



To demonstrate its range of control and connectivity solutions, Ohio-based Delta Systems developed a pair of Tech Tractors, including one based on an Exmark commercial zero-turn radius mower. The Tech Tractor incorporates a range of technologies, including a pushbutton start system, touchscreen display, backup camera and object detection system and Bluetooth-