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NewsVoice of Salvage, Waste and Recycling

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FOCUS: Alt. Energy

Food scraps are turned into black gold



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Long reaching impact of waste-to-energy initiatives explored

by MAURA KELLER

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Waste-to-energy plays an important role in integrated waste management as a hygienic method of treating waste. Waste-to-energy can reduce the volume of waste by about 90 percent. Generating energy from waste, instead of sending it to landfill, avoids methane gas.

As Josh Prigge, founder and chief executive officer of sustainability consulting firm Sustridge, explained, waste-to-energy can be a great initiative for more sustainable energy creation and waste management if done correctly. For example, capturing methane released from landfills is one way to create energy from a very potent greenhouse gas (GHG) emission that would have otherwise gone to the atmosphere to contribute to more atmospheric GHG levels, increasing global warming and climate change.

“Another great waste-to-energy initiative is food waste to energy,” Prigge said. “By composting food waste in a controlled environment, there are technologies that can capture the methane from decomposing food waste and turn it into energy.”

One way to generate electricity is to burn solid waste. According to Mihri Ozkan, professor in the Department of Electrical and Computer Engineering at the University of California – Riverside, incinerated garbage – transforming chemical energy to thermal energy and into electrical energy – can also be a solution.

“Further, the methane gas from our decayed garbage can be used as fuel,” Ozkan said.

Currently, there are hundreds of plants doing just that worldwide including in the U.S. However, as Ozkan explained, one of the unsolved problems with this approach is the amount of toxic gases and air pollution released during burning of solid waste.

“From one plant hundreds of millions of pounds of carbon dioxide is released into the air in one year,” Ozkan said. “This could be a major respiratory health concern for people living nearby these facilities. Because of these side effects, 10 major U.S. cities are all moving towards zero waste goals including Minneapolis, Oakland, Seattle, Dallas and New York City.”

Prigge said burning our garbage may seem like a good idea because we eliminate the waste, but this does nothing to incentivize us to reduce our consumption and material use in the first place and it also does not support the



Building complex of a modern waste-to-energy facility in Oberhausen, Germany where a higher concentration of facilities is seen in space restricted countries.

PHOTO BY STEPHAN PIETZKO | DREAMSTIME

circular economy and recycling of materials. “While we are saving some material from ending up in the landfill, a waste audit report for the City and County of Honolulu states that roughly 40 percent of the material burned at Honolulu’s waste-to-energy plant, H-Power, still ends up in the landfill as residue and ash,” Prigge said.

On a Global Scale

As an overall trend, waste-to-energy is more common in areas where space is at a premium. That’s why we see a higher concentration of waste-to-energy facilities in Europe and New England.

“Where waste-to-energy lands on the sustainability scale is often debated,” said Kristin Kinder, product manager at ENGIE Insight, a sustainability and energy management company. “As of 2015, only 21 states considered waste-to-energy a renewable energy source and had operating facilities within their borders.”

More waste-to-energy efforts can be seen in Europe than the U.S. According to the Confederation of European Waste to Energy Plants, currently waste-to-energy plants in Europe can supply 18 million inhabitants with electricity and 15.2 million inhabitants with heat.

This is based on 90 million tons of remaining household and similar waste that was treated in 2015 in Europe. The total number of waste-to-energy plants in the 18 European countries is approximately 455. At the end of 2015, the U.S. had 71 waste-to-energy plants that generated electricity in 20 states.

The U.S. Environmental Protection Agency has a program called Energy Recovery from the Combustion of Municipal Solid Waste (MSW). This program facilitates energy recovery from waste using different processes, including combustion, pyrolysis, gasification, landfill gas recovery and anaerobic digestion.

Andrew G. Swapp, wind energy instructor at Mesalands Community College, still sees the U.S. as a leader overall but there are countries that are spearheads in certain technologies within the waste-to-energy sector.

“We have a few cities that are considered 100 percent renewable and a large part of that is utilizing waste to achieve that 100 percent – i.e., burning wood chips to produce electricity, gasification of garbage, including used tires to burn and create electricity,” Swapp said. “There strong opinions about the

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Recycle Track Systems honored

Recycle Track Systems (RTS) was recognized for creating a positive impact as a business based on an independent, comprehensive assessment administered by the nonprofit B Lab.

RTS is honored in the Best for the World Overall list, which includes businesses that earned scores in the top 10 percent of more than 2,400 certified B Corporations across all categories on the B Impact Assessment. The assessment measures a company's positive impact on its workers, community, customers and the environment. To certify as B Corporations, companies like RTS must complete the full assessment and have their answers verified by B Lab.

The full B Impact Assessment evaluates a company's environmental performance, employee relationships, diversity, involvement in the local community, the impact a company's product or service has on those it serves and more.

B Corporations set a gold standard for companies using business as a force for good. RTS made the list thanks to practices for their innovative approach for waste and recycling solutions, promoting sustainability, transparency, and economic efficiency.

The 226 Best for the World Overall honoree companies come from 92 different industries and 30 countries. B Lab simultaneously released separate lists recognizing top-performing B Corporations as Best For Environment, Best For Customers, Best For Governance, Best For Community and Best For Workers.

RePower South and the City of Montgomery bring recycling back to residents

Montgomery, Alabama plant poised to transform waste processing

RePower South (RPS) has reached an agreement with the City of Montgomery, Alabama to reopen the city's recycling facility to return recycling to Montgomery residents.

RPS will add a proprietary fuel manufacturing capability with new additions and features, positioning Montgomery as a national leader in community and environmental sustainability. RPS offers a cost-effective recycling and waste processing solution that expands recycling recovery across the entire waste stream and produces a low carbon, renewable fuel. RPS will fund the over \$7 million capital investment in the newly named City of Montgomery Recycling and Recovery Facility and create over 60 green jobs.

RPS corporate development director Scott Montgomery said that the

facility will feature new system upgrades as well as produce a low carbon, clean fuel from traditionally land-filled waste. "Our platform enables greater recycling recovery across the entire waste stream and creates a low-carbon, clean fuel to help reduce the consumption of coal, resulting in greater recycling, less landfilling and cleaner air at lower cost."

RPS development partners include Barnhill Contracting Company as general contractor, Bulk Handling Systems to refurbish and upgrade the waste processing system and Loesche Energy Systems to provide the fuel manufacturing system. RPS licenses the fuel technology (ReEngineered Feedstock™) from Accordant Energy. The facility is slated to begin operations in late 2018.

Kansas joins safety legislation move

Members from the Kansas chapter of the National Waste and Recycling Association (NWRA) joined Kansas Governor Jeff Coyler, M.D. for a ceremonial bill signing of Senate Bill 272. This legislation, commonly known as Slow Down to Get Around (SDTGA), is a priority for NWRA, which represents America's private waste and recycling

industry. The new law requires drivers to slow down and safely change lanes or be prepared to stop when approaching solid waste and recycling vehicles. Governor Coyler first signed the bill on May 8, 2018.

Safety is a top priority for NWRA member companies, for their drivers and employees.

Hasbro, Inc. launches toy recycling program

Hasbro, Inc. recently launched a new toy and game recycling pilot program with TerraCycle, a leader in product recycling. During the pilot program, consumers can collect and send their well-loved Hasbro toys and games to TerraCycle, who will recycle them into materials that can be used in the construction of play spaces, flower pots, park benches, and other innovative uses.

Though toys and games are technically recyclable, the high cost of recycling the mixed plastics contained in these products makes it impractical. The Hasbro Toy Recycling Pilot Program aims to overcome this obstacle and builds upon Hasbro's longstanding commitment to sustainability, a key focus area of which is reducing the environmental impacts of products and packaging. This program aligns with that initiative, diverting valuable plastic material from the non-recyclable waste stream.

Consumers in the contiguous U.S. can visit www.hasbrotoyrecycling.com to sign up. The pilot program is open to all Hasbro toys and games, including games, plastic and electronic toys, action figures, dolls, plush and more.

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



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Waste-to-energy ■Continued from Page 1

cleanliness of this type of energy but there is always a balance to strike. Bury or burn? The technology is so exact now that gasification is a very clean way to dispose of several different types of waste and turn that waste into a useful product and a profit.”

Swapp added that California seems to be the leader in these technologies but there are some branches of the armed forces that are stepping up and taking care of their waste streams by capturing the value that can be derived with current technology. “It is easy to look at a very small country and see that the majority of the country is recycling or doing more sustainable things than the whole of the U.S., but for our size we are doing great,” Swapp said.

Continuing Downstream

Kinder stressed that waste-to-energy is not a one-step solution and does not replace the need for strong recycling and compost programs.

“European countries that incinerate most of their trash also boast some of the highest diversion rates, many exceeding over 50 percent diversion for recyclables and compostables,” Kinder said.

In the short term, to provide more waste to burn is a tempting approach for the waste industry, however potential future impacts to human health for any

decided process needs to be considered for global integration.

“In the U.S., we waste over 250 million tons of resources every year. Only 33 million tons are burned, 136 million tons are buried under ground, and only 89 million tons are recycled or composted, which is also a major concern,” Ozkan said. “For waste-to-energy programs to be successful, a comprehensive approach is needed to remove the waste and create energy but without causing other issues that harm human health.”

The U.S. Department of Energy’s Bioenergy Technologies Office is interested in the area of converting waste-to-energy specifically in the following waste streams:

- Commercial, institutional and residential food wastes, particularly those currently disposed of in landfills.

- Biosolids, organic rich aqueous streams, and sludges from municipal wastewater-treatment processes.

- Manure slurries from concentrated livestock operations.

- Organic wastes from industrial operations, including but not limited to food and beverage manufacturing, biodiesel production, and integrated biorefineries, as well as potentially other industries such as pulp and paper, forest products and pharmaceuticals.

- Biogas derived from any of the above feedstock streams, including but not limited to landfill gas.

“This is certainly a promising area with positive intentions. It can also create more jobs for local regions,” Ozkan said. “I believe that pilot studies involving universities, the government and the waste industry would be an all-star approach to make this attempt thoroughly successful.”

Prigge stressed that we are living in a finite world, meaning our natural resources are limited. “We have a global population that the United Nations expects to reach 9.7 billion by 2050, and natural resources are being depleted every year,” Prigge said. “We must make sure we are managing our resources in a sustainable way and considering the lives of future generations.”

Experts agree that recycling teamed with energy production is a win-win proposition when coupled with proper engineering, education and mindset. “I believe that all municipalities should consider producing their own power and doing so by utilizing their waste with other renewable sources,” Swapp said. “If we can get to the point where education and motivation are met, this industry has nowhere to go but up.”



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Events Calendar

August 12th-14th

Tennessee Recycling Coalition’s 2018 Annual Conference. Franklin Cool Springs Marriott, Franklin, Tennessee.
423-854-5459
www.tennesseerecyclingcoalition.com

August 20th-23rd

SWANA’s WASTECON. Gaylord Opryland, Nashville, Tennessee.
888-744-1449 | www.swana.org

September 11th-13th

Missouri Recycling Association Conference. Stoney Creek Hotel and Conference Center, Independence, Missouri.
866-667-2777 | www.moraconference.org

October 17th-19th

Association of Energy Engineers 41st World Energy Engineering Congress 2018. Charlotte Convention Center, Charlotte, North Carolina.
770-447-5083 | www.energycongress.com

October 24th-25th

Canadian Waste & Recycling Expo. Enercare Centre, Toronto, Ontario, Canada.
416-263-3000 | www.messefrankfurt.ca

October 28th-30th

WV Educational Conference on Litter Control & Solid Waste Mngmt. Stonewall Resort, Roanoke, West Virginia.
304-573-5194 | www.awvswa.com

October 30th-31st

Northeast Recycling Council (NERC) Fall Conference. Sheraton Hartford South Hotel, Rocky Hill, Connecticut.
802-254-3636 | www.nerc.org

November 1st-3rd

Automotive Recyclers Association (ARA) Annual Convention and Expo. Walt Disney World Dolphin Resort, Lake Buena Vista, Florida.
571-208-0428 | www.araexpo.org

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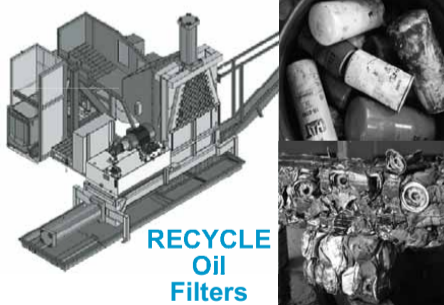


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New officers named for the Northeast Recycling Council

Kaley Laleker, Maryland Department of the Environment, has been named president of the board, having previously served as vice president of the Northeast Recycling Council.

Laleker is the deputy director of the Land and Materials Administration. The Land and Materials Administration includes the solid waste, resource management, oil control, lead poisoning prevention, mining, and land restoration programs. Laleker formerly worked in the resource management program, primarily on composting and other recycling issues, and in the director's office on regulations, legislation, and other issues affecting the Land Management Administration's work. She has a J.D. from the University of Virginia School of Law and has been with the department for five years.

New to the executive officers is Megan Pryor, Maine Department of Environmental Protection, who will serve as the vice president. Pryor is an environmental specialist with the Maine Department of Environmental Protection, where she oversees and administers the paint, mercury thermostat, and mercury lamp product stewardship programs. Pryor provides outreach, education, and technical assistance, working with municipalities and businesses to meet specific situational needs in waste reduction and recycling efforts.

