WASTE & RECYCLING NEWS

# Hybrid trash trucks grow in popularity



**Shawn Wright**

Since 2009, a smattering of U.S. municipalities have been integrating hybrid-vehicle technology into their refuse pickup, helping curb escalating fuel costs.

New York, Denver, Houston and Miami-Dade County are just some of the locales using fuel efficient trucks.

“In the last couple of years, we’ve really seen these pre-production deployments,” said Bill Van Amburg, senior vice president of CALSTART, a clean transportation technology organization in Pasadena, Calif. “The Florida tests have been some of the key ones, and then Denver and Texas have had vehicles that have been in assessment. New York City has had probably the biggest cross-section of different types of refuse trucks.”

The prevalence of alternative-energy vehicles can be traced to the New York City Department of Sanitation (NYDS), which challenged the refuse industry to develop a hybrid garbage truck in 2007. The city was searching for a way to cut down on fuel consumption for its roughly 2,200 large garbage trucks that were hauling, at the time, more than 11,000 tons of waste per day.

In spring 2009, the NYDS performed field tests on three diesel-hybrid drivetrain technologies that were implemented on one Mack Truck and two Crane Carrier Co. refuse vehicles.

Since then, NYDS’ fleet has grown to seven hybrids: Five Crane Carrier trucks – three powered with ISE Corp. (now owned by Bluways USA Inc.) hybrid series technology and two with Bosch Rexroth’s parallel hydraulic hybrid system – one Mack Truck with a parallel system and another Crane Carrier truck powered with compressed natural gas.

But the fuel mileage improvements for the NYDS alternative fuel fleet haven’t been equal to what the city was expecting, a 20% to 40% reduction. On average, DiRico said, the trucks are seeing a 10% to 12% savings.

“[But] the hybrid-hydraulic trucks are very, very reliable,” DiRico said. “They go out to work every day; the operators are happy with them; and they do the job very nicely. Brake wear has been limited; that’s an advantage of having a hybrid-hydraulic truck as well.”

NYDS plans on purchasing 25 more hybrid-hydraulic trucks this year from Mack Truck with the Bosch Rexroth technology. DiRico said this batch of trucks should have improved gas mileage, due to the evolving technology.

And Van Amburg echoed that statement.

“The United States has been a real leader in this hybrid technology, both development and deployment in the big trucks, as opposed to light passenger cars,” Van Amburg said.

Denver and Houston were two of the first cities to use Cleveland-based Eaton Corp’s Hydraulic Launch Assist (HLA), which has been in production for about a year and a half.

Denver has witnessed fuel savings of 25% and anticipates a significant improvement in brake life because the HLA system recovers and stores most of the kinetic energy usually absorbed by the brakes, Eaton and the city said.

Eaton’s technology was initially launched in cooperation with Denton, Texas-based Peterbilt Motors Co. in its Model 320 truck. Eaton also supplies Crane Carrier Co. with the HLA. The net cost for the HLA ranges from $40,000 to $42,000, if purchased from Peterbilt.

“We’ve got a little less than 100 units out there running around in fleets,” said Robert Golin, business development manager for Eaton Hybrid Systems. “[Customers] are generally pleased; there is a learning process with drivers and fleet to get the ultimate use out of it.”

Houston plans to purchase 15 to 20 more HLA-equipped trucks this year, Golin said. Los Alamos County, N.M., purchased a truck last year. And Ann Arbor, Mich., recently purchased four Peterbilt Model 320 HLA-equipped trucks that will operate daily for curbside recycling.

Columbus, Ohio, put four Eaton HLA-equipped refuse side loader trucks into service last month, which makes it the first city in the state to own and operate any type of hybrid refuse truck.

Other companies are getting into hybrid refuse trucks, too. Volvo recently launched its FE Hybrid lineup overseas. BAE Systems Inc., which has its HybridDrive series system in 3,500 transit buses across North America and Europe, recently announced it will move into heavy trucks after entering into an agreement with Crane Carrier to integrate a heavy-duty hybrid-electric propulsion system. Those companies hope to have it on the market by the end of next year.

“You have multiple, competing driveline and truck manufacturers involved,” Van Amburg said. “And that’s a real good sign.”

CALSTART data shows an average of 20% to 30% in fuel savings over traditional refuse trucks on some of the vehicles being used, Van Amburg said.

“Refuse trucks don’t drive a lot of miles, but they use a lot of fuel doing their job,” Van Amburg said. “So, if you can save a fleet that amount of fuel, that’s significant.”

Next generation

For almost six years, Autocar LLC and Parker Hannifin Corp., a Cleveland-based maker of motion and control systems, have been working to bring their version of hybrid technology to the refuse industry. The companies originally unveiled the E3, which stands for environmentally friendly, energy-efficient and economical, at Waste Expo in Las Vegas in 2006.

During a month of real-world testing in south Florida last year, an Autocar E3 class 8 refuse collection truck with Parker Hannifin’s RunWise system had a 42% reduction in diesel fuel consumption. The E3 recently had its commercial release.

“They offered us a truck for almost four weeks, free of charge, and we were able to test it first-hand on our routes,” said Danny Diaz, director of fleet management for Miami-Dade County Department of Solid Waste Management. “When that truck performed well here in Miami, with the hot temperatures and on two of our routes, we said that this is something we definitely have to look into.”

Following the trial, three south Florida municipalities – Miami, Hialeah and Miami-Dade County – purchased 11 E3s and have been using them for nearly 10 months.

Diaz said Miami-Dade County looked at Eaton’s product, but wasn’t satisfied with the amount of fuel savings the HLA offered. Under normal operating conditions, Autocar says the E3 consumes 30% to 50% less fuel than a conventional garbage truck. The six E3s in the Miami-Dade County fleet have seen about a 45% fuel reduction, Diaz said, and it intends to purchase more.

Mark Neale, director of application engineering for Hagerstown, Ind.-based Autocar, said he hopes the fuel savings will entice fleet managers to buy the $120,000 hybrid option.

“What we’re selling it on is a return on your investment,” Neale said. “Typically, we can show a five-year-or-less payback for this. We’re still at the early-adopter phase. It’s like everything else; as it gets more exposure and volume, the prices come down.”

Funding for the future

Finding money to help cities pay for the new hybrids is a hurdle.

The E3 has qualified for the U.S. EPA’s Clean Diesel Emerging Technologies Program, along with California’s Hybrid Truck and Bus Voucher Incentive Project – a $39 million program Van Amburg manages.

New York is looking to create something similar.

“That would be really tremendous,” Van Amburg said. “New York City, in particular, has been a leader in hybrid-transit busses; the refuse department has new hybrids they’d like to roll out. ... We’re hopeful that New York actually becomes a counterpart to California on this voucher. It’s possible that there could be other states – Florida could be one – where a voucher would be possible.”

Funding on a federal level has been an issue, Van Amburg said.

“God, I wish we had some federal assistance,” he said. “There is none right now. There had been some tax credits for medium- and heavy-duty hybrid vehicles that expired in 2009 – ironically, right around the time they would’ve been most needed.”

A bipartisan bill was recently reintroduced into Congress by Sen. Herb Kohl, D-Wis., and Sen. Roy Blunt, R-Mo., that would reinstate the hybrid- and electric-truck tax credits. Sen. Debbie Stabenow, D-Mich., has also sponsored a bill that includes similar tax-credit language.

“If we really want to create jobs in America, get off imported petroleum and save money for fleets, we’ve got to keep moving forward on this technology,” Van Amburg said. “That is one of the key things we’ve been sharing with policymakers. ... These are areas where we’re leaders and where we can make these more efficient vehicles that people actually do want.”