invests in the technology we need to succeed not just

today, but also tomorrow," said Scott Miller, president and chief executive officer of Interstate Batteries. "Our focus is on the future of our industry and continued growth. Aqua Metals' breakthrough technology is a promising new way for recycling lead-acid batteries."

Aqua Metals' patent-pending AquaRefining process is an environmentally friendly electrochemical process for recycling lead-acid batteries. AquaRefining is a closed-loop, room temperature, water-based recycling method that is fundamentally non-polluting, yet able to yield nearly 100 percent lead recovery.

Interstate Batteries' \$10 million strategic investment into Aqua Metals will be in the form of common stock, a fixed-price note that converts into common stock, and two cash warrants to purchase common stock over the next three years.

Concurrent with all of these agreements with Interstate Batteries, Aqua Metals signed definitive agreements with various institutional and individual accredited investors to raise additional gross proceeds of approximately \$5.1 million in a private placement of common stock. National Securities Corporation, a wholly owned subsidiary of National Holdings, Inc., acted as sole placement agent for the additional \$5.1 million investment. The Liquid Venture Partners group at National Securities Corporation was primarily responsible for the sourcing and execution of that portion of the investment.




Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
#1 Bushelings	per gross ton	\$185.00	\$185.00	\$205.00	\$260.00	\$301.00
#1 Bundles	per gross ton	178.00	190.00	190.00	260.00	290.00
Plate and Structural	per gross ton	195.00	185.00	195.00	262.00	277.00
#1 & 2 Mixed Steel	per gross ton	190.00	190.00	205.00	245.00	252.00
Shredder Bundles (tin)	per gross ton	150.00	161.00	180.00	175.00	210.00
Crushed Auto Bodies	per gross ton	150.00	161.00	180.00	175.00	210.00
Steel Turnings	per gross ton	92.00	95.00	120.00	135.00	185.00
#1 Copper	per pound	1.95	1.94	1.95	1.91	1.98
#2 Copper	per pound	1.89	1.85	1.87	1.88	1.85
Aluminum Cans	per pound	.57	.56	.53	.59	.52
Auto Radiators	per pound	1.38	1.41	1.42	1.42	1.40
Aluminum Core Radiators	per pound	.56	.55	.54	.51	.50
Heater Cores	per pound	.97	.98	1.00	1.10	1.10
Stainless Steel	per pound	.44	.45	.43	.45	.47

All prices are expressed in USD. Printed as a reader service only.

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AUTOMOTIVE

Honda's green HR-V recognized

The 2016 Honda HR-V, the brand's stylish and versatile crossover vehicle, has been named 2016 Green SUV of the Year by Green Car Journal. The Green SUV of the Year award recognizes the all-new HR-V for its class-leading environmental performance – a top fuel economy rating of 35 mpg highway (2WD CVT) and additional designation as an ultra-low emissions vehicle.

“With its active styling, smart features, and fuel economy leadership, the

2016 Honda HR-V gives car buyers an entirely new option in the small SUV category,” said Ron Cogan, editor and publisher of Green Car Journal and CarsOfChange.com. “The HR-V brings true environmental performance to this fast-growing category, and drivers are taking notice, as are we here at Green Car Journal, making HR-V the perfect choice to take home 2016's ‘Green SUV of the Year’ honor.”

SALVAGING Millions

by Ron Sturgeon
Autosalvageconsultant.com

Tools for success – an ongoing series

Learn to delegate

The first article in this series listed more than 25 tactics to increase your business success, all of them based on my experience. I started with nothing and didn't go to college, so I know you can achieve maximum success, regardless of your education. Each, after the first, takes a closer look at one of the tactics.

Learn to delegate. You can't do it all. Yes, you can do the job of many of your employees better than they can, but that does not mean you should. Your employees trust you to run your business so that they get a check every Friday. You have plenty on your plate and can't let yourself be drawn away from the crucial tasks of setting the strategy and managing to ensure its execution.

Yes, it will take your employees longer to get some jobs done. Yes, they will not do the job in the same way or with the same care you would have. It is what it is.

You can't drive the forklift if you want to grow.

I recall in the first year of business, I was the go-to guy for anything Volkswagen because of my many years as a mechanic fixing VWs. My dismantler came in to my office to help him get a VW started. He came because I had gotten him in the habit of asking for help whenever he was stuck.

When he came in, I told him I couldn't work on the sales plan, the finance plan, and the new marketing plan if I helped him start engines. I told him to go figure it out. He understood that I had to work on the bigger issues that would make us grow.

I used this lesson many more times over the years. To grow, you simply must delegate. You will help your business and give your employees the chance to get better at their jobs.

Delegate, but do so selectively. Don't delegate important matters. Don't delegate so that you can slip away to play golf. Delegate so that you have the time to do what you must to grow your business.

Learn to tolerate mediocrity. Employees vary in quality and skills. If all of your employees had great skills and business acumen, they would all own their own businesses. Learn to deal with those who are, er, smarter than others and with those that, well, aren't so bright. After all, you need worker ants.

If you have 20 employees, you will have 5 great ones, and 5 good ones, and 10 worker ants that are great at what they do but are operating near capacity. You can't hold them all to the same standard.

I remember one of my competitors asked me how I could have 60 employees dismantling cars, when he couldn't hire 5 that were worth a crap. He wanted every employee to be as good as he was. I told him to look in the mirror, and review the way he hired, trained, managed and led his people.

Know the value of small increments of time. If you can invest two hours today to save 10 minutes per week for the rest of your career, do it! Even if it pains you, do it!

Don't underestimate the value of saving 20 seconds in a process you do hundreds of times per day. Twenty seconds saved 180 times per day is an extra hour. Look at the processes that are at the heart of your business and shave seconds from them.

Would you like to have an extra hour per week? Some folks won't take eight hours to put in a new system that will save them one hour per week for the rest of their lives. Be smart. Invest in new systems when they will save enough time to make them worthwhile.

Remember, only you can make BUSINESS GREAT!

This article was provided by autosalvageconsultant.com, which was formed in 2001 by recyclers for recyclers, to help them improve their businesses.

Hybrid and electric technologies compete with lower fuel prices

The Automotive Science Group released its 2016 Automotive Performance Index study findings, highlighting the stark differences in performance merits that differentiate conventional and alternatively powered cars and SUVs in 2016.

According to the study, hybrid vehicles, plug-in hybrid electric vehicles (PHEVs) and electric vehicles (EVs), by and large, outperform their conventional combustion counterparts from a life-cycle environmental performance view. While conventional gasoline powered vehicles outperform alternatively powered vehicles from an economic performance view.

When comparing all 815 model year 2016 cars in North America in a head to head life-cycle assessment, ASG's study did not find a single vehicle with a conventional combustion engine earning a place on ASG's Best 20 Environmental Performance List. The all electric Nissan LEAF topped the list with the smallest life-cycle carbon footprint of any 2016 car.