Pryor is currently pursuing a Certificate of Graduate Study in Sustainable Development at the Muskie School of

Public Service. Pryor graduated summa cum laude from the University of Southern Maine with a BA in Environmental Planning and Policy.

Richard Watson, Delaware Solid Waste Authority will continue as the treasurer. Watson is the chief executive officer of the Delaware Solid Waste Authority (DSWA). He leads the organization which is responsible for managing all municipal solid waste, recycling, household hazardous waste, electronic waste and other special waste programs for the entire State of Delaware. He joined DSWA in 1981 as a project engineer for Delaware's first double lined sanitary landfill. Through the next 35 years he has overseen design, construction, and operation of solid waste projects, including landfills, transfer stations, landfill gas control systems, and various recycling projects.

Watson holds a B.S. Degree in Civil & Environmental Engineering from Clarkson University and a M.S. Degree in Civil Engineering from the University of Delaware. He has been a professional engineer in Delaware since 1983 and received his BCEE certification in 1996 from the American Academy of Environmental Engineers & Scientists. He has been a member of several professional organizations including SWANA, ISWA, AAEES, ASCE, NSPE, WEF and NERC. He has served as treasurer, vice president and president of NERC in the recent past.

New Hampshire towns and cities recognized for utilizing most NRRRA programs in 2017

The Northeast Resource Recovery Association (NRRRA) honored four New Hampshire municipalities: The City of Keene, The Towns of Rye, Walpole and Sunapee with the "Most Programs through NRRRA - 2017" Award at NRRRA's 37th Annual Conference and Expo.

NRRRA's grassroots beginnings were based on the premise of cooperative marketing and cooperative purchasing with communities working together to create increased tonnage of materials to gain market leverage, better pricing for their high-quality recyclables and low costs for their recycling needs. Thirty seven years later, NRRRA offers over 35 cooperative marketing and purchasing programs to its members.

This year's winners, Keene and Rye, each with 19 programs, and then Walpole and Sunapee, each with 17 programs, have marketed a total of nearly 13 million pounds or 6,357 tons of recyclables through NRRRA, that's the equivalent of 318 tractor trailers worth of recyclable materials that were removed from the waste stream!

"This award highlights the towns or organizations that are making the most of the NRRRA programs," said Michael Durfor, executive director, NRRRA. "We hope that this award inspires other towns and organizations to find new revenue opportunities for recyclable materials that may currently be going into a landfill."

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PLASTICS

APR develops sorting protocols for recycling

The Association of Plastic Recyclers (APR), an international trade organization representing the plastics recycling industry, initiated the Sortation Potential Protocols to address the issue of how packages and containers of all material types flow through a typical MRF.

"We continually get questions about whether or not a certain type of package is recyclable," commented Steve Alexander, president and chief executive officer of APR. "An integral step in determining recyclability is assessing whether or not the article can be sorted properly. If it cannot be successfully sorted, it won't make it to the recyclers, and will most likely end up in the landfill."

APR's definition of recyclable is based on three factors: access to recycling programs, successful sortation and the ability to be processed into a new material. Although these protocols assess the sorting potential of a package, additional components or features must be tested before they are considered recyclable.

Some packaging characteristics that may affect successful sortation through those steps include size, color, labels and metals. Another important topic that must be addressed is 2D and 3D packaging. The fourth test will assess how packaging that is flat or thin will flow through a typical MRF.

"A typical MRF includes size screens, NIR sortation, and magnets," explained Alexander. "These tests address each of those steps in the sortation process. We are currently developing another protocol to assess how compressed plastic items flow through a MRF. We hope to announce that test in October."

The development of the Sorting Potential Protocols is part of an ongoing effort to ensure The APR Design® Guide for Plastics Recyclability remains the most comprehensive resource outlining the plastics recycling industry's recommendations in the marketplace today. Beyond The APR Design Guide, APR offers a wide variety of resources including test methods, glossaries, references for color and labels, flow charts, and other supporting documents.

"Recycling is a complicated industry," commented Scott Saunders, board chair of APR and general manager of KW Plastics Recycling. "Unfortunately design innovations often affect recyclability, but more specifically, the ability for that package to be properly sorted at the MRF. These new protocols allow designers to make that determination early in the process, and more importantly, these protocols are material neutral. Because the sortation potential of any type of material can be assessed, the entire sortation and recycling industry can benefit from their utilization."

Program partners with MRF to pilot curbside recycling of flexible plastic packaging

The Materials Recovery for the Future (MRFF) research program has partnered with J.P. Mascaro & Sons Inc. to pilot single stream curbside recycling of flexible plastic packaging (FPP) at its TotalRecycle materials recovery facility in Berks County, Pennsylvania. This will be the first pilot to demonstrate the technical and economic feasibility of recycling household FPP from municipal residential single-stream recycling programs.

"We are all committed to the success of this program and look forward to adding recycled flexible packaging into the circular economy. As a side benefit, we expect to see the quality of J.P.'s other recycling streams improve as the flexible plastics are processed," said Steve Sikra, MRFF chairperson and associate director of global research and development for Procter & Gamble.

FPP – which includes films, wraps, bags and pouches – is not widely recycled today. As it becomes a larger part of the packaging waste stream, the need for scalable recycling collection strategies is critical to its sustainability. The pilot is expected to generate data to help inform municipalities and the recycling industry on the most efficient and economical ways to recycle FPP. This will turn used FPP materials, typically destined for disposal, into a bale that can be sold to a variety of end markets.

FPP is becoming a more commonly used form of packaging, thanks to its light weight properties and enhanced product performance and protection. According to Resource Recycling Systems (RRS) the recycling system consultancy which conducts the MRFF research program, 12

billion pounds of the material is introduced into the market for consumer use every year, and it is the fastest growing form of packaging. RRS estimates TotalRecycle will produce 3,100 tons per year of high quality post-consumer FPP feedstock for various end market uses that are being tested.

Van Dyk Recycling Solutions will add sophisticated sorting equipment to Mascaro's TotalRecycle facility that will target FPP out of the single stream flow. The FPP will be identified and separated by advanced optical sorters, resulting in a new generation bale of FPP.

The pilot program will begin in late 2018 with the installation of the sorting equipment. After an internal testing period, TotalRecycle will begin accepting FPP for recycling from the municipal residents it serves. From equipment order to acceptance of FPP in curbside carts, the pilot program is expected to last two years.

MRFF members include The Procter & Gamble Company, Target, The Dow Chemical Company, PepsiCo, Nestlé USA, Nestlé Purina PetCare, Amcor, and the American Chemistry Council. Other members include the Flexible Packaging Association, LyondellBasell Industries, The Plastics Industry Association, Sealed Air, SC Johnson, the Canadian Plastics Industry Association, and the Association of Plastic Recyclers. The research program is excited to announce Chevron Phillips Chemical Company as a new member.

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

Straws only upon request to reduce plastic pollution

California Bill AB 1884 (Calderon/Bloom), which calls upon dine-in, full service restaurants to only give customer straws upon request, passed the State Assembly by a 45 to 17 margin with 16 "not voting". The bill now goes to the State Senate.

This victory follows closely behind Environment California's campaign launch, "Wildlife Over Waste."

"Straws are one of the mostly unnecessary, single-use disposable items that are consistently found as litter in our streets, parks, waterways and ocean. Giving consumers a choice as to whether or not they would like a straw reduces

plastic pollution at its source, saves businesses money, and raises awareness about the growing plastic pollution crisis," said Genevieve Abedon of Ecoconsult, who represents the Clean Seas Lobbying Coalition, a group of eleven non-profit organizations dedicated to promoting plastic pollution solutions in the Capitol.

Already, many cities and counties have banned single-use plastic straws or only make them available upon request. For example, Santa Cruz County banned plastic straws, stir sticks and cutlery in 2017, and required all food service products to be recyclable or compostable.

A fellow went to the doctor who told him that he had a bad illness and only a year to live. He asked his doctor if there was anything he could do.

"What you should do is go and buy an old pickup truck," said the doctor. "Then marry the ugliest, nagging

woman you can find, and move to a run-down trailer park."

The fellow asked, "Will doing all that help me live longer?"

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Maryland governor signs safety legislation

Eighteenth state to make waste and recycling workers safer

Maryland Governor Larry Hogan signed SB 445, legislation that requires drivers to slow down and safely change lanes when approaching solid waste and recycling vehicles from behind. This legislation, commonly known as Slow Down to Get Around (SDTGA), is a priority for the National Waste and Recycling Association (NWRA), which represents America's private waste and recycling industry.

"Driving safely should be a top priority for anyone getting behind the wheel of a vehicle. We all want to safely get home to our families. This legislation carries an important message – take your time and slow down around garbage trucks," said Darrell Smith, president and chief executive officer of NWRA.

NWRA member companies have been diligent in providing advanced safety training for drivers and those who hop off the trucks to make collections. But, drivers who are distracted – or just going too fast – are a major hazard for waste collection workers. Over the past four years, NWRA member companies and its chapters nationwide have successfully championed "Slow Down to Get Around" legislation, which is now the law in 18 states and under consideration in several more. The late state Senator Wayne Norman (R-Harford County) was instrumental in the passage of SB 445. The law will take effect October 1, 2018.

NRRA: Glass is not trash

The Northeast Resource Recovery Association (NRRA) is notifying all New England municipalities that glass is an extremely valuable material.

Whether crushed to a 3/8s minus specification for reuse under roads, sidewalks, and parking lots, or melted and reused for other glass products, it most certainly is not trash and it can be recycled at a much lower cost per ton than either single stream recycling or trash disposal.

Glass is detrimental for both incinerators and single stream processing plants and its disposal as waste will only accelerate the loss of landfill capacity.

The recent international recycling market upheaval has put a tremendous strain on municipal recycling budgets and programs. NRRA recognizes that cities and towns are in a tough spot with no easy answers. They are facing rapidly rising recycling costs unheard of only a year ago, and NRRA stands ready to help them "recycle right."

NJ DEP provides \$19.4 million in grants

The New Jersey Department of Environmental Protection (DEP) is awarding \$19.4 million in annual Clean Communities Grants to assist municipalities and counties with litter cleanup activities and programs that beautify communities and enhance quality of life, Acting Commissioner Catherine R. McCabe announced.

The DEP is awarding more than \$17.2 million to eligible municipalities and nearly \$2.2 million to the state's 21 counties.

"Litter is not only unsightly, it poses a significant threat to our environment because much of it – including plastics that do not degrade readily – is carried by stormwater runoff into our ecologically sensitive waterways and wetlands," acting commissioner McCabe said. "Appropriately, some of the areas receiving the largest grants are our cities, where it is particularly important that we focus on litter removal efforts."

The nonprofit New Jersey Clean Communities oversees 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), \$401,583; Jersey City (Hudson County), \$371,385; Toms River (Ocean County), \$209,273; Paterson (Passaic County), \$179,928; Hamilton Township (Mercer County), \$177,004; Edison Township (Middlesex County), \$166,404; Elizabeth (Union County), \$164,999; Woodbridge Township (Middlesex County), \$163,272; Brick Township (Ocean County), \$158,713; Middletown (Monmouth County), \$143,055; Cherry Hill (Camden County), \$140,976; Trenton (Mercer County), \$132,574; Clifton (Passaic County), \$128,937; Vineland (Cumberland County), \$123,965; and Franklin Township (Somerset County), \$122,514.

Also, Berkeley Township (Ocean County), \$121,496; Vineland (Cumberland County), \$123,965; Camden (Camden County), \$118,240; Gloucester Township (Camden County), \$116,590;

Old Bridge (Middlesex County), \$112,124; Howell Township (Monmouth County), \$109,473; Jackson Township (Ocean County), \$106,770; Parsippany-Troy Hills (Morris County), \$103,698; East Orange (Essex County), \$103,014; Manchester Township, (Ocean County) \$102,474; and Wayne Township (Passaic County), \$100,119.

The counties receiving the largest grant awards are: Ocean, \$199,522; Cumberland, \$173,950; Burlington, \$162,643; Bergen \$141,754; and Gloucester, \$131,157.

Litter comes from a variety of sources, such as pedestrians, motorists, overflowing household garbage, construction sites and uncovered trucks.

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 such as receptacles, recycling bins, anti-litter signs and graffiti removal supplies.

King County transfer station wins award

The Solid Waste Association of North America (SWANA) has honored the King County, Washington Solid Waste Division with the SWANA Gold Excellence Award in the transfer station category for the new Factoria Recycling and Transfer Station.

The new station improves efficiency and decreases truck trips to and from the site. Their recycling and diversion efforts will keep 5,000 tons of waste out of landfills helping King County achieve its goal to be one of the most environmentally responsible counties in the nation.

The 70,000 sq.ft. station facility in Factoria offers a wide array of recycling services, such as a new household hazardous waste facility giving customers a place to dispose of these materials in an environmentally-responsible way – something McLaughlin said is growing increasingly important with recent changes in the recycling market in China that require collected recyclables to be clean, empty and dry.

The Factoria Recycling and Transfer Station is certified as LEED - Gold by the U.S. Green Building Council. The designation was earned for the facility's sustainable design, recycled content building materials, rainwater harvesting, efficient energy and water use, and more.

King County operates eight transfer stations, two drop-boxes, the Cedar Hills Regional Landfill, and many programs to help customers recycle.

