

PROPANE, a promising alternative

Fuel delivery system improvements and an in-place supply infrastructure give commercial cutters another fuel option

BY BRIAN KLINE

Four years ago Billy Morell converted five 48-in.-cut mowers to propane, running them on standard forklift propane cylinders.

"I've been a wrench turner all my life," says the supervisor of vehicle services for the Austin Independent School District (AISD). "I figured I'd give it a run and make it work."

Today Morell is running a stable of propane-fueled mowers with dual mower-dedicated 7 ½-gal. propane cylinders. Morell is so confident in propane that he's removing his 88-in. diesel tractors from service in favor of new 72-in. propane-powered mowers.

"That means big tractors that aren't on the road, crews that aren't split up and a lot of dollars saved on fuel," says Morell. "And in the end I'm getting a better cut."

Lower maintenance costs

Propane's higher octane level, higher compression ratios and closed systems, while being environmentally friendly, have another benefit – they lower equipment maintenance costs.

Tests have shown that oil, oil filters,

What is propane?

Propane is found in both crude oil and natural gas. Propane and other hydrocarbons like butane and ethane are byproducts of the refining process of those raw compounds.

Propane burns cleanly, especially compared to gasoline and diesel fuel. In fact, propane, which is approved under the Energy Policy Act of 1992 for use by federal and state fleets as an alternative fuel, has an octane rating of 104 to 107 and allows for a higher compression ratio, allowing a propane engine to run just as powerfully and more efficiently than with gasoline, which has an octane ratio between 87 and 93. As a result, propane-fueled vehicles can meet the very tough Ultra-Low Emission Vehicle (ULEV) standards. — BK



Several well-established companies now offer propane-powered units.

spark plugs carburetors and engines in propane-powered equipment last up to three times longer than gasoline-powered equivalents and that during the lifespan of that equipment, fewer tune-ups are required. At present, new propane mowers can be somewhat more expensive than traditional gasoline equipment, but lower fuel and maintenance costs over the lifetime of the equipment more than balance the equation. Morell has seen the benefit for his fleet of mowers.

"I don't have water in my fuel; I don't have dirty carburetors, and if need be, my mowers can sit for a month or two, and they fire back up without any maintenance."

Lower fuel costs

For most grounds maintenance applications, propane is either delivered and stored in bulk tanks on site or delivered in ready-to-mount mower cylinders that are

continued on page 44

continued from page 42

re-filled by the supplier after use. Either way, there is a significant cost savings over gasoline. Overall, the price of propane compares favorably with the price of conventional or reformulated gasoline, historically running at under 75% of retail costs. Many states offer fuel tax incentives or alternative fuel benefits to encourage the use of propane, helping to further increase fuel savings.

Another center of expense — fuel shrinkage — is virtually eliminated in a transition to propane. Propane is, at present, not a common fuel for cars and trucks and is less vulnerable to theft in the field and on site. Also, because of propane's closed storage and delivery systems, fuel budget losses due to loss, evaporation, spillage and theft, as well as contamination from rain, dirt and other contaminants, are essentially eliminated.

Environmental benefits

A number of states across the union are either eyeing or actively pursuing legislation to cut the emissions of mower fleets owned by the state or its institutions. This, coupled with heightened senses of environmental and fiscal awareness at every level of business and education, bring new attention to clean-burning and economical propane as a fuel.

It is well known that the gasoline en-



Envirogard 61 features EPA and CARB-certified engines.

gines on grounds maintenance equipment, in particular, emit high levels of carbon monoxide, volatile organic compounds and nitrogen oxides. Those engines produce on average 5% of the nation's air pollution, a number that can be significantly higher in metropolitan areas. Emissions are so low that propane mowers can be used during "Ozone Action Days" — days deemed by cities or states as especially likely to foster the production of ozone — when the use of gasoline-powered engines is either prohibited or discouraged.

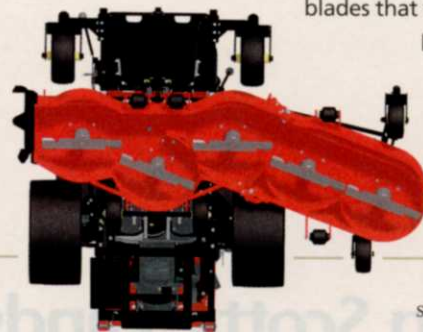
Propane-fueled equipment has minimal emissions. Studies indicate that smog-forming hydrocarbons are lowered 60% to 70% in propane-fueled engines vs. gasoline, along with 12% less carbon dioxide, 20% less nitrous oxide and 60% less carbon monoxide. Toxins and carcinogens

Articulators follow the lay of the land

One year after introducing articulating rotary mowers into the commercial market, Jeff Laskowski, founder and CEO of Indianapolis-based Lastec, is on a mission to build distribution. That, he says, is the biggest hurdle in getting the industry to recognize the inherent advantages of his products' design.

