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www.wasteadvantagemag.com November 2012 Vol.3, No.11

WasteAdvantage^{magazine}

The Advantage in the Waste Industry and Recycling Industry



The Newton, IA Landfill: A Smooth Operation

10 Steps to Make Your
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Editor's Note



BY THE TIME THIS ISSUE OF *WASTE ADVANTAGE* MAGAZINE COMES OUT, THE 2012

presidential election will just be over and we will be setting a course on a path supposedly toward a better future. It will be interesting to see how environmental strategies, including energy plans and "being green", will play into this. We will be keeping our eyes and ears open in order to see or hear what new changes or updates will be coming on the horizon and how they will affect the industry.

November's issue features a spotlight on the Newton, IA Landfill (page 14), which has not only navigated the local, State and federal political landscapes, but has also kept operations running smoothly through its share of changes. Other articles focus on "Tidying Up Your Company's Credit" (page 20), which reveals 10 steps to making your next loan application process less stressful, and "Cell Phones and Driving are Bad for Business" (page 28), focusing on why it is a good idea to institute and enforce policies banning cell phones and texting while driving. And don't miss the second part of the series, "Connecting and Mounting a Power Take-Off" (page 24), covering the PTO installation process step-by-step, or "Let's Be Social" (page 32), that gives advice on planning a strategy to using social media platforms to your full advantage.

Waste Advantage Magazine's Recycling/Transfer Stations/Landfills section also features some great articles—from the next frontier for waste management (page 52), to planning and designing a transfer station and MRFs to support zero waste initiatives (page 57), and landfilling in the European Union (page 60). Be sure to check it out and see how all three link together.

Also be sure to log on to our Web site at www.wasteadvantagemag.com and visit our news page, Marketplace and rotating videos, articles and past archives for even more complete information on the industry. As always, feel free to contact me with any comments, questions or requests. It's great to hear from you.

Best Regards,

Angelina Ruiz
Editorial Director
angelina@wasteadvantagemag.com

Editorial Advisory Board

Rick Eggleton
Human Resources
Universal Waste Systems (Santa Fe Springs, CA)

Sal Tagliavia
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PUBLISHER

Gary Orfe
gary@wasteadvantagemag.com
(800) 358-2873 Ext. 2

EDITORIAL

Editorial Director
Angelina Ruiz
angelina@wasteadvantagemag.com
(800) 358-2873 Ext. 7

Associate Editor
Meghan Pirone

ART/PRODUCTION

Director of Production/Design
Heidi Jensen
heidi@wasteadvantagemag.com
(800) 358-2873 Ext. 8

CIRCULATION

Circulation
Amanda Cordano
circulation@wasteadvantagemag.com
(800) 358-2873 Ext. 6

SALES

Sales Manager
Noreen Cocron
(800) 358-2873 Ext. 1
noreen@wasteadvantagemag.com

Account Executive

Marcus Rubio
(800) 358-2873 Ext. 3
marcus@wasteadvantagemag.com

ACCOUNTING

Accounting Manager
Elisa Weil
elisa@wasteadvantagemag.com
(800) 358-2873 Ext. 5

WASTE ADVANTAGE, LLC.

PO BOX 30126
PALM BEACH GARDENS, FLORIDA 33420-0126
TEL: (800) 358-2873 • FAX: (888) 871-4515

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The large surface area of BOMAG's 472 RB's blade allows large refuse loads at the Newton, IA Landfill to be quickly and easily spread.

Photo courtesy of BOMAG (Kewanee, IL).

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Photo courtesy of McGill Environmental Systems (middle) and Potluck Pick-Up (right).



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Wayne Engineering Hosts An Open House

WAYNE ENGINEERING (Cedar Falls, IA) is hosting an open house and barbecue on November 16th from 10AM to 3PM at 1801 West Watkins Street in Phoenix, AZ. Open to all private and municipal waste haulers in Arizona and Wayne's customers nationwide, this free event will feature several live demonstration vehicles featuring the company's most recent developments.

Having established a factory direct dealership in Phoenix, AZ this past summer, this location now acts as the service and warranty center for Wayne refuse trucks and street sweepers in Arizona. The new dealership will begin parts distribution for the West Coast and expects to be fully integrated by 2nd Quarter of 2013. This dealership currently carries Wayne's line of refuse trucks and street sweepers and will be adding truck equipment franchises such as tarping systems, roll off bodies, sewer vacuums, flat beds and service bodies. Wayne also expects to begin carrying a complete line of truck equipment accessories. Wayne's factory in Iowa will continue to provide parts distribution needs to Midwest and East Coast customers. With this important move, Wayne will be able to service customers in the Western U.S. in one to three days via UPS Ground rather than three to five days from Iowa.

For more information, call (480) 695-3503 or visit www.waynetrucks.com.

Eaton's National Distributor Meeting a Success

At its 2012 annual national distributor meeting held in September, **EATON** (Beachwood, OH) hosted a panel discussion on "How to Win on Refuse Collection Platforms." This breakout session included discussions of a recent customer success story involving Force America (distributor), Wayne Engineering (OEM), Waste Pro (end-user) and Eaton. Although this case

study highlighted a refuse platform success story, Eaton presented an approach that could be replicated in other markets and platforms: from the solution description and value proposition (Power On Demand - Eaton), to the benefits when integrated onto a platform (OE- Wayne), and finally the operational cost savings and productivity gains realized by the end user (Waste Pro)—the entire value cycle. The panel included key members of the three organizations' sales, engineering and operations teams: Scott Kanne, Executive Vice President of Wayne Engineering, Bob Nicholas, Fleet Director for Waste Pro, Corey Moore, Commercial Vehicle Segment Director for Eaton and Robert Golin, Refuse Platform Sales Manager for Eaton. The audience consisted of Eaton Hydraulic distributors from around the world, as well as several members of Eaton's team from operations, engineering, marketing and sales. There were also numerous demonstrations of the custom-designed and built Wayne Titan front end loader, with a custom Curroto can, all with Eaton's smart hydraulics to provide pack at idle, significant fuel improvement and emission reduction. A trade show venue was also held where Scott Kanne and Bob Nichols met and shared this solution success story with Sandy Cutler, Eaton's Chairman and CEO.

For more information, call (800) 386-1911 or visit www.eaton.com.

Deist Industries, Inc. Acquires Roll-off Parts, LLC

DEIST INDUSTRIES, INC. (Hadley, PA), parent company to Bucks Fabricating™, has acquired Roll-off Parts, LLC including all of the company's technology. This acquisition fits perfectly with the strategic plan of Deist Industries and is designed to increase access to company products while also providing 24-hour accessible parts sales throughout the U.S. and abroad. Bucks Fabricating has been associated with Roll-off Parts, LLC for an extended period of time and has been supplying them with quality, American-made parts. All of Bucks parts are made with ASTM structural-grade steel to keep your roll-off fleet moving every day. Replacement parts for Bucks Fabricating containers and other manufacturer containers can now be purchased through roll-offparts.com or from the Roll-off Parts mobile apps on the Apple and Android markets. These parts include: hinges, latches, wheels, rollers, tailgates, post caps, hook-plates, A-frames and much more. Through the efficiencies in this process and large parts purchases, Bucks quality parts are now available at competitive prices through roll-offparts.com.

For more information, call (800) 233-0867 or visit www.bucksfab.com.

Mack Bulldog Hood Ornament Turns 80

The iconic Mack Bulldog® hood ornament celebrated its 80th birthday last month. The Bulldog first became associated with **MACK TRUCKS** (Greensboro, NC) during World War I. British soldiers nicknamed the Mack AC models used in the Allied effort "Bulldog Macks" because of their tenacity. The Bulldog moniker stuck from that point on. Years later in 1932, Alfred Fellows Masury, a chief engineer at Mack Trucks, was in the hospital for surgery. Not one to be idle for long, during his recovery, Masury hand-carved the first model of the now iconic Bulldog hood ornament out of a bar of soap. Once released from the hospital, Masury applied for a patent on his design. The patent was granted Oct. 11, 1932. Masury was killed in the crash of U.S. Navy airship Akron in 1933, the same year the Bulldog hood ornament began adorning Mack trucks. The hood ornament functions as a grip for opening the hood of the truck.

"For 80 years, the Bulldog hood ornament has been a symbol of the durability and reliability customers expect from Mack," said Kevin Flaherty, president, Mack Trucks North American Sales and Marketing. "We're proud of our heritage and that the Bulldog has become so widely recognized—and we tip our hats to Alfred Masury for his contribution to our legacy."

For more information, visit www.macktrucks.com.

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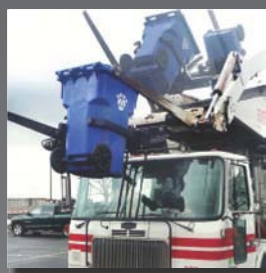
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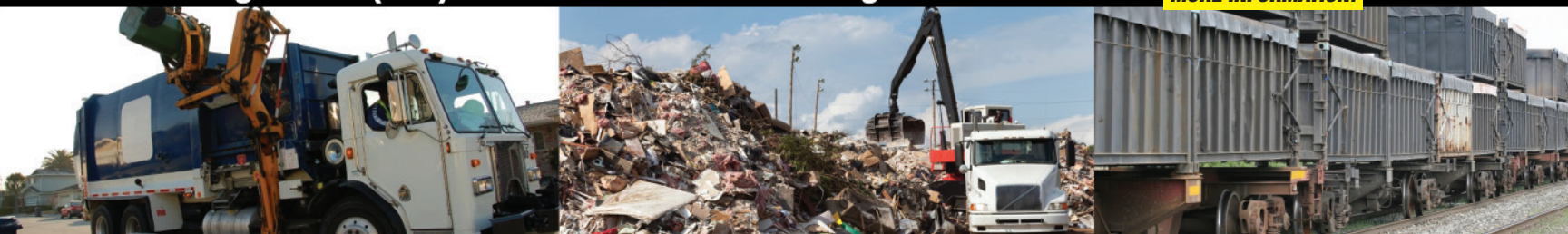
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27 – 29: National Advanced Biofuels Conference & Expo

Hilton Americas – Houston
Houston, TX
www.biorefiningconference.com

28 – 29: Waste Conversion Congress West Coast

Renaissance Hotel
Long Beach, CA
www.renewable-waste.com/waste-conversion-west

DECEMBER 2012

11 – 13: Renewable Energy World Conference & Expo North America

Orange County Convention Center
Orlando, FL
www.renewableenergyworld-events.com

13: Post-Closure of MSW Landfills: Development of a Performance-Based Approach (Webinar)

1:00 – 2:30 pm EST
www.erefdn.org

JANUARY 2013

23 – 24: 5th Annual Kuwait Waste Management Conference & Exhibition

Radisson Blu Hotel
Kuwait City, Kuwait
www.promediakw.com/2013/waste

27 – 30: Managing Recycling Systems Training/Exam

Florida Hotel and Conference Center
Orlando, FL
www.swanafl.org

28 – 31: U.S. Composting Council 21st Annual Conference & Trade Show

Buena Vista Palace Hotel and Spa
Lake Buena Vista-Orlando, FL
www.compostingcouncil.org/conference

29 – 31: 16th LMOP Annual Conference and Project Expo

Hilton Baltimore
Baltimore, MD
www.epa.gov/lmop/workshops/16th.html

30 – 31: SWANA FL/RFT (Recycle Florida Today) Joint Winter Summit

Florida Hotel and Conference Center
Orlando, FL
www.swanafl.org

31 – February 1: Mia Green Expo & Conference

Miami Beach Convention Center
Miami Beach, FL
www.miagreen.com

FEBRUARY 2013

3 – 9: SeminarFest

The Flamingo
Las Vegas, NV
www.asse.org/education/seminarfest13

24 – 28: WM Symposia

Phoenix Convention Center
Phoenix, AZ
www.wmsym.org

25 – 26: The Road to Zero Waste Conference

Embassy Suites Atlanta at Centennial Olympic Park
Atlanta, GA
<http://zerowaste.swana.org>

MARCH 2013

6 – 8: The Work Truck Show

Indiana Convention Center
Indianapolis, IN
www.ntea.com/worktruckshow

10 – 13: 26th Annual Southeast Recycling Conference & Trade Show

Hilton Sandestin Beach Golf Resort and Spa
Destin, FL
www.southeastrecycling.com

18 – 21: SWANA's 36th Landfill Gas Symposium

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Government Gossip



Solid Waste and Recycling Collectors Identified as Nation's 4th Most Dangerous Profession

NSWMA is troubled by statistics released by the U.S. Bureau of Labor Statistics (BLS). In the report (*Census of Fatal Occupational Injuries Summary, 2011*), BLS states that 34 waste and recycling collectors died on the job in 2011, a 31 percent increase from the number of fatalities reported by BLS in 2010. The BLS report states that refuse and recyclable material collectors had a fatal injury rate of 41.2 per 100,000 full-time equivalent workers in 2011, compared to a rate of 29.8 per 100,000 in 2010. The BLS now ranks solid waste and recycling collection as the 4th most dangerous profession in the U.S., up from 2010's No. 7 ranking.

NSWMA Safety Director David Biderman stated, "We are concerned that the new federal data shows a reversal of the great progress we made as an industry during the past decade. Safety has been and continues to be an important focus for NSWMA and its members. We are working to better understand the root causes of these accidents so we can provide better safety-related information to the industry." Biderman urges all haulers and governments to participate in NSWMA safety programs, including Safety Monday, regional



training events, the *Be Safe Be Proud* video series and the Slow Down to Get Around program, as well as communicating the importance of working safely to their employees.

For more information about how you can help protect yourself and keep waste and recycling workers safe, visit www.environmentalisteveryday.org/safety.

Waste Industry Releases Revised Standard



The Waste Equipment Technology Association (WASTEC)—the secretariat for the American National Standard Institute (ANSI)

for all industry standards related to equipment technology and operations for wastes and recyclable management (ANSI Z245)—announces the release of the revised standard for safety requirements for mobile equipment used in the collection, transportation and management of waste, recyclable and repurposed materials. The ANSI Z245 full committee focused a great deal on making manufacturer and user safety a priority. Many important changes and requirements have been added since the 2008 version of this standard, including sections that address ladders, fall protection and battery disconnects.

This revised standard applies to the construction, reconstruction, modification, care, maintenance, operation, and use of mobile waste or recyclable materials collecting, transportation and compacting equipment. The standard identifies requirements for refuse collecting and compacting equipment mounted on a refuse truck chassis, including rear-loading, front-loading and side-loading compacting equipment; tilt-frame and hoist-type equipment; grapple loaders; satellite vehicles; waste transfer vehicles; recycling collection vehicles; and mechanized container collecting and lifting equipment.

For more information visit www.wastec.org.

ISRI Applauds the EPA for its Sustainable Materials Management Electronics Challenge



The Institute of Scrap Recycling Industries, Inc. (ISRI), the voice of the recycling industry, applauds EPA for its announcement of the Sustainable Materials Management (SMM)

Electronics Challenge, "an initiative to make protective electronics refurbishing and recycling practices the industry standard." Electronics companies participating in the challenge will commit to send 100 percent of the used electronics they collect to third-party certified refurbishers and recyclers.

The new EPA program is an effort that ISRI supports to establish benchmarks within the industry that ensure proper recycling practices. According to ISRI, three to four million tons of electronics are recycled each year. With so much consumer data at stake, responsible recycling and certification is paramount for any company seeking to protect sensitive data. "We commend the EPA for creating this challenge and the forward-thinking companies participating in the initiative," said Robin K. Wiener, president of ISRI. "Safeguarding consumer information and other sensitive data is a must-have component of the electronics recycling process, and certification is the answer to proper data protection and destruction. We are thrilled that EPA continues to support the R2 Standard as one of the premier gold standards in the industry."

For more information, visit www.isri.org.

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The Newton, IA Landfill: A Smooth Operation

While navigating the local, State and federal political landscapes, the NEWTON, IA LANDFILL HAS MAINTAINED ITS OPERATIONS TIMELY AND EFFICIENTLY.

THE NEWTON, IA LANDFILL STARTED OUT AS AN OLD

strip mine in 1945. When it first was created, trash was dumped at the site and whenever it was needed, the garbage was set on fire and pushed into the old strip mine. As the rules have changed throughout the years, the dump was transitioned into a sanitary landfill in the late 1960s. However, at that time the trash would still pile up and would not get covered according to today's standards. Finally, as the regulations changed, the way of processing the waste was changed as well. Now, serving all of Jasper County, the landfill operation employs a full-time staff of five and hires part-time people to help with the litter control, mowing, weeding and other maintenance as needed.

The landfill deals with not only solid waste, but also some recyclables—plastics, glass and metals—and they act as a drop-off point for recycling motor oil, antifreeze, car batteries, tires, etc. as well. Because many of the

major communities they serve have gone to curbside recycling, most of the recycling items that they get are hygiene products and leftover household products from rural residences. In addition, the landfill takes yard waste, burning the brush and composting the rest to use onsite.

Navigating Tough Times

Rod Van Dusseldorp, Superintendent of the Newton, IA Landfill, explains that although they have experienced cutbacks due to a slow economy, they are staying even with demand across the board and still getting things done efficiently. "It seems like every time the economy slows down, the first place everyone wants to cut is in sanitation because its one of those things that are out of sight, out of mind," says Van Dusseldorp. "Not everyone sees the landfill, so if you don't have the equipment or the manpower to keep the garbage

Clean wheels aid in traction and pushing power to efficiently place refuse.