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NY DEC releases report on pharmaceutical stewardship

The New York State Department of Environmental Conservation (DEC) commissioner Basil Seggos has released the agency's report on pharmaceutical stewardship developed in consultation with the New York State Department of Health (DOH). Report recommendations include establishing an independent pharmaceutical stewardship organization to provide oversight of a statewide program funded by pharmaceutical manufacturers rather than consumers or taxpayers. The report is the result of a comprehensive assessment of existing programs in New York and across the country, as well as meetings with key stakeholders about the proper management and disposal of unused, expired, and unwanted pharmaceuticals.

In the report, DEC, in consultation with DOH, recommends establishing an independent pharmaceutical stewardship organization to oversee a statewide program that is funded by pharmaceutical manufacturers rather than burdening consumers or pharmacies. In addition, the report recommends that all New York pharmacies be required to maintain a pharmaceutical waste collection receptacle and offer pre-paid mail back envelopes. Recommendations also include educa-

tion and outreach with information about accepted materials; safe disposal methods approved by DEC under federal regulations; and regular reports on the efficacy of the program provided by the proposed pharmaceutical stewardship organization.

Governor Andrew M. Cuomo directed DEC to undertake the report to ensure New York consumers and pharmacies would not be disproportionately burdened with the costs associated with take-back and disposal, as proposed in legislation passed by the State Assembly and Senate in 2017. DEC worked closely with DOH to develop the report, which includes an assessment of current programs across the country. Across the country, 18 counties, including Rockland County in New York, four cities, and three states have adopted pharmaceutical stewardship laws that establish take-back programs to help ensure consumers' unwanted, expired, and excess drugs are disposed of safely. Many of these stewardship programs are operated and financed differently.

In addition, in 2018, DEC met with stakeholders representing New York's local governments and municipalities, retailers, manufacturers, waste management industry represen-

tatives and environmental advocacy groups to discuss the proper management and disposition of unused, expired and unwanted pharmaceuticals.

During the course of its review of current programs and after meeting with stakeholders, DEC and DOH identified elements critical to a comprehensive pharmaceutical stewardship program: identification of entities required to participate and their respective roles; requirements for collection, disposal, and reporting; public education and outreach; funding and cost allocation; uniform statewide application; compliance, enforcement, and penalties; and an implementation schedule.

DOH currently operates the Medication Drop Box Program, which allows law enforcement agencies to operate an on-site drop box for pharmaceuticals. The box is available to members of the public, during hours of operation, who may drop off any unwanted pharmaceuticals. All costs associated with destruction of surrendered pharmaceuticals must be borne by the participating locations and a law enforcement officer must be involved in the transport and destruction. Currently, according to DOH, 41

counties have at least one drop box through DOH's program.

The report's recommendations complement DEC's current \$2 million pilot Pharmaceutical Take-Back Program. To date, the pilot program has distributed 87 collection boxes to participating retail pharmacies, hospitals, and long-term care facilities across the state. The pilot program to safely collect unused and expired waste medication was launched by DEC in December 2017, and a total of 246 facilities have agreed to participate.

The pilot is funded with \$2 million from the state's Environmental Protection Fund, which covers the full cost of purchasing U.S. Drug Enforcement Administration compliant medication drop boxes, as well as the cost of up to 50 inner liners, pick up, transport and destruction of collected waste pharmaceuticals for a period of two years. At the end of the pilot program participants are required to continue the program, at their own expense, for six additional months. As proposed by the Governor, the Enacted Budget for 2018 – 2019 includes an additional \$1 million to support the expansion of this pilot program.

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King County transfer station wins solid waste award

The Solid Waste Association of North America (SWANA) has honored the King County, Washington, Solid Waste Division with the SWANA Gold Excellence Award in the transfer station category for the new Factoria Recycling and Transfer Station.

SWANA's Excellence Awards Program recognizes outstanding solid waste programs and facilities that advance the practice of environmentally and economically sound solid waste management through a commitment to using effective technologies and processes in system design and operations.

The new station improves efficiency and decreases truck trips to and from the site. Their recycling and diversion efforts will keep 5,000 tons of waste out of landfills helping King County achieve its goal to be one of the most environmentally responsible counties in the nation.

"Replacing the aging, undersized Factoria Recycling and Transfer Station with a modern facility allows King

County to meet customer needs for the next 50 years," Solid Waste Division director Pat D. McLaughlin said.

The new 70,000 sq.ft. station facility in Factoria offers a wide array of recycling services, such as a new household hazardous waste facility giving customers a place to dispose of these materials in an environmentally-responsible way – something McLaughlin said is growing increasingly important with recent changes in the recycling market in China that require collected recyclables to be clean, empty and dry.

The Factoria Recycling and Transfer Station is certified as LEED - Gold by the U.S. Green Building Council. The designation was earned for the facility's sustainable design, recycled content building materials, rainwater harvesting, efficient energy and water use, and more.

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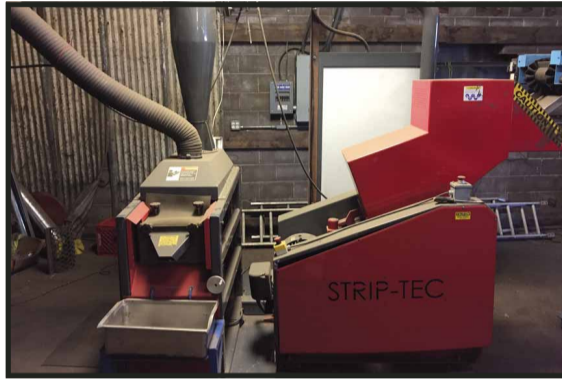
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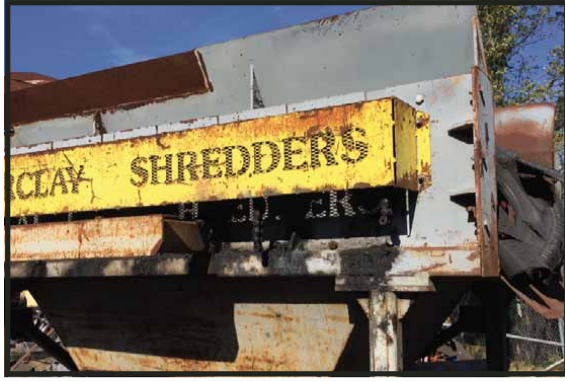


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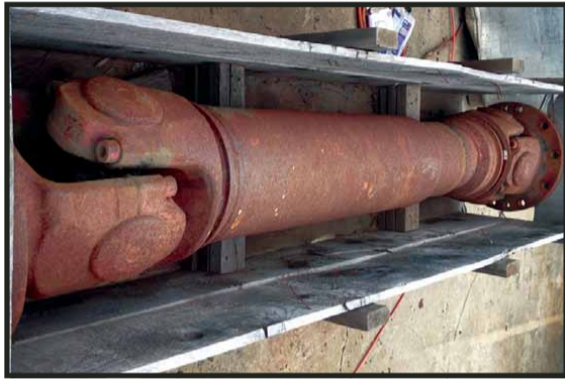
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ELECTRONICS

Sims Recycling Solutions introduces new e-waste separation technology

Sims Recycling Solutions (SRS), a global provider of electronics recycling and IT asset disposition services, expanded their processing lines at the Eindhoven, Netherlands e-waste facility. This site, known to be the largest e-waste recycling operation in this region, added enhancements that include metals and plastics separation technologies.

“The expansion of the capabilities at the SRS Eindhoven site started in the beginning of 2017 with the development of space for the building. This new building makes it easier to fulfil local environmental regulations, as we are now able to decrease the noise and dust considerably from the storage and processing of e-waste, which is now done under the roof,” stated Jan Visser, managing director of SRS, Eindhoven.

When recycling e-waste it is important to separate shredded materials into streams that are as clean as possible. These material fractions may include, but are not limited to iron, aluminum, copper, plastics and printed circuit boards. The newest innovation involves two new sorter lines which use metal sensors, color recognition and photo-technology to separate plastic, circuit boards and metals.

“Constant improvement in processing technologies is a high priority for SRS, as this enables us to securely deliver recycled and separated materials all over the world,” stated Marc Affüpper, director of SRS, EMEA. “By innovating our processing lines we are able to manage new, complicated electronic gadgets.”

The new lines also provide a plastic fraction which is another important addition to the SRS Eindhoven site. This process delivers a clean plastic fraction which can be delivered directly to the plastics recycler or compounder industry globally.

The new plastic sorting line helps original equipment manufacturers (OEM) to be more sustainable by supplying (circular-produced) recycled raw materials for their new products.

As requested by their OEM partners, there is an option to process a dedicated batch of products as one single stream. This makes it possible to separate the plastics from a batch into a very clean stream of recycled plastics which can be returned to our OEM partners, creating a perfect triangle of circular material deliveries.

EPA launches electronic waste tracking system

The U.S. Environmental Protection Agency (EPA) has launched the Hazardous Waste Electronic Manifest System (e-Manifest). The system will improve access to higher quality and more timely hazardous waste shipment data and save industry and states valuable time and resources to the tune of \$90 million annually.

“The successful launch of EPA’s E-Manifest system is a very significant accomplishment,” said Terri Goldberg, executive director of Northeast Waste Management Officials’ Association. “The New England State environmental agencies are eager to work with EPA Region 1 on implementing the new system and look forward to having the enhanced access to data and information that it will provide. Once the online system is fully functioning and all parties are utilizing its features, the New England States believe that it will reduce the reporting burdens on generators, haulers, and TSDFs and help all parties save time and associated costs.”

Users must submit all manifests, whether paper or electronic, to EPA’s e-Manifest system. There will be several ways to submit manifests to EPA, ranging from mailing conventional paper to full electronic delivery. Receiving facilities will pay a fee that varies based on how the manifest is submitted.

The e-Manifest system, authorized by the 2012 e-Manifest Act, enables electronic tracking of hazardous wastes and will serve as a national reporting hub and database for all hazardous waste manifests and shipment data. Once electronic practices are widely adopted, EPA estimates e-Manifest will ultimately reduce the burden associated with preparing paper shipping manifests, saving state and industry users, on average, about \$90 million annually. Complete transition to electronic manifests will be phased in. EPA will continue to conduct ongoing outreach to states and industry.

The Agency will also re-evaluate whether additional security measures are necessary for a small subset of manifest data about certain acute hazardous wastes. In the interim, EPA will be working directly with impacted receiving facilities on specific procedures related to those manifests. Additionally, EPA recently announced it would grant receiving facilities extra time to submit paper manifests in the initial months after system launch to further support industry implementation. Facilities that receive manifested waste between June 30, 2018 and September 1, 2018 will now have until September 30, 2018 to send those paper manifests to EPA.

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

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METALS

USS Tripoli docks for the last time in Texas



The USS Tripoli has concluded her final voyage from Beaumont to Brownsville, Texas, where she will now be dismantled and recycled by International Shipbreaking Limited LLC, part of EMR Group, a leading metal recycler.

The 13,000 ton IWO JIMA – class amphibious assault ship was the second ship in the U.S. Navy to be named after the famous amphibious operation that inspired the words in the marine hymn “To the shores of Tripoli”.

She served in the Navy for almost 30 years. During this period the USS Tripoli completed three deployments during the Vietnam War and became the first amphibious warfare ship to carry a full squadron of AV-8’s Harrier Jets. She also played an integral role in the Persian Gulf where she spearheaded the U.N. mine sweeping operation in Iraq and was deployed as an initial “show of force” when Saddam Hussein deployed forces along the Kuwaiti border.

Her distinguished service earned her 19 awards, including three Combat Action Ribbons and a National Defense Service Medal before she was decommissioned and stricken from Naval service in 1995. The Tripoli spent her following years laid

up at Mare Island Naval Shipyard, Vallejo, California before she was towed to Pearl Harbor to serve as a launch platform for the ballistic missile defense program.

International Shipbreaking Limited LCC, part of the EMR Group, is one of the world’s leading green ship recycling companies with three specialist facilities located in Brownsville, Texas; New Orleans and Amelia, Louisiana. These specialized facilities have safely recycled over 400 ships and marine structures including USS Thomas S. Gates (CG-51), USS Forrest Sherman (DD-931), USS George Philip (FFG-12), USS Jarrett (FFG-33), USS Constellation (CV-64) and USS Ranger (CV-61). The USS Independence (CV-62) is currently being recycled.

Chris Green, Senior Manager of the Brownsville facility said: “The USS Tripoli has significant sentimental meaning to the men and women who served our country and spent a part of their lives with her. She will be recycled in a safe, respectful and environmentally responsible manner.”

Work has begun to recycle the ship and the recycling operation is expected to take approximately 12 months to complete.

NY Governor Coumo launches artificial reef expansion

The number of species of fish and crustacea habitats in waters has been declining over the years resulting in severe impacts to the fishing industry, tourism and local economies. In an effort to revive marine life populations, Governor Cuomo has launched the largest artificial reef expansion in New York’s history.

This commitment will enhance 12 artificial reef sites beginning with 6 this year at Fire Island, Hempstead, Moriches, Rockaway, Shinnecock and Smithtown with many more planned in the future.

The reef program will include an effort to use retired steel vessels from the Erie Canal, and demolition materials from transportation and infrastructure projects.

Material and vessels have been cleaned of all contaminants and repurposed. Once the materials settle on the sea floor, the reef structure will begin to fill with various species of marine life and over time the structure will create a habitat very similar to a natural reef. Fish like blackfish, black sea bass, scup, fluke, hake and cod will move into the new structure.

