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Overall Maintenance Tools

A look at some work-saving tools

Photo: Eastern Pneumatics & Hydraulics

By Peter Hildebrandt

What if you could say goodbye to that 4.5-foot torque wrench when mounting wheels, or visually inspect brake adjustment without having to crawl under the truck to physically measure pushrod stroke, or grease the chassis less often, or have a daily look at where your MSW fleet stands with load, fuel, and driver management?

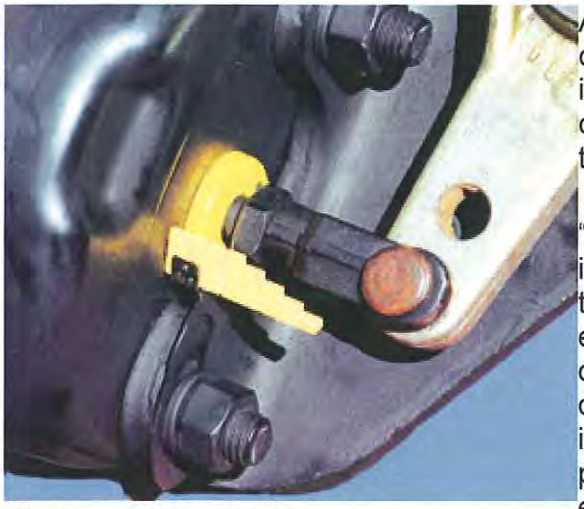
Those who deal with maintenance talk about these four tools that are helping them or their customers save money while improving the safety of their personnel and fleet assets.

Solving a Basic Problem With Wheel and Torque
Trash trucks vary in their torque, depending upon their size. Problems with torque can come from technicians not following proper mounting procedures, which tend to be quite labor-intensive. With a 30-pound, 4.5-foot torque wrench for torquing the wheels, the job tends to be difficult and monotonous, involving a quite heavy tool to perform.

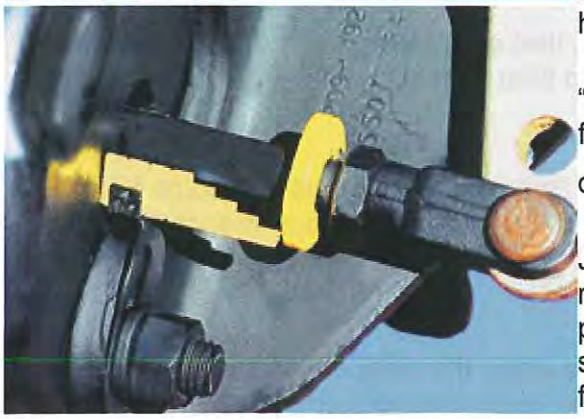
"The physical demand of tire- and wheel-mounting procedure—and the tiring effect the job has on your body—leads to a high rate of improper mounting procedures—even among average employees—

procedures for which it's critical that they're properly followed," says Charles Carroll, corporate director of maintenance with Advanced Disposal Inc. in Jacksonville, FL. "Many times if the weather's not right or the employee doesn't feel just right, harmful shortcuts can happen in mounting procedures, resulting in failures. These failures are typically due to over-torquing or under-torquing.

"Due to the physical requirements of the particular job of mounting the wheels and properly tightening lug nuts, the Wheel Master is absolutely the best tool product there is," says Carroll. "It's best for its accuracy in achieving proper torque on the wheels of our vehicles. The plus-or-minus range of accuracy is small when comparing to the larger and heavier torque wrenches. When it comes to what this tool is capable of, for lack of a better word, the accuracy of the Wheel Master is dead-on."



Photos: BrakeSentry
Equipping brake chambers with BrakeSentry eliminates guesswork by providing drivers with a significant advantage.



Advanced Disposal is an environmental services company that operates solid waste collection trucks in the Southeast US, including Florida, Georgia, Mississippi, and Alabama. The company is in the third year of using the Wheel Master on its truck fleets.

"This tool makes a hard job much easier, a huge ergonomic improvement for our technicians," adds Carroll. "It's important to achieve the manufacturer's required torque and not to exceed it. We need all the help we can get in keeping downtime to a minimum. You wouldn't think a small tool could do so much for helping us manage this important maintenance issue. Though it's a substantial investment, if you consider the piece of mind in knowing the job is done correctly, and the ergonomic improvement we can give our technicians, its price is worth every penny."