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The aggressive teeth of BOMAG's PAKALL polygonal wheels fully penetrate and shred site refuse.

Every year, the Newton, IA Landfill handles:

- 50 tons of tires
- 7,000 gallons of oil
- 300 gallons of antifreeze
- 5 – 7 tons car batteries
- HHW (Satellite with Des Moines metro): 10,000 – 15,000 lbs

Equipment used:

- BOMAG Compactor
- CAT D8 Dozer
- CAT IT28 Toolcarrier
- P39 Sumatzu Dozer
- John Deere Tractor Mower

The Newton, IA Landfill: A Smooth Operation

covered or compacted, they don't think about it because they don't see it. Most of the things that get neglected are some of the maintenance—grounds or equipment—because you don't have the time and the people to do it properly.”

Van Dusseldorp says that he's seen less waste come in since economy has fluxuated. At one time, the city of Newtown housed the Maytag headquarters, and the factory's waste resulted in 20 percent of the landfill's volume. However, when the facility closed in 2008, it made a pretty big cut in the landfill's volume, although there was an influx of waste from the closedown for another year. Van Dusseldorp points out that the good thing is some other small businesses did come into town after Maytag closed—in 2009 Trinitiy Towers, a company that makes towers for the turbines, and a wind turbine company, TPI, in 2010. “So we have offset a lot of what we lost from the closure of Maytag,” he says.

Another thing Van Dusseldorp has noticed is that back when the economy was doing better and based on Maytag, the landfill would see a lot of discarded appliances every year at Christmas time. “We don't see that like we used to. We also have seen a lot more remodeling going on rather than new construction. Landfills can be a great barometer of the economy.”

Availability to the Community

Every year, the Newton, IA Landfill would hold three recycling events. However, due to the traffic problem it would create and the landfill's vicinity to the highway, these events were eliminated in lieu of allowing people to bring in their recyclables either as a drop off or via appointment. “It keeps the crowds and the lines down and is a lot more manageable,” says Van Dusseldorp. He goes on to point out that they do advertise the services available through. In addition, he has given talks at the local schools when requested—from elementary to college—and the landfill has provided many tours peaking usually during the spring months, April and May (i.e., Earth Day). Says Van Dusseldorp, “We did a full day tour about two years ago for college students from mainly European countries. It was very interesting because they asked a lot of good questions and we shared a lot of information back and forth on how they did things in other countries. For example, Germany is much more advanced in recycling than we are. They were fascinated by the amount of ground that we had for our small landfill and the way we did things.” When the landfill was going through a rapid rules change back in the early 1990s, there were a lot of requests to do the onsite visits, explains Van Dusseldorp, and now that the rules have been fairly consistent for the last five years, the number of tour and lecture requests has stayed flat and consistent.

Training and Safety

At the landfill, training and safety go hand in hand. When a new employee comes onboard, the first thing management does is to send them through a state-certified operations training class so they can get a state certification. They also do first aid and CPR training through the local Red Cross. Every year, during the winter months when things are slower, the staff sits down and goes through their emergency response procedures and prevention plans (which is part of its safety program). “We have a safety consultant that comes in and does a 10-hour refresher

training every year and he also holds classes on compliance space entry, traffic control and other topics. We also work through the Metro Waste Authority on household hazardous waste training, which is an eight-hour annual class," says Van Dusseldorp. Because of the low number of employees and staggered hours, new personnel works by themselves on a weekend morning with a supervisor before moving to weekdays. Although the employee may not be riding on the piece of equipment with someone, the supervisor will be in the vicinity while the employee is getting the feel of the equipment and how it operates. In addition, management holds off on the new employees interacting with the customers until they feel comfortable enough with the equipment.

The Political Landscape

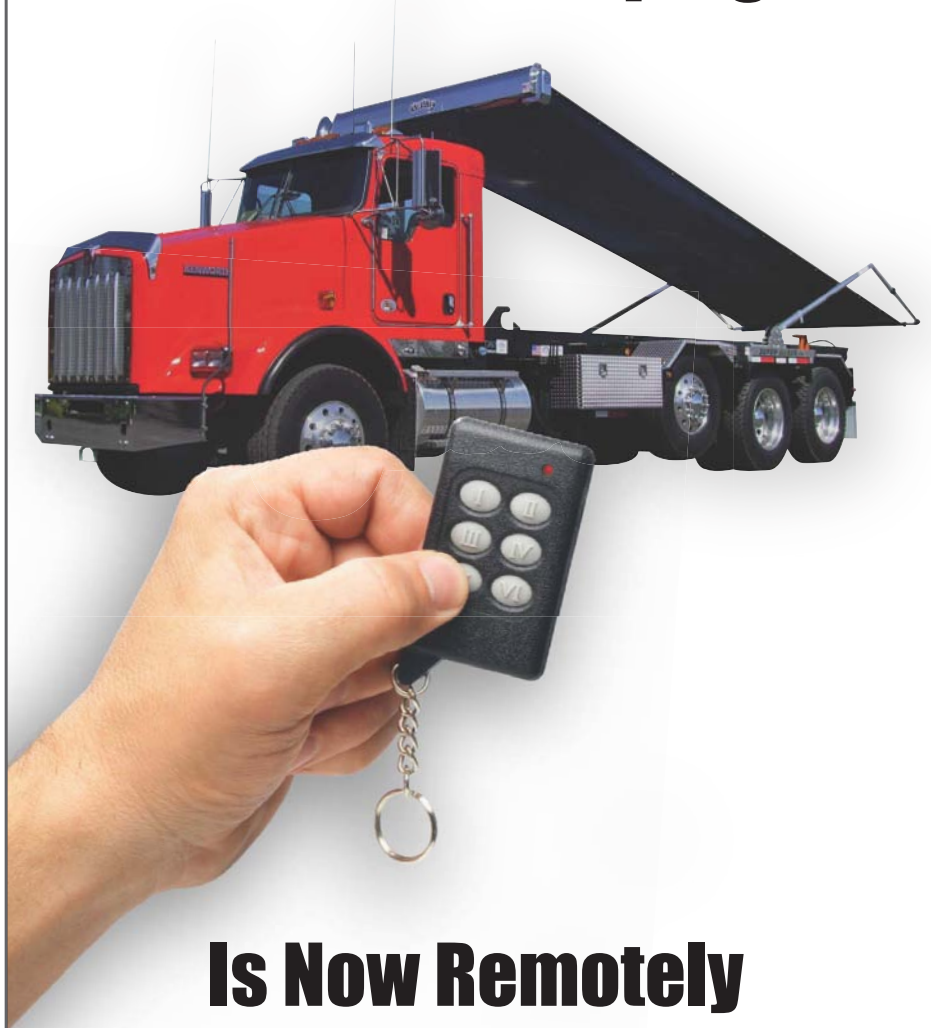
Currently, says Van Dusseldorp, his biggest challenge is politics, all at the local, State and federal levels. "Again, it is the out of sight, out of mind thinking. When you go to a local government and tell them that you need to raise certain fees because the State has changed the regulations on post-closure funding, the price of fuel is going up or we need equipment replacement and maintenance, they think we don't need to because they want to use funds in another way," he says. "The city of Newton oversees the landfill as daily operation so we have to go through the city council in order to do anything minor. If it's a major expense or repair, then we have to notify all 12 members of the board about what's going on so they can have an official meeting. Answer time varies—a couple of years ago we had a tractor that had a major breakdown and for three weeks we were trying to get someone to make a decision. There has been other times when we've had a breakdown and had an answer in a couple of hours. It's hard to predict and gets a little frustrating."

He points out that politics is also a challenge for them at a larger level because while it seems easy for someone sitting in a desk to come up with an idea or plan on changing a rule or regulation, when it comes down to the reality of doing it, there's usually a cost factor involved that no one really wants to look at. "When it comes to some ideas, there's not a lot of common sense to their thinking and sometimes not even a need. However, once these ideas get thrown out into the public and people think it sounds great, someone starts putting the pencil to the paper on what it may cost and finds out, it's not such a good plan."

Major Changes Through the Years

Despite these challenges, Van Dusseldorp is most proud of all that the landfill has become today—

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transitioning from a dump to a compliant and smooth operation—especially since it was a major change not only in educating the public, but also the people who work at the facility. In addition, he stresses that getting into household hazardous waste disposal in 1995 was a very big accomplishment that has been received and used very well. Now when people need to get rid of household hazardous waste such as leftover draino, oil, car batteries, etc. they will bring it to the landfill. The influx of this type of waste varies with the weather; Van Dusseldorp says that spring and fall are usually when they see the heaviest amount of volume since people are getting ready for winter or summer. “We’ll run somewhere in the area of 75 to 150 people per month during April, May, September and October. We do try to limit taking household hazardous waste in the winter since the facilities we have out here aren’t heated. Several years ago, it was one of those winters where it was below freezing at night and the latex paint cans that had been collected split, so there was latex paint all over the ground. Although we were able to clean it up when the weather got warmer, we basically quit taking household hazardous waste in the winter from that point on.” Van Dusseldorp is quick to point out, however, that if there is an emergency, such as a death in the family and a house has to be cleaned out, the facility will accept the waste, handle it and process it.

In order to make the public continuously aware of the services the landfill offers, they have held some small promotions as budget allows funded by some of the fees collected, including giving out stickers, pencils, wheel charts, etc. that help to promote the proper storage and disposal of household hazardous waste and different materials.

Looking Ahead

Right now, Van Dusseldorp says that the landfill’s survival is most important. “We have a life expectancy here of approximately 100 to 110 years under our current conditions. I have a great staff here. All of us here like to keep things looking nice because we have to look at it everyday. We also try to get compliments from customers who come in and out. When we’ve been mowing and maintaining a clean appearance, you like to hear things like that.” Since the landfill is in a rural area, Van Dusseldorp says that they get a lot of wildlife around the facility and it’s one thing that everyone loves to watch, especially when a deer or pheasants run through. “Usually everyone will stop and take a look and I think that it gives them a little bit of an incentive to try to do everything right because they are trying to protect the wildlife as well as the people in the area.” | **WA**

For more information, contact Rod Van Dusseldorp, at (641) 792-3866 or e-mail landfill@netins.net.

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Tidying up Your Company's Credit: 10 Steps to Make Your Next Truck Loan Application Easier and Less Stressful

Karen Pembroke

By using lenders who understand trucks and the waste industry, tidying up your company's safety fitness rating, and getting your company's business plan and financial statements together, YOU'RE PLACING YOUR COMPANY IN A GOOD POSITION TO QUALIFY FOR A LOAN.

IT MAY SEEM LIKE THE ONLY COMPANIES THAT CAN

get credit to buy new or used trucks are those that don't need it, particularly in a recovering economy. However, by taking proactive steps, such as gathering financial statements, dusting off the company business plan or completing one, and improving or maintaining your company's safety fitness ratings, there's little reason why companies shouldn't be able to get a loan. Particularly if they work through a lender that understands trucks, fleets and the waste industry.

It's a good idea to share your company's story with your truck dealer so that the dealer can share your goals and needs with the lender. For example, companies that have shown how they worked through economical difficulties have had more success with loan applications. It's also important to show lenders how you generate your income. Who do you haul for and how long have you been hauling for your customer(s)? Lenders are looking for longevity and stability when they consider whether to approve loans.

Following is a list of 10 tips that can help fleets improve their chances of an approval when they apply for a new or used equipment loan.

#1: Safety Pays—Examine Your Safety Assessment on the CSA Web Site

Companies that operate interstate truck and trailers or that are required by their state department of transportation to have a federal DOT number on their trucks should examine their fleet's safety assessment on the U.S. Federal Motor Carrier Safety Administration's Compliance, Safety, Accountability (FMCSA) program Web site at <http://ai.fmcsa.dot.gov/sms>. An unsatisfactory carrier safety rating could make you too much of a credit risk. If you have a checkered safety history, lenders will wonder about your ability to operate safely and efficiently and your commitment to repay the loan. If something shows up on your safety assessment, companies should contact the FMCSA through the Web site at <https://dataqs.fmcsa.dot.gov/login.asp> on how to best address the issue.

#2: Gather Your Most Recent Financial Statements from the Last Three Fiscal Years, Including the Most Current

Some of the most important pieces of information that will help your company establish whether it can

Be Aware of Differences in Business Credit Reporting from Personal Credit Reporting

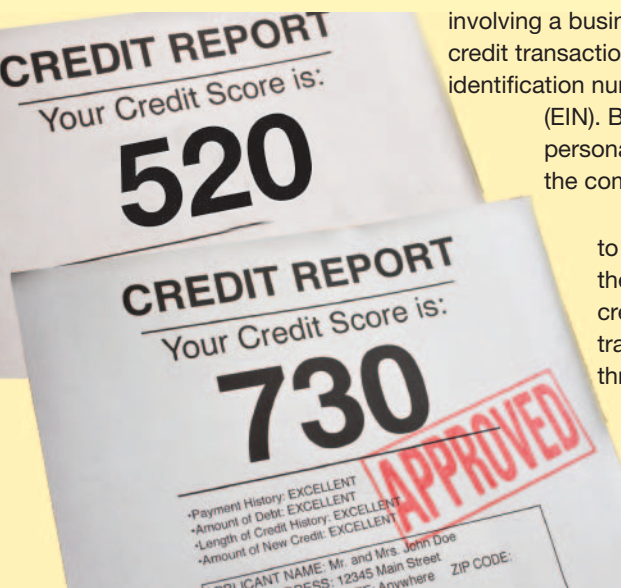
Trade or business credit, which is not reported in the same way as personal credit, often refers to transactions involving a business issuing another business credit. Business credit bureaus gather information about trade credit transactions to create a business credit report using the business' name, address and federal tax identification number (FIN), also known as an employer identification number

(EIN). Business credit scores range on a scale from 0 to 100, instead of the 300 to 850 range used in personal credit ratings. As with personal credit scores, the higher the business credit score, the better the company's credit rating.

In many cases, lenders will rely on a company's business credit report to determine if they want to grant a company credit and how much credit they'll give. Because information provided to the business credit bureaus is sent in voluntarily—businesses are not required to send it in—the credit bureaus may never receive all or even any information about a company's business credit transactions. So, establishing a business or trade credit report for your company at one or all three of the business credit bureaus would be a good idea.

To check your company's credit report or to establish a report at one or all three major business credit bureaus lenders commonly use, visit:

- Experian Business: www.experian.com/small-business/small-business-credit.jsp
- Equifax Business: www.equifax.com/business/en_us
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Tidying up Your Company's Credit: 10 Steps to Make Your Next Truck Loan Application Easier and Less Stressful

borrow money for new equipment are its financial statements. The recent downturn in the economy may have wreaked havoc with your company's profit and loss statements. If that's the case, it may be important for your company to go back further and show financial statements from the past several years, particularly if they show your company was doing well before the downturn in the economy. If your company has seen dramatically improved results in the last several months to a year, be sure to point that out. And explain how you think those results will continue. The key is to have statements readily available to provide to the lender.

#3: Update Your Company Business Plan or Consider Drafting One if Needed

It's important for lenders to understand your business, who are your customers, how you operate, your company's mission and future plans. Your company's business plan should explain where your company operates, how it operates, how it generates income and from which customers. If most of your company's revenue comes from one or handful of customers, you should explain your company's relationship with those customers, and why you think those customers will remain with you. If your company is planning to move into new markets in the next several years, that should be something included in your company's business plan.

On the other hand, if your company doesn't have a business plan, visit the U.S. Small Business Administration's Web site for tips on how to write one: www.sba.gov/category/navigation-structure/starting-managing-business/starting-business/how-write-business-plan.

#4: Establish Good Commercial Credit References

Establish or obtain commercial credit references from three or more companies with whom you do business. A commercial equipment lender or bank is the most important source; additional references could be your tire dealer, diesel fuel provider, parts supplier or anywhere your company has established accounts it pays regularly. The credit references can help show your company as a good credit risk.

#5: Check Your Company's Business Credit Report or Register Your Company with Business Credit Bureaus

Check your company's credit history by requesting a report from one, two or all three of the major business credit bureaus. Verify the accuracy of the information contained in the reports. If you see something that's wrong, make note of it and write a brief, but detailed explanation of the error, why you think the information is incorrect and how the information should be updated or corrected. Use accurate dates and amounts since the business credit bureau must verify the information that you provide with your creditors.

Because business credit transactions don't have to be reported, any or all three of the business credit bureaus may not have a report for your company (see the *Be Aware of Differences in Business Credit Reporting* from *Personal Credit Reporting* sidebar, page 20).

#6: Actively Manage Your Company's Debt

If your company is current with all of its creditors, congratulations. Since payment history contributes significantly to its financial score calculation, staying current with bills is the best thing you can do to keep your company's

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score higher. If your company has any delinquent payments on its record, it's vital to get current and stay current with payments. The longer your company pays its bills on time after being late, the higher its credit score will rise.