Topping the Best 20 Economic Performance list was the 2016 Nissan Versa, holding claim to the lowest cost of ownership, but the Versa also landed at #26 in terms of environmental performance, and with a 49 percent environmental performance deficit when compared to the #1 LEAF. Only one vehicle with an advanced hybrid configuration made the Economic Performance List – the Toyota Motor Corp's Toyota Prius c at #19.

When looking for the best balance of economic and environmental performance, ASG's Best 20 All-Around Performance List found alternatively powered vehicles holding five positions – #1 Nissan LEAF, #2 Ford Motor Company's Ford Focus Electric, #3 Toyota Prius c, #5 Toyota Prius Two Eco, and #14 General Motors Company's Chevrolet Volt. The highest ranking conventional car was the Chevrolet Spark coming in at #4, with an all-around performance score falling just 5 percent short of the #1 Nissan LEAF, which was named ASG's Best All-Around Performance car of 2016.

When comparing all 567 SUVs head to head, only five of the nine SUVs with hybrid and PHEV configurations made ASG's Best 20 Environmental Performance List (SUV). Topping the list was the 2016 Toyota RAV4 Hybrid, with the smallest life-cycle carbon footprint of any model year 2016 SUV.

The Fiat Chrysler Automobiles' 2016 Jeep Patriot held the lowest cost of ownership of all model year 2016 SUVs, topping ASG's Best 20 Economic Performance List (SUV) for the fifth consecutive year. The list was rounded out by all conventional powertrains, with no hybrid, PHEV's or diesel engines. The 2016 Mazda CX-3 topped the list and was named ASG's best all-around performance SUV of 2016.

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* — Testimonial — *

I received your publication by mail. I can confirm I have never seen it before in its hard copy version. I like the layout and it is very informative, in a league of its own in terms of quality information. No wonder it is the only recycling publication quoted on Lumistar's blog. I look forward to upcoming issues.



I have read issues of your publication in the past by accessing digital archives at one of two libraries I am a member of. Your website is also fantastic.

—Paul Angel, LUMISTAR CORPORATION

CONSTRUCTION & DEMOLITION

Elimination of irresponsibly sourced products sought

The U.S. Green Building Council (USGBC) disclosed the quarterly addenda to the LEED (Leadership in Energy and Environmental Design) green building rating system, which includes a new pilot Alternative Compliance Path (ACP) credit that is designed to further advance environmentally responsible forest management and help rid buildings of illegal wood by promoting the use of wood that is verified to be legal. The pilot ACP builds on the robust infrastructure that has been built around responsible wood sourcing and chain of custody to test an approach to prerequisite requirements, which could serve as a model for other building materials.

This new pilot ACP is applicable to both LEED 2009 and LEED v4 systems. While LEED has always rewarded leadership in materials specification, this new ACP seeks to leverage LEED's unparalleled market power by focusing attention on the significant need for more comprehensive and effective legality verification of building products. The pilot ACP is designed to address a critical piece of the supply chain and reward project teams who proactively verify that the wood they are using is legal.

"Healthy, vibrant forests are an essential piece of life as we know it," said Rick Fedrizzi, chief executive officer and founding chair, USGBC. "LEED has made tremendous strides by promot-

ing leadership on sourcing of forestry products. We want LEED to also be a significant driver for stopping illegal logging. As we have begun looking at approaches to incentivize responsible sourcing of all materials that go into our buildings – such as concrete, steel, copper and other materials – we recognize the need to address both the top – rewarding the best – as well as the bottom by eliminating unacceptable practices."

Over the last 15 years, the green building industry has invested a significant amount of resources related to responsible procurement of forest products, which have taken up the vast majority of the debate about raw materials sourcing.

"Today, it is possible to achieve the LEED wood credit and still have illegal wood in a LEED certified project," said Scot Horst, chief product officer, USGBC. "This is because LEED projects receive credit for a percentage of the wood on the project, rather than on all wood used. LEED is a global standard with a vision of market transformation. Addressing the illegal wood issue in LEED projects, especially in projects outside of the U.S., comes at a critical time both for the global issue of illegal logging and unfair forestry practices and also for LEED and its growing influence."

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BUSINESS BRIEFS

Stephen J. Girsky elected to U. S. Steel board

United States Steel Corporation disclosed that Stephen J. Girsky was elected to the company's board of directors. His term as a director became effective April 26, 2016.

Girsky is president of S.J. Girsky & Company, an independent advisory firm, where he advises senior corporate and board executives, labor leaders, OEM leaders, suppliers and dealers, and policy makers. He has been a member of the General Motors board of directors since 2009 and has served as a senior advisor to General Motors Company (GM) since 2014. Girsky is also a director at Valens Semiconductor Ltd., a provider of semiconductor products for the distribution of uncompressed high-definition multimedia content. His extensive career includes more than 25 years of experience in the automotive industry.

Girsky previously served as GM vice chairman from 2010 to 2014, during which time he oversaw global corporate strategy, new business development, global product planning and program management, global connected consumer/OnStar, and GM Ventures LLC and global research and development while also serving as chairman of the Adam Opel AG Supervisory Board. From 2011-2013, Girsky also held responsibility for GM's global purchasing and supply chain function.

Vitality shows in not only the ability to persist but the ability to start over.
—F. Scott Fitzgerald

Petersen Industries names Eagle Truck as new dealer

Petersen Industries, Inc., manufacturer of grapple trucks and bulky waste collection systems, is expanding their dealer network with the recent addition of Eagle Truck Equipment in Pennsylvania. Their territory will include all counties east and to the south of Williamsport down to Penn State, a total of 32 counties in the eastern half of the State of Pennsylvania.

Eagle Truck Equipment has been servicing the waste, recycling and material handling needs of Pennsylvania since it opened its doors back in 1980. Their knowledgeable sales staff have been in the industry for over 25 years. Eagle prides itself on its dedicated service department that handles everything from oil changes to wheelbase and frame alterations, as well as paint needs in their 11,000 sq.ft. heated paint booth.

Advanced Disposal acquires Arwood accounts

Advanced Disposal, an integrated environmental services company, has completed the acquisition of certain accounts of Arwood Waste, Inc., based in Florida, which serves the five county area in addition to Glynn and Camden counties in Georgia.

The acquisition includes roll-off collection accounts and will be operated out of the Jacksonville commercial facility. Arwood Waste will continue to operate their temporary roll-off, demolition and nationwide waste brokering businesses under their existing brand name.

Recycle Track Systems adds to leadership team

Recycle Track Systems (RTS), a waste and recycling technology company headquartered in New York City, has hired Amy Marpman as director of sustainability, and appointed Arthur Curcuru as a member of the board of directors.

Amy Marpman, RTS director of sustainability, brings nearly a decade of expertise in recycling and waste management services. Prior to RTS, Amy served as chief operating officer for Great Forest Inc., a company that developed sustainability solutions to clients nationwide, ranging from Fortune 500 businesses to educational institutions, hotels, retailers and property management companies. While there she managed the waste brokerage division, and also helped develop key services including comprehensive waste audits, waste metrics verification and recycling program standardization across portfolios. She has advised on commercial solid waste issues for New York City and is on Urban Green's monthly programs committee.