The Wheel Master is a tool offered by Eastern Pneumatics & Hydraulics Inc. for properly torquing various types of wheels to 400 to 550 foot-pounds. It's a smooth rotating non-impacting torque wrench that runs pneumatically to tighten the wheel lugs completely to the correct tension. If the tool is used in mounting the wheels, the operator can go back and test later to see if there is further rotation.

"The serious problem in the solid waste industry is too much torquing," says Mitch Kopacz, sales manager for Eastern Pneumatics & Hydraulics. "This means too much tension on the studs and bolts can cause overstretching, which means they're not doing their job properly, that job being to keep the bolts on the bib. Over-torquing is more of a problem than under-torquing. The use of this tool with brand new wheels, studs and nuts insures your wheels are properly torqued and have the correct tension on the studs.

"There are a lot of solutions and inventions appearing recently for the problem of nuts coming loose. But what these are doing is attacking the symptom, not the problem itself."

Just like a rubber band pulled constantly and then not returning to its original shape after stretching, a similar process happens, as even though a nut is placed on a stretched stud at proper torque, there is no tension there to force that nut to stay on; it's actually loose, according to

Kopacz. "When a stud is over-stretched, it is in effect broken, even though it's not physically broken in half. The MSW industry changes more tires than anyone else out there. In the end it's always less expensive buying the tool you've got to have to function properly than to pay the costly alternative."

Getting a Better Look at Brakes

Whether it's viewed from a safety or maintenance standpoint, brake adjustment issues are huge for the waste industry. According to data collected from the recent DOT-sponsored "Large Truck Crash Causation Study," annual CVSA inspections, and NTSB investigations into high-profile truck crashes, brake adjustment defects account for nearly one-third of all truck crashes and consistently have the highest rate of out-of-service violations.

Gabrielli Truck of Hicksville, NY, installs the BrakeSentry (a visual brake-stroke indicator) for the New York City Sanitation Department's fleet. According to Paul Polito, director of municipal sales and service, the company has already outfitted about 400 trucks in the NYC Sanitation Department's fleet.

"Installation is fairly basic," says Polito. "We're doing installations on tandem Class 8, three axle trucks. Everything is going well with NYC Sanitation's use of the BrakeSentry and it's been over a year now since they've first started to be installed. There are another 400 systems to be installed by our 12 employees who are trained on putting the product in place."

Photo: Rotary Lift
Good visibility is an essential part of any maintenance program.

After NYC Sanitation Department first installed the product on some test trucks in 2003, the BrakeSentry eventually ended up being placed in their spec of new vehicles, according to Polito. "Once they're installed, there is not much more to do. Checking out the brakes on these vehicles is a much simpler, more accurate proposition."

Whether it's measured in fatalities, catastrophic injuries, lost revenues, fines, insurance costs or maintenance expense, no defect exposes fleets, drivers or the public to any greater cost, risk, or liability than brakes out-of-adjustment, according to Daniel Judson, technical director at Brake Sentry.

"One of the major contributing factors is the critical role of drivers in the inspection process. With so much depending on the drivers' ability to inspect and report defects to maintenance people, it's important to note that drivers can visually inspect every item on their pre-trip except brake adjustment. This puts the whole process at an immediate disadvantage," says Judson. "If existing defects cannot be visually identified, they cannot be reported and will go uncorrected. Add to this the fact that a refuse truck will have more brake applications in a single day than most highway vehicles will accumulate in a month, it's easy to see why brake adjustment issues are so prevalent."

"The common belief that drivers can determine brake adjustment by 'feel' is based on a false assumption," insists Judson. "The practice of hitting the brakes within the first 50 feet of movement to see if they lock up only tells you that brakes will stop an empty vehicle moving at 5 miles per hour. But it won't tell you how the brakes will operate when the truck is fully loaded at 60 miles per hour, where a much greater demand is placed on the brakes. By the time a driver can feel a problem with his brakes, it may be too late because the damage is already done."