AISI releases 2017 annual steel statistical report

The American Iron and Steel Institute (AISI) announced the release of its 2017 Annual Statistical Report (ASR), which provides comprehensive data on the U.S. steel industry and select data on the North American steel industry as a whole. In 2017, total steel imports increased 15 percent, while finished steel imports rose 12 percent and garnered a 27 percent share of apparent steel supply. U.S. steel shipments were at 90.9 million net tons, up 5 percent from the previous year, but were 2 percent lower than the most recent 5 year average of 93 million net tons. The report also notes that U.S. raw steel production was 90 million net tons in 2017, a 4 percent increase from 2016. The construction and automotive industries continued to be the leading end-use markets for shipments of U.S. steel products.

The AISI report is the most comprehensive reference of its kind, providing statistical data for the U.S. steel industry and a variety of selected statistical data on the Canadian, Mexican and world steel industries. It features extensive charts and graphs, including selected statistical highlights on shipments, apparent supply, imports, employment and raw steel data over a 10 year period; selected financial highlights; shipments by products and markets over a 10 year period; raw steel production (including selected state-level production data) and capability utilization; and, detailed imports and exports data.

To find out how you can receive a copy of the 2017 Annual Statistical Report, view this article on www.AmericanRecycler.com.

May steel shipments increase

The American Iron and Steel Institute (AISI) reported that for the month of May 2018, U.S. steel mills shipped 8,056,366 net tons, a 3.3 percent increase from the 7,798,326 net tons shipped in the previous month, April 2018, and a 5.2 percent increase from the 7,660,969 net tons shipped in May 2017. Shipments year-to-date in 2018

are 39,316,041 net tons, a 4.2 percent increase vs. 2017 shipments of 37,722,240 net tons for five months.

A comparison of May shipments to the previous month of April shows the following changes: hot rolled sheets, up 6 percent, hot dipped galvanized sheets and strip, up 3 percent, and cold rolled sheets, no change.

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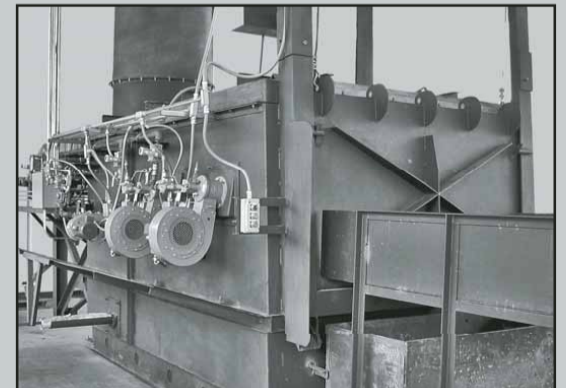
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METALS

Steel imports increase 12 percent from March 2018

Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the U.S. imported a total of 3,738,000 net tons (NT) of steel in April 2018, including 2,860,000 NT of finished steel (up 12.1 percent and 15.1 percent, respectively, vs. March final data). Year-to-date through four months of 2018, total and finished steel imports are 12,436,000 and 9,696,000 NT, up 1.1 percent and 2.3 percent, respectively, vs. the same period in 2017.

Key finished steel products with significant import increases in April compared to March include line pipe (up 87 percent), heavy structural shapes (up 57 percent), tin plate (up 53 percent), reinforcing bars (up 47 percent), hot rolled bars (up 39 percent), sheets and strip hot dipped galvanized (up 24 percent), sheets and strip all other metallic coatings (up 23 percent), standard pipe (up 20 percent), cut lengths plates (up 16 percent), and plates in coils (up 11 percent). Major products with significant year-to-date increases

U.S. IMPORTS OF FINISHED STEEL MILL PRODUCTS BY COUNTRY OF ORIGIN (Thousands of Net Tons)					
	APR 2018	MAR 2018	2017 Full Year	2018 Annualized	% Change 2018 Annual vs. 2017
SOUTH KOREA	472	317	3,753	4,255	13.4%
JAPAN	99	154	1,504	1,476	-1.9%
TURKEY	146	134	2,191	1,427	-34.9%
GERMANY	120	74	1,405	1,227	-12.7%
TAIWAN	115	79	1,245	1,170	-6.0%
BRAZIL	95	79	987	977	-1.0%
VIETNAM	131	81	749	934	24.8%
CHINA	53	68	813	781	-3.9%
All Others	1,628	1,500	16,914	16,842	-0.4%
TOTAL	2,860	2,485	29,561	29,089	-1.6%

vs. the same period in 2017 include plates in coils (up 43 percent), hot rolled sheets (up 40 percent), line pipe (up 31 percent), oil country goods (up 25 percent), mechanical tubing (up 23 percent) and hot rolled bars (up 12 percent).

In April, the largest volumes of finished steel imports from offshore were from South Korea (472,000 NT, up 49 percent from March final), Turkey (146,000 NT, up 9 percent), Vietnam

(131,000 NT, up 62 percent), Germany (120,000 NT, up 64 percent) and Taiwan (115,000 NT, up 46 percent). For the first four months of 2018, the largest offshore suppliers were South Korea (1,418,000 NT, up 17 percent vs. the same period in 2017), Japan (492,000 NT, down 6 percent), Turkey (476,000 NT, down 52 percent), Germany (409,000 NT, up 21 percent) and Taiwan (390,000 NT, down 8 percent).

Steel import permit applications decrease in June

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 June totaled 2,894,000 net tons (NT). This was a 3.7 percent decrease from the 3,005,000 permit tons recorded in May and a 0.3 percent increase from the May preliminary imports total of 2,887,000 NT. Import permit tonnage for finished steel in June was 1,946,000, down 19.5 percent from the preliminary imports total of 2,418,000 in May. For the first 6 months of 2018 (including June SIMA permits and May preliminary data), total and finished steel imports were 18,236,000 NT and 14,078,000 NT, down 7.4 percent and 6.6 percent, respectively, from the same period in 2017. The estimated finished steel import market share in June was 22 percent and is 25 percent year-to-date.

Finished steel imports with large increases in June permits vs. the May preliminary included black plate (up 540 percent) and sheets, strip, and all other metallic coatings (up 24 percent). Products with significant year-to-date increases vs. the same period in 2017 include hot rolled sheets (up 25 percent), plates in coils (up 23 percent), line pipe (up 13 percent) and mechanical tubing (up 12 percent).

In June, the largest finished steel import permit applications for offshore countries were for South Korea (206,000 NT, up 88 percent from May preliminary), Japan (134,000 NT, up 11 percent), Germany (105,000 NT, down 25 percent), Taiwan (103,000 NT, up 32 percent) and Vietnam (88,000 NT, up 18 percent). Through the first 6 months of 2018, the largest offshore suppliers were South Korea (1,738,000 NT, down 10 percent from the same period last year), Japan (745,000 NT, down 7 percent) and Germany (654,000 NT, up 9 percent).

SALVAGING Millions

by Ron Sturgeon
Autosalvageconsultant.com

Tools for success: pulling people through keyholes

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 attend college, so I know you can achieve maximum success, regardless of your education.

When we sold Greenleaf to LKQ, I was in charge of legal items and environmental. After closing, they gave me a trophy tombstone labeled 'The Locksmith'. They called me that because I was so good at pulling people through keyholes.

To become a locksmith, you have to lead so that your people want to perform. When the heat is on, you need people to perform and not miss deadlines.

Here are some of the ways you can get results from your team:

- You NEVER tell people the stick-in-the-spokes deadline. You have a soft deadline and an early deadline and a final deadline. Not telling them the true deadline allows them to shine and makes you look good. It allows for inevitable missteps and still lets your team over deliver and be heroes.

- Make sure they buy in to the goal. Let them help prepare the goal and the plan.

- In my case, getting clean environmental phase ones was key to closing the transaction. I offered each site manager a \$5,000 bonus if he got a clean report. You think they weren't cleaning and preparing for that inspection?

- Give them the resources they need to deliver the goal. In most cases, you have to let them tell you what those are; it doesn't do any good to demand results but withhold resources.

- Make sure they've been taught your mantra of how to pull people through keyholes so that those they delegate to can make them look good by over delivering on the expectation.

- Have a sense of urgency about everything. Sure some things are easy, but don't slow down because you can. You will need that lost time on one of the steps that goes wrong!

- Perhaps most important to being able to pull people through the keyholes: your people have to like you. They have to want to perform and you have to lead by example. Is your car there before they arrive and after they leave, especially when a deadline looms?

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.

River Metals achieves third SHARP Award

River Metals Recycling Newport received the prestigious SHARP (Safety & Health Achievement Recognition Program) recertification for taking extraordinary measures to ensure the safety and health of all teammates. RMR's exceptional safety record garnered the company its third SHARP award, which was presented by the acting secretary of the Kentucky Cabinet Mike Nemes. RMR Newport achieved the original SHARP certification in December 2013 and was the first recycling facility in Kentucky to earn SHARP status. This award represents RMR's second SHARP recertification.

The Newport Kentucky facility was recognized for its commitment to creating and maintaining a safe and healthy workplace. SHARP is one of the highest honors OSHA awards to small worksites that demonstrate an exemplary commitment to workplace safety and health.

River Metals Recycling is the largest scrap recycler in Kentucky and in the greater Cincinnati area, with nine locations in Illinois, Indiana, Kentucky and Ohio. RMR is headquartered in Crescent Springs, Kentucky, and has 260 teammates. River Metals Recycling's Newport facility employs 44. Newport specializes in scrap recycling services for households, tradesmen and businesses, and buys ferrous scrap as well as common household nonferrous scrap metal items like aluminum cans and other aluminum, stainless steel, copper and brass products.

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METALS

Partnership expands educational program

The City of Denver, The Recycling Partnership with special support of the Can Capture Group – a consortium of national can manufacturers: Anheuser-Busch; Ardagh Group; Ball Corporation and Crown Holdings, aluminum suppliers: Novelis and Tri-Arrows Aluminum, and the Can Manufacturers Institute – announced the next phase of the City’s expanded recycling education program to increase the collection of more aluminum beverage cans citywide.

This next phase of the recycling education programs follows the successful implementation of phase one in 2017 throughout pilot communities in Denver.

“Last year, we measured recycling of cans at the curb, both before and after the program, and what we found was exciting,” says Karen Bandauer, strategic partnership lead at The Recycling Partnership. “As a result of simplified messaging and communication with res-

idents through tags at their garbage carts, Denver residents responded by recycling 25 percent more loose aluminum cans. This year we’re thrilled to work again with the City of Denver with support from the Can Capture Group to take this program citywide. We hope that every Denver resident will take up the challenge and recycle every single can.”

Residents will see tags on their carts, easy to follow information cards in their mailboxes and other think outside the trash messages throughout the city all summer long.

Aluminum is a permanent material and can be kept in an infinite use loop, as long as it is continually recycled. Nearly 75 percent of all aluminum ever produced is still in use today. All of this means that cans uniquely contribute to the economic health of municipal recycling programs.

The David J. Joseph Company makes organizational changes

The David J. Joseph Company (DJJ) recently made organizational changes:

Rob Angotti, DJJ’s executive vice president, brokerage and services since 2000, retired from the company effective June 30, 2018. Angotti joined DJJ in 1982 as a brokerage representative and later served as district manager.

Mark Schaefer was appointed DJJ’s executive vice president, brokerage & services. Schaefer joined the company in 1985 and held roles in DJJ’s brokerage, recycling and transportation groups.

David Steigerwald was appointed DJJ’s executive vice president, recycling group. Steigerwald joined DJJ in 1998 and held various roles in the corporate, brokerage and recycling groups.

Kelly Poellein was appointed senior vice president, finance for DJJ. Prior to joining DJJ in 2002, Poellein was an audit manager with PricewaterhouseCoopers. She has held various roles in DJJ’s corporate and brokerage groups and has served as vice president, finance for brokerage & services since 2005.

PAPER

Paper reports released

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

Containerboard

Containerboard production was up 1.5 percent compared to May 2017 and up 0.8 percent year-to-date. The month-over-month average daily production compared to April 2018 was 1.5 percent higher. The containerboard operating rate was 98.5 percent, 1.4 percentage points higher than the same month last year. Production for export was 3.6 percent lower than May 2017 and 5.4 percent lower year-to-date.

Printing-Writing Paper Report

Total printing-writing paper shipments decreased five percent in May compared to May 2017. Total printing-writing paper inventory levels decreased three percent from April. Imports of printing-writing papers in April increased four percent compared to April 2017 imports, while exports declined one percent compared to April 2018.

- Uncoated free sheet (UFS) paper shipments in May 2018 edged down slightly year-over-year. Imports of UFS decreased less than one-half of one percent year-over-year in April. Exports of UFS papers increased 13 percent in April compared to April 2017.

- Shipments of coated free sheet (CFS) paper and uncoated mechanical (UM) papers in May both declined year-over-year. Imports of UM papers increased seven percent compared to April 2017, while imports of CFS papers

decreased 12 percent compared to last April.

Purchases of coated mechanical (CM) papers increased year-over-year in May 2018 for the second time this year. Imports of CM increased 24 percent year-over-year in April. Exports of CM increased two percent year-over-year in April.

Boxboard Report

Total boxboard production increased 6.3 percent when compared to May 2017 and increased 2.3 percent from April. Unbleached Kraft Boxboard production decreased over the same month a year ago and decreased compared to April. Total Solid Bleached Boxboard & Liner production increased when compared to May 2017 and increased compared to April. The production of Recycled Boxboard decreased compared to May 2017 but increased when compared to April.