Curcuru is the current vice president – controller and chief accounting officer of Soucycle Inc. He previously worked as senior vice president – controller and chief accounting officer of Hudson Global, Inc., a multi-national public company professional staffing firms. Curcuru began his career working for over nine years at KPMG LLP, a big four public accounting firm servicing large multi-national public companies as well as start-up organizations.

Sellick Equipment breaks ground on new facility

On April, 20, 2016, Walter Sellick along with sons Howard Sellick – president, David Sellick – vice president, and grandson Colin Sellick – systems manager, held a ground breaking ceremony for a new multi-million dollar, 120,000 sq.ft. facility.

Sellick Equipment has been manufacturing rough terrain and truck mounted forklifts for over 47 years to a variety of industries including building supply yards, engineered wood products, automotive recycling, oil field services and mining and military applications. In recent years, a new generation of forklifts was introduced featuring enhanced ergonomics, environmentally-friendly diesel engines and increased lift capacities.

Bunting Magnetics promotes Davis to COO

Bunting Magnetics Co. disclosed that Jana Davis has been promoted to chief operating officer (COO), a new position within Bunting Magnetics.

Davis joined the company in 2011 as chief financial officer. As COO, Davis will be responsible for overseeing the day-to-day business operations – including manufacturing, distribution and engineering – of all four Bunting Magnetics divisions. Davis will continue to report to Bob Bunting, president and chief executive officer.

A search for a new chief financial officer has begun. Bunting's chief financial officer will manage division controllers and human resources.

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BUSINESS BRIEFS

Rinaldi named president of Tunnel Hill Partners

■ Tunnel Hill Partners, LLC, a waste-by-rail transfer service company, has named William F. Rinaldi its new president.

A successful businessman, philanthropist, and proud member of the North-eastern Pennsylvania community, Rinaldi has contributed a great deal to the area over the last two decades. As a developer of complex projects that create and improve the area's infrastructure, Rinaldi is also the co-founder of Hazleton Creek Properties, LLC, a beneficial reuse site dedicated to improving the quality of life for Hazleton Area residents.

Previously serving as the director of Strategic Planning & Development of Tunnel Hill Partners since its merger with Hazleton Creek Properties in 2013, Rinaldi continues to find innovative ways to cultivate business that benefit the community in which he lives and works.

In addition, Rinaldi also continues to serve as president of both the Northeastern Economic Development Company, since 2004 and Mark Construction Services, since 1999. He has over 20 years of experience in brownfield and economic redevelopment. His latest project, the Lackawanna Energy Center, is a 1500 megawatt energy plant located in Jessup, Pennsylvania which will bring an economic impact of over \$1.2 billion.

Moley Magnetics makes multiple changes

■ Moley Magnetics, Inc. implemented management changes including the promotion of Jeff Seavers to the position of national sales manager.

Seavers, Moley Magnetics Great Lakes territory manager for the past three and half years, has accepted the new role of national sales manager. Effective immediately, Seavers will manage all the aspects of sales for the outside sales group in the Attachments & Equipment Division. In addition to Seavers' management responsibilities, he will also handle Western Canada, Mexico and all US accounts west of the Mississippi.

In his place, Moley welcomed David Koch to their attachments and equipment division. Koch has over five years of national business development and sales experience in magnets, and a skill set that includes extensive product and sales training at customer and reseller levels.

As Moley's sales manager, he will be responsible for the Great Lakes territory which includes the states of Iowa, Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia and Wisconsin.

Moley Magnetics recently moved headquarters to a 52,000 sq.ft. machine shop, distribution facility and corporate offices in Lockport, New York.

A 9 year old boy had finished his summer vacation and gone back to school. Two days later his teacher phoned his mother to tell her that he was

misbehaving. "Wait a minute," she said. "I had Johnny with me for three months and I never called YOU once when he misbehaved!"

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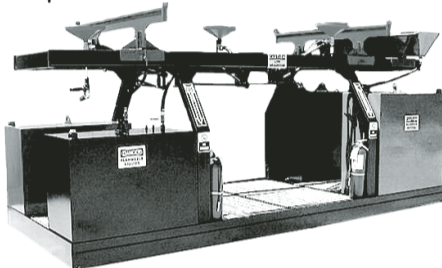
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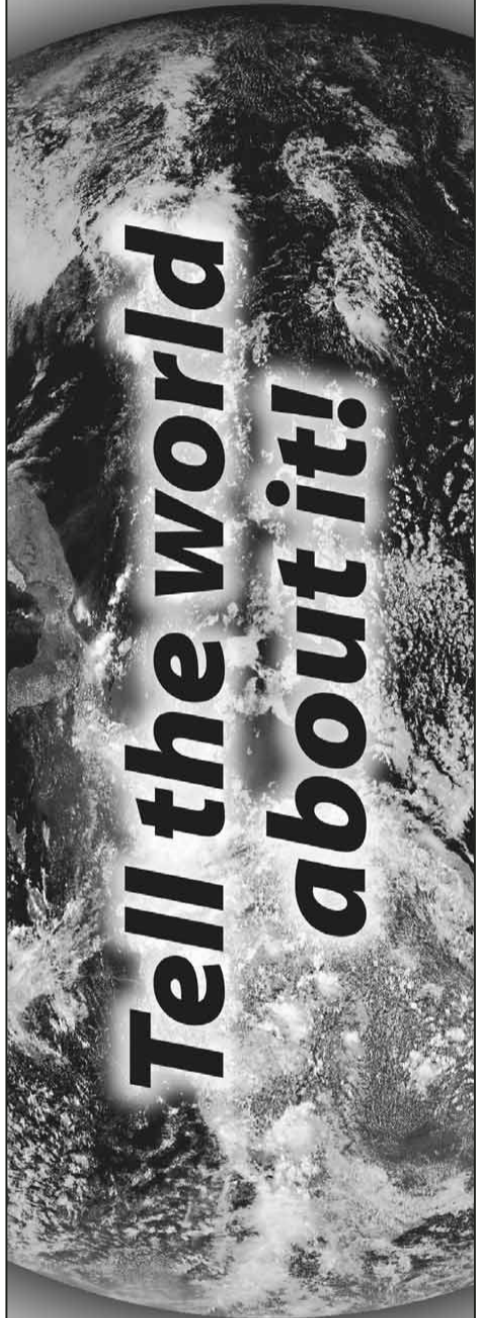
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Working to curb recycling violations

by MAURA KELLER

mkeller@americanrecycler.com

Take a walk in any neighborhood on “garbage day” and you’ll likely find a curbside recycling bin at every residence. What’s inside that bin may surprise you. While the majority of people properly dispose of recyclable materials, others place non-recyclables in the recycling bins, causing a slow-down in the processing and contaminating other recycled material. This is a “violation” and an issue that municipalities and haulers have been working on together for many years.