Equipping brake chambers with BrakeSentry visual brake-stroke indicators eliminates all the guesswork by providing drivers and technicians with a significant advantage, a quick and effective means to visually inspect and identify any brake out-of-adjustment conditions—conditions that ordinarily remain undetected and increase exposure to cost, risk, and liability, according to Judson.

By using BrakeSentry, the industry prescribed "applied stroke" inspection method can be performed faster, safer and much more efficiently without the need to crawl under vehicles to physically mark and measure pushrod stroke. "What would normally take 20 minutes can be done in less than two minutes. That's a lot of time and cost savings when you take into account that waste trucks get a PM inspection about every 15 days," says Judson. "And, made from a flexible and unbreakable material, these brake-stroke indicators are uniquely suited to withstand the severe-duty environment that waste collection vehicles operate in."

Changing Lubrication

The MSW industry is considered to be possibly the most severe environment, as constant intermittent operation (stop-and-go) for an over-the-road fleet means the components are also under constant stress.

"From a lubrication standpoint, the operating conditions translate into more stress on the lubricants overall," says Mark Betner, heavy-duty lubricants manager, Citgo Petroleum.

"If you want the lubricant to contribute to optimizing the life of the component, the lubricants should be of the premium quality types. There are greases available that will last twice as long in the chassis. Many of these trucks operate in severe weather. Anti-icing agents, very good at knocking out black ice or highway ice are also extremely corrosive. That same grease used in the chassis will stay in the pins and bushings on truck container equipment or the driveline and chassis.

"Too often people think, well, any grease will work; we grease often enough," adds Betner. "But greasing often means more labor. The big challenge from a lubrication standpoint for refuse equipment is to ask if there is something that truly offers an advantage for the conditions I operate in, a product selection, and a program that will optimize my component life, my service life, and thereby offer me the best opportunity to reduce my maintenance cost, instead of simply saying, well, I want to meet this spec—what's your deal? Cost is a critical factor these days."

Most solid waste haulers have automatic transmissions, which serve the industry best with all its stop-and-go conditions. "If it is an automatic transmission, synthetic lubricants will last much longer, a minimum of twice as long, perhaps as much as three or four times longer. In a transmission environment, they also offer the best internal component protection within the transmission; better protection and less deposit buildup. This is why some of the major transmission builders offer extended warranties based on the use of approved synthetic fluids.

"A synthetic lubricant transmission technology offers tangible real-world advantages in an automatic transmission. In the engine, due to the severity of operation in the MSW environment, if you combine premium 15/40 engine oil with an engine analysis program, it optimizes nearly everything. These items include the service interval, which returns much more on reducing maintenance budgets than simply purchasing a spec product at a lower price. Component life can be increased as well."

Combine the premium technology with a well-managed oil analysis program and with today's electronic data management systems, evaluation of large solid-waste haulers can be done, according to Betner. A "maintenance report card" is able to be assembled for the fleet in order to determine the biggest areas for problems. There can also be a constant view and overview of data that can impact things they do within their maintenance program.

"If they just run those machines doing established things from 20 years ago, without doing what I call 'blood testing,' it is often a more 'seat of the pants' operation," adds Betner. "There can be many things revealed about what's going on with your engine systems that you are able to correct, like coolant leaks, fuel dilution, or air-induction dirt—all harsh operating environment issues, things that can kill components or at the very least take many hours of life off of the components."

By grading oneself in how things are going in those system-maintenance areas, corrective action can be taken by operators through getting the most out of lubricants instead of simply dumping the oil into the engine. Oil analysis can be used to establish the safest most cost-effective use of lubricants, create better environmental stewardship, have less filter recycling—all things many in the industry are now conscious of.

"Citgo is one of the few, if not the only one among the major oil companies that handles this information within the company," says Betner. "We have 2,500 fleets in our program, over 170,000 car units of all different models and makes of power, enabling us to more thoroughly evaluate the trends existing within different makes and models and operations of equipment. We're working with a large solid-waste fleet now to do these very things; they are excellent at it, creating those maintenance report cards at different maintenance locations and for their company in general."