U.S. Packaging Papers & Specialty Packaging

Total Packaging Papers shipments were up 3.0 percent compared to May 2017 but down 0.2 percent year-to-date. Bag & Sack shipments were essentially flat year-to-date, Multiwall shipments were down 3.3 percent, Converting shipments were down 0.4 percent and Food Wrapping shipments were up 3.5 percent. The operating rate for May increased to 94.5 percent from 92.9 percent in April. Inventories were down 3.6 percent since April.




Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
#1 Bushelings	per gross ton	\$285.00	292.00	298.00	305.00	402.00
#1 Bundles	per gross ton	276.00	259.00	289.00	295.00	397.00
Plate and Structural	per gross ton	284.00	276.00	292.00	302.00	370.00
#1 & 2 Mixed Steel	per gross ton	219.00	262.00	240.00	285.00	341.00
Shredder Bundles (tin)	per gross ton	189.00	184.00	223.00	285.00	240.00
Crushed Auto Bodies	per gross ton	189.00	184.00	223.00	225.00	240.00
Steel Turnings	per gross ton	95.00	102.00	100.00	184.00	260.00
#1 Copper	per pound	2.80	2.65	2.89	2.54	2.48
#2 Copper	per pound	2.62	2.54	2.82	2.41	2.21
Aluminum Cans	per pound	0.73	0.80	0.75	0.70	0.74
Auto Radiators	per pound	1.94	1.92	1.94	1.86	1.87
Aluminum Core Radiators	per pound	0.74	0.90	0.66	0.55	0.62
Heater Cores	per pound	1.29	1.30	1.34	1.30	1.68
Stainless Steel	per pound	0.68	0.65	0.65	0.64	0.66

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

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PAPER

Award given to redevelop Vicksburg paper mill



The original 1904 building and other former mill structures will be converted into a commercial, business and residential hub.

A vacant, contaminated paper mill in Vicksburg will be returned to productive use with help from the Michigan Department of Environmental Quality (MDEQ). A \$100,000 grant and a \$1,250,000 loan were awarded to the Kalamazoo County Brownfield Redevelopment Authority to protect public health and safety and revitalize the historic mill property, located on West High Street.

The brownfield funding will be used to perform an environmental assessment, remove contaminated soils and protect those who will work, play and live at the future Paper City development. A dangerous, fire-damaged portion of the building will also be demolished.

Paper City Development, LLC, is rehabilitating the historic paper mill with residences, event space, a brewery and

food production. The project will bring \$50 million in private investment and 200 new jobs to Vicksburg. The state equalized value of the property should increase from \$159,800 to \$12,000,000 following redevelopment.

The project is within walking distance of downtown Vicksburg and incorporates public walking trails. Sustainable building materials, including new windows, insulation and energy-efficient lighting will be used.

The MDEQ partners with communities to protect public health and the environment and revitalize contaminated property. MDEQ grants and loans pay for environmental investigation and cleanup on brownfields. Brownfields are vacant or abandoned properties with known or suspected environmental contamination.

AF&PA elects two new board of director members

The American Forest & Paper Association (AF&PA) announced the election of Resolute Forest Products president and chief executive officer Yves Laflamme and Sonoco Products Company president and chief executive officer Robert Tiede to serve on its board of directors.

AF&PA president and chief executive officer Donna Harman issued the following statement, "Yves Laflamme and Robert Tiede bring deep industry experience and valuable leadership to the table as we work to advance the paper and wood products industry's top advocacy priorities. We are one of the largest manufacturing sectors in the

nation – eager to innovate and invest in the future with the help of common sense public policy, including regulatory reform, free and fair trade and efficient transportation measures."

Laflamme fills the seat left by the retirement of Resolute president and chief executive officer Richard Garneau and Tiede fills the seat left by the retirement of Sonoco president and chief executive officer M. Jack Sanders. The AF&PA board of directors consists of 23 top industry leaders who represent a broad spectrum of companies in the paper and wood products manufacturing sector.

At the end of a job interview, a human resources officer asked a young engineer who was fresh out of a technology institute, "And what starting salary are you looking for?"

The engineer replied, "In the region of \$125,000 a year, depending on the benefits package."

The interviewer inquired, "Well, what

would you say to a package of 5 weeks vacation, 14 paid holidays, full medical and dental insurance, company matching retirement funds and a company car leased every 2 years, maybe a red Corvette?"

The engineer sat up straight and said, "Wow! Are you kidding?" The interviewer replied, "Yes! But you started it."

BUSINESS BRIEFS

Caterpillar names Redzic as a new vice president

■ Caterpillar Inc. announced that its board of directors has appointed Ogi Redzic as a vice president of the company. He will lead Caterpillar's Digital Enabled Solutions Division (DESD), and report to group president of customer & dealer support Bob De Lange.

DESD is comprised of the company's data analytics group, the enterprise data hub, equipment management tools, Cat® Connect technologies and customer experience portals. Caterpillar Vice president Julie Lagacy has led DESD on an interim basis; she will continue in her role as vice president of Global Information Services.

Redzic brings with him more than 20 years of global experience in delivering digital solutions like connected vehicles, digital services and autonomous technologies, most recently in the automotive industry. He previously served as senior vice president of connected vehicles and mobility services at Renault Nissan Alliance based in Paris, France.

Redzic holds an MBA from Northwestern University's Kellogg School of Management and a master's degree in computer science from the Illinois Institute of Technology. Redzic will be based in Caterpillar's Chicago office.

Frontline appoints new director of operations

■ Ohio-based Frontline International, a provider of Smart Oil Management™ systems for foodservice operators, has promoted Trevor Stretch to director of operations.

Having served in two other managerial positions in the company for 12 years, Stretch will now oversee day-to-day operations. His responsibilities include supervising manufacturing and purchasing and managing production, from raw material integration to finished product. He is also tasked with preparing each department for integration with scheduled plant expansions.

Stretch joined Frontline International as a shop and service manager in 2006 and was promoted to plant manager in 2010. As such, he managed and strengthened relationships with high-profile house accounts and is eager to continue this effort.

Wendt Corporation partners with MOROS

■ Wendt Corporation has entered into a strategic partnership with MOROS Industrias Hidraulicas SA, a Spanish manufacturer of high quality machinery for the ferrous and nonferrous metal recycling industry. The exclusive partnership will allow the Zargoza, Spain based MOROS to offer their shears and balers to the North American marketplace through the Wendt Sales and service platform.

The agreement will extend to the United States, Canada and Mexico.

Michael Harbert joins Echo Environmental sales team

■ Longtime recycling professional Michael Harbert has joined Echo Environmental LLC as senior manager for business development, the company has announced.

Harbert, who served for many years on the State of Texas Alliance for Recycling steering committee, built a reputation for electronics recycling expertise and strong customer relationships in more than two decades at ECS Refining.

Echo Environmental, based in Carrollton, Texas, is an R2-certified electronics recycling and data security company operating nationwide.

The company specializes in refurbishing and remarketing unneeded equipment and recovering valuable commodities from end-of-life material, to recoup maximum residual value for the customer. At the same time, its data management experts erase and destroy sensitive information with full documentation and transparency.

Harbert is a native of Cincinnati and studied at Cincinnati State College.

Meridian Waste names Sides as an area president

■ Meridian Waste, an integrated, non-hazardous solid waste services company, has named George Sides, as area president in Missouri.

In this role, Sides will be responsible for providing service to over 100,000 residential customers and 3,000 commercial customers and oversee 4 hauling companies, 1 MSW landfill and 1 transfer station.

Sides most recently served as director of sales and acquisitions for the company, and prior to that owned his own business. Sides has a wide range of garbage industry experience serving in general manager, area president and vice president of sales roles for two of the largest waste companies in the country.

Sides holds a bachelor's degree from the University of Florida.

Intermountain Bobcat added as Bandit dealer

■ Utah-based Intermountain Bobcat with locations in Salt Lake City, Ogden and Orem has joined Bandit's growing network of authorized dealers.

The three locations will offer sales, service and parts on all Bandit hand-fed chippers, stump grinders and skid-steer attachments.

Intermountain Bobcat is a division of the Scott Intermountain Companies, which has been involved in the construction equipment business since 1968. In 1995, the company acquired Intermountain Bobcat and operates it today.

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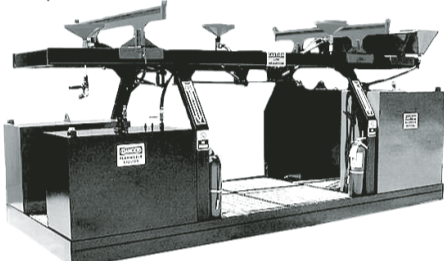


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LIFTOMATIC RELEASES BELOW-HOOK DRUM HANDLING SYSTEM

Liftomatic Material Handling, Inc. expanded its line of drum handling equipment to include the model 3A-HD-BHDL, a below-hook drum handling system. It is a fully automatic and mechanical below hook attachment that can be used to lift 55 gallon drums from an overhead position for placement to or from many containment devices, scales, pallets or similar handling requirements. Drums remain in a vertical position while lifted.

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BUSINESS BRIEFS

Cavada named CEO and president of Highview

Highview Power announced that Dr Javier Cavada Camino will join the company as its chief executive officer and president. Cavada will drive the international deployment of Highview Power's proprietary liquid air energy storage (LAES) technology and execute the company's ambitious 10-year global expansion strategy. He will lead a team across the company's United Kingdom headquarters in London and United States offices in New York.

Current Highview Power chief executive officer Gareth Brett will become vice chairman when Javier Cavada joins the company in September. Brett has led the company for 10 years during which time he has taken Highview Power's LAES technology from development to demonstration and established the first two fully operational LAES plants in the world.

Javier Cavada joins from Wärtsilä Corporation, one of the world's top three technology companies in the energy market and a global leader in smart technologies and complete energy lifecycle solutions. Since 2015, he has been president of the Energy Solutions division and executive vice president, leading the company's global energy business and driving its vision towards 100 percent renewables as the most advanced system integrator. Under Cavada's leadership, Wärtsilä's global market share in gas and liquid fuel power plants (up to 500 MW) has grown from 9 percent in 2015 up to 19 percent in 2017, reaching levels over 20 percent already in 2018 by implementing a smart strategy to maximize the use of renewables in the grid, providing the required flexibility. His 17 year career at Wärtsilä has included extensive international experience, including executive roles in China, Italy, the Netherlands, Spain and Finland.

Tomra appoints Fenton as sales manager, east coast

Tomra Sorting Recycling, a supplier of sensor-based sorting equipment, has appointed Rick Fenton as sales manager, east coast North America. In his new position, Fenton will assume the lead role to further develop and implement Tomra Recycling Americas' short and long term sales strategies as well as work directly with TOMRA partners and customers.

Fenton offers more than 20 years of equipment applications and sales experience, working directly with customers for dealers and plant builders as well as working for equipment manufacturers. Most recently, he served as sales manager, North America East, for Metso Waste Recycling, where he was tasked with evaluating new applications and expanding into new markets as well as developing new distribution networks. He also was a part of the Van Dyk team for seven years, where he was the main point of contact for customers in the Southeast. He created and managed solution development efforts that best addressed customer needs for Van Dyk.

Franklin Miller celebrates 100th anniversary

Franklin Miller Inc. was honored by the Township of Livingston in a ceremony commemorating the 100th anniversary of the company's founding. The ceremony took place at the company's Livingston, New Jersey facility.

William Galanty, president of Franklin Miller and Jake Galanty, general manager were presented with a proclamation by Edward Meinhardt, mayor of Livingston as well as Al Anthony, Livingston's deputy mayor.

Franklin Miller is an American original that proudly manufactures its products in the U.S. The company started as a manufacturer of ice cream freezers and ice crushers in East Orange, New Jersey and has grown over the years into a modern manufacturer with equipment sales worldwide. Its crushers, shredders, wastewater grinders and screens are used in the environmental field as well as in industrial applications such as chemicals, food manufacturing and minerals.

Bandit to offer ARJES shredders and rock crushers

Bandit Industries Inc. and Germany-based ARJES GmbH are partnering to bring ARJES' line of slow-speed shredders and crushers to Bandit customers worldwide.

Bandit is adding ARJES' select models of slow-speed industrial shredders and stone crushers to its lineup of heavy-duty large equipment that already includes The Beast® horizontal grinders, whole tree chippers, and track carriers. Bandit large equipment dealers from select markets will offer sales, service and parts on ARJES machines. Those Bandit dealers will be introduced to ARJES equipment in early June at Bandit's mid-Michigan facilities.

Under the leadership of Norbert and Tetyana Hammel ARJES was founded in 2007 at the current location in Leimbach/Thuringia in the heart of Germany. It started with a staff of just 19 people dedicated to a vision of innovation and economical shredders for the recycling industry. ARJES has grown in the last 10 years, adding individual shredding and screening solutions for waste wood, green waste, biomass, plastics, paper, domestic and industrial waste, scrap metal, used tires and other materials.

Rick Woodrum joins Genesis Attachments

Genesis Attachments announced that Rick Woodrum has joined its sales team as Mid-Atlantic regional manager.