“When market expectations are high and the prices received for recovered materials are still relatively low, the concern about curbside recyclable contamination is very high,” said Sara Bixby, deputy executive director at the Solid Waste Association of North America (SWANA). “It is an ongoing challenge – teaching people to put the correct material in their recycle bins. When they don’t, it isn’t like speeding or running a red light, but it is indeed a violation.”

Don Ross, director of operations for Tampa, Florida-based Kessler Consulting, Inc., a company that works with municipalities on waste collection issues, said contamination is typically identified at the material recovery facility (MRF) where recyclables are sorted and prepared for the commodities markets. The material commodity buyers and end users of the material drive identification by processors. They set the contamination hurdles.

Usually, a contract exists between the processor (usually the private owner of a MRF that serves a region) and the local municipality. “It would be impossible to deliver a load to the MRF without some contamination. It is unacceptable to deliver a load with a lot of contamination,” said Anne Germain, director of the National Waste and Recycling Association. “Ideally, the contract would specify an acceptable contamination level. The procedure for identifying the contamination levels should also be stipulated in the contract. For instance, the parties might agree that on a quarterly basis, a specific number of random loads that must be sorted. The results of that sort might then be used as part of 12 month rolling average for the contract contamination rate. This is just one example of how the situation can be handled. To avoid difficulties, it is important such issues be considered before finalizing a multi-year contract.”

Dan Samoles, director of operations at the Loyaltree Group, a waste recycling and services provider in Forked River, New Jersey, claims that recycling contamination has been a problem since the programs began decades ago.

“The process is successful when we all work together in educating the public about what they can and cannot recycle,” Samoles said. Violations are typically identified by what is thrown out. “For example, if there is material that could be recycled found in a customer’s trash, that is a violation,” Samoles said. Depending on the collection system in use, route workers may notice contaminants in the recyclables at the curbside or when the trucks are unloaded at a transfer station or recycling facility. If possible, route workers leave the contaminant at the curbside as an immediate notification to the household. Bixby explained that often someone



The act of recycling isn’t as easy as it seems. The director of the National Waste and Recycling Association stated that it would be impossible to deliver a load with no contamination.

PHOTO BY IMAGEEGAMI | DREAMSTIME

– whether it’s the route workers or someone following up later – may return to a household to alert them.

Many of the haulers Loyaltree Group uses now have cameras on trucks to capture data on violators. “The cameras allow drivers to see what’s dumped into the trucks,” Samoles said. “If drivers see signs of contamination of trash or recycle bins, a warning can be issued at that time to a violator or later. A warning can even be issued if the contamination is seen at a later time, due to camera recorded evidence. We have personal information for each customer, and we can often even send an email to the address, to let them know of the violation.”

Partners in Progress

Are waste and recycling companies working with municipalities to monitor recycling infractions made by residents and companies? Many municipalities ask haulers and companies like Loyaltree Group to penalize residents and businesses that don’t follow the rules.

Here’s why: contamination can reduce the entire capacity of the MRF. If 25 tons of material is collected but half of it is not recyclables, you’re only handling 12.5 tons. “The sorting technology is not perfect,” Germain said. “It adds cost. The removal of contaminated material has a cost and it can affect the health and safety of the workers. Frontline workers that remove unacceptable materials have, for instance, been stuck by needles. Some materials can also harm process machinery. One plastic bag may be insignificant but hundreds of them can stop machines. Also, workers may need to climb up and cut out plastic bags.”

As Samoles explained, many cities are getting more serious in catching violators. For example, various communities in the Chicago and Boston areas promise to ticket residents who continually leave out improper material in their bins. “Philadelphia issues \$25 fines through the Streets

and Walkways Education and Enforcement Program to residents who mix recyclables with trash,” Samoles said. “In New York City, commercial businesses are threatened with fines if they don’t follow recycling rules and they must also pay if they don’t encourage tenants to do the same.”

Bixby said public education programs play a big role in addressing contamination. Recycling violations often occur because residents don’t understand what they can and can’t recycle. “Some haulers and municipal officials don’t realize the importance of educating their customers,” Bixby said. “Now, haulers, municipalities and participants on a national scale are more actively focused on the need for clear, consistent and recurring education.” As an example, SWANA partnered with EPA, Keep America Beautiful and NWRA to develop a “Top 10 in the Bin” message.

Ross stresses that a crackdown on recycling violations by municipalities and waste companies must be a transparent partnership. “Contamination must be identified at the source, or generator,” Ross said. “By the time materials reach the MRF, materials have been collected and aggregated together, making generator identification difficult. Haulers must assist with the identification process and communicate with municipalities in order to change generator behavior.”

Steps to Take

Another challenge involves the fact that contaminants in recyclables are often difficult or dangerous to remove. Broken glass is an abrasive and it isn’t easily color sorted and recovered. Some materials can clog sorting machines. “We’ve heard maintenance estimates as high as 15 to 20 minutes out of every couple hours,” Bixby said. “That is a significant drain on processing efficiency and costs.” When higher maintenance costs combine with low market prices, recycling companies inevitably begin to reevaluate which materials they

See VIOLATIONS, Page B2

BioHiTech Global expands waste stream product offering with launch of Entsorga North America

BioHiTech Global, Inc., a green technology company that produces innovative data-driven solutions for food waste disposal, has launched its new subsidiary, Entsorga North America that expands the company's value proposition to include organic and inorganic waste streams and provides enterprise solutions to the residential and municipal marketplaces.

The Entsorga North America venture will expand the company's product offering towards providing disruptive, clean technology solutions that advance the global movement towards sustainability and zero waste initiatives.

Entsorga North America will manage Apple Valley Waste Conversions LLC., an Entsorga North America part-owned subsidiary, the company that holds an exclusive license to deploy the proprietary Entsorga HEBioT Mechanical Biological Treatment (MBT) technology throughout the northeastern U.S.

The HEBioT MBT system converts food waste, plastics and other carbon based materials from the mixed municipal solid waste (MSW) stream into an EPA recognized alternative fuel source. The waste received at a facility is converted to a clean burning alternative fuel (Solid Recovered Fuel or

SRF), which will be used as an alternative or supplement to fossil fuels. SRF is ideal for co-processing plants such as cement kilns and steel mills, as well as coal fired power plants, as a source for the production of renewable energy.

The Entsorga MBT technology creates an Environmental Protection Agency (EPA)-recognized "engineered fuel." This means that facilities using this specific SRF, as an alternative fuel, will not be subject to the EPA incinerator rule (Commercial/Industrial Solid Waste Incinerator Rule) and that the SRF meets certain standards that other fuels cannot meet.

The Entsorga HEBioT technology is currently used throughout Europe as a cost effective and environmentally efficient means of municipal solid waste disposal. The first US deployment of the Entsorga technology is currently under construction in Martinsburg, West Virginia in a partnership with Apple Valley Waste Services, the region's leading provider of residential waste collection. The facility was financed with a \$25,000,000 tax-exempt bond issued by the West Virginia Economic Development Authority. The facility is expected to be operational in the spring of 2017.