In spite of 20% growth since attacking the commercial market and growing distribution by more than 50 dealers, he admits that Lastec's footprint remains small compared to more-established national brands. What it has going for it, however, he insists, is the ability to cut grass better on real-life properties — properties with hills, bumps, depressions, uneven terrain — better than fixed-deck units. And, he predicts, once commercial cutters see what his units can do,

The Articulator 2886AD follows a site's contour for better cut, no scalping.



Lastec's articulating-deck models (decks ranging from 61- to 86-in. cutting capacity) will take their place as standard equipment on landscapers' trucks.

The Articulators, with multiple decks and blades that flex and contour with the ground, have virtually replaced wide-cutting, fixed-deck mowers in the golf industry, says Laskowski. Why shouldn't they do the same in the commercial market?

— Ron Hall

such as benzene and toluene are eliminated almost entirely as well, seeing a 96% reduction in their level.

Gasoline, in addition to being a heavy post-burn pollutant, is a spillage and evaporation hazard. While propane is a gas in its uncompressed state, it is stored as a liquid. "Closed" storage and delivery systems, meaning airtight systems that keep propane in its compressed, liquid state, prevent leaking and evaporative emissions by their nature — effectively removing spillage hazards from your environment. Should a leak develop in the system, propane escapes. As a non-toxic gas, the environmental impact is minimal.

Propane storage tanks are also safer to have at your facility, having been rated at up to 20 times more puncture resistant than gasoline tanks. On the whole, propane is a safer, more environmentally

continued on page 46

continued from page 44

sound option than conventional or reformulated gasoline.

"My crews are no longer coming in contact with gasoline," Morrell says. "That's one less carcinogen in their lives, and that is good for everybody."

Making the transition

When it first moved to propane in 2002, the AISD found it necessary to experiment and tinker with the mowers to make the transition successful. Today, manufacturers like Dixie Chopper, Ferris, Envirogard and others produce or plan to roll out propane-fueled ZTR mowers. Envirogard (www.envirogard.com) and other companies manufacture conversion kits for older mowers, helping to alleviate the expense of transitioning a whole new fleet.

The propane cylinder itself has even been improved through experience in the field. In the beginning, Morell and other early adopters were using cylinders designed for use of forklifts, which don't often travel over rough terrain, resulting in fuel-delivery problems and frozen lines. Now, however, mower-dedicated cylinders effectively regulate the flow of propane to the engine, even on the rough-

BIGMOW, the newest robotic mower

Are the professional grounds and landscape markets ready for a robotic mower? Tom Moore of SofTee Automation, a North Carolina-based distribution company, thinks they are. He showed off the BIGMOW, 5-acre robotic mower at this past fall's OPEI Expo in Louisville, KY.

This unit, manufactured by Belrobics in Belgium, has five floating cutting heads with a combined 42-in. mowing width. The battery-powered unit cuts continuously as its onboard computer mows in a random or a systematic pattern. It uses sonar to detect trees and signage in its path, says Moore. When low on energy, the unit goes back to its recharging station for a 90-minute charge. Then it's out mowing again. A buried low-voltage wire defines the perimeter, beds and islands. Because the unit is continuously mowing, bagging clippings is eliminated.

This futuristic, battery-powered robotic unit mows continuously.

Moore says the unit is particularly suited to sites such as hospitals, office complexes, nursing homes, educational facilities, restricted areas and public building grounds. For

more information visit www.bigmow.biz.

— Ron Hall



est terrain. The mower-dedicated cylinders are engineered to be rugged, easily transportable and connected in seconds.

The idea of switching to a seemingly new, less-established fuel like bio-diesel or ethanol can be worrisome as there is not

an existing supply infrastructure. The same is not true of propane, which boasts of a well-established delivery infrastructure. The supply of propane for a mower fleet is easily secured, requiring either the delivery of a bulk tank that is regularly filled by a bulk supplier or the delivery of pre-filled cylinders on an as-needed basis.

Jrco Heavy-duty Attachments for Commercial Mowers

Electric Broadcast Spreader

- 2.2 cu. ft. / 120 lb. Capacity
- Electronic Speed Control
- Stainless Steel Frame
- Stainless Steel Controls
- Spread Pattern Centering

Call for Dealer
800.966.8442

www.jrcoinc.com



Won over

Billy Morell is no longer a skeptic. The environmental, cost and maintenance benefits inherent in a transition to propane fuel have won him over.

"Propane is superior," says Morell. "Were making more buys every year, and everything will either be propane-fueled right off the assembly line or we'll convert it here if we have to." **LM**

— The author is vice president, corporate development for Ferrellgas.
Find out more at www.ferrellgas.com.

Circle 145