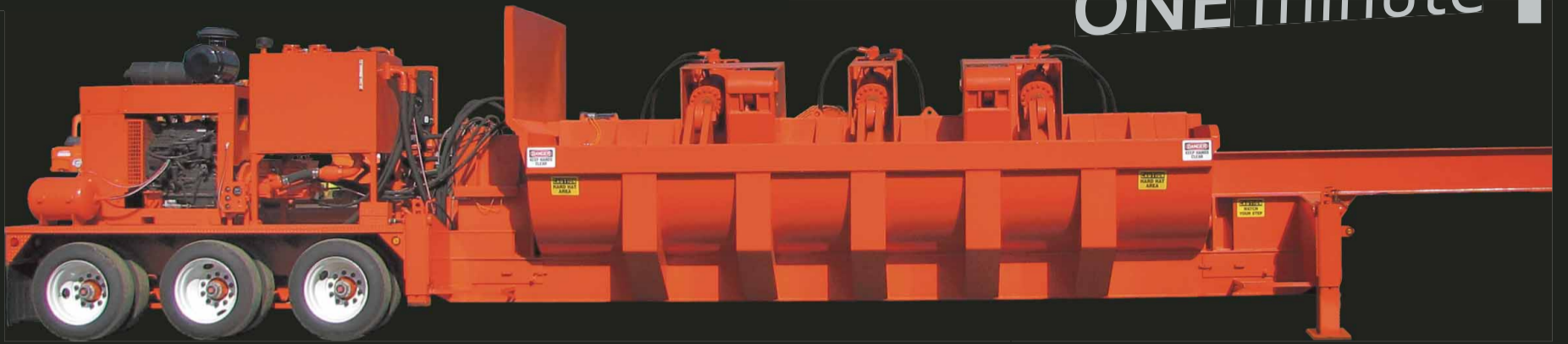
Covering West Virginia, Virginia, Delaware, Maryland, New Jersey, Eastern Pennsylvania and Washington, DC, Woodrum will provide attachment, parts and service sales and application support to the demolition, scrap and material handling industries.

Woodrum will also manage Genesis' dealer presence and activities in the region and comes to Genesis with 20 years of industrial sales experience.

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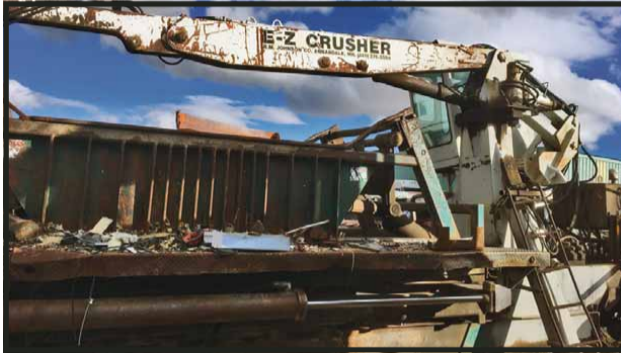
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Municipal green waste programs turn food scraps into black gold

by MAURA KELLER

mkeller@americanrecycler.com

The need for a sustainable organic waste disposal option is a growing concern throughout the U.S. Roughly one third of the food produced annually in the world for human consumption, or approximately 1.3 billion tons, is thrown away and deposited into the waste stream bound for the landfill. And the U.S. Environmental Protection Agency (EPA) estimates that food waste makes up 21.6 percent of the garbage shipped to municipal landfills and incinerators. In 2015, the U.S. Department of Agriculture and the EPA established a national goal of cutting food waste in half by 2030.

“This organic waste once deposited in the landfill produces harmful methane gas; the only way to curb this increased waste is to use less food, compost or utilize a company with a digester,” said Mark Sredin, facility manager at Lakeshore Recycling Systems. “When deposited into landfills, organic waste runs the risk of contaminating water, and emits odorous hydrogen sulfide gas and methane gas.”

At Lakeshore Recycling Systems (LRS), the company’s organic recycling operations convert organic waste into a high-grade compost and organic fertilizer that is ready to ship to local companies and customers for mixing and distribution. The process delivers an end

product that is reduced in weight and volume by 70 percent.

“The technology is ideal for urban environments as it can operate on a smaller footprint, needs little labor or overhead and its process and output are odorless,” Sredin said. “Along with not producing any odor, the LRS aerobic digester also produces zero water pollution and zero methane gas.”

According to Jordana Viuker, sustainability consultant, the current environment of organics recycling as it relates to municipalities is gaining momentum. In 2013, 150 American municipalities had composting programs and that was a 50 percent increase over 2009.

“This increase was driven by multiple factors, but following Trump’s election and the ensuing gutting of the EPA, communities and governments were more motivated to make environmentally friendly decisions at the local level,” Viuker said.

In 2014 the state of Vermont began phasing in its organic waste ban, applying it to businesses that produced more than 104 tons of organic waste a year. In 2020, when the law will apply to all Vermont businesses and residents, it will be illegal to send any organic waste to landfills. Also since 2014, all Massachusetts businesses, arenas and institutions that generate 1 ton or more of organic waste each week have been barred from shipping that waste to landfills.

While several states have initiatives similar programs as above, the need for more and more municipalities to join the green waste effort is immediate. As Sredin explained, the need for a different end result



Municipal Composting at County Hall Leicestershire produces rich soil from organic waste despite the difficulty municipalities face engaging the public in organic waste programing.

PHOTO COURTESY OF CARRY ON COMPOSTING

for food waste is critical, as the increasing food losses which turns into waste is roughly \$680 billion in industrialized countries and \$310 billion in developing countries.

“This issue is a paramount concern, not just on a local level, but a global one that needs immediate resolution,” said Sredin. “This requires all people to work together and become educated consumers as well as conscientious about their food waste, even on the smaller at-home scale.”

Few products are needed for consumers to participate in municipal organics recycling programs (compared to backyard compost systems). As Viuker said, avoiding additional consumer products is ideal since the overarching idea is to reduce waste and resource use.

“At a minimum, participants just need compostable bags to store and transport their food waste,” Viuker said. Some municipalities sell three key products for green waste recycling – the bags, the kitchen counter receptacle, and a larger bin for storage in a garage for transfer and collection.

Embracing Challenges

One barrier in the overall green waste initiative on the part of municipal-

ities has been lack of facilities available to process a growing amount of food waste and produce what is commonly referred to as “black gold.”

“Most urban residents don’t have enough outdoor space to process their own food waste into compost and eventually soil,” Viuker said. “Another challenge has been how to increase public interest by removing the ‘yuck’ factor for residents. The kitchen counter bin needs to be tight to keep odors in.”

Sredin said that the largest issue that organic waste faces is gaining consumer participation and the separation of organic waste from municipal solid waste. The food waste collected usually comes in at about 90 percent proper food waste, but the remaining 10 percent contains contamination with utensils, plastic, and aluminum.

“These items mean that the load could either be seen as contaminated or will require further sorting and less time utilized for optimum diversion elsewhere,” Sredin said. “To optimize this organic waste diversion process we need further education and full participation within the organic waste program.” Lakeshore Recycling Systems is dedicated to making a difference with edu-

See **BLACK GOLD**, Page B2



Up to 21.6 percent of municipal waste is food material which can be processed with other organic wastes yielding a mineral-rich compost material, sometimes called “black gold.”

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Agromin and Waste Management partner for sustainability project

Agromin and Waste Management of Antelope Valley are collaborating to rehabilitate the turf at the City of Lancaster, California's James C. Gilley National Soccer Center, which boasts 35 premium soccer fields.

"The Soccer Center fields require over one million gallons of water per acre per year from an on-site well in order to stay healthy and green — the City of Lancaster sees this soil enhancement project as a continuation of its commitment to building a more sustainable community," said City of Lancaster Mayor R. Rex Parris.

As part of this effort, Agromin's Turf Rescue product, which collects organic material from providers such as Waste Management, will be applied to reduce water usage; increase the soil's ability to absorb water; deepen root structure; and decrease water runoff. Additionally, the compost used on the soccer fields will be 100 percent organic.

"The soil in many of the soccer fields has high sodium levels," said Rick Wilson, Agromin's chief technology officer. "The sodium causes the soil structure (porosity) to deteriorate, so water cannot move into the soil and reach the roots. The soil is also highly compacted due to the intensive play on the fields. Currently, much of the water doesn't always soak in. Instead, the water puddles after a watering or rain and evaporates or runs off. Turf Rescue can address these soil health challenges."



Agromin's Turf Rescue product is applied to soccer fields to increase water absorption and decrease runoff.

Turf Rescue is a patent pending formulation that includes compost, biochar and minerals. Biochar, a natural black carbon residue produced from heating wood under an oxygen-deficient environment at high temperatures, absorbs water while collecting CO₂ from the atmosphere. It is found in abundance as a result of vegetation fires in the world's most fertile agriculture soils.

Agromin will first demonstrate the efficacy of the product on Lancaster's most water intensive fields (West Fields 11 and 12). The first step is to conduct multiple passes of deep tine aeration followed by field top dressing with Turf Rescue. Next comes several cycles of deep watering (leeching) of the salts, Wilson says it will take about a month to see a visual difference in the quality of the turf, at which time watering rates will be reduced.

"If all goes as expected, the Soccer Center should be able to cut back on their field watering," said Wilson. "The turf will be healthier and stronger without puddling."

RJD Green announces plans for animal waste processing facility

RJD Green, Inc. announced the Earthline Environmental Division has acquired industrial property to be utilized for an initial animal waste processing facility.

The 12 acre industrial property acquired is located in Nowata, Oklahoma, a strategic location for Mid-America transportation, and it is in the heart of commercial meat farming and oil & gas services. The development plan allows for two separate operations on the property.

The first of the two projects is an animal waste processing facility to be utilized for demonstration and ongoing development of environmentally friendly, and cost saving processes and services.

The second project is a Waste Oil Recovery facility that will utilize the proprietary processes previously acquired by Earthline that creates efficiencies in the oil recovery process and returns a higher ratio of salable oil recovery from the waste oil barrels processed.

REA currently on path to fully renewable energy baseload

Renewable Energy Aggregators (REA), pioneers in the development of 100 percent renewable baseload electricity, announced a new streamlined path to market for their first two northeastern Pennsylvania projects. Recent orders of the Federal Energy Regulatory Commission (FERC) disclaimed licensing jurisdiction over these 500-megawatt projects, allowing them to proceed without the need to secure a federal license under the Federal Power Act. As a result, REA can bring the Pennsylvania Pump Storage and Old Forge Bore Hole Reclamation projects to market faster and at substantially lower cost.

REA's innovation is a unique approach to pumped-storage hydroelectric power. Their plans include creating facilities that exclusively use renewable energy to pump ground water from abandoned and flooded coalmines. FERC was able to issue a favorable order because REA's unique design uses no surface or otherwise navigable waters. The company has many additional pumped-storage projects in development to which the FERC orders may also apply.

REA's efforts will benefit host communities in important ways

beyond providing renewable power, said company president Adam Rousselle. First, site development and operation will create quality jobs in areas that may be economically depressed due to the closure of the now-abandoned and flooded mines. Consequently, the projects enjoy substantial support in the host communities in which the flooded mines are located. Second, highly polluted mine water will be diverted from watersheds and purified before it can be used in the pumped-storage reservoirs and run through generators.

Each of REA's projects will offer unique value to renewable generation developers. This is true because they will create a 24/7 market demand for renewable generation. Whenever the wind is blowing, or the sun is shining the power being generated can be consumed by REA's pumped-storage system—even during night or mid-afternoon hours when electricity demand would traditionally be insufficient. By creating this demand, REA increases revenues to existing renewable generation facilities and stimulates further renewable generation development.

Black gold

■Continued from Page 21

cating about the dangers of food waste and the use of the aerobic digester.

Ensuring easy collection also is a barrier. In Viuker's town, residents have to drop off their compost at the town dump or weekly farmer's market.

"Our program has been hugely successful despite the lack of curbside pickup, but the hope remains that by increasing participation, the town will be more or less forced to make the smart move to a weekly collection," Viuker said. "If done properly, this should reduce the overall greenhouse gas emissions spent on transport of organics waste."

Of course, the initial requirement on the part of municipalities is to find room in the budget for the financial costs of these programs. As Viuker explains, this cost comes from the added collection process, but the total waste amount would remain the same.

"But compost pick up could be taken care of simultaneous to trash and recycling, the same haulers could be used to transport to landfill, incineration sites, or compost facilities, and these various waste end points could be located close to one another," Viuker said. "It will take time to streamline these waste streams. Until then, there will be additional costs."

Down the Road

Viuker said organic waste will eventually become ubiquitous. "Some friends of ours were on vacation recently, and their young son was flabbergasted that they had to throw their

banana peels into the regular trash," Viuker said. "Food comprises about 21 percent of NYC's waste stream. As with most things, change takes place slowly and through educating future generations on the new norm."

Unfortunately many municipalities perceive green waste as a cost prohibitive program. As Sredin explains, from the containers used, to specialized trucks, to the education and resources for increased understanding of the unique nature of this program, the costs can easily be seen as unnecessary within a community.

"Additionally, it is a messy process and can be perceived as a dirty program and extra step," Sredin said. "The thought behind organic collection is that collecting your food waste can be too much work and create a certain household odor."

That said, Sredin believes that eventually more and more people will jump on the bandwagon of organic waste as they see the benefits of doing so, including ending greenhouse gases, using viable compost, and making less room in landfills.

"With companies such as Lakeshore Recycling Systems pioneering new technology such as the aerobic digester to have a second life for organic waste, progress can be made," Sredin said. "With more people working together to better provide clean organic waste, without contamination, and boosting an understanding of the process, we can have a better system to emit food scrap waste from the landfill."

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

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Hiland Dairy honored for sustainability initiative

Sustainability has always a priority at Hiland Dairy Foods Company, which continuously seeks new ways to recycle, reduce and reuse at its production plants. Hiland Dairy's most extensive effort to date took years to reach its current magnitude as a closed-loop sustainability initiative at the company's plant in Chandler, Oklahoma. At the June ProFood Live conference in Chicago, Hiland's initiative received a ProFood World 2017 Sustainability Excellence in Manufacturing Award.

Hiland Dairy received the second place award in the Project Category for the Chandler plant's whey recycling and wastewater treatment facility, which has

expanded over the years to include additional projects.

Whey wastewater, a byproduct of cottage cheese production, must undergo treatment, which was expensive for Hiland Dairy and taxing on the City of Chandler's municipal treatment facilities.

To recycle the whey, Hiland separates it from the water. The water goes to their own treatment facility, and the whey is filtered into a silo and held until the Chandler team applies it as fertilizer through irrigation pivots.

The treatment facility sits on 280 acres, and Hiland uses the surplus acreage to grow high yield feed crops,

irrigated with the treated wastewater and fertilized with the recycled whey. These crops provide area farmers with an affordable, local feed source.

The Chandler plant also produces Hiland's Red Diamond Tea, which inspired its most recent project under this sustainability initiative.

With the revelation that the tea bags are rich in nitrogen, phosphorus and potassium, a solution emerged: the Chandler team could use the tea bags to fertilize the overworked, now barren 340 acres outside the irrigation system's reach.

The results of the closed-loop sustainability initiative show the tangible

significance of Hiland's Chandler initiative. The plant reduced its amount of wastewater by 95 percent. Landfill waste was reduced by 194 tons a month. During growing season, the plant produces 1.75 tons of feed a day. And those are only a few of many notable results.

"At Hiland Dairy, we've made investments to take the three biggest wastes out of the plant and put them to work revitalizing the land," Smith said. "To be a part of such an enormous effort and see it not only succeed on a local level but also earn national recognition is incredible. It makes me proud to work for a company that's dedicated to innovation like Hiland is."

Envision and Bow Power partner in wind projects

Envision, a global smart energy solution provider, entered into a strategic partnership with Bow Power to evaluate, develop and operate utility-scale wind farm projects in Latin America, starting with a 90-megawatt project in the Peninsula of Yucatan, Mexico. This collaboration brings together state of the art technology and services provided by Envision, with engineering, construction and asset management capabilities from Bow Power and affiliate companies. "The purpose of this alliance is to work together to pursue specific opportunities across global markets, in an effort to enhance our participation in the renewable energy sector. Envision is committed to bringing advanced technologies to support Mexico in its energy transformation. We are committed to creating a clean and sustainable future while lowering the levelized cost of

energy," Envision group executive director Felix Zhang said.

The Envision – Bow Power joint venture in Energia Renovable de la Peninsula, developed by Envision's local partner ViveEnergia, was awarded with two power purchase agreements (PPAs) with Mexico's utility company CFE in the 1st Renewable Energy Auction (energy and clean certificates) and a third contract in the 2nd Auction offering capacity.

Partnering with experienced and reputable local and international companies is part of Envision's core strategy, leveraging multiple synergies and bringing comprehensive solutions to different stakeholders, not limited to off-takers, investors and lenders, in competitive global markets. The partnership with Bow Power is the first of its kind in Mexico as the companies explore business opportunities elsewhere.

Wärtsilä works towards 100 percent renewable energy

The technology group Wärtsilä is leading the way to the power industry's transformation towards a future that utilizes 100 percent renewable energy. In announcing its vision for the energy market, Wärtsilä is making a call to action since the technologies required to achieve this vision are already available. The energy sector is changing for all stakeholders, and Wärtsilä is harnessing its extensive capabilities to lead that change.

Central to maintaining a sustainable and profitable future for the industry is the need to maximize renewable generation, which is made possible by generating assets having the necessary flexibility. In the 100 percent renewables world, the majority of the energy produced will be from solar and wind power. The required operational flexibility will be provided by flexible gas assets using synthetic renewable fuels, by the extended use of energy storage technology, and by optimizing the lifecycle of the existing installations.

As an energy system integrator, Wärtsilä understands the role of differ-

ent technologies within future power systems. By combining the various assets, optimal paths towards a future with 100 percent renewables can be created. Already today, renewables – solar and wind in particular, constitute a major share of the total power generated in a number of markets, thus driving the paradigm change in the power market. As the levels of affordable renewable energy continue to replace the existing inflexible power generating capacity, a growing market for flexible generation and energy storage solutions is being created. Wärtsilä provides lifecycle services and solutions to support its customers in the energy transition.

Wärtsilä's flexible power generation solutions provide operational flexibility and will be a key element within the 100 percent renewable power system future. Wärtsilä's engine solutions already have the capability to run on various gas and liquid fuels, and Wärtsilä is looking for opportunities to develop engines for synthetic biofuels, as well as traditional biofuels.

Attis Industries converts corn ethanol coproducts into grocery bags

Attis Industries, Inc., an integrated technology and innovations holding company, unveiled the first of its planned new ecosystem of biobased products – biodegradable multi-use grocery bags.


Plastic grocery bags are lightweight, strong and extremely convenient for shoppers. The U.S. alone consumes about 100 billion of them every year. The vast majority are used once and discarded. They end up as litter, in streets, in oceans or in landfills where they take up to 1,000 years to decompose.

Year after year, 12 million barrels of fossil fuel is converted into something used for a few hours and then forgotten as it contaminates food chains over the span of generations.

Attis Industries' new Genarex subsidiary is developing corn ethanol coproducts.

Through its recent investment in Genarex, Attis is able to reduce the cost of expensive compostable bags by introducing its biobased additive packages. The formulations pass the ASTM D6400 biodegradability testing for industrial compostability and have been proven to not interfere with end of life considerations when paired with existing bioplastics. The new formulations can be used in grocery bags, lawn and leaf bags, pet waste bags, and other film solutions, providing the convenience and end of life performance at a price consumers are willing to pay.

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EQUIPMENT SPOTLIGHT

Anaerobic Digesters

by **MARY M. COX**

maryc@americanrecycler.com

Nationally, almost all organic waste goes into landfills or incinerators. Instead, that material can be used to create energy via anaerobic digestion (AD). The northeast and west coast are leading the way in utilizing AD technology – the natural process in which microorganisms break down organic materials, in the absence of oxygen (air) typically in a closed vessel, generating biogas, which can be then used as energy.

Biogas is mostly methane (CH₄) and carbon dioxide (CO₂), with very small amounts of other gases and water vapor. The CO₂ and other gases can be removed, leaving only methane, the primary component of natural gas. Digestate is the material left after anaerobic digestion happens, it can usually be separated into a solid and a liquid and also used as crop fertilizer. According to the EPA, AD systems are basically alike, whether the material involved is food waste, wastewater sludge or animal manure. The three main types of digesters are stand alone, on-farm, and those used at wastewater treatment plants. This green technology presents a win-win situation on an industrial scale. Evidence indicates that basic AD methods were used in ancient times, and the first commercial digester was established in 1950 in Germany. Countless varieties of digesters are now in use, globally. Companies such as TeamBiogas assist clients in understanding their options to better adapt, migrate and leverage their efforts so they can participate in the expanding AD marketplace.



EcoloCap Solutions Inc.

Biogas Energy offers turnkey anaerobic digestion systems including waste processing, feedstock decontamination, anaerobic digestion, power generation and CNG fuel production. "Our complete mix mesophilic technology is deployed in hundreds of biogas plants in Europe for food waste digestion. We've also built a 100 ton per day food waste digester that is located in Chico, California but the technology we offer can be scaled up or down as required, by our clients. The key for recyclers is to retain flexibility in managing changing feedstock. Biogas Energy digesters can be fed with liquids (whey, wastewater, septic, glycerin, etc.) or high solids material (grass clippings, plant material, food waste). From waste reception through post-digestion processing and energy generation, our experts

have the solution you need," stated Brian Gannon, president.

He noted that some anaerobic digestion facilities face unique challenges in working with organics recyclers: 1) Varied feed stocks, whether high-solids yard waste or low solids liquid food waste; 2) A robust operation is required to maintain uptime and throughput capacity. 3) Energy generation efficiency and low opex; and 4) The capability for contamination removal and pre-processing of feed stocks.

The use of anaerobic digestion is growing among companies that generate food waste, as it adds energy production to materials disposal. The challenging aspect in this process, however, can be the way in which mandated landfill diversion of organics can create waste streams that may be contaminated and heterogeneous. "Our systems however, enable wide feedstock variability, remove contaminants and enable full anaerobic digestion of material for energy production," Gannon explained.

EcoloCap Solutions' Bio-ART (Biological Aerobic Remediation Technology) is an aerobic, vertical in-vessel bioreactor technology "that requires a minimal capital investment and low cost of operation," Joseph Mure, marketing and public relations director, remarked. The technology remediates most any type of organic waste including but not limited to, yard waste, manures, segregated organic municipal solid waste (MSW), mixed organic MSW with plastic bags and small non-organics, human bio solids, petro

See DIGESTERS, Page 27



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Duke Energy completes acquisition of Shoreham Solar Commons

Duke Energy Renewables has completed the acquisition of the 24.9 megawatt Shoreham Solar Commons project on Long Island from Invenergy.

Shoreham Solar Commons is located in Brookhaven, New York, about 60 miles east of Manhattan, on the site of the former Tallgrass Golf Course.

It was placed into service July 1, and the Long Island Power Authority is purchasing the power under a 20 year agreement.

The project is expected to generate between \$700,000 and \$900,000 in annual tax revenue. The energy produced is estimated to displace 29,000

tons of greenhouse gas emissions annually and create nearly 1 million megawatt hours of clean, renewable energy over its lifetime.

“Repurposing the former Tallgrass Golf Course into a solar site eliminates the use of pesticides and fertilizers on the property, protecting Long Island’s fresh water aquifer,” said Invenergy’s

EVP and chief development officer Bryan Schueler. “We also planted 2,000 trees on the site, providing further environmental benefits in addition to the generation of renewable energy.”



Duke Energy Renewables expects to create nearly 1 million megawatt-hours by capturing solar energy at the repurposed Tallgrass Golf Course site.

PHOTO COURTESY OF DUKE ENERGY RENEWABLES

New York State's offshore wind development plans move forward



Block Island Wind Farm is an example of currently running wind farms on the Atlantic Coast.

PHOTO COURTESY OF DEEPWATER WIND

The New York State Public Service Commission took another step toward meeting Governor Andrew M. Cuomo’s goal of procuring at least 2.4 gigawatts of offshore wind energy by 2030 by accepting the environmental review of policy options to implement a New York State offshore wind program.

In his 2018 State of the State address, the Governor announced plans to solicit at least 800 megawatts of offshore wind power in 2018 and 2019. In January, the New York State Energy Research and Development Authority (NYSERDA) released the comprehensive Offshore Wind Master Plan, which will guide the responsible and cost-effective development of 2.4 gigawatts of offshore wind by 2030.

“The development of offshore wind energy is a vital component to achieving Governor Cuomo’s goal of 50 percent renewable energy by 2030,” said commission chair John B. Rhodes. “New York is poised to be a national leader in this burgeoning industry, reaping environmental benefit as well as creating thousands of good-paying jobs and millions of dollars of investment in our coastal communities and in New York.”

Concurrent with the issuance of the Offshore Wind Master Plan,

NYSERDA finalized an offshore wind policy options paper, which provided an assessment of alternatives for addressing a wide range of policy issues pertinent to the successful deployment of offshore wind energy. These options were provided to ensure that the State continues its progress to meet Governor Cuomo’s goal of procuring at least 800 megawatts of offshore wind power through competitive solicitations in 2018 and 2019, and 2.4 gigawatts by 2030.

In a recent decision, the Commission, as part of a mandatory environmental review developed under the State Environmental Quality Review Act, found a number of positive outcomes associated with the development of offshore wind, including: public health benefits, climate change benefits; and economic development benefits.

The environmental review also raised potential impacts, such as the need to consider sensitive biological resources, and mitigation measures to lessen these impacts. Those impacts will be taken into consideration by the Commission and can be addressed in site-specific environmental impact statements as project development proceeds.

Arizona recognized for renewables

Since 2008, Arizona has seen a 185-fold increase in the amount of electricity it gets from the sun, ranking second for solar growth in a new report released by Environment Arizona Research & Policy Center. The state also ranks in the top ten for energy efficiency, battery storage and electric vehicles.

The report, *Renewables on the Rise*, provides a state-by-state assessment of the growth of key technologies needed to power the nation with clean, renewable energy.

Arizona ranks highly in a number of categories in the report:

- 2nd for growth of solar energy generation
- 6th for electricity saved as a portion of retail sales
- 6th for utility scale battery storage additions
- 9th for the number of registered electric vehicles (per registered vehicle)
- 28th for growth of wind energy generation

Nationally, the United States produces nearly six times as much energy from the sun and the wind as we did in 2008. At the same time, the average American uses nearly 8 percent less energy than a decade ago.

“Over the last decade, key clean energy technologies have spread across the country and become core parts of our energy system,” said Gideon Weissman of Frontier Group, report co-author. “In 2017, nine states produced at least 20 percent of their electricity with wind and solar power. Back in 2008, not a single state was even close.”

The report comes as voters may consider a citizen initiative by Clean Energy for a Healthy Arizona on the ballot this November that would set the state’s renewable energy standard at 50 percent by 2030.

At the same time, Arizona Corporation commissioner Andy Tobin has put forward a proposal for the state to reach 80 percent clean energy by 2050, including large goals for energy storage and electric vehicles. His proposal includes nuclear power, which is largely not considered to be renewable because it relies on uranium for fuel and creates toxic waste.

“Arizona is on its way to powering its needs with renewable energy from the sun and the wind, while using less and storing more,” said Fanshaw. “We should seize on this progress and chart a course for Arizona to create a cleaner, greener state both now and into the future.”

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INDUSTRY PROFILE

A Closer Look

by Donna Currie

BCA Industries

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BCA Industries makes a lot of interesting products for the paper recycling industry, even if they weren't originally built for that purpose. "Reduction equipment that works well for heavier and denser materials can work for paper," John Neuens, BCA's sales and marketing director said. "They just last longer and work faster as we have proven in the insulation, pulp and cardboard industries."

The company was founded by twin engineer brothers Doug and Joe Bartelt, who started out doing car restoration and building hot rods. From working on cars, they moved into making mechanical and decorative metal items, then built their first shredder when a worldwide company asked them if they could build something that was portable and could be used in the back of a garbage truck. Of course they could!

That set them off on a new trajectory, making portable shredders. "We're the king of the portable shredders even though half of our sales are larger custom stationary systems," Neuens said. The 1000 series machines are very popular because they're simple to use and "cheap to keep." Neuens said that maintenance is always considered when machines are designed because customers can't afford downtime. "They're designed to avoid catastrophic costs," he said, so maintenance and repair costs are low and many of the replacement parts are readily available, off-the-shelf components.

One interesting use of the small portable hydraulic shredders is in the rejected product destruction business. "The beauty of the portable shredder is not always that it's portable," Neuens said, since many of the portable shredders never move once they're in place. "What is most appealing is that the shredders are turnkey," so there's no need for an electrician, a pad, or a building just for the shredder. Right now, the portable shredder can be found in over 20 different countries.

On the other side of the size spectrum is "The Beast," which is the 2000 series shredder that is currently being used by one of the largest battery recyclers in the world. To keep downtime low and maintenance costs reasonable, the machine has a series or cluster drive of eight smaller hydraulic motors rather than one large motor. If one motor goes out, the machine still operates, but with a slightly lower torque, until a new motor can be installed when it's convenient to take the machine out of service for a short time.

Another intriguing machine is the patented single-pass chipper-shredder. This machine does the work of two, since it shear-cuts and chip-cuts without the need for screening. "It's truly a revolution," Neuens said. The machine has many uses, from turning cardboard into z-shaped squiggles that are perfect for use as packaging materials, to turning lightweight plastic grocery store bags into confetti. It can also handle uncured rubber and other heavy, dense materials chipping to a size as low as 3/8 x 3/8 in a single pass.

Neuens said that this machine is "central to our future," and there is a large market for it beyond the industries they are currently selling to. To address that larger market, they're looking to license the machine. The chipper-shredder often appears at trade shows where, Neuens said, "We still have engineers who don't believe it – they look underneath for a screen." Besides the usual recyclables, the machine can handle wet and mixed materials like MSW as well.

That's not the end of the innovations, since the company designs custom machines, like the one that was built for recycling clothes hangers. Neuens explained that hangers are very difficult to recycle, since they ball up and tangle. The custom machine eliminated the need to have people separate the hangers by hand.

While Neuens is in the marketing department, he has an affinity for the design and engineering work that the company does. Before he joined BCA, he had a metalworking background, had an architectural woodworking business, and designed a boat for refueling marine vessels. He contracted BCA to build his invention and liked the company. Soon, he was working with them.

"When a customer brings you your custom problem, you have to come up with custom solutions," Neuens said, and that's something that BCA can do. "In scrap, everyone is different," he said. Even if the materials are the same, desired end product may be very different, so he tries to get to know the customer's business. "We determine what would be the best for the markets they are in."

Unlike some owners who transition into management only positions, the Bartelt brothers do much of the engineering work and split their responsibilities when working on a new machine. "They literally design together," Neuens said. "There is a synthesis of their different disciplines – there is a review process between the brothers that is organic."

"There is nothing greener than quality," Neuens said. While recycling is part of the green movement, and using recycled materials is certainly part of the cycle, Neuens pointed to the longevity of their products or any other product as being the most green part of the business. "What is greener," he asked, "something that is made from recycled products, or something that doesn't need to be replaced for 30 years?"

Apple launches new clean energy fund in China

Apple announced a new first-of-its-kind investment fund in China to connect suppliers with renewable energy sources. As part of Apple's commitment to address climate change and increase the use of renewable energy within its supply chain, 10 initial suppliers and Apple will jointly invest nearly \$300 million over the next four years into the China Clean Energy Fund. The fund will invest in and develop clean energy projects totaling more than one gigawatt of renewable energy in China, the equivalent of powering nearly one million homes.

Transitioning to clean energy can be complex. This is especially true for smaller companies that may not have access to viable clean energy sources. By virtue of its size and scale, the China Clean Energy Fund will give its participants the advantage of greater purchasing power and the ability to attain more attractive and diverse clean energy solutions. The China Clean Energy Fund will be managed by the DWS Group, which is a third party which specializes in sustainable investments and will also invest in the fund.

This news follows Apple's announcement earlier this year that its global facilities are powered by 100 percent clean energy and the launch of its Supplier Clean Energy Program in 2015.



Since that program began, 23 manufacturing partners, operating in more than 10 different countries, have committed to powering all of their Apple production with 100 percent clean energy. Apple and its suppliers will generate more than 4 gigawatts of new clean energy worldwide by 2020 – representing one-third of Apple's current manufacturing electricity footprint.

Apple is also working with its suppliers to find new ways to reduce greenhouse gas emissions. The company recently announced it reached a breakthrough with aluminium suppliers Alcoa Corporation and Rio Tinto Aluminium on a new technology that eliminates direct greenhouse gas emissions from the traditional smelting process, a key step in aluminium production.

New York DEC adopts major update to State's regulations

New York State Department of Environmental Conservation (DEC) commissioner Basil Seggos announced that DEC has adopted a rulemaking package that will make the first major update to State Environmental Quality Review (SEQR) regulations in more than two decades, preserving the integrity of the regulations and streamlining the environmental review process.

The updates to SEQR will take effect on January 1, 2019, and will expand the number of actions not subject to further review, known as Type II actions, modify thresholds for actions deemed more likely to require the preparation of an environmental impact statement (EIS), and require scoping of an EIS. Additional highlights regarding content of a draft EIS, are the consideration of measures to avoid or reduce an action's impacts on climate change-induced conditions such as sea level rise and flooding, as well as enhancements to make acceptance procedures for EIS more consistent. Examples of Type II actions to be added include:

- Green infrastructure upgrades or retrofits;
- Installation of solar arrays on closed landfills, cleaned-up brownfield sites, wastewater treatment facilities, sites zoned for industrial use, or solar canopies on residential and commercial parking facilities;
- Installation of solar arrays on an existing structure not listed on the National or State Register of Historic Places;

- Reuse of a residential or commercial structure, or structure containing mixed residential and commercial uses;

- Acquisition and dedication of parkland;

- Land transfers in connection with one, two or three family housing; and

- Construction and operation of certain anaerobic digesters at operating publicly owned landfills.

DEC's updates to SEQR were subject to one of the most extensive stakeholder outreach campaigns in agency history and were designed to address concerns shared by a wide range of stakeholders while still maintaining SEQR's purpose of protecting the public and the environment. In addition to a full public scoping process for the draft EIS, DEC held 11 stakeholder meetings with representatives from the business community, environmental groups, and local governments over two years. DEC received more than 280 comments from the public after the proposed regulations were released in 2017.

The final rules are available on DEC's website and noticed in both the Environmental Notice Bulletin and the State Register as of July 18. DEC expects to release an updated SEQR Handbook and SEQR workbooks later this year to reflect the regulatory changes that take effect on January 1, 2019. In addition, DEC will provide training for lead agencies to ensure they understand the changes to the SEQR process.

Shift to electric transit buses continues as performance increases

Momentum Dynamics Corporation, a leader in high power wireless charging for electric vehicles, has commissioned a 200 kilowatt wireless charging system to support zero emission electric transit buses in Chattanooga, Tennessee. The system is installed inside the Chattanooga Area Regional Transportation Authority (ARTA) Shuttle Park and automatically charges while loading and unloading passengers. Momentum's wireless charger is UL field certified and became operational on June 26, 2018.

On-route high power charging is a critical milestone in growing the world's fleet of battery electric municipal buses. Electric buses can now outperform diesel-fueled and hybrid buses in terms of the all-important measure of driving range – while eliminating toxic tailpipe emissions to zero and dramatically reducing costs of operation. The Momentum charging system is safe, fast, efficient and has the lowest total cost of ownership for any high-power charging solution. The system is installed in the roadway, which allows buses to be recharged multiple times per day during their scheduled stops. In this short period of time, the battery of the bus receives enough energy to allow the bus to complete another circulation loop, thereby enabling unlimited driving range.

Momentum's chief executive officer Andrew Daga added, "Limited driving range is regarded as the key roadblock to the adoption of electric vehicles. To replace fossil fuel buses with electric buses, an alternative to overnight plug-in charging must be used to allow for extended operations. On-route wireless charging allows an electric bus to drive any route in any city with unlimited driving range."

The Momentum® wireless charger installed at ARTA is the second installation in North America to operate at the 200-kilowatt power level. It follows the recent installation for Link Transit in Wenatchee, Washington. Additional wireless charging systems will be installed in the U.S. this year and multiple installations are planned for Europe in 2019. Momentum's breakthrough technology is designed and manufactured in the U.S., and can be used in electric cars, autonomous vehicles, and commercial trucks.

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Digesters

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sludge as well as other hazardous organic waste. Each Bio-ART module inputs 15 tons per day, 525 ft² per module, with a processing time of 7 days. Processing bio solids requires 14 days to meet EPA regulations. The daily output is a compost/soil amendment or biomass (18 to 20 million btu per ton) is approximately equal to 1/3 the input by weight, containing a 15 to 25 percent moisture content and virtually no odor.

Government mandates are restricting organics from landfills in an effort to achieve zero waste goals. Mure noted that Bio-ART systems offer favorable logistics designed to accept virtually all organic materials, including meats, FOG (fat, oil, grease), produce, and dairy. Plastic bags and larger plastic pieces are automatically separated via pre-processing equipment and prior to entering the vessel. It is acceptable for napkins, paper towels, and compostable plates, bowls, cutlery, and paper cups to remain in the digesting process. Smaller non-organics are separated during post processing.

The first installation established by U.S. Bio-ART is located in Chicago at the Lakeshore Recycling Systems transfer station, processing 15 tons per day, with the capacity to expand to 120 tons per day. The energy efficient Bio-ART composting technology is UL Approved, Chicago EPA, Illinois EPA, Federal EPA and OSHA-compliant. EcoloCap's manufacturing plant, located in South Korea, remediates over 10,000 MT per day of mixed organics, using the Bio-ART technology. "As demonstrated by the LRS installation, the clean, odor free, Bio-ART system can collocate at existing MRFs and transfer stations.

Colocation of Bio-ART saves money for operators, in hauling and tipping fees, as well as revenue derived from compost/fertilizer sales. System installation takes approximately three to six months from order to commissioning," said Mure.

Impact Bioenergy manufactures and sells portable, prefabricated bioenergy systems that convert organic waste materials into renewable and storable energy and fertilizer with zero waste. Jan Allen, president, explained how "Our systems truly deliver a zero waste solution to a universal problem. Rarely does an opportunity come along that can touch on energy, water, air, soil, food, jobs and education simultaneously. Our system does. Generating chemical free plant food is a bonus to generating renewable energy. Also, trucking and exporting waste, traffic congestion and emissions can all be substantially reduced by digester use."

Allen has witnessed over 10 million tons of waste become something new and valuable, and started his company in 2013 because no one in North America offered microdigesters. Inside, microbes convert decomposing food into natural gas and liquid fertilizer. "Think of this as a mechanical cow or horse. Our "HORSE" (high-solids



Impact Bioenergy Inc.

organic waste recycling system with electrical output) eats, burps out gas, and makes manure but is innovative because we've miniaturized the process involved, made it affordable and added odor control. Our smallest HORSE feeds on 960 lbs. per week and takes about 2 hours a week to feed and manage. With our product, designed for easy use and with few moving parts, food waste flows by gravity through the digester, which is perfect for small campuses, craft brewers/distillers, and restaurants. Our larger Nautilus product can process 35,000 lbs. per week and is a good fit for use on an island," said Allen.

He added, "Although commonly used at wastewater plants and dairy farms, our biggest challenge is convincing other entities to utilize this technology. The University of California, San Diego will soon install a digester and hopefully, more colleges and businesses

that want to go green will follow their lead. We receive daily inquiries from islands, campuses, beverage and food manufacturers, food service and catering operations. We inspire people to find a better way to move carbon-rich resources back to the soil. The New York Times and National Public Radio both recently featured soil regeneration as a cutting edge issue. There is good reason for that, given the loss and damage done just from factors such as the burning of diesel fuel. It is the largest source of GHG from vehicles – 25 billion gallons of fuel burned last year in the U.S. resulted in 10 kg GHG emissions per gallon. Resulting traffic congestion wasted money, time, and fuel, which translated to \$305 billion in lost U.S. productivity last year and valuable carbon-rich resources were buried in landfills. In 2017, \$218 billion in food was wasted domestically, and another \$15 billion was spent, landfilling it."

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