Fairfax County launches public awareness campaign

SWANA, the Fairfax County Solid Waste Management Program, and key stakeholders in the safety and solid waste industry were on hand in Fairfax, Virginia for the launch of the county's Slow down to Get Around (SDTGA) awareness campaign.

Officials gathered to mark the launch of a public campaign throughout Fairfax County, Virginia, promoting awareness of Virginia's new SDTGA law. Ultimately, Slow Down to Get Around is meant to help ensure waste and recycling services workers go home safely from work every day.

SWANA Executive director David Biderman said, "With the new Slow Down to Get Around Law effective in Virginia and other states, I urge all drivers to think of waste and recycling trucks not as an obstacle to go around quickly, but as having someone's son, father, husband, or brother on or near it. We stop for school buses. We need to slow down around garbage trucks. Someone's life depends on it."

SWANA pledges to continue expanding communications regarding safety.

Violations

■Continued from Page B1

will accept. "Acceptable recyclables are local and program specific," Ross said. For example, although glass or certain plastics may be recyclable in one area, they may not be accepted in other areas or programs. A recycling symbol seen on an item does not insure the material is acceptable in every program. Transient residents may also bring recycling habits with them to new communities where programs may have a different list of acceptable materials. Many states have lists of materials they consider recyclable written into state law. Container glass, which is heavy, is an example of a material that has often been mandated as recyclable, but it may have a low market value.

"Municipalities are supposed to meet waste diversion and recycling goals that have historically been calculated based on the weight of material diverted or recovered," Bixby said. "If you consider those issues together, you get competing drivers. Do you reflect the current economic concern and stop collecting? Somebody's waste diversion rate is going to suffer and the public gets confused

because something they've been told to recycle for years is no longer accepted. Do you accept that the law requires the material be recycled? That may require a focus on adjusting contracts to better cover costs and on long-term education to improve the quality of recyclable glass, in a hope that the value increases again. Or do you start looking at changing the law to measure diversion differently?"

Bixby stresses that the level of concern about contamination in the recycling stream is going to bring all of the participants in recycling back to the table to discuss why we recycle and how materials contribute to that goal. "The answer of why we recycle may be changing. In the future, it may be less about reducing the weight of material in a landfill and more about reducing the generation of greenhouse gas," Bixby said. "The addition of a national food waste recovery goal definitely supports a greater emphasis on greenhouse gas." What's more, education and outreach is essential to communicating program details. Direct feedback to generators is critical to changing bad recycling habits and maximizing the recovery of clean, acceptable recyclables.

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Volunteers clear eight tons of litter

Tellico Village residents were among the more than 350 East Tennesseans who participated in a long tradition of keeping the shorelines of the Tellico Reservoir Watershed clean.

Each spring for the past 15 years, members of the Loudon County, Tennessee community have risen early on a March Saturday morning to pick up trash and debris from the shores of the lake.

The project is a partnership between those who live around Tellico Lake, led by the Watershed Association of Tellico Reservoir and Tennessee Valley Authority (TVA).

The cleanup is done prior to TVA raising water levels in order to reduce the amount of garbage introduced to the Tennessee River via the watershed.

SWANA: Surge of waste-related fatalities on America's roads unacceptable

The recent increase in fatal accidents involving garbage trucks is of great concern and is unacceptable, according to the Solid Waste Association of North America (SWANA). SWANA's safety tracking has identified 10 separate incidents in March 2016, in which someone in the United States has been killed in an accident involving a truck carrying garbage or recyclables.

SWANA executive director David Biderman said, "The recent surge of fatal accidents is unacceptable. Several waste collection workers have been killed, and other drivers, pedestrians and a bicyclist have also died in seven other tragic incidents."

SWANA has developed several free safety resources for public and private

sector waste employers and employees. These include a backing toolkit and the 5 To Stay Alive poster (both available in Spanish). In addition, nearly 100 companies and local governments have ordered more than 3,000 Slow Down to Get Around stickers from SWANA.

Biderman added, "We call on our peers and members to join our effort to get waste collection employees off the list of top 10 most dangerous occupations. This will be difficult to accomplish, as many of these fatal accidents are not the driver or helper's fault. We are working with several associations, companies, and local governments on safety-related educational projects, reflecting our view that safety is not proprietary, and that it will take leadership,

collaboration, and teamwork to make this industry safer."

SWANA pledges to continue to expand communications regarding safety, including at the chapter level through the Safety Ambassador Initiative. Many chapters will be conducting safety programs in the coming months. Two safety programs happened recently in Pennsylvania and Florida, where fatal accidents occurred in the past couple of months.

For a direct link to more information on SWANA's safety program, and what can be done to create a safer industry, view this article on www.AmericanRecycler.com.

Casella reports increased earnings for first quarter

Casella Waste Systems, Inc., a regional solid waste, recycling and resource management services company, reported its first quarter financial results for the three month period ended March 31, 2016.

For the quarter, revenues were \$125.4 million, up \$8.9 million, or 7.6 percent, from the same period in 2015, with revenue growth mainly driven by robust collection and disposal pricing and continued growth in solid waste and recycling volumes, partially offset by lower recycling commodity pricing, lower energy pricing and divestitures.

Adjusted EBITDA was \$19.3 million for the quarter, up \$4.8 million, or 33.1 percent, from the same period in 2015, with growth mainly driven by improved performance in the collection, disposal and recycling lines-of-business.

Operating income was \$2.0 million for the quarter, down \$1.1 million from the same period in 2015, whereas Adjusted Operating Income was \$2.0 million for the quarter, up \$3.8 million from the same period in 2015. The current quarter did not include any adjustments, while the same

period in 2015 included a \$4.9 million gain related to the dissolution of CARES and a reversal of excess costs related to the Maine Energy divestiture.

Net loss attributable to common stockholders was (\$7.6) million, or (\$0.19) per common share for the quarter, compared to a net loss attributable to common stockholders of (\$9.3) million, or (\$0.23) per common share for the same period in 2015. The current quarter included a less than \$0.1 million gain on debt extinguishment, while the same quarter last year included, in addition to the items identified above, a \$0.5 million loss on debt extinguishment related to refinancing of the company's Senior Credit Facility.

Net cash provided by operating activities was \$1.7 million in the quarter, up \$7.4 million from the same period in 2015. Free cash flow was (\$8.3) million in the quarter, as compared to (\$7.5) million for the same period in 2015.

As expected, given the seasonality of the company's business, free cash flow was negative in the first quarter, and it is projected that free cash flow will be positive for the remainder of our fiscal year.

Alpine Waste & Recycling named Best of Colorado

Alpine Waste & Recycling has been named the Best of Colorado in the waste and recycling industry for 2016, according to ColoradoBiz Magazine.

A recent online vote of the magazine's readers and other business leaders determined that Alpine Waste & Recycling offers the most satisfactory service to its clients. The announcement follows news at the end of 2015 that Alpine had become the first recycling company in Colorado to accept polystyrene foam, also known as Styrofoam™, in Alpine's single-stream recycling operations.

"Since our inception in 1999, we have proudly pursued the kinds of innovations in this industry that will most benefit our clients and the environment," said Alpine president John Griffith.

Some of the other innovations by Alpine Waste & Recycling over the years: First waste/recycling hauler in the state to use natural gas trucks; first to install natural gas fueling stations; first to offer clients an Automated Sustainability Report; first in the state to recycle gable top (milk and juice) boxes in the single-stream process; first to accept heavy rigid plastics; first to recycle campaign yard signs; and more.

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EQUIPMENT SPOTLIGHT

Compactors

by MARY M. COX

maryc@americanrecycler.com

Compactors are a commonly used piece of equipment in the waste industry, in a variety of settings and processes.

“Marathon Equipment Company is known throughout the world as a leading manufacturer of on-site waste and recycling systems. The Marathon Ram-Jet brand has been the industry standard for quality and innovation for more than 48 years and our line of products include: stationary, self-contained, auger, compaction, solar, apartment and high-rise compactors, pre-crushers, transfer systems, and carts and cart tipplers. Our products are purchased by retailers, hospitals, restaurants, manufacturers, municipalities, waste haulers, and transfer system operators,” explained James Robbins, director of engineering for stationary products.



Sebright Products, Inc.

He said that an increasing trend is the diversion of items such as organic/food waste from landfills and that Marathon's new ASC-215 self-contained auger compactor is useful for this application because it has a sealed feed chamber and no hydraulic housing cavity. Another trend involves maximizing efficiency in collecting and transporting waste or recyclable material such as old corrugated containers. Marathon's AST-220 auger compactor is used in this application, and can achieve 50 percent more payload per container full, which saves hauling costs and reduces GHG emissions.

“Our innovative AST-440 dual auger compactor is a great choice for bulky items that must be reduced for transportation and disposal or recycling. Items such as bulky wooden crates and pallets, old furniture, mattresses and other bulky items can be quickly reduced to a fraction of their original volume with the AST-440, which also renders the waste unattractive to potential scavengers. Industrial customers often choose a trainable cart system to deploy carts at waste generation points around their facility, and then tow these to a Marathon cart tipper, used for volume reduction and improved house-keeping. All products are backed by experienced sales and support personnel. They are available not only to make the purchasing process easy but also to

make sure that you remain satisfied with your equipment well into the future,” Robbins said.

Stationary compactors manufactured by Sebright Products range from a 1/3 cubic yard to 7 cubic yard chamber capacity. They are designed to meet the needs of every type of facility where waste or recyclables are generated. “Each unit is designed to offer the best long term value possible. Our reputation for innovation and long term value remains strong and all facets of design, manufacturing, installation and service are provided in our American facility,” noted Jean Bolt, sales support.

The compactor itself is separate from the compaction container. The container is removed and hauled to the landfill and emptied, and the compactor remains onsite. “These compactors are customized to fit your particular facility and application. They are available with security chutes, complete enclosures, open hoppers, walk-on and drive-on decks, and integrated hydraulic cart dumpers with capacities of up to 40,000 lbs. They can be integrated with scales, dust control systems, and more. The compactors are also available with gas, propane, or diesel motors and mounted on a heavy duty skid for use at multiple locations, whether for C&D waste, disaster clean up or large outdoor events,” stated Bolt.

The compactors are available with a variety of operating systems such as PLC operated, and relay circuit board (boost or auto-cycle). Sebright offers the most comprehensive warranty in the industry with a five year frame and ram structural guarantee. The firm also offers waste compaction solutions for high-rise apartment and hotel buildings, universities, nursing homes, hospitals, manufacturing facilities, department stores, municipalities, transfer stations, and more. Sebright has been manufacturing heavy duty compactors since 1984. Over 11,000 custom units have been produced with installations located worldwide in many fortune 500 companies.



SSI Compaction Systems

SSI Compaction Systems (dba SSI Shredding Systems Inc.) specializes in producing pre-load waste compactors and is a leader in providing size reduction technology. The company also produces a multitude of low speed, hi torque shredders used in various industries including waste, tires, plastics, fiber, electronic scrap and more.

“Our pre-load compactors are designed to compact waste within the bale chamber and then the machine ejects the compacted bale into a trailer or container for transport to the landfill. At our website, you can see how the system works, and an overview of the operations. These machines are at the top of the waste compactor food chain. They are proven as the cleanest, most efficient means of loading waste from transfer station operations while minimizing transportation costs,” said Dave Miller, sales engineer.

He said that SSI's larger models of pre-load compactors are designed for transfer station operations of 1,000 tons per day or more. “In most large

See COMPACTORS, Page B7

Manufacturer List

Automated Equipment

Keith Fossen

800-309-5431

www.autoequipllc.com

BACE (Baler & Compaction Equipment)

Drew Sigmund, Sr.

704-394-2230

www.bacecorp.com

Chutes International

Heidi Wood

800-882-4883

www.uschutes.com

Cram-A-Lot

Jason Lind

800-678-7320

www.cram-a-lot.com

Gradeall International

Stephen Murphy

44 28 8774 0484

www.gradeall.com

KenBay

Tim Meis

973-543-3200

www.kenbay.com

Komar

Mandy Howenstine

614-836-2366

www.komarindustries.com

Marathon Equipment Company

James Robbins

800-269-7237

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Nedland Industries

Dave Nedland

800-447-4925

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Continued on Page B7



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United Nations receives complaints about Republic Services' radioactive landfill

Formal complaint delivered to special U.N. rapporteur for human rights and the environment

Teamsters with the Solid Waste and Recycling Division, Saint Louis residents Dawn Chapman and Karen Nickel, founders of JustMoms STL and Center for Health Environment and Justice founder Lois Gibbs lodged a formal human rights complaint with the United Nations Rapporteur for Human Rights and the Environment.

The coalition has been corresponding with the U.N. Rapporteur regarding the effects of the ongoing West Lake Bridgeton landfill environmental crisis in Missouri, its impact on surrounding communities and the need for corporate accountability and government action.

An underground fire has been raging for five years at the West Lake complex, which contains thousands of tons of illegally dumped radioactive nuclear wastes in an unlined landfill. The sub-surface fire is moving closer to the nuclear waste and is releasing toxic chemicals that residents and workers can smell for miles. The landfill complex is owned by the second-largest landfill company in the U.S., Republic Services.

In December 2015, more than 18 witnesses testified to a jury composed of leading civic and religious figures in Saint Louis. Witnesses detailed their many health problems, including deaths

among family, friends and neighbors; asthma and other respiratory ailments; sharp drops in home values; and the inability to enjoy the outdoors and their homes.

Teamster members and other union workers from the warehouse sector and other businesses surrounding the landfill also testified at the tribunal.

"Workers and residents need real protection and respect, and Bill Gates and Republic Services need to step up to the plate and put real resources to resolving this untenable situation, instead of evading accountability," said Chuck Stiles, assistant director of the Teamsters Solid Waste and Recycling Division.

The other members of the delegation, including Karen Nickel and Dawn Chapman, who live in proximity to the landfill, pointed out how the radioactive material has been dumped illegally and left unmanaged for over 40 years, while the fire, which has been burning for five years, is expected to burn for many more, leaving families and neighbors trapped with no end in sight.

They are reaching out to the United Nations Human Rights Commission because they feel that their fundamental human rights to clean air, water and health are being violated, and fear they have no redress.

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Terry & Mary Mandel – Mega U-Pull, El Paso, Texas



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The F1000W wheeled and F1000T tracked pavers allow contractors to equip the units with either a center auger drive system or outboard auger drive system. The pavers can be equipped with Atlas Copco's new tunnel extension system for optimal productivity and minimal maintenance.

The center drive auger system features a 6" wide chain box and 17" diameter flights to ensure continuous, uniform material flow and minimize centerline segregation. Center drive is suitable in all paving applications and works best for areas where the width of the pavement is frequently changing.

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800-732-6762
www.atlascopco.us



BEST PROCESS SOLUTIONS OFFERS SHREDDER ISOLATION MOUNTS

Best Process Solutions offers a complete line of shredder isolation mounts for the auto shredding and recycling industries.

BPS shredder isolation mounts are designed to reduce vibration and shock from impact loading, which are the major causes of wear and fatigue. These heavy-duty units are located between the main shredder assembly and the concrete support foundation.

The units feature high impact side guards and heavy duty mechanical down stops. They do not require hydraulic dampening fluid and are virtually maintenance-free due to the elastomeric isolation element.

Best Process Solutions
1071 Industrial Parkway
Brunswick, OH 44212
330-220-1440
www.bpsvibes.com



FUCHS INTRODUCES NEW PURPOSE-BUILT CAB DESIGN

Beginning in Q4 2016, Fuchs material handlers will sport a sleek new purpose-built cab design that incorporates more glass surface area in the structure's front, top and sides to improve visibility.

The new cabin features joystick steering that delivers improved steering responsiveness and eliminates the steering wheel console to increase operator leg room. The dual joystick controls are designed specifically for material handling functions to advance operator efficiency. A main 7" multi-function touchscreen display provides intuitive handler operation, while a second display shows video captured by night vision cameras.

Fuchs
11001 Electron Drive
Louisville, KY 40299
502-267-2318
www.terex.com



INTERCOMP UPDATES WEIGH-IN-MOTION AXLE SCALE SYSTEMS

Intercomp has launched updates for their LS-WIM Weigh-in-Motion Axle Scale Systems. As a more efficient and cost effective alternative to older full size truck scales, American-made LS-WIM scale systems are now NTEP Certified making them Legal for Trade when weighing in static mode.

A key factor in designing the new LS20™ indicator was the LS-WIM scale's ability to weigh axle-by-axle dynamically (in-motion) and statically. Intercomp has also released a new purpose-built indicator, further solidifying LS-WIM scale systems as the preferred solution for a variety of truck traffic applications.

Intercomp Company
3839 County Road 116
Medina, MN 55340
763-476-2531
www.intercompcompany.com



PALADIN ATTACHMENTS LAUNCHES NEW BREAKER LINE

Paladin Attachments has launched a line of hydraulic breakers to its product offering.

The Strike Force™ Breaker line has a wide range of models and sizes. The small mounted breakers are ideal for jobs on mini excavators and skid steer loaders.

The robust structure with advanced noise reduction technology makes the mid range breakers the optimal solution for trenching and demolition.

The larger sizes of Strike Force breakers have the most efficient piston and cylinder design to transfer the highest shock wave into breaking objects.

Paladin Attachments
2900 North Zeeb Road
Dexter, MI 48130
800-456-7100
www.paladinattachments.com

NJ DEP to award community grants for litter cleanups

The Christie Administration is awarding a record \$23.7 million in Clean Communities grants to help municipalities and counties conduct litter cleanup efforts to help beautify New Jersey's communities and roadsides.

"Each New Jersey county is receiving Clean Communities money to help beautify their communities and protect natural resources," said Department of Environmental Protection (DEP) commissioner Bob Martin.

The DEP is awarding more than \$21.1 million to eligible municipalities, and an additional \$2.6 million to all 21 counties. Clean Communities grants to municipalities and counties in 2015 totaled \$20.8 million.

As established by law, the non-profit New Jersey Clean Communities Council oversees the reporting requirements for the program. Grants are funded by a legislated user-fee on manufacturers, wholesalers and distributors that produce litter-generating products. Disbursements to municipalities are based on the number of housing units and miles of municipally owned roadways within each municipality.

Municipalities receiving the largest grants are:

Newark, (Essex County) \$494,289; Jersey City, (Hudson County) \$456,609; Toms River (Ocean County)

\$257,441; Paterson (Passaic County) \$221,250; Hamilton Township (Mercer County) \$217,544; Edison Township (Middlesex County) \$204,693; Elizabeth City (Union) \$202,882; Woodbridge Township (Middlesex County) \$200,959; Brick Township (Ocean County) \$195,190; Middletown (Monmouth County) \$175,892; Cherry Hill (Camden County) \$173,431; Trenton (Mercer County) \$162,941; Clifton (Passaic County) \$158,574; Vineland (Cumberland County) \$152,185; Franklin Township (Somerset County); \$150,740; Berkeley Township (Ocean County) \$149,316; Camden (Camden County) \$145,152; and Gloucester Township (Camden County) \$143,342.

The counties receiving the largest grant awards are: Ocean, \$244,853, Cumberland, \$213,520, Burlington, \$199,728, Bergen, \$174,015 and Gloucester, \$160,944.

Activities funded by Clean Communities grants include cleanups of stormwater systems that can disperse trash into streams, rivers and bays; volunteer cleanups of public properties; adoption and enforcement of local anti-littering ordinances; beach cleanups; public information and education programs; and purchases of litter collection equipment.

20 percent of Nestlé Purina factories achieve zero waste to landfill status

Nestlé Purina shared that five of its factories in North America have achieved zero waste to landfill status. This important milestone marks Purina's first zero waste facilities in North America.

Reducing waste is a critical part of Purina's sustainability roadmap, which identifies how the Company can best add value for the environment and society to make the biggest positive influence. Work continues at other Purina facilities, including offices and distribution centers, across North America to meet the global commitment to achieve zero waste to landfill status by 2020, or sooner. Under Nestlé global standards, to achieve zero waste to landfill status a

facility's discarded materials are directed to destinations that specialize in recovering the ecological and/or economic value of the material.

Measures to reduce waste to landfill focus on three key areas: employee engagement; improving processes to minimize generation of waste at the source; and partnerships with credible vendors for composting, recycling, energy recovery, and other forms of beneficial use, in line with Nestlé's environmental sustainability guidelines and standards.

Purina's "war on waste" began in 2010, and since then the company has reduced waste to landfills in North America by over 21 percent.

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Clean Earth acquires Phoenix Soil in Connecticut

Clean Earth, Inc. has acquired privately owned Phoenix Soil, LLC located in Plainville, Connecticut. This acquisition will mark Clean Earth's 15th fixed based location in the U.S. This expansion into the New England market will provide Clean Earth the opportunity to geographically expand soil recycling throughout the Northeast with a strong presence in the New England markets.

Phoenix Soil, now a Clean Earth Company, is a state-of-the-art thermal treatment facility processing non-hazardous petroleum contaminated soils. Phoenix Soil has operated a low temperature thermal desorption manufacturing facility in Connecticut since

1993 and was the first treatment facility to obtain a Connecticut DEEP Beneficial Use Determination Permit allowing treated soil to be classified as clean fill throughout Connecticut.

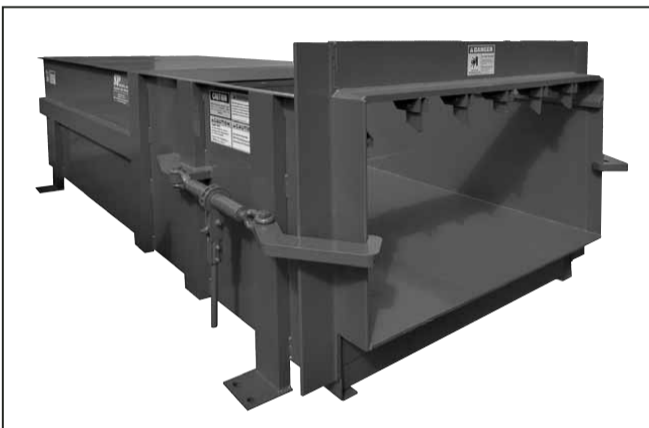
Clean Earth owns and operates 15 facilities throughout the northeast with treatment platforms that consist of bioremediation, chemical fixation of RCRA hazardous waste, aerosols and consumer commodities, thermal desorption, aggregate production, drill cuttings and pipeline cuttings, and stabilization of dredged material. In 2015, Clean Earth recycled approximately 3.5 million tons of soil derived from various construction sites throughout the East Coast.

Compactors ■Continued from Page B4

transfer stations, two or more of these machines are used to ship up to 5 to 6 trailer loads per hour each, moving up to 150 tons of waste per hour. These machines operate automatically or by radio controls located in the cab of the loading machine. These compactors are used in transfer stations because they maximize payloads and minimize transportation

costs. By building a bale of waste in the bale chamber, the trailers or containers used to transport the waste are made as light as possible since they do not have to resist the forces of other waste compactors compacting directly into the trailers or containers. These pre-load compactors are also set on scales, so they weigh the waste added to the compactor and build a bale to the exact weight allowed by the waste transport equipment. This process maximizes the payload for each trailer or container. As a result, these pre-load compactors can reduce operational costs and pay for the capital expense in a very short period of time and save transportation costs over the long term," Miller stated.

The machines are used in various areas of the world, especially when long distances are involved in transporting waste. "We have units operating in Canada, Hong Kong, Australia, Russia and the U.S. In the U.S., they are primarily used in western regions, where long distance trucking and rail haul are required for the distances between the transfer stations and the landfill. We've manufactured these compactors since 1990, and have adapted them to light scrap metal and mobile versions. Over the last few years, we have produced fifteen of these units for the waste industry on the west coast and recently added the 2000 series compactors to our product line," Miller noted. The 2000 series are specifically designed for compacting waste into purpose-built containers and soon, there will be a total of fifteen units operating in Hong Kong.



SP Industries, Inc.

SSI compactors are custom-built, self-contained, powered by electrically driven hydraulic power units and take up to four months to manufacture. Transportation from the factory to a transfer station is provided by specialized heavy equipment and systems typically require about two weeks for installation.

Manufacturer List Cont.

New Way
Phil Allen
712-652-3396
www.newwaytrucks.com

Ptr Baler
Eric Riethmiller
800-523-3654
www.ptrco.com

Sebright Products, Inc.
Jean Bolt
269-793-3420
www.sebrightproducts.com

SP Industries, Inc.
Adam Pool
800-592-5959
www.bestcompactors.com

SSI Compaction Systems
Dave Miller
503-682-3633
www.ssicompactors.com

Wastebuilt SW
Jerry Sampson
708-458-7800
www.wastebuilt.com

Progressive Waste Solutions reports revenue growth

Progressive Waste Solutions Ltd. reported its financial results for the three months ended March 31, 2016.

First quarter highlights

- Consolidated revenues of \$471.4 million, an increase of 6.0 percent assuming a foreign currency exchange rate consistent with the prior year period.

- Organic revenue growth of 6.6 percent, including price and volume growth of 1.6 percent and 4.5 percent, respectively.

- Adjusted EBITDA of \$112.3 million, an increase of 9.6 percent at constant currency. Adjusted EBITDA margin of 23.8 percent.

- Free cash flow of \$30.3 million, down 6.2 percent at constant currency.

- Adjusted net income per share of \$0.25, consistent with the same period last year.


"We delivered strong revenue growth in the first quarter on consolidated revenues of \$471.4 million, up 6.0 percent at constant currency, and we converted this revenue growth into adjusted EBITDA of \$112.3 million, up 9.6 percent at constant currency," said Dan Pio, chief executive officer. "Our organic revenue growth of 6.6 percent, or nearly \$33 million, was driven by unseasonably higher landfill volumes in our North and East regions due to the mild weather relative to the year-ago period, as well as a significant contribution from our natural gas plant at the Lachenaie landfill in Quebec. Revenues from the gas plant represented approximately \$9.3 million of our organic

growth, with the majority relating to increases in biofuel commodity pricing and approximately \$2.0 million that is not expected to recur. Our organic revenue improvement was also driven by higher prices across our collection service lines, most notably from our commercial service line which increased 2.9 percent period-over-period, and by higher consolidated volume growth of 4.5 percent."

Reported revenues increased \$11.2 million or 2.4 percent from \$460.2 million in the first quarter of 2015 to \$471.4 million in the first quarter of 2016. Expressed on a reportable basis, and assuming a foreign exchange rate of parity between the Canadian and U.S. dollar, revenues increased 6.2 percent. This increase was due in large part to a 1.6 percent increase in overall pricing, higher volumes of 4.5 percent and higher recycled commodity pricing, 1.5 percent, partially offset by lower fuel surcharges, (1.0 percent) and net divestitures, (0.4 percent).

Operating income was \$21.5 million in the first quarter of 2016 versus \$49.2 million in the first quarter of 2015. Net (loss) income was (\$2.0) million versus \$18.1 million in the first quarter of 2016 and 2015, respectively. The current period net loss includes approximately \$21.9 million of transaction related costs incurred as a result of a proposed merger with Waste Connections.

The company's board of directors declared a prorated quarterly dividend of \$0.11 Canadian per share payable to shareholders of record on May 16, 2016.



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