#7: Create a List or Flow Chart of Your Company's Corporate Structure

To help lenders understand your company's organizational structure, create a flow chart that explains who is responsible for what at your company. Does your company have a CFO, fleet manager or vice president of operations? If so, does your fleet manager report directly to your Vice President of Operations, or to the CFO? Or, as the owner of the company, do you act as the company's fleet manager, CFO and operations executive? Lenders will want to know who is ultimately responsible for your company's equipment and who holds them accountable. Keep the flow chart current so you don't have to create a new one when applying for a loan.

#8: Draw Up a Fleet Description

This description should list the number and type of trucks and trailers your company currently operates and how they are used. It's also important to explain how the new or used equipment acquired with your loan will be used. Will your company be able to go after new or more business with the new equipment; or is your company replacing older units? If so, why and do you expect any improvements in driver satisfaction, efficiency or payload or reductions in expenses with the new equipment?

#9: Using a Captive Lender

When financing your trucks, diversify your resources by using a captive lender that truly understands trucks and the waste industry. By using one that's linked at the hip with the truck manufacturer and truly understands trucks and the waste industry, truck operators don't have to explain the necessity

for certain equipment on their trucks. For example, a heavy hauler may need expensive equipment like higher horsepower engines, auxiliary transmissions or fully locking rear differentials that raise the cost of their trucks, but makes them more efficient in generating revenue.

Using captive lenders also helps companies diversify their source of loans, allowing them to reserve lines of credit at the bank for operational needs. By using a captive lender that understands trucks and the waste industry, you're setting your company up for a more successful lending experience.

#10: Be Prepared to Make a Down Payment, Depending on the Extent and Quality of Your Past Credit History

Lenders are still looking for loan applicants who have an appropriate amount of "skin in the game" by asking for a down payment. Applying for State and federal grants, like those available from the California Air Resources Board, can help you pay for new equipment with technology to reduce emissions and to run more fuel-efficient. While having those grants when you apply for your company's loan can make your company's loan application more attractive to a lender, be cautious. For example, don't count on the grants alone to automatically qualify you. They want to know that the company borrowing the money has a vested interest in the equipment.

By using lenders who understand trucks and the waste industry, tidying up your company's safety fitness rating, and getting your company's business plan and financial statements together, you're placing your company in a good position to qualify for a loan. Following these tips will most likely make the loan process less stressful. | **WA**

Karen Pembroke is the director of credit for PACCAR Financial (Bellevue, WA) PACCAR Financial is the captive finance company for Peterbilt and Kenworth. Karen can be reached at Karen.pembroke@paccar.com.



Second of Four Parts Connecting and Mounting a Power Take-Off

Mikel E. Janitz

If you took the time to select the right PTO for the application and YOU ARE FAMILIAR WITH THE PRODUCT, THE PTO INSTALLATION PROCESS WILL BE SIMPLER.

THIS ARTICLE IS THE SECOND OF A SERIES OF articles to assist end users and installers in order to plan the selection, installation, troubleshooting and maintenance of refuse vehicles equipped with mobile power units and auxiliary pumps and motors. These articles cover the important and sometimes forgotten topics one needs to know to get the most out of their power take-off (PTO).

Whereas the previous article dealt with proper PTO selection (*Waste Advantage Magazine*, October 2012), now we will focus on PTO installation. There are a couple of major areas to cover when mounting and connecting a PTO to the vehicle. Safety is first and foremost with any install. It is vital to know the vehicle inside and out and more importantly have a thorough knowledge of the underside. Secondly, be prepared, get your tools organized to avoid wasting time. Lastly, a few tips to get the most out of your PTO. Take some time to get a lay of the land before starting and read the installation manual that came with your unit (see Figure 1).

The First Steps

Ok, admit it, reading the instruction manual is the last thing you do. Manuals are only reviewed if there is a problem, or you are stuck or get angry and need an 800 number to call. The truth is, reading the instruction manual and supplements are a great use of your time. There are some very important topics every installer needs to be aware of in those documents. PTOs change all the time. There are constant improvements made. New configurations are engineered and released. The installer needs to know what has been improved and changed. First, safety is very important. Read the warnings and caution page. Look through the installation kit and find the decals supplied by the PTO manufacturer. Those decals must be placed on the vehicle to ensure others are knowledgeable and alerted to the performance of the PTO as well as the dangers if not paying attention while in use. Do not start the installation until all safety decals are in a suitable position.

Before you begin the installation, make sure the vehicle has cooled down. Don't attempt to install any PTO with the vehicle running. Make sure wheels are chocked. Ensure the vehicle cannot be started while under the vehicle. Put the keys in a safe and secure place so it cannot be started accidentally. Why is the engine hot you ask? Running the engine for a couple minutes and listening to the drive train noise is a good idea. This is important information to know after you install the

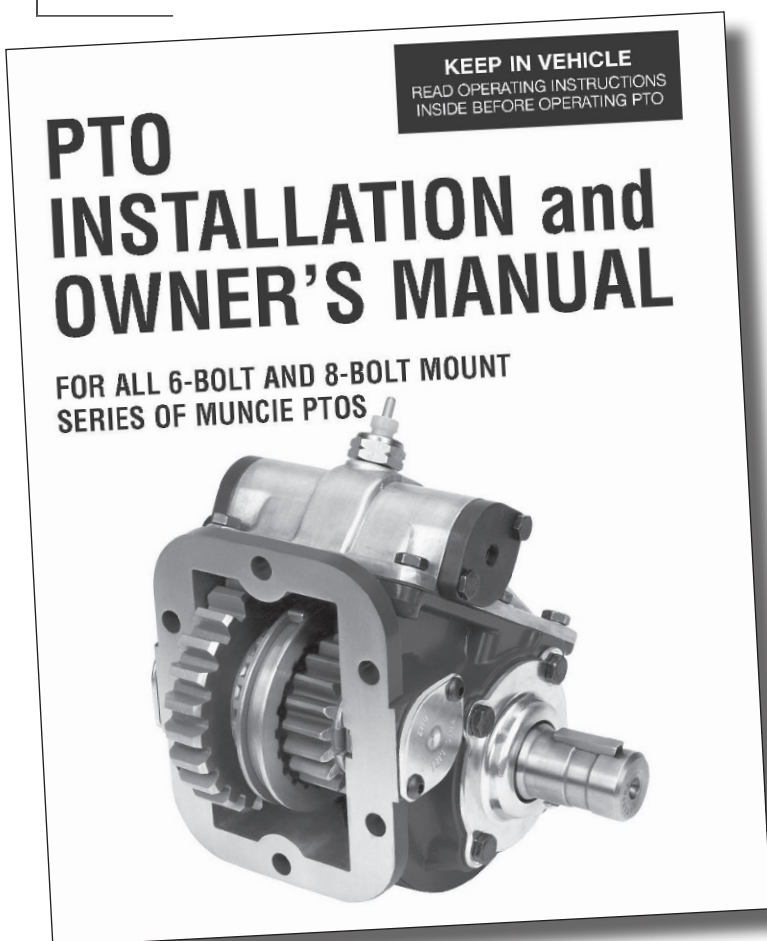


Figure 1
This is a sample PTO installation and owner's manual. It is chock-full of specifics needed to correctly install and safely operate the PTO.

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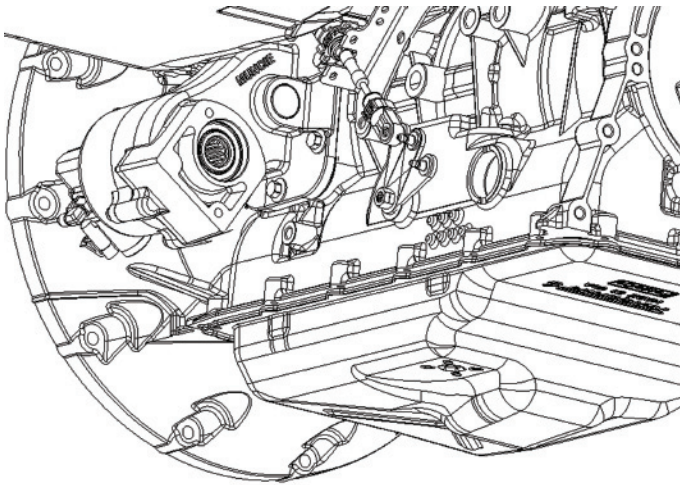


Figure 2

This the underside of the transmission with the PTO attached. Next step is to mount an extended shaft to allow adequate room for the pump and brackets.

PTO. You need a benchmark to compare later to determine if it is quieter, the same or louder. It is normal for the transmission noise to change once a PTO is installed. Let it cool down; the fluid is hot and can burn you as you remove the transmission cover. While it is cooling down, remove all the parts from the package. Get familiar with the unit, its hoses, flanges and output shafts, electrical connections and related accessories.

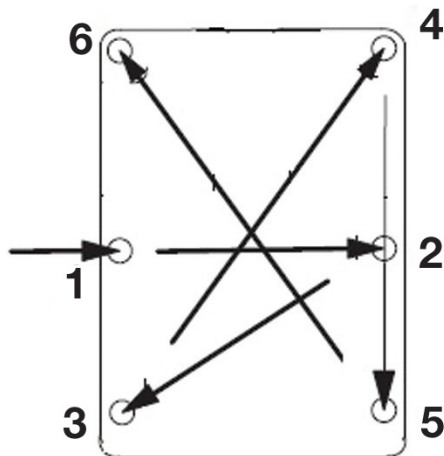


Figure 3

Depiction of backlash measurements. In the picture, the dial indicator is in contact with the PTO gear. When holding the transmission gear steady, try to rotate the PTO gear. The movement is the measured readout on the dial indicator.

Proper Tools

Once you know what you have, you probably know what tools you need. Get the tools organized and located near the vehicle. One of the most important tools is lighting. Flood the area with light (see



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Connecting and Mounting a Power Take-Off

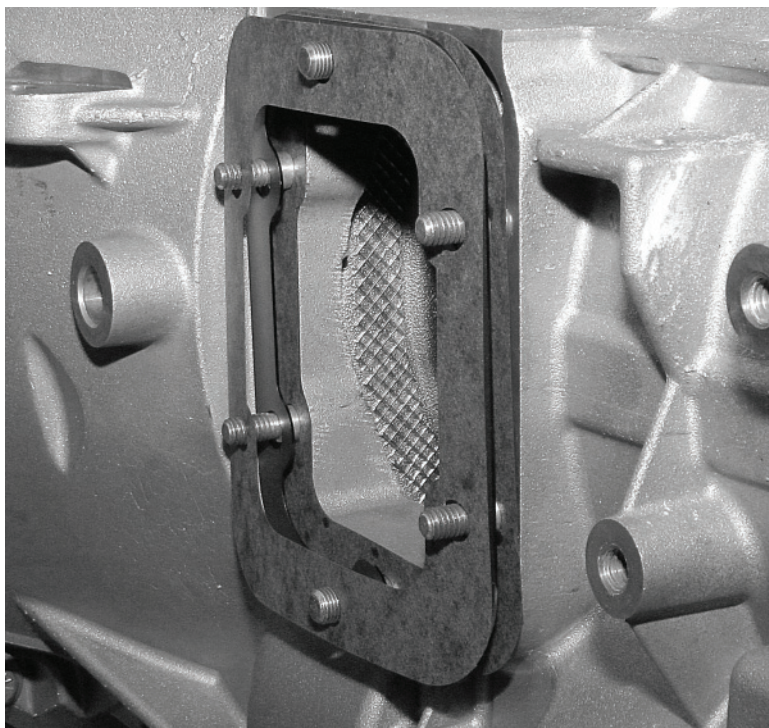


Figure 4: Bolt pattern. The PTO is first secured by hand tightening the hardware. Once all hardware is snug use a "X" style pattern to torque the fasteners.

Figure 2, page 25). You need to see what you are doing since this is the area where most the work is done. Secondly, have the proper torque wrench handy. All PTOs need to be torqued to specification to reduce noise, improve gear meshing and it prolongs the life of the PTO. Not to mention proper torque minimizes leaks between the transmission and PTO. PTOs can be heavy; there are many ways to hold the unit in place, and it all depends on the amount of space available under the vehicle. One option is to get a partner for a few minutes to help hold it in place. Floor jacks are commonly used for bottom mounted PTOs. But before you get excited about bolting down the PTO, carefully check the backlash between the transmission gear and the PTO gear. Typically, the backlash ranges from 0.006 to 0.012 of an inch. It is recommended to use a dial indicator to determine the correct backlash. The smaller the reading, the quieter the PTO operates (see Figure 3, page 25). Remember you ran the engine earlier to benchmark the noise? Backlash is controlled primarily through the thickness of the gasket, by adding or removing mounting gaskets. Secondly, ensure the PTO mounting bolts are torqued to specification when installed since this will help minimize rattle.

Gasket Selection

Gasket selection is not difficult. A lot of PTO installations use the gasket that comes on the transmission under the aperture cover. If the installation manual states to use it, then do so. If the PTO has a kit, there may be a series of gaskets to select from.

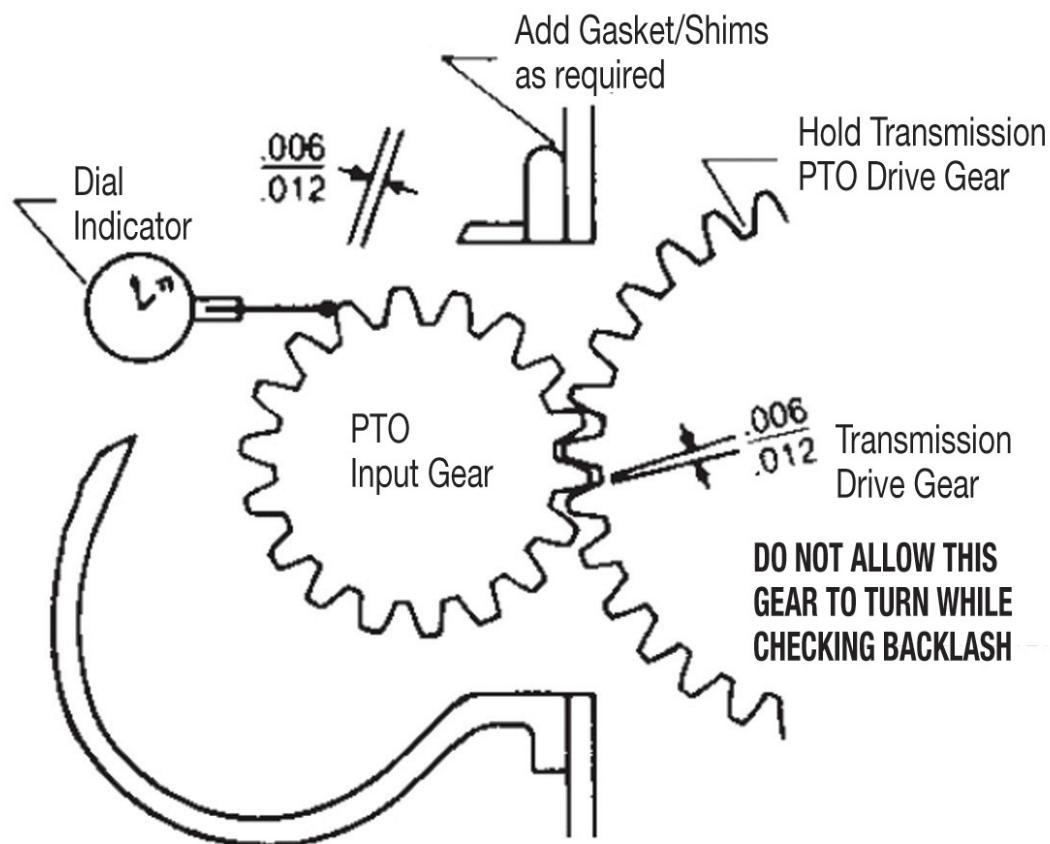


Figure 5
Here is an actual diagram with the PTO gasket in place on the transmission before the PTO is installed.

Begin with the thinnest gasket first and work your way to the thicker one. This can be a time consuming task, but it pays off in the long run. Remember, you want the PTO to run as quiet as possible. Good gasket selection not only helps reduce noise, but it also provides a barrier to leaks. No one wants transmission fluid dripping onto a clean floor. The best tip to prevent leaks is to torque the mounting hardware to the proper specs and use a crossing pattern on the fasteners as you torque them down (see Figure 4).

This article will not go into the mechanics of assembly linkage or wiring the PTO to the vehicle. Each application is unique and slightly different for vehicle manufacturer. Read the installation manual or call the manufacturer to speak to a customer representative and they will be glad to walk you through the process. The customer service representatives are knowledgeable and happy to assist you.

Inspect the Gear

Here are a couple more tips to improve the installation process. Before the PTO is mounted, inspect the transmission gear by removing the cover on the transmission. With good lighting, slowly rotate the gear and look for burrs, nicks and other tooth deformities as well as where it is in respect to the aperture. After the PTO is mounted securely, rotate the output shaft. Does it turn freely? If not, there may be something in a bind. As the output shaft spins, listen for a metallic noise. If it is smooth then all is ok, if you hear grinding, this could be attributed to the PTO gear rubbing the transmission housing or the clutch ring hitting the drive gear. If you hear any unusual noises remove the PTO and inspect. Here is an important tip: do not install a PTO without a gasket to reduce backlash. This will cause immediate damage to transmission gears and PTO gears. It is sure to leak, but that will be the least of your worries after you run it a few minutes. Yes, it is true that the smaller the backlash (or thinner the gasket), the quieter the performance, but no gasket will have a profound negative impact on the PTO and the transmission. And if you are the installer, your job may be negatively impacted as well (see Figure 5).

To recap, the PTO installation process is simple. If you took the time to select the right PTO for the application, you are familiar with the product. Once it is in the hands of the installer they need to do the same—get familiar with the PTO and all of its parts. Read the instruction manual and use the appropriate tools to ensure the PTO and all parts are assembled correctly. Follow the safety instructions. Replenish any fluids that may have spilled or ran out of the transmission during assembly. Run the unit and listen for any noise or other obvious signs of concern. If it meets your satisfaction you are good to go to the next step of connecting your auxiliary equipment to the PTO. Otherwise a little adjustment may need to be made before continuing on. | **WA**

The next article will discuss the art of troubleshooting in order to help keep the product running and productive.

Mikel Janitz is the Manager of Engineering for Muncie Power Products (Muncie, IN), a global leader in power take-offs and a worldwide organization dedicated to solving the vocational industry's mobile power issues. Mikel graduated from Oklahoma State University with a BS and MS in Engineering and Engineering Management. He can be reached at mjanitz@munciepower.com or visit www.munciepower.com.

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Cell Phones and Driving Are Bad for Business

Todd Clement



Until the next generation of “smart cars” that drive themselves override and compensate for the carelessness of this generation’s smartphone users, **RESPONSIBLE WASTE HAULERS MUST HELP PREVENT DWD by instituting and enforcing policies banning cell phone use while driving.**

IN LIGHT OF THE STORM OF TECHNOLOGY THAT is fueling the public’s insatiable appetite for instant connection with each other and the world, Driving While Distracted, DWD, is becoming the new DWI with deadly consequences. The largest culprit in the distracted driving epidemic is cell phone use and texting (including e-mailing) while driving. In 2010, the National Safety Council (NSC) estimated that 28 percent of all U.S. accidents—almost 1.6 million crashes—were caused by drivers using cell phones and texting.

Employer Awareness

Cell phone use and texting while driving causes drivers to suffer from impaired visual scanning, inattention blindness, impaired ability to react appropriately and impaired situational awareness. Surprising to many, this risk is present whether the driver is using hand-held or hands-free devices because the act of talking on a cell phone is a cognitive distraction.

Waste haulers should be particularly aware and concerned about DWD. In 2008 alone, distracted driving crashes cost \$40 billion. The Federal Motor Carrier Safety Administration estimates that on-the-job crashes cost employers \$24,500 per crash, \$150,000 per injury and \$3.6 million per fatality. Under the laws of most States, employers are liable for any distracted driving accident caused by the negligence of its employees while on the job and employers can be held independently liable for gross negligence and punitive damages if they do not have an enforced ban on cell phone use while driving.

Juror Reaction to DWD

Some argue: “How can our company be punished for something everyone, including the vast majority of jury

members, do themselves?” The answer is simple. Cell phone use is the one activity most jurors think they can do safely, but which they very much do not want others to do. Recent research has indicated that jurors deliver large verdicts when they are motivated by self-preservation and protecting their children. Why do collisions which involve cell phones and texting while driving, create a perfect storm for such verdicts? The answer comes to the universally positive response to three simple questions:

1. Have you ever observed another driver driving dangerously while using a cell phone?
2. Have you ever been personally afraid of the driving of a driver on a cell phone?
3. Do you think that it is extremely dangerous to read or write a text or email while driving?

Jurors correctly believe that by returning a sizable verdict, they can motivate others to be safer and help prevent the one dangerous activity that they perceive threatens them and their children the most on our roadways. This point is aptly illustrated by a recent Texas verdict against Coca Cola for \$21,544,873, including \$10,000,000 in punitive damage. In this case, a delivery driver caused a collision while on the phone. The significance of this verdict is not just the amount, but the fact that the Coca-Cola driver was talking hands free at the time of the collision and the victim was not killed or paralyzed by the collision, she only suffered a significant back injury requiring surgery.

Landmark studies by Dr. David Strayer have shown that cell phone use—dialing, answering and talking—has the same risk of a crash as driving while intoxicated at the legal level of .08, approximately 4 times that of normal driving. The risk with texting and e-mailing while driving is much worse. Imagine how a jury would react if they knew a company regularly knew about,

encouraged and even profited from its employees driving while intoxicated? As a practical matter, that is what you do every day when you fail to ban and even encourage and profit from their employees' cell phone use and texting while driving on the job.

Waste Hauler Employer Responsibility

My father-in-law was a supervisor for a waste hauling company for more than 30 years so I have a unique appreciation for this mobile business. Your drivers are constantly exposed to unexpectedly stopped traffic, careless children at play on residential streets and alleys, bad drivers that cut in front of your drivers and other hazards that require prompt response to avoid a catastrophe. Cell phone use while driving dramatically reduces reaction times and that combined with heavy trash trucks results in severe collisions and catastrophic injuries. Consequently, risk management by way of DWD accident prevention has to be a priority for any waste hauler to financially survive.

The only responsible option for you to protect your ongoing livelihood (and the public) is a total ban on your drivers' cell phone use and texting while driving. The National Safety Council has a free downloadable employer's cell phone policy and education kit located at http://nsc.org/safety_road/Distracted_Driving/Pages/EmployerPolicies.aspx?VanUrl=cellphonekit.

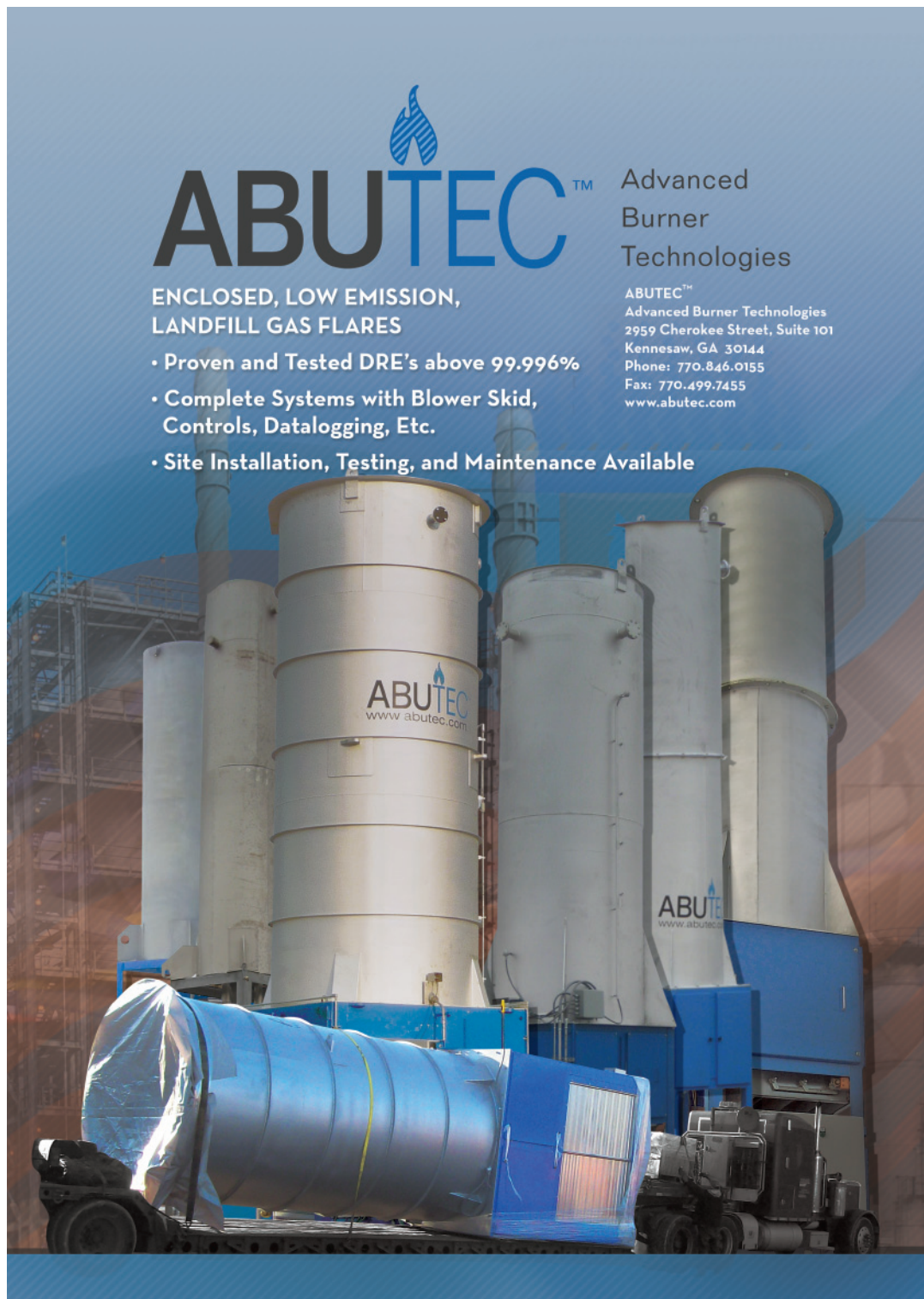
A proper ban, in and of itself, does not insulate your company from responsibility. You must also educate your workforce about your policies and the underlying reasons for them. You must also enforce your policies through stringent penalties, driver monitoring and readily available blocking technology. Without enforcement, you will be guilty of recognizing the significant danger yet addressing it only with a "lip service" policy, inevitably causing a strong negative reaction from the jury.

Until the next generation of "smart cars" that drive themselves override and

compensate for the carelessness of this generation's smartphone users, responsible waste haulers must help prevent DWD and the shattered lives it creates by instituting and enforcing policies banning cell phone and texting while driving. | **WA**

Todd Clement is a Dallas, TX personal injury

attorney who is a nationally recognized expert on cell phone and texting while driving accident cases. He is a frequent speaker and interview subject on corporate cell phone policies and cell phone safety. Todd can be contacted through his Web sites, www.clementfirm.com and www.distractionlawyer.com.



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Let's Be Social

John Watson

With thorough planning, A MUNICIPAL WASTE MANAGEMENT SERVICE CAN SUCCESSFULLY USE ANY NUMBER OF SOCIAL MEDIA PLATFORMS to reach residents, foster participation and promote waste diversion.

FOR MANY YEARS, MOST MUNICIPAL SOLID WASTE

management services have used traditional print communication tools like calendars, flyers, brochures and advertisements, to reach residents. These traditional tools definitely help to raise awareness, motivate participation and increase waste diversion. However they are all “one way” tools: communication by a municipality to residents. Thanks to the Internet and mobile devices like smart phones and tablets, people are now communicating with each other through engaging social media platforms like Facebook, Twitter and YouTube.

Many waste management services are now exploring how they can add social media to their toolbox of communication tools. Why not reach residents using social media if that's where the residents are? Social media, by its very nature, is social. Social media is “two way”: interactions and conversations occur back and forth between a municipality and residents. It is a new way of communicating, and municipalities must be properly prepared to use social media efficiently to maximize successes.

Before diving head-first into social media, it is important to thoroughly plan your program, including determining target audiences and their needs, which platforms are most appropriate to use, how to evaluate results and what resources will be allocated to manage your program.

Social Media Pilot Projects

In 2010, recognizing that social media could be an effective communication tool if used appropriately, the Regional Municipality of Halton (Ontario, Canada) formed a cross-department social media committee which conducted research, determined best practices, and set goals and objectives. This work led to the development of a formal social media policy under which all of Halton's social media programs would function. That year, Halton started three social media pilot projects. Two of the pilots were very successful (and still continue) and best practices from them have informed any new social media initiative being launched at Halton Region.

In spring 2011, Halton's Waste Management Services submitted a social media proposal to the committee for consideration. Just like a strategic communications plan, Halton Waste Management Services' social media

program included a clear goal and target audience, identified various objectives and evaluation tools. The proposal to launch Twitter and a blog was endorsed by three different management teams before being approved by the social media committee in May.

Choosing the program name was a bit of a challenge. Several options were tested with Waste Management Services staff, staff in other departments, and with friends and family. HaltonWaste was considered as it encompasses the municipality's various program areas; however, there was a fear it would be viewed negatively. Halton3Rs and HaltonRRR were also considered, but many adults didn't know what the 3Rs were without being prompted. Ultimately, HaltonRecycles was selected as it sounds positive, is memorable and at 14 characters, would be short enough for inclusion in tweets.

Halton's creative services team developed the HaltonRecycles visual look. In keeping with the personal tone of social media, it was decided to include photo headshots of the staff members involved with the program so that residents could put a face and name to who it was they were engaging with. On Twitter, staff end their tweets with their personal initials (for example ^jw). There are also first-person biographies of each staff person on the blog. YouTube videos about waste management topics feature the team members. The premise is that “real life” people are speaking and engaging with residents.

Social Media Platforms

There are a multitude of social media platforms available to use. Some platforms may be more appropriate than others, depending upon the needs of your target audience or your ability to regularly use and monitor the platform:

- **Facebook:** This is the most popular social media platform. On their profiles, users can update their status, upload photos or videos, like organizations or causes, and respond to events. If you are going to use Facebook, a best practice is to update your profile once a day. HaltonRecycles has just begun to use Facebook for an events page to promote its community open house celebrating the 20th anniversary of the Halton Waste Management Site.

- **LinkedIn:** A network in which professionals post their résumé and make connections with others.



• **Blogging:** A type of “Web log,” in which stories or articles are presented in reverse chronological order. Readers can comment on blog posts. Popular blog sites include Wordpress and Blogger. HaltonRecycles uses Wordpress and blogs at www.haltonrecycles.ca, with the aim to post a new story twice a week. The more frequently a blog is updated, the more likely readers will return.

• **Twitter:** A “micro-blogging” site where users can post 140-character posts (called “tweets”) to their followers. Followers can “re-tweet,” thereby extending the reach of a post. Twitter users can incorporate hashtags (like #HaltonCompost) in their tweets—if a particular hashtag is used a lot during a relatively short period of time, it creates a “trend.” Using the handle @HaltonRecycles, Halton tweets about waste management eight to 10 times per weekday.

• **YouTube:** The second most used search engine in the world (after Google). Users can view and upload videos, and make comments. An extremely popular video is said to go “viral,” but you can’t force a video to go viral. If you are going to post multiple videos to YouTube, it is recommended that you have a “channel” so that all your videos can be found in one place. Online video viewing habits are short—five minutes is considered a long video. HaltonRecycles has a YouTube channel (www.youtube.com/haltonrecycles) where it posts internally-produced and externally-produced videos.

• **Flickr:** Similar to YouTube, but users primarily post photos instead of videos. Users can follow other users, who often create themes.



A screen shot of Halton's Twitter feed, www.twitter.com/haltonrecycles. Photos courtesy of Halton Waste Management Services.

• **Pinterest:** Relatively new, it is quickly becoming an extremely popular social media platform. Users “pin” images to “boards” and others can “re-pin” the images. The most popular boards have to do with wedding planning and home décor. HaltonRecycles has a number of boards, including interesting infographics, books about the environment and landfill technology (www.pinterest.com/haltonrecycles).

• **FourSquare:** Used primarily on mobile devices, users can “check in” at physical locations like a landfill site, and leave comments about their experiences. Even if you don’t participate in FourSquare, it is recommended that you monitor your locations (landfill, transfer stations, etc.) to see what is being said about them—are hours correct, are the “tips” accurate?



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Let's Be Social



A screen shot of Halton's blog, www.haltonrecycles.ca.

Once you've determined which social media platforms your program may want to use, you need to determine what resources you can allocate towards the program.

Staffing Requirements

In an era of fiscal restraint, one main advantage to using social media is that it's essentially free. It doesn't cost anything to use most social media platforms like Facebook, Twitter or YouTube. The costs to social media have to do with staffing requirements. In Halton, 10 staff members—representing Planning, Collections and Landfill—were selected to be part of the HaltonRecycles social media team. These were existing staff members, and social media was added to their regular

job duties. Having ten staff members from different work groups enables HaltonRecycles to have a variety of subject matter experts, offer differing voices or opinions on topics, and enables the social media workload to be spread out.

Each team member works a half-day shift, once per week, in which they are required to use and monitor the HaltonRecycles social media platforms. The objective is to tweet four to five times a shift (so eight to 10 tweets per day), publish a new blog post twice a week and post a new video once a month.

Most of the team had personal experience using Facebook, but their knowledge and use of other social media platforms was quite limited. A seven-hour training program, developed in-house, was delivered over three days. There were homework assignments to help familiarize staff with the new platforms including an online scavenger hunt, tweet writing and blog post writing. Follow up training has included photography, video (script development, filming and editing) and tutorials about using new platforms.

Some think that social media is a “young person’s tool,” so they feel assigning social media use and monitoring to a student or intern is a good fit. You need to consider whether the student or intern has a complete understanding of your programs and services (including political nuances surrounding various topics), and has the authority to represent your municipality publicly.

Responding to Comments

The whole purpose of social media is to be “social”—to encourage dialogue and conversation with residents. If you tweet something or put up a blog post, people will respond or comment. It may be scary, but it’s a good thing.

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Commenting indicates people are engaged with your program. If someone is extremely upset about a particular topic, take the conversation "offline." Publicly invite the person to e-mail you or call you directly.

While others can comment on your social media platforms, you can also comment on their social media platforms. The most important thing to remember about commenting is that you need to be transparent. If a Facebook group is opposed to your waste management infrastructure project, you should identify yourself (including your job title) if you comment on their page. There's nothing worse than being called out as a "plant."

HaltonRecycles developed a "decision tree" to assist the team with knowing when, or if, to respond to particular comments. Originally, the decision tree was quite complicated, but has now been simplified to be a simple "red, yellow, green" chart. There's also a Start-of-Shift Checklist to remind team members what they should be covering during their shift. Staff complete an End-of-Shift Log about their shift, enabling the next shift to know what had happened previously.

Evaluating and Promoting Your Program

It is extremely important to plan how you will evaluate your social media program. Most social media platforms can provide you with basic results like number of followers, number of page views, etc. Programs like Klout, Kred Story, PeerIndex, PinReach, Sysomos, TweetReach and TwentyFeet offer additional means of evaluating the reach of your program. For example, it can be demonstrated that over an eight month period, HaltonRecycles made 925,524 impressions from 1,572 Twitter mentions.

Once you launch your social media program, remember it needs to be promoted. Not all residents expect to find a municipal waste management service using a social media platform. In Halton, traditional communication tools like newsletter articles, inclusion in print advertisements, mobile signs, Halton's Web site, media

relations and vehicle wraps have helped to raise the profile of HaltonRecycles.

It must be remembered that social media is an "addition to" traditional communication tools and not an "instead of." Research has continued to show that residents have various communication preferences and some will always continue to favor print materials over online and social media. In Halton Region, to most effectively reach residents, social media is used in conjunction with existing communication tools. We are simply engaging with some residents on a new platform that they prefer.

Social media is exciting—it is fresh, rewarding and ever-changing. With thorough planning, a municipal waste management service can successfully use any number of social media platforms to reach residents, foster participation and promote waste diversion. | **WA**

John Watson is the Waste Diversion Education

Coordinator at Halton Region, where over the past five years he's delivered more than 1,000 workshops about the 3Rs to over 100,000 participants. He coordinates Halton Region's waste management communications and outreach programs, including its social media program, HaltonRecycles. John can be reached at (905) 825-6000, etc. 8238 or via e-mail at john.watson@halton.ca.

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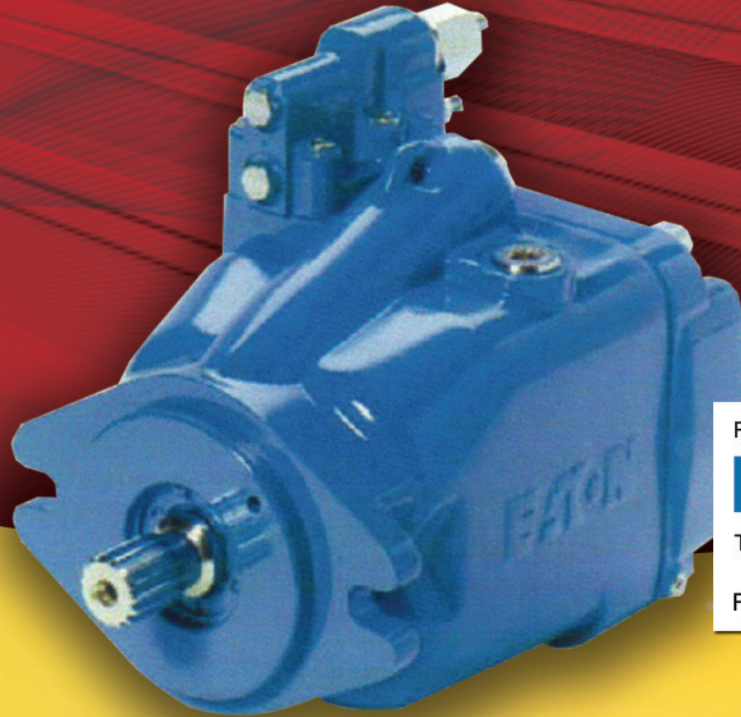
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Managing the Details

Darell Luther

As with any business decision, THERE IS A LOT OF CRITERIA REQUIRED TO MAKE AN INFORMED DECISION, all of which need to be explored to the minute level of detail when moving waste by rail.

EVER HEAR OF THE OLD SAYING, “THE DEVIL IS IN the details”? We all know it to be true and how the details are composed and managed generally affects the outcome of whatever it is you are working on. Over the past several months, the Waste-By-Rail articles have just touched on the details, yet remained high level enough to give you the overall picture of the topic being discussed. This month we’ll delve a bit deeper into the details on managing waste-by-rail and the decision-making process required to support and analyze those details.

What Are We Shipping?

The definition of waste is generally in the eye of the beholder. In railroad speak it begins with the definition of the commodity under a universal system of classification called the Standard Transportation Commodity Codes (STCC). STCC are seven-digit numeric codes that represent 47 different commodity groupings. These commodity groupings represent more than 10,000 STCC and are maintained by the Association of American Railroads (AAR). They are generally based on the Standard Industrial Classification (SIC), but STCC and SIC have diverged over the years. Commodities are classified according to producing industry with the first five digits coinciding with an adaptation of the SIC published by the U.S. Office of Management & Budget as a mandatory reporting form for all regulated carriers. The sixth and seventh digits of the STCC give specific commodity identification.

Of particular importance to hazardous waste shippers is the Hazardous Material Response Code, which is a unique seven-digit code used to classify a commodity or group of commodities that have hazardous waste response requirements specific to a commodity. The first two digits of a hazardous waste STCC are either 48 or 49. To continue with our mantra of working in the details, **Table 1** shows the STCC classification general schema that we’ll be using in this article.

Pricing a Shipment

Let’s say we want to ship a railcar loaded with scrap iron or steel wastes or tailings from Albany, NY to Atlanta, GA. There are a series of steps that should be followed in order to obtain the most current rate and railcar options available, including:

- Finding rail stations and rail carriers
- Researching price alternatives
- Analyzing the results

Finding Rail Stations and Rail Carriers

The first step is to find the originating and terminating rail carriers. The easiest way to start this research is by visiting Class I Railroad Web Sites to identify which railroad carriers originate shipments at Albany, NY and which railroad carriers terminate at Atlanta, GA (see **Class I Carrier Web Sites sidebar, page 38**). Generally, in the eastern U.S., CSX and Norfolk Southern are the predominate Class I railroads, and in the western U.S., BNSF and Union Pacific are

STCC	Description
40	Waste or Scrap Materials Not Identified by Producing Industry
402	Waste or Scrap Exc.
4021	Metal Scrap, Wastes or Tailings
40211	Iron or Steel Scrap, Wastes or Tailings
4021125	Scrap, Iron or Steel

Table 1: Standard Transportation Commodity Codes Hierarchy.
Table courtesy of Tealinc.

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the predominate ones. These rules of thumb for originating and terminating carriers provide general overall geographic relevance. If you can't find your originating or destination station, the easiest next step is to call an originating carrier customer service representative that you believe to be able to provide you with rail service. There is also an official document called the Open and Prepaid Station List (OPSL) that lists every station and interchange between all rail carriers. It is a cumbersome tool and should not be used as a resource in identifying station lists. Just be aware that there is detail at this minute level. In our research we show a direct route from Albany, NY to Atlanta, GA on the CSX Railroad. We'll use the CSX as our rail carrier to price out the movement.

Researching Price Alternatives

Generally, all Class I railroads give their customers and registered users online price inquiry capabilities. In this case Tealinc, Ltd is a registered user on CSX and has an account with www.Shipcsx.com. This gives any person with such an account a lot of research capability to compare and contrast rail pricing across railroads and with other transportation options. We know from our STCC research that the seven-digit STCC for the scrap, iron or steel that we want to ship is 4021125. We feed the information required into the CSX Web page and select retrieve prices (see Table 2). After we retrieve our pricing we find several alternatives that are available to us (see Table 3). You'll note on the table that there are two price alternatives for two different

Step 1: Please select a state and enter at least the first four or all the letters of a city then select the city and carrier.

The following fields require a valid selection in order to process your price request.

Origin State: Origin City:

Origin Carrier:

Destination State: Destination City:

Destination Carrier:

Step 2: Please select one of the search methods below.

STCC/Commodity Description:

Price Authority: (example: CSXT1234)

Price List:

[View details](#)

[Search by STCC or commodity description](#)

[Search by price authority](#)

Table 2: CSXT Price Inquiry Screen. Table courtesy of CSXT RR.

AVAILABLE PRICES Origin: Albany, NY (CSXT) Destination: Atlanta, GA (CSXT) STCC: 4021125 - SCRAP, IRON OR STEEL									
For more details select one or more prices and click 'Get Selected Price Detail'.									
To view the price publications click () next to the price.									
<input type="checkbox"/>	Price	Per	Mileage or % Est. Fuel Surcharge	Equipment Size Restrictions	Price Authority	Route	Min Weight	Car Owner	Eff Date
Maint. of Way, Scale, Caboose and EOT									
<input type="checkbox"/>	\$3,676.00	PER CAR	1095@ \$0.50 pm \$547.50*	From 1' 0" to 70' 0" (outside length)	CSXT3919	CSXT Direct	-	Railroad	06/15/12
<input type="checkbox"/>	\$3,235.00	PER CAR	1095@ \$0.50 pm \$547.50*	From 1' 0" to 70' 0" (outside length)	CSXT3919	CSXT Direct	-	Private	06/15/12
GONDOLA									
<input type="checkbox"/>	\$3,676.00	PER CAR	1095@ \$0.50 pm \$547.50*	From 1' 0" to 70' 0" (outside length)	CSXT3919	CSXT Direct	-	Railroad	06/15/12
<input type="checkbox"/>	\$3,235.00	PER CAR	1095@ \$0.50 pm \$547.50*	From 1' 0" to 70' 0" (outside length)	CSXT3919	CSXT Direct	-	Private	06/15/12
OPEN HOPPER									
<input type="checkbox"/>	\$3,676.00	PER CAR	1095@ \$0.50 pm \$547.50*	From 1' 0" to 70' 0" (outside length)	CSXT3919	CSXT Direct	-	Railroad	06/15/12
<input type="checkbox"/>	\$3,235.00	PER CAR	1095@ \$0.50 pm \$547.50*	From 1' 0" to 70' 0" (outside length)	CSXT3919	CSXT Direct	-	Private	06/15/12
Price request complete. Show price results.									

Table 3: CSXT Price Output Screen. Table courtesy of CSXT RR.

railcar types. The price alternatives are in per railcar shipment increments for either railroad-provided or private railcars.

Specifically, if a railcar is railroad-provided it is a railroad-owned or controlled railcar provided for this specific shipment. You may or may not see the railcar again depending on the next best alternative the railroad has for it after your

shipment. In the case of this shipment, as soon as the railcar hits Atlanta and is unloaded, it is most likely to be redistributed in the Atlanta area first, then generally within a close geographic boundary to another shipper that can use the same railcar type for their product shipment. Railroad supplied railcars are great alternatives for shippers that are only shipping occasional railcars or the economics of the product sale and shipment don't economically justify a shipper committing to a lease or ownership of railcars.

A private supplied railcar is one that you, as the shipper, provide the railcar(s) for the shipment of your product. In this case, you'd either need to purchase or lease the railcar from a railcar lessor or seller. A private railcar will automatically be reverse routed back to your loading location in Albany, NY unless you provide the railroad with an empty diversion to another loading location. Private railcars make sense if you have continuous ongoing movements of commodities that require a railcar with a specific physical and qualitative condition that optimizes your commodity movement.

You'll notice the next line of demarcation is between railcar types. The CSX provides an option of gondola or open top hopper railcars with a wide range of equipment size options. Both railcar types can be loaded via multitude of ways e.g., front end loader, conveyor, overhead gravity bin, etc. The real key is to determine destination unload capabilities before selecting a railcar type so that when the railcar reaches its destination it can be most efficiently unloaded.

The results contain other important information such as:

- *Mileage or Percent Estimated Fuel Surcharge.* This is the rail mileage that can give you comparative mileage statistics or rates per ton mile comparative analysis. Fuel surcharges are added to the base rate and change independently of the base rate.
- *Applicable Equipment Restrictions.* This field will denote most railroad restrictions including length of the railcar. It is important to be aware that additional restrictions including railcar height and gross weight on rail for each individual car may further be specified when you are finalizing pricing and contracts for service with the railroad representative.
- *Price Authority.* The particular tariff and the rules and regulations that accompany the move are contained in this document. It's worth a read to see what you're signed up for. In our case, Tariff CSXT 3919 provides the governing rules and regulations for our shipment.
- *Effective Date and Expiration Date.* The time frame the tariff authority is in effect.

Analyzing the Results

The results of our inquiry yield identical freight and fuel surcharge rates from Albany, NY to Atlanta, GA for either private gondolas or private open hoppers and for either railroad supplied gondolas or railroad supplied open hoppers. The rate for railroad supplied gondolas or open hoppers is \$3,676 per railcar shipped and the rate for private supplied gondolas or open hoppers is \$3,235 per railcar shipped. Including a fuel surcharge for each move of \$547.50 per railcar shipped, the rates are \$4,223.50 for railroad supplied railcars and \$3,782.50 for private railcars per railcar shipped.

The railroad has priced the railcars used to ship our STCC 4021125—scrap, iron or steel—at a point of indifference. This leads us to our next point of analysis, which is to determine what railcar type best fits our shipment requirements and yields the best economics for our company. To do the decision analysis at this level it's best to start with a list of questions and answers:



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Managing the Details

1. Can we load both railcar types
 - If yes, then consider both railcar types
 - If no, then eliminate unworkable railcar
2. Can we easily unload both railcar types?
 - If yes, then consider both railcar types
 - If no, then eliminate unworkable railcar
3. What are the product considerations?
 - Does the product work in the specific railcar without leakage?
 - Do the railcars need any special mechanical considerations, e.g. sealed weep holes or door seals, tarp straps, lids, etc.?
 - Does the product bridge during unloading?
 - What does the product weigh per cubic foot?
 - What unloading requirements are necessary for the product?
 - Does the railcar require tarps or other covers for product protection?
4. What are the expected shipment patterns?
 - Is this a one-time move or sporadic movement?
 - Is the move ongoing and repetitive even possibly seasonal?
 - Is there value to the customer in having a railcar of product timely delivered?
5. What are the economics of the decision criteria?
 - What are the railroad-supplied railcar rates?
 - What is the reliability of getting the right railcar from the railroad?
 - What are the private railcar rates?
 - How many railcars will I need to ship the quantity of product in the timeframe desired?
 - What are the requirements to buy or lease a group of railcars sufficient to handle my commodity?

Applying the list of questions above to our situation of shipping scrap, iron or steel from Albany, NY to Atlanta, GA, we have two resulting decision criteria. It starts with the physical railcar characteristics—you have to be sure the railcar will transport your product before going forward. The second criteria are whether to use a railroad or private railcar for your shipment.

Physical railcar considerations are important in that they help drive the overall economics of the shipment. In our example, we have two railcar types with a myriad of physical characteristic options. Our selection criteria begins with product density and handling characteristics:

- Is the product flow-able?
- What does it weigh per cubic foot?
- Does it tend to leak out of hopper gates? What are the cover requirements if any?
- Does it bridge up when unloading?
- Does it have hazardous commodity considerations that require special handling, etc.?

In our example movement, we know that with the inclusion of small fragments and dust, the commodity is flow-able and does tend to leak out of open hopper gates if they aren't foamed. In addition, the destination does not have the capability to unload commodity from beneath the railcar. These two critical items disqualify open hoppers from being used in this movement.

Our next consideration is to determine what physical characteristics should a gondola have to optimize our per car rail rate. We know the product is flow-able, so we have to cover the weep holes in the gondola, while still having the capability to remove them when the railcars are empty so that we don't create a large water retention vessel. If our shipment profile is sporadic or a one-time move, we can simply plug the holes with wood, metal, cloth or other material.

If the shipment profile is ongoing, we'd want to apply a more permanent mechanical fix. We check the product shipment requirements in the applicable tariff (CSXT 3919) and find that the product does not require the railcar to be covered. We can unload the railcar with an excavator or a track hoe that climbs across the top of the railcars.

We also weigh our product and find that it's relatively heavy at 80 pounds per cubic foot. Our shipment originates on a shortline that is a CSX reporting railroad. For pricing purposes, the movement shows CSX as the only route but physically the movement is originated on a shortline railroad. The originating shortline railroad has certain line restrictions at the origin allowing a maximum of 263,000 lbs. gross weight on rail. This restricts our gondola railcar to the same criteria. Basically, a mill gondola railcar will be able to transport 100 tons (200,000 pounds) of commodity with a light weight of 60,000 to 63,000 pounds (railcar weight). In our case we know our commodity weighs around 80 pounds per cubic foot. Doing the math, we arrive at an optimal car cubic capacity of 2,500 (200k/80lb ft³) at 263,000 lbs. gross weight on rail. Mill gondolas come in varying sizes and capacity, but a popular size is 2,494 cube at approximately 100 tons capacity for a maximum 263,000 lbs. gross weight on rail, resulting in the optimal railcar for this movement.

Our next analysis is to determine whether to use railroad supplied railcars or lease private railcars. Our shipment is relatively steady at the rate of five railcar loads per month. Since we're shipping from a processing facility, the reliability of railcar supply is important to keep the product moving to the destination in a relatively steady fashion. The difference between the railroad supplied and private railcar rate is \$441 per railcar. We check the market and find that railcars that fit our profile lease for a range of \$300 to \$350 per railcar per month net, meaning that as the lessee, we'll be responsible for the maintenance, insurance, transportation and taxes for the railcar while it's under lease. Mobilization into service and the permanent mechanical changes to fix the weep holes will result in an additional \$25 per railcar per month. We check our shipment cycle time and find that a normal shipment pattern averages 30 days loaded and empty return. Hence, our cost of leasing railcars is around \$375 on the outside. In a very simplified fashion, netting a benefit to leasing railcars versus relying on railroad supplied railcars of \$66 per railcar per month plus increasing the reliability of meeting our customer shipment requirements. In this scenario, a decision to lease private railcars appears to provide us with the most economical and efficient waste-by-rail solution.

Shipment Analysis Conclusion

As with any business decision, there is a lot of decision criteria required to make an informed decision, all of which need to be explored to the minute level of detail when moving waste by rail. After all, "the devil is in the details" leads to positive results. | **WA**

Darell Luther is president of Forsyth, MT-based Tealinc Ltd., a rail transportation solutions and railcar leasing company. Darell's career includes positions as President of DTE Rail and DTE Transportation Services Inc., Fieldston Transportation Services LLC, managing director of coal and unit trains for Southern Pacific Railroad and directors positions in marketing, fleet management and integrated network management at Burlington Northern Railroad. Darell has more than 24 years of rail, truck, barge and vessel transportation experience concentrated in bulk commodity and containerized shipments. He can be reached at (406) 347-5237, via e-mail at darell@tealinc.com or visit www.tealinc.com.



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More Power, Quieter Efficiency

Potluck Pick-Up purchases a quieter, more efficient truck from Wayne Engineering and SEES IMMEDIATE RESULTS.

POTLUCK PICK-UP, LOCATED IN ALLENDALE, MI, is a small, locally owned company that provides residential, commercial and roll-off services to approximately 10,000 total customers in western Michigan. In business since 1983, the company currently sends out seven trucks daily and employs a staff of 13.

In March 2011, Potluck was in the market to replace their existing commercial front loader truck due to the age of the vehicle. They began to research the industry for those that supplied the type of truck that they needed. After demonstrating a number of different trucks, they finally tried out Wayne Engineering's (Cedar Falls, IA) Titan Ecoforce. Andy Katt, Sales Manager for Potluck, emphasized that out of all the options they saw, this was the best truck option they had seen. "It was the quietest and had the most efficient fuel mileage. We also knew that it had an Eaton power-on-demand (POD) system implemented on the truck and liked the way that it

handled as part of the function of the truck. After we demonstrated it, we became even more interested in the truck as an option for us."

Latest and Greatest

Wayne Engineering is a leading manufacturer of chassis-mounted productivity solutions for the solid waste industry. Their Curbtender ASL is one of the first automated trucks introduced into the industry in the 1970s. Wayne's existing small-body rear and side loaders have received various engineered enhancements, and their products, including the commercial-class Titan Ecoforce front loader, Phoenix full-size rear loader and Arlock one-man commercial container handling system, give Wayne Engineering a complete product lineup for any type of residential or commercial refuse collection.

Since Wayne Engineering and Potluck already had an established working relationship due to Potluck

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Photo courtesy of Potluck Pick-Up.



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CONTAINER

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RECYCLABLES
ALLOWED

WDNOT103

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PLACED ON HARD,
LEVEL SURFACE
LOAD UNIFORMLY

WDNOT112

NOTICE
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TO PUT HAZARDOUS OR
TOXIC WASTE IN THIS
CONTAINER

WDNOT113

NOTICE
ALL TRASH MUST
BE PUT IN THE
CONTAINER

WDNOT106

NOTICE
PLEASE
CLOSE COVERS

WDNOT116

NOTICE
NOT FOR
PUBLIC USE
VIOLATORS WILL
BE PROSECUTED

WDCAU101

CAUTION
DO NOT PLAY IN, ON
OR AROUND OR OCCUPY
THIS CONTAINER FOR
ANY PURPOSE

WDCAU106

CAUTION
KEEP HANDS
CLEAR OF THE
HOPPER

WDCAU111

CAUTION
KEEP
OUT

WDCAU114

CAUTION
THIS COMPACTOR
STARTS
AUTOMATICALLY

WDCAU115

CAUTION
BEFORE OPENING DOOR
TURN CONTROL PANEL KEY
SWITCH TO OFF POSITION,
REMOVE KEY AND
BLOCK OFF TRASH CHUTE

WDCAU116

CAUTION
THIS BALER
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CAUTION
DO NOT PLAY
IN OR AROUND

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WDDAN102

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WHEN CONTAINER
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AND BACKING

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ENTER

WDDAN107

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WasteAdvantage Magazine November 2012 43

Eaton Provides a Solution For Wayne Engineering

In the summer of 2010, Eaton personnel made a visit to Wayne Engineering in Cedar Falls, IA. Eaton was anxious to show their POD solutions that were instrumental for success in similar applications, so the initial meeting was set up. Wayne Engineering was excited with the potential of POD style systems to save fuel, run faster and run with a cooler system. With that, a program was started and system proposals were presented and a relationship began. In the meantime, Wayne had just introduced a front end loader style truck, and Scott Kanne, Executive Vice President for Wayne Engineering, asked Phil Dybing, Program Manager and Systems Engineer for Eaton, if Eaton could provide a similar value proposition for the front end loader and use a POD system or technology solution. Dybing knew FEL-style trucks well and their current shortcomings with pneumatic controls and large gear or vane pumps, so he came up with a solution and presented to Wayne Engineering Management. Besides several other benefits, with the Eaton POD system or technology, the predicted results were that at least 3 gallons per day fuel savings could be attained when compared to a conventional truck.

Solution

Eaton delivered the solution with a tandem 420-load sensing piston pump along with a CMX160 3 section EH fully load sense control valve to command the arms, forks and packer functions. The balance of the system uses a variety of Eaton SICV custom manifolds to control the pumps as well as the top door and tailgate functions. Finally, Eaton Weatherhead hoses with ORS style fittings and adapters round out the system. ORS style connectors were selected to further minimize oil spills, one of the primary headaches of the refuse world.

The tandem 420 pump solution uses 80 cc rotating groups in both pumps as well as being driven off the transmission PTO with a speed increased output ratio. The tandem pumps combine their flows via a custom manifold to feed the single circuit. By using the tandem pump arrangement with a PTO speed increase ratio, enough flow is delivered to meet the required arm and packer cycle times at less than 800 engine RPM. The CMX160 valve provides full EH proportional control for the arms and forks. The proportional control on the packer allows it to extend and retract and again with the use of simple position sensors, decelerate to virtually eliminate any pressure spikes and resulting noise. Eaton SICV manifold solutions provide packer regeneration and retract dumping, pump combining and control, and finally, full e-stop shut off directly mounted onto the piston pumps. With positive shut off valves, only possible with a variable displacement piston pumps, the e-stop shuts all oil flow out of each pump into the high pressure and work lines. This is a key feature that allows trucks with a major fluid conveyance line rupture, to be able to be driven back to the service bay and more importantly, help alleviate severe oil spills on the highway.

With forward thinking in mind, Phil provided a solution that will also accept a residential style container that can be added without any added pumps, flow dividers or any other hydraulics. Instead, three hydraulic lines are plumbed into the system (pressure, tank and load sense) along with the electronic controls wire connections. The predicted fuel savings with a residential option will further increase fuel savings compared to conventional trucks with residential loader options.

The control system is a fully CAN bus control system that is able to interface with the engine CAN bus output signals. This prevents engine stall out as the proportional valves will pull back flow slightly to lower the torque demand on the engine. This is a key feature with the newer Tier 4 engines and diminished output torque at idle and especially critical with the increased usage of CNG style engines.

Results

The results have been better than predicted. The new Ecoforce Titan FEL is setting a new standard that no other FEL style truck can come close to. Fuel savings exceeded 3 gallons per day. The truck performs quietly and efficiently at idle, much quieter than a standard truck. Based on the excitement that the new Eaton POD system provided for the Titan, this truck model was completed first and production released with the Curbtender slated for early 2013.



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More Power, Quieter Efficiency

previously demonstrating a regular front loader from them, Wayne Engineering was ready to be among the companies to show Potluck their latest model. Says Scott Kanne, Executive Vice President for Wayne Engineering, "We proposed the Titan Ecoforce as our latest and greatest model and stressed that it had Eaton's POD system on it as well—something that would make their truck even more efficient."

Kanne explains that Wayne Engineering had previously used the Eaton POD system on their line of street sweepers and after seeing great results, they decided to develop and implement the system first onto their Curbtender automated truck. "It had been a decade since anyone had really done anything new and innovative for a front end loader truck and I believe that Eaton's system that provides power on demand is the game changer. We truly believe that this is the future of front loaders. We were actually able to increase our performance and cycle times on our packer and it runs faster and smoother," says Kanne. "The whole idea is that the entire packer system can operate at full speed with the truck in idle and also operates when the truck is driving down the road or in gear. When you are not using a function on the truck, the hydraulic system is not drawing any horsepower or demand on the engine which helps in the fuel efficiency. The POD system works in front loaders like the Titan Ecoforce as well as automated trucks. It's already taken off big for us" (see *Eaton Provides a Solution for Wayne Engineering sidebar*).

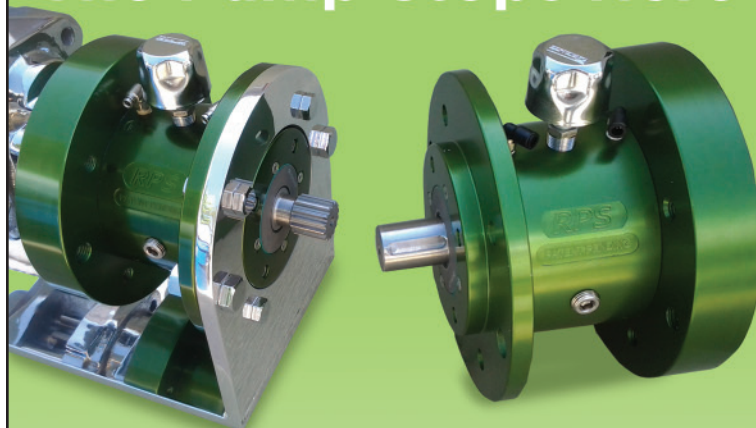
And that includes Potluck Pick-Up's purchase of the Titan Ecoforce. Katt concurs that with the fuel savings and efficiency on their newly purchased commercial vehicle, "The Titan Ecoforce definitely saves fuel over what we had before. Based on some of the official numbers that we've gotten back so far, we're getting about 9 to 11 percent better mileage than the old truck, which means that over a year, I am going to save about \$6,000 in fuel with this truck and system that provides power on demand. Katt even points out that the truck is so quiet that he's received customer complaints that the company hasn't picked up the trash for that day. "They don't even know that the truck has been there because it's so quiet," says Katt. And once all of the truck's pressures and settings were correct, Potluck has not had any problems. "Wayne Engineering worked with us to make sure the pressures were set right because of the heavy weight of some of the dumpsters."

Because nothing is needed to maintain the fuel saving system in the truck, Katt expects the truck's life expectancy to be seven to 10 years. "This was really a prime opportunity for us to get this truck. We tried it out, we really liked it and we have been happy with it ever since. Recently, we demoed the residential arm truck with the fuel saving hydraulic system and that will be considered for a future purchase as well." | **WA**

For more information about Wayne Engineering, contact Scott Kanne at Skanne@wayneusa.com.

For more information about Potluck Pick-Up, contact Andy Katt at potluck@telco.net.

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Breakthroughs and Innovations



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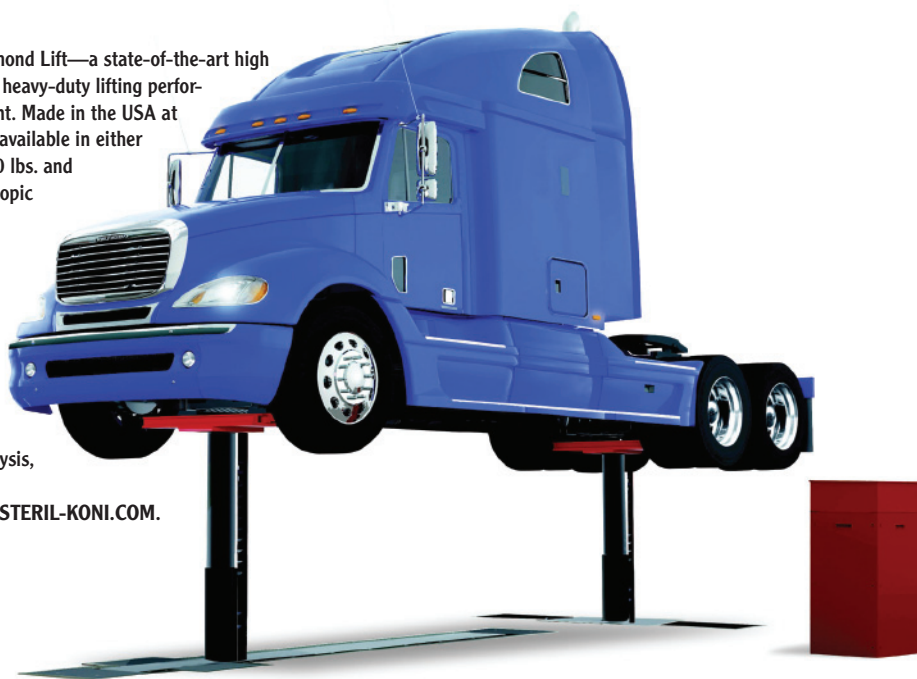
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The Diamond Lift uses biodegradable oil and the upper portion of the steel containment is hot galvanized, which provides corrosion resistance at floor level and ensures proper interlock with the foundation. In addition, the containments are coated internally and externally with DiamondGuard, which not only safeguards against corrosion and electrolysis, it also prohibits hazardous shop fluids from entering the environment.

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Breakthroughs and Innovations



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Mean Green Industrial Strength Cleaner & Degreaser is packaged in sizes to suit any hospitality use—ranging from a 32-ounce trigger spray bottles to 55-gallon drums. Product is available from distributors, or directly from the Spartanburg, SC factory.

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ZONAR (Seattle, WA), providing electronic fleet inspection systems, reveals the 2020 telematics tablet, which is the first portable device to provide electronic inspection, hours-of-service, instant driver feedback, fuel efficiency, two-way messaging and advanced commercial navigation in an open platform that allows fleets to integrate other systems and customize its use. The all-new 2020 provides fleet managers and drivers with the most powerful tool on the market to successfully enhance fleet efficiency and performance. Drivers improve productivity with advanced vehicle operation applications and an easy to navigate touch screen. Data captured with the 2020 is instantly available to fleet managers for powerful reporting and process improvements.

Unique to the 2020 is the ability to ensure inspection compliance and streamline repairs with the patented Electronic Vehicle Inspection Report (EVIR) system. Drivers use the 2020's built-in RFID reader to scan tags placed at each vehicle inspection point. Drivers identify component conditions using the onscreen QWERTY keyboard and can send pictures of defects with the completed report. All inspection information is available to fleet and maintenance managers through Zonar's web-based

Ground Traffic Control™ application. While EVIR helps with inspection compliance, Zonar's ZLogs™ helps ensure hours-of-service compliance. Available through 2020 and new to Ground Traffic Control, ZLogs is an hours-of-service application which works to ensure drivers are operating within the limits of safety. Drivers can easily view available hours, update duty status and electronically submit service records through the 2020 tablet. Specifically designed with the Federal Motor Carriers Safety Administration (FMCSA) in mind, the 2020 hours-of-service application meets the US DOT standards in 49 CFR Part 395.15.

The 2020 also provides two-way messaging to further enhance fleet productivity and improve communication. The two-way messaging feature includes in-boxes, message templates, and a grouping function for sending messages to specific groups of vehicles. Received addresses from two-way messaging can be tapped and opened up in the 2020 navigation program for accurate turn-by-turn directions. The navigation dashboard displays an hours-of-service clock and miles per gallon reading. Other notable 2020 features include a 16GB NAND Flash storage memory, 7" widescreen resistive-touch display, SD/MMC card slot, 5 megapixel camera with LED flash, video recording capability, in-cab training, Bluetooth and built-in flashlight.

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A new line of professional-grade grease guns promises a simpler, cleaner workday for equipment service technicians. **BEKA-MAX OF AMERICA INC.** (West Seneca, NY) has introduced Lube-Shuttle® grease guns by Mato, designed to allow complete use of lubricating grease without leaking grease onto equipment, tools and clothing. Initially, they will stock three models of the Lube-Shuttle grease guns, all featuring reusable screw-top grease cartridges. The Lube-Shuttle system's screw-top cartridges keep reloads fast and simple while the screw-top fitting ensures absolutely clean handling. Available in a pistol-grip, side-lever and battery-powered models, they all feature a premium-quality zinc-plated steel barrel.

Already in widespread use in Europe, the Lube-Shuttle grease guns have been well received in trials with North American shops. Service managers report that technicians are saving time and steps by keeping grease off their hands and work areas. This eliminates a clean-up before they switch to other tools and service steps. The quality fit of the Lube-Shuttle mechanism also means that the complete contents of the grease cartridge is dispensed. This eliminates the cost of wasted grease and means no safety or environmental hazards to clean either. Beka-Max of America Inc. offers a full range of greases in the Lube-Shuttle cartridges, from standard EP2 shop grease to chisel paste for breakers. To reload the grease gun, technicians simply remove the screw cap, slide the new cartridge into the barrel and twist to seal. Soon Beka-Max will also offer pail pumps and adapters for shops to refill their used cartridges onsite. Refilling the cartridges will reduce the costs even further and will eliminate shipping costs for grease supplies.

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Recycling

First of Three Parts

Food Waste Diversion: The Next Frontier for ‘Waste’ Management?

Noel Lyons and Lynn Lucas

FOOD WASTE DIVERSION HAS BEEN DUBBED THE “NEXT FRONTIER” BY recycling industry leaders. It is a dominant subject at recycling and energy conferences and a major focus of many State agencies and advocacy groups. Food waste is also linked to the promise of bioenergy, a hope fueled by strong government support, including credits and other subsidies.

However, so far, this high level of enthusiasm and interest in food waste recycling has not yielded meaningful results, and food waste still represents the single largest fraction of the total municipal solid waste (MSW) stream finding its way into landfills and incinerators. According to EPA as shown in **Chart 1, page 55**, the U.S. generated almost 35 million tons of food waste in 2010, roughly 14 percent of the total MSW stream. With only 3 percent recovered or recycled, the remaining 34 million tons make up the single largest fraction of the total MSW stream to be landfilled or incinerated.

An Economical Vision

Despite this lack of progress, one should not conclude that food waste recycling is an unrealistic vision. In fact, food waste recycling is inevitable and will happen for two reasons. The first is economics related to compost use. Once processed, stabilized organic waste in the form of compost is a valuable product destined to play a critical role in food production and food security, natural resource conservation and sustainability. In recent years, compost manufacturers have seen a slow-but-steady climb in the dollar value of their products. This has allowed them to remain viable in a highly-competitive waste management market because the revenues from compost sales have helped offset rising costs on the organics services side of the business.

The second driver is also economic. The attractive cost—benefit ratio of food waste recycling for high volume generators. There is only one reason why some of the biggest names in the foods business have joined the groundswell of support for organics diversion and other zero waste initiatives, and it is not environmental altruism. Pulling organics from the waste stream makes economic sense and puts us on the final lap to achieving zero waste. Once organics are diverted, the remaining material is clean and easy to separate, thus removing the last major challenge to eliminating landfilling as we know it today.

Zero waste is very attainable. The European model of “no unstable organic matter in landfills” will be met or surpassed here in the U.S. when we succeed in food waste recycling. It is no longer a matter of if, but when. An important question is will present-day owners and operators of landfills and collection companies be onboard or still standing on the platform when the organics recycling train leaves the station? Food waste is being diverted outside of traditional systems and channels by a new breed of entrepreneur who doesn’t always rely on the infrastructure support of transfer stations and municipal collection systems. Once this group hits its stride, food waste won’t be the only garbage tossed into the organics bin. Materials like dirty paper, waxed cardboard, natural-fiber textiles and biodegradable diapers can be safely and efficiently recycled using modern, high-rate composting processes, including materials like biodegradable plastics that cannot be recycled by most outdoor windrow operations.

Poised for Growth

Recently-released figures suggest that the average landfill tipping fee in the U.S. is approaching \$50/ton. When it hits that mark, food waste diversion will represent a potential \$1.65 billion annual revenue loss for traditional disposal. Generation rates of biodegradable materials (an estimated 60 to 70 percent of the total MSW stream) are often of sufficient volumes to justify the cost and challenges of source-separation and diversion by even small and medium-sized generators. A highly-motivated, entrepreneurial private sector is bypassing co-mingled collection and MSW transfer stations for “greener” options—no landfill bans or other legislated mandates required.

Over 40 percent of paper and paperboard, wood, food scraps and yard trimmings were recovered in 2010 in the U.S., but that means nearly 60 percent is still being wasted when 100 percent of these materials could be efficiently and affordably recycled through composting. The commercial composting industry is poised for the exponential growth required to successfully manage these organics.

Leveraging Existing Assets

Basic, no-frills windrow operations of the industry’s infancy are being replaced by advanced, high-rate processes and industrial-scale, environmentally-

Large, industrial-type composting operations like this McGill facility near Waverly, Va., require one-tenth of the acreage of an outdoor windrow composting facility with the same capacity.



Photos courtesy of McGill Environmental Systems.

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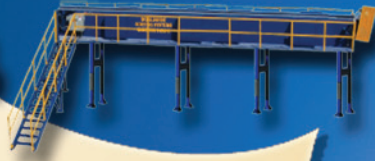
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secure buildings designed for product manufacture—not disposal. Advanced technologies and professional management ensure quality products of high dollar and horticultural value. Tight buildings and biofiltration systems allow such facilities to operate in urban environments close to feedstocks and product markets, cutting transportation costs.

When compared to outdoor windrow composting operations (where long, uncovered piles of blended materials are turned periodically with a windrow turner), indoor, high-rate, industrial plants occupy just one-tenth of the real estate required for outdoor windrow facilities and solve a myriad of other intrinsic problems of outdoor windrow composting. These advanced facilities are designed to handle all organics not otherwise recycled, co-composting MSW, water treatment residuals, industrial by-products (including residuals from bioenergy/biofuel production) and agricultural organics of all moisture levels at one facility using one process.

Designs and systems are not the only aspects of composting to benefit from two decades of private-sector innovation. The economics associated with the operation of modern, high-rate systems have improved to the point where composting tipping fees remain competitive with disposal, thanks to more efficient operations, knowledgeable management, and revenues derived from the aggressive sales and marketing of premium compost products.

Building new collection and processing systems for organics outside of the existing waste management infrastructure could take years. Is that really sensible when the existing waste management industry is uniquely positioned to become a catalyst for change? It already owns or controls important resources like collection routes, ideal sites and raw materials. Leveraging these existing assets makes more sense than building a new system that would, for all intents and purposes, merely mirror the old.

Benefits

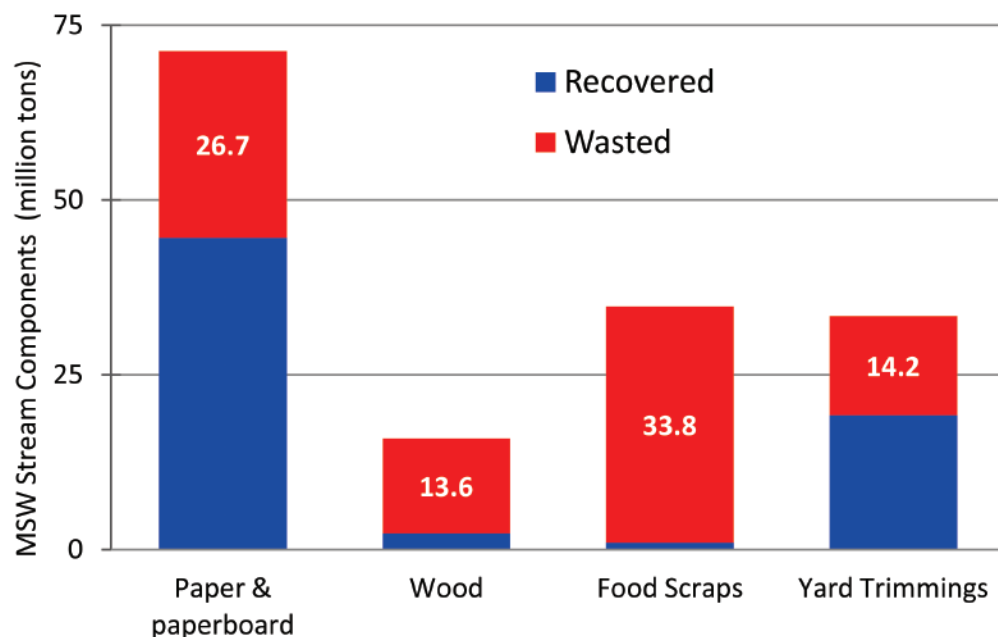
Impelled by a new era of environmental awareness, the waste management industry in the U.S. has made a relatively swift transition from open dumps and burn pits to environmentally-secure disposal, a tremendous accomplishment placing it among the best in the world. Now, it has an opportunity to lead the transition from a disposal-based society to one that recycles as a first choice. On economic merits alone, compost manufacturing trumps disposal. But modern composting also creates jobs—one for every 3,000 tons processed. At a time when the nation is crying out for more employment opportunities, continuing to bury or burn more than 29,000 decent jobs every year is not a smart use of economic or environmental resources.

But while creating jobs, reducing costs and avoiding the generation of greenhouse gases and leachate are certainly good reasons to embrace composting; however, they are secondary to the real potential of organics recycling—using compost manufactured from MSW organics. Compost is 40 to 50 percent organic matter (OM), a critical constituent of topsoil. The topsoil layer supports important soil functions, but human activities now deplete topsoil much faster than nature can replace it. What passes in many locales as “soil” is actually subsoil, a near-barren substrate incapable of supporting a healthy soil ecosystem.

As a result, soils no longer function as they should. While humans have figured out how to grow food without good soil, there is no substitute for soil organic matter when it comes to managing our most critical survival resource—water—and that is what has so many people looking at the organic fraction of MSW as a resource instead of waste.

Compost is the most practical, efficient and affordable means of replacing topsoil. It is 40 to 50 percent organic matter, and when used to raise soil OM content to at least 5 percent:

Chart 1 - U.S. Recovered and Wasted Organics



Source: USEPA

- Holds many times its weight in water, reducing stormwater runoff 30 to 50 percent.
- Improves percolation, cutting irrigation requirements by 30 to 50 percent.
- Improves nutrient uptake, reducing the amount of chemical fertilizers needed to grow turfgrass, ornamentals and food/fiber crops, typically, about 50 percent.
- Is biologically active, replenishing the microbial populations responsible for disease suppression and nutrient uptake.
- Eases compaction, encouraging stronger root systems and water infiltration.
- Filters/degrades pollutants, improving water quality.

What might a 50 percent cut in runoff volumes do for cities and towns facing massive infrastructure investments to manage stormwater? What impact would a 50 percent reduction in pollutant-laden stormwater have on threatened bays and estuaries? Would a 50 percent reduction in irrigation requirements ease food shortages during times of drought?

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As a management strategy, MSW composting results in environmental and economic benefits reaching far beyond its value as a recycling technology. Modern lifestyles and industrial processing promise an abundant, ever-renewing supply of raw materials, making compost manufacture and compost use a closed loop, sustainable system.

Financing

The final ingredient in the organics recycling mix is financing. Public-sector owners and operators are strapped for cash at a time when existing infrastructure is aging. However, companies with a history of successful composting operations have financing, and when partnered with public and private entities with ideal sites at landfills, transfer stations and wastewater treatment facilities, provide the final building block eliminating the need for publicly-financed capital projects.

Feedstocks, technologies, expertise, sites and financing—all the crucial elements already exist to exponentially expand processing volumes of organics within just a handful of years through market forces alone. Together, compost manufacturers and the owners of waste management assets hold in their collective hands all that is required to reach high diversion rates for food waste and other organics. The challenge now is to fuse these individual components into a cohesive system. | **WA**

Next month's article will focus on how do we get there from here?

Noel Lyons is president and co-founder of McGill Environmental Systems (Harrells, NC), a pioneer in the establishment of indoor, industrial-scale composting as a revenue-producing service and recycling technology for mainstream waste management.

Lynn Lucas is a project developer for McGill Environmental Systems, specializing in business development, communications, marketing and branding.

They can be reached via e-mail at thecompostpeople@mcgillcompost.com or visit the Web site at www.mcgillcompost.com.



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Transfer Stations

Planning and Designing Transfer Station and Materials Recovery Facilities to Support Zero Waste Initiatives

Jim Miller, Douglas Drennen and Stu Clark

ZERO WASTE INITIATIVES, WHICH SEEK TO MAXIMIZE SOLID WASTE materials recovery and minimize disposal of materials into landfills (i.e., maximize landfill diversion), are at an all-time high. These days, “Zero Waste” is in the vocabulary of nearly every State, municipality and governmental agency. Maximizing landfill diversion requires significant commitment and efforts at many levels. Public and private participation, on the parts of individuals as well as businesses, are essential. It is evident that this commitment and these efforts are in place in many locations throughout the U.S., leading to the profound growth in landfill diversion regulations and Zero Waste initiatives.

History

The Clean Air Act of 1963 and its significant amendments, the creation of the EPA in 1970, and the passage of the Resource Conservation and Recovery Act (RCRA) in 1976 have transformed the solid waste industry. During the same general time frame as the passage of the original Clean Air Act, the public’s awareness and concern for the environment led to the “Environmental Movement”, a significant, driving political force. Helping to launch the Environmental Movement was Rachel Carson’s 1962 New York Time’s bestselling book, *Silent Spring*. Although, not directly related to solid waste, this book opened a previously non-existent public conversation on environmental concerns and the effect human behavior can have on the world we live in.

The next significant event that helped institutionalize the Environment—and made it something policy makers would start (and continue) to pay attention to—was the first Earth Day on April 22, 1970. This achieved a rare political alignment, enlisting support from Republicans and Democrats, and people from all walks of life and social persuasion. The success of this first Earth Day was no doubt an influencing factor leading to the passage of the significant 1970 amendments that strengthened the Clean Air Act. In a few years the momentum would lead to the passage of RCRA, which included Subtitle D that specifically addressed the design, operations and closure of landfills. Hundreds of landfills closed rather than comply with Subtitle D requirements.

A consequence of these widespread landfill closures was the perception that the U.S. was “running out” of landfill capacity. The icon for this publicly perceived “crisis” became the Mobro 4000, a barge that made headlines for hauling more than 3,000 tons of trash from New York to Belize and then back again. The 1987 Mobro 4000 incident was widely cited by environmentalists and the media as emblematic of the “solid-waste disposal crisis” in the U.S. “due to a shortage of landfill space.” It triggered much national public discussion about waste disposal, and has been credited as a contributing factor to recycling rate increases in the late 1980s and after.

The combination of all of these factors—heightened environmental consciousness, perception of shortage of landfill space and increased costs for

landfill disposal resulting from Subtitle D requirements—prompted many States and municipalities to initiate recycling regulations. Typically, early recycling programs had modest goals. However, over time, and in response to increased public interest, States and jurisdictions have expanded their recycling goals. Zero Waste initiatives are the latest attempt to capture the public and political will to maximize diversion and recycling.

The Recycling Industry

Most communities began with simple residential “curbside” recycling programs that included glass bottles, tin and aluminum cans and newspaper. However, as the benefits of landfill diversion and recycling became clearer, these programs were expanded over time to add more and more commodities. Another contribution to the growth of recycling was the rise of commodities markets which started to expand and stabilize, creating a demand for materials.

Eventually the practical limits of being able to add more and more compartments on collection vehicles limited any further ability to expand collection services for recyclables. The obvious efficiency of collecting mixed (commingled) recyclable materials created the need to innovate on the processing side. This led to the development of the sophisticated sorting technology that exists today. This current technology has enabled, among other things, “single-stream” residential collection and processing to become a reality.

As single stream collection and processing have matured, the amount of targeted materials diverted from landfills has risen significantly. Many municipalities have adequate collection and processing for source separated recyclable materials from residential and sometimes commercial sources. However, the amount of these materials generated by the residential sector is generally limited to approximately 20 percent of the total waste stream.

Other strategies and processes that have gained momentum for diverting these additional materials include: accepting food waste for composting, processing commercial waste to recover recyclables in a mixed waste (dirty) MRF, improved specialty MRF’s for increased recovery of C&D materials and energy-from-waste conversion technologies.

The Role of the Transfer Station

As landfills closed and population grew rapidly starting in the 1960s, transfer stations became vital components of many solid waste systems. Early transfer stations were designed strictly to receive waste from collection trucks and self-haulers and then transfer that waste to larger vehicles for transportation to landfills. The tipping floor area required for the simple dump and load operation was comparatively small, and early transfer stations were often designed for “direct dump” or had receiving pits to facilitate the dumping process.

As population has continued to increase, demand for more transfer station

space has increased proportionately. Adding to this is the need to incorporate more space for waste material unloading and staging of non-residential materials typically destined for disposal into landfills. Placing operations to recover those materials at the location where they are already received enables the operator to more fully use existing infrastructure and staff. For instance, source separation is effective in diverting certain waste stream portions, including C&D, green waste and food waste. When these materials are received at transfer stations, segregating and staging them require tipping floor space that may already exist and the existing loading equipment, staff and infrastructure can be used to transfer them to recyclers or to energy conversion facilities.

Fortunately, many transfer stations have adequate site space to accommodate expansion if needed, and recovery operations can typically be added within the limits of existing facility operating permits or with minor permitting revisions, whereas permitting a new facility could be lengthy and costly. Unfortunately, many existing transfer stations are too small and improperly configured to accommodate the necessary operational changes for the needed services. The archaic direct dump and pit designs are especially ineffective and unsafe for added recovery operations.

Achieving maximum diversion typically requires providing additional public services including convenient and safe recycling and household hazardous waste drop-off centers. While these services usually are not conducted within transfer

stations, they are often located at transfer station sites, further complicating site traffic flow and safety.

Moving Towards Making Modifications

Zero Waste initiatives and the desire to recycle are here to stay. As jurisdictions continue to develop new policies and strategies for recycling more materials, additional tipping floor space and improved operational flow will become essential. To meet the demands, transfer stations will no longer be single-purpose facilities and will need to transform into multi-functional solid waste processing facilities, and many municipalities have been or will be forced to modify, expand or add new facilities to meet their needs. The ability to successfully modify existing transfer and recovery facilities will significantly affect how much of the total waste stream can be diverted and recycled and the ultimate success of Zero Waste initiatives. | **WA**

Jim Miller is CEO of J.R. Miller & Associates (Brea, CA). He can be reached at (714) 524-1870 or via e-mail at JRMiller@jrma.com.

Doug Drennen is Principal of Environmental Engineering Services for J.R. Miller & Associates. He can be reached at (714) 524-1870 or via e-mail at doug@jrma.com.

Stu Clark is Principal at D. Edwards Inc. (Brea, CA). He can be reached at (707) 395-0213 or via e-mail at stu@dedwardsinc.com.

Shoreway Center for the Environment, South Bayside Waste Management Authority, San Carlos, CA (SBWMA)

SBWMA operates as a special district responsible for managing recycling and solid waste services for 12 jurisdictions in the San Francisco Bay Area. Built in 1982, the original transfer station is situated on a 10-acre site located halfway between San Francisco and San Jose. Prior to the improvements, the transfer station was a 58,000 sq ft building with a large commercial tipping floor and a small self-haul tipping area. In the early 1990s, SBWMA started collection services consisting of dual-stream recyclable pickup and yard waste on a bi-weekly basis for residents in each of its member jurisdictions. To process the dual stream recyclables, equipment was installed in an existing 48,000 sq ft building adjacent to the transfer station site. As SBWMA continued to add programs, new operations were added at the site, including a public drop-off for recyclables, e-waste drop-off and segregated construction debris (see Figure 1).

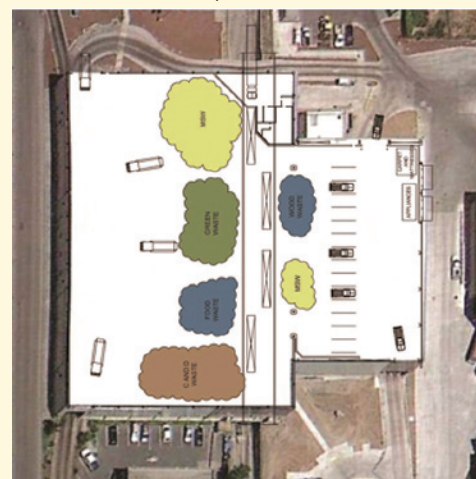
Figure 1
Existing SBWMA facilities.



Figure 2
New S.E.C. facility.



Figure 3
New transfer station floor plan.



The primary access road to the inbound scale was located between the two operations, requiring all traffic to use one access road. Both commercial collection and general public vehicles traveled in two lanes to one scale house. This single entrance caused several undesirable traffic circulation conflicts that created significant safety problems and operational inefficiencies. The situation was aggravated by the fact that the added new services increased customer traffic.

In 2005, with the goal of increasing participation and recovery/diversion, the Authority decided to convert to single-stream collection. To process the different material stream plus clean commercial and handle the anticipated increase in volume, the existing MRF system would have to be replaced by a new processing system and substantial changes to the MRF building would be required.

The Authority also wanted to enlarge the self-haul tipping floor because its small size created an unsafe and inefficient operation with little opportunity for materials recovery. This need for a significant capital improvement presented a fortuitous opportunity to consider other pressing needs, such as overall operational efficiency, employee and customer safety, more efficient traffic circulation and better materials handling. The Authority sought to construct an educational center with viewing gallery and to gain, as a minimum, LEED Silver certification.

Completed Improvement

The existing MRF building was demolished and replaced with a new 71,000 sq. ft. building. This size and configuration provided sufficient floor area for the single-stream and clean commercial MRF system, including staging for the increased volume of collected materials (see Figure 2). The existing 12,000 sq. ft. self-haul portion of the transfer station building was removed and replaced with a 21,000 sq. ft. building addition. This increased building area doubled the number of unloading stalls from six to 12 and provided a significant increase in material staging capacity. In addition, customer safety and the ability to recover self-haul materials were greatly increased (see Figure 3).

Other improvements included a relocated recyclables and E-waste drop-off in front of the MRF near the street—another significant increase in customer safety as well as convenience. Now those customers using only these services will not need to drive to the back of the site, thus eliminating unnecessary traffic and congestion. A new Education and Environmental Center was also provided for conducting tours and providing educational events for schools or other civic organizations. In addition, the facility received LEED Gold certification.

Diversion Data

The improved facility and new processing system has produced the following increases in recovery/diversion:

- Converting to single stream residential collection resulted in a 29.5 percent increase in recyclables that were processed in the new MRF.
- Weekly residential pickup of organics resulted in 29.4 percent increase in recoverable materials over the previous year.
- Additional floor space provided by the transfer station expansion resulted in an additional recovery of wood, metals, OCC and used carpets from C/D waste.

The following is a comparison of the amount of materials recovered between the original and the improved facilities:

Waste/ Stream	Volumes (TPY)	
	2006	2011-12
Residential SS	32,000	41,000
Organics (green + food wastes)	88,000	102,000
C/D waste	18,300	38,200
Total	138,300	181,200

After one full year of operating the new Shoreway Environmental Center, SBWMA has increased recycling by 31 percent or about 43,000 TPY. The



Figure 4
New S.E.C. MRF and Education Center.

Authority expects this number to increase as new programs and services mature (see Figure 4).

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Landfills

Landfilling in the European Community in Accordance with the Landfill Directive

Derek Greedy

LANDFILLING WITHIN THE EUROPEAN UNION (EU) WHEN IT WAS FORMED

varied quite considerably from Member State to Member State so one of the key drivers was to have uniformity of landfill operations. Landfill was considered to be a dirty word in northern Europe as a result of the need to produce energy rather than dispose of waste. Landfills were few and far between with disposal of municipal waste to energy recovery facilities. For the UK and much of southern Europe, energy was not so much the driver, but instead the disposal of waste. However, it was clear that the standards in these countries varied considerably with some operating “state-of-the-art landfills” and others merely dumping waste as you now see in developing economies.

European Landfill Directive

As a result, the Council Directive 99/31/EC on the landfilling of waste set out to impose minimum technical standards and it did not stop member states from imposing tighter ones. However, for the majority of Member States where landfilling was the prime disposal route for its waste, the directive was transposed into national legislation virtually unchanged.

The Landfill Directive places the onus on the Member State to ensure that there is compliance; any enforcement action would be against the Member State rather than the individual operator within that Member State. For example, when using the biodegradable municipal waste diversion targets, each Member State would make a return to the EU to confirm progress. If the diversion targets are achieved within the timeframe specified, it would not matter to the EU whether one operator or one local authority had not achieved the target—what matters is the overall number (see **Municipal Biodegradable Waste Diversion Targets sidebar, page 62**). Failure to achieve the diversion targets would result in infraction proceedings against the Member State. It would be up to the Member State to take sanctions against any individual operator or local authority if it had failed to comply with the transposed legislation.

There are specific landfill permit procedures as described in Articles 8 and 9 of the Directive that have to be adopted. Applications for permits must be accompanied by a number of risk assessments—including groundwater risk, landfill gas and stability—which demonstrate the efficacy of the engineering design. The application also has to be accompanied by an environmental statement discussing clearly how the applicant will mitigate against the potential of environmental harm from the landfill’s day-to-day operations, including litter, dust and noise.

There is also a specific requirement to reduce the production of methane gas from landfills. It calls for a technical adaptation committee to create uniform waste acceptance procedures. The operator is required to demonstrate how he will make financial provisions throughout the entire lifetime of the landfill—from construction to operations and finally through the aftercare period.

Directive Requirements

The Landfill Directive requires each Member State to have procedures in place to prevent or reduce negative landfill effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and the greenhouse effect (more commonly referred to as climate change). Technical standards need to protect, preserve and improve the quality of the environment in the community as well as reduce methane production in order to make an impact on climate change. This fits well with what is known as the “head-of-pipe approach”—prevention rather than collecting and treating the gas after it is produced. Notwithstanding this, there is still a requirement to collect and treat any landfill gas that may be produced.

Work has also been undertaken by the technical adaption committee, with input from all Member States, to introduce a uniform waste acceptance procedure to reflect the landfill’s classification as shown below. The Member State must define the operator’s obligations during the after-care period. The key areas to meet these objectives are:

- Landfill classification
- The diversion of biodegradable municipal solid waste from landfill
- The reduction and control of direct emissions

The Landfill Directive specifies three types of landfills:

1. *Inert landfills*—accepts waste that does not undergo any significant physical, chemical or biological transformations after deposit.
2. *Hazardous landfills*—accepts the deposit of hazardous waste only as defined by the hazardous waste directive and the hazardous waste catalogue. One of the landfill directive drivers was to stop the joint disposal or co-disposal of hazardous and non-hazardous waste, which had been practiced widely and successfully in the UK as this was perceived to pose an unnecessary risk to the long-term integrity of the landfill and the surrounding environment.
3. *Non-hazardous landfills*—for the disposal of all other wastes that are not inert or hazardous with the exception of inert waste that might be used for operational or engineering purposes. This includes municipal, commercial and industrial waste and stabilized non-reactive hazardous waste to be deposited in self-contained cells. These are wastes such as asbestos cement and plasterboard (gypsum).

Although this might seem straightforward, each Member State had its own definitions for each of the waste streams with very little similarities. For instance, the UK did not have a definition for municipal waste; they only had a definition for household waste, which did not exactly fit with the European definition. Now, 12 years after the directive was transposed into UK law, the definition has been revised and the UK has been required to divert biodegradable municipal waste away from landfill as well as report on progress.

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Tools to Aid Diversion

Fiscal measures such as a landfill tax are not uncommon. Currently, the landfill tax applied in the UK for active waste—waste being deposited at on-hazardous waste landfills—stands at £64 (US\$104) per ton and will rise by £8 (US\$13) per ton for each of the next two years. This has recently had a dramatic effect here in England since now only 40 percent of the municipal waste is landfilled, which is some achievement when you consider that in 2001 it was well over 80 percent. The rest is recycled, re-used, composted or used to produce energy. Landfill bans are becoming commonplace with a uniform EU directive ban on liquids. Some Member States currently ban organics and in the UK the possibility of banning wood waste is being considered. For Local Authorities in England and Wales, the government department for food and rural affairs set annual statutory household waste diversion targets for each of its local authorities. However, progress has been so good that these have now been withdrawn and the government believes that the landfill tax is now the only driver necessary.

Environmental Protection Measures

One of the requirements of the Landfill Directive is to protect, preserve and improve the quality of the community environment which can be achieved through engineering, water control and leachate management, and landfill gas control. These measures are to be achieved using the annexes described in the directive. Annex 1 of the directive says that each class of landfill shall have a geological barrier engineered to the following specification:

- *Inert landfill*: $k = \text{or} < 1 \times 10^{-7} \text{ m/s}$, thickness = or > 1m;
- *Non-hazardous landfill**: $k = \text{or} < 1 \times 10^{-9} \text{ m/s}$, thickness = or > 1m; and
- *Hazardous landfill**: $k = \text{or} < 1 \times 10^{-9} \text{ m/s}$, thickness = or > 5m

**Requires an additional artificial sealing liner and a drainage layer = or > 0.5m thickness.*

For the protection of the environment from leachate, Annex 1 requires that there are measures in place to:

- Prevent precipitation entering the landfill body
- Prevent surface and groundwater entering the landfilled waste
- Collect contaminated water and leachate
- Treat contaminated water and leachate

However, this is no more than what would be expected from good landfill practice. Bunds, berms, cut-off trenches and capping will all deliver these requirements together with the engineering outlined previously.

A further requirement from Annex 1 is to treat and manage any landfill gas that is produced. Clause 4.2 is quite specific in saying that the landfill gas must be treated and used. The measures must include:

- Controlling the accumulation and migration of landfill gas
- Collection from all landfills receiving BMW
- Treatment and use
- Collection and treatment must minimize the risk to human health and the deterioration or damage of the environment

Conclusion

The measures described will contribute to the aims of the Landfill Directive to reduce the negative effects of landfilling by:

- Clearly defining the engineering criteria to contain emissions
- Defining the engineering requirements to prevent the ingress of ground and surface waters
- Providing for the treatment and use of landfill (biogas) gas

However, it does not completely deliver the need for sustainability. For example, the exclusion of liquids will slow down the degradation of the biodegradable matter resulting in a dry tomb landfill requiring long-term management way beyond that of one generation. Furthermore, the concept of a hazardous waste landfill is nothing more than hazardous waste storage, which will in perpetuity pose a potential threat to the environment.

There is little doubt that over time the landfilling of biodegradable municipal waste within the European Union Member States will cease. What is not so certain is whether the same can be said for industrial and commercial waste having the same properties as municipal waste; this will depend very much on how hard any fiscal measures might bite. However, what we can be sure of is that the landfill legacy will remain with us for many years to come and require long-term management of the emissions. | **WA**

Derek Greedy is the Chair of the International Solid Waste Association's (ISWA) Landfill Working Group. He is a Chartered Chemist and a Chartered Waste Manager who has worked in both the private and public sectors of the waste and resources management industry in the UK since 1975. He can be reached at derekgreedy@hotmail.co.uk or visit www.iswa.org.

The Working Group on Landfill (WGL) focuses on the design, construction, regulation and management of landfills, both for industrial and developing nations. Management issues include operations, closure and post-closure issues, including ground-water monitoring and testing, leachate management, landfill gas management, as well as the quantity and quality of the wastes landfilled.

Municipal Biodegradable Waste (BMW) Diversion Targets

The diversion targets for BMW as set by the Landfill Directive on all Member States are as follows:

- By 2006 (2010) BMW reduced to 75 percent of 1995 levels
- By 2009 (2013) BMW reduced to 50 percent of 1995 levels
- By 2016 (2020) BMW reduced to 35 percent* of 1995 levels

** Council to review this diversion target two years prior to target date*

Although the diversion targets for biodegradable municipal waste in the northern European member states was relatively easy to achieve, it was recognized that a number of countries were so reliant on landfill as a disposal option that it would have been particularly onerous for them to achieve the targets within the timeframe. Therefore, for countries who were landfilling more than 80 percent of their biodegradable municipal waste in 1995, the target was moved back by four years (the dates shown in brackets). The UK was one of these countries. The final target set for 2016 will be reviewed in 2014 and it is being widely reported that this might become zero as some Member States have already introduced this into their own legislation.

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Dry and ventilated storage accelerates waste material breakdown for a faster composting cycle. Compost can be used for landscaping, agricultural and horticultural uses. Reduced collection weight decreases transportation costs and reduces pressure on landfills and waste incineration. The carts are built to last. The robust sealed lid has a rain-shielded vent, which keeps animals and rain outside and dry waste inside. The sturdy floor grate is rust resistant, does not clog and is easy to clean. Waste can be collected for compost processing with standard refuse collection vehicles using automatic or semi-automatic systems. Cart and lid assembly requires no bolts or no holes and thus cannot leak.

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Almost all packaging for fluorescent lamps and CFLs is not designed to prevent the lamps or bulbs from breaking. And most recycling containers leak mercury vapor if the lamps or bulbs are broken inside the container. Because recycling containers are typically opened and closed repeatedly to add additional lamps or bulbs, opening a package containing broken fluorescent lamps and/or CFLs presents a significant risk of mercury vapor exposure, potentially rising well above both the OSHA 8-hour permissible exposure limit of 100 ug/m³ and the NIOSH (National Institute for Occupational Safety and Health) IDLH (immediately dangerous to life and health) level of 10,000 ug/m³. VAPORLOK PRODUCTS' (Mankato, MN) patent-pending, new VaporLokCapture™ technology significantly minimizes this risk, effectively adsorbing and capturing the mercury vapor. To provide an enhanced layer of protection against incidental mercury exposure, VaporLokCapture adsorbs mercury vapor—achieving more than 95 percent mercury vapor reduction within the container. With this design, approximately 60 percent vapor reduction is achieved in as little as 15 minutes after lamp breakage, keeping vapor levels below the NIOSH IDLH guideline.

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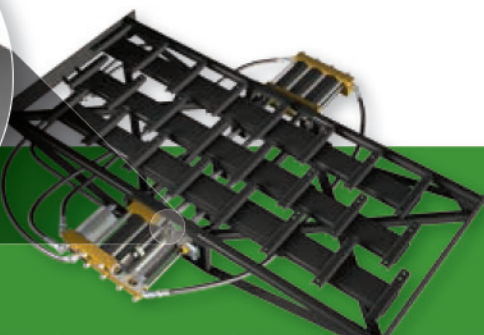
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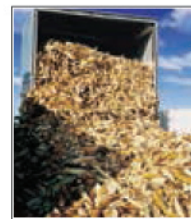
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