This allows that solid waste fleet to optimize the service life of the lubricant and gain much more, moneywise. "Lubricants represent a penny on the variable operating budget. Fleets need to look outside that penny at programs and practices and utilization of technology that will take you even further.

"Also, we have greases that will last twice as long and extend component life. This is not cliché; these are specifically engineered, severe-duty, on-highway truck products, not just general-purpose stuff. We have synthetic transmission technology, and with our premium engine oils offer oil analysis at no additional cost, because we feel it's an integral part of our program. You can't separate service from the product itself. If you're going to go premium, you need a tool that will allow you to optimize the service life of the product."

A hydraulic fluid Citgo is preparing to market will improve work efficiency, productive efficiency, and save fuel, according to Betner.

"I encourage operators to ask good questions about options for lubrication technology, not just say this has worked okay for all these years," adds Betner. "Search for something that may make a difference for the chassis or the bushings. Unfortunately, lubricant providers themselves don't know enough to present the right information. Force them to get beyond just selling you something because it meets a price point. It's time to change the model from simply using what was good for our grandfathers."

"Everybody has heard oil analysis for 60 years now. What some have not done is discover how to use that data to impact cost and operating practices. Today's electronic data management systems allow you to do that, to use those reports."

Automating Key Functions Through Software Program

Equipment Maintenance Innovators (EMI) is involved with the automation of fuel management, idle management, load management, power management, driver-operator management and dynamic lifecycle-costing on equipment," says EMI owner, Richard LeFrancois. "I've taken the traditional SCADA system [Supervisory Control Data Acquisition]—something which has been around a long time—and placed it in an environment where the machine moves; that's the only difference. If we receive this information it has a positive result on our back end, our profitability, reliability and our cost of doing business."

The one thing about managing equipment, according to LeFrancois, has to do with automating a process. EMI has chosen areas where it can put technologies in place and document a return on their customer's investment. The company's equipment helps with fuel management through automation of this process, as well as taking steps even further through a wireless system to virtually eliminate involvement by the driver altogether, at least in some cases.

"We have technology to automatically shut off a waste truck after too many minutes, shutting off the electronics," adds LeFrancois. "When drivers go to have lunch or coffee, instead of leaving that machine

running after a set amount of time, it's going to shut off and the key will have to be recycled to start it. This is for a vocational vehicle with certain characteristics, not an over-the-road vehicle."

The company has load-cell technology for the industry, whether it's a front-end loader for Allied Waste or it's in the hauler market or for load-offs. It is also GPS-enabled so that payloads and data by customer ID as well as by the location are indicated. The software is also Windows-based and integrates very seamlessly into existing software packages.

"The system is very useful in such areas as tire management, for example," says LeFrancois. "There are also many downstream advantages to load management, and just knowing how much you've got on the truck. This also eliminates any discrepancies between what the customer says he had load-wise and what he actually had."

Automated billing information can be added to the billing system and process. On the maintenance side, certainly the fact that the truck is not overloaded ties into brakes, hydraulics, and, especially, tires.

This is also a paperless system with no lost data, no lost route sheets, and you don't have to worry about a dyslexic individual who writes down wrong numbers, something that LeFrancois says has been found to be a real problem.

"If we monitor and know the laws regarding waste hauling trucks as well, we know that something such as tires being properly inflated is not going to be an issue. Having the ability to study a route, see how much is being picked up and then seeing how profitable that account may be is a powerful tool; this is what our technology has the ability to do. Technology works for those who can intuitively understand what it does.

"It's a mindset. Technology should be put in place to both automate the process and give you a return on your investment; the key in all this is to be able to know your business. If you don't know your business, no piece of technology anywhere is going to help you.

"Many of those successful in the MSW industry and many other businesses have used technology to their advantage by being able to have at their fingertips the six to 10 most critical reports in their hands each day to run that business. Perhaps the most important report areas in the MSW industry are fuel management, load management, driver management, and idle management, all ranked differently depending upon the type of fleet being managed."

Idle management may not be a key area in the waste management operation, but load, fuel, and driver management may be the top three. "Certainly these are areas where, if you can manage it properly, you have direct positive impact on managing that fleet with profitability, reliability and cost."

Topics: Maintenance, Equipment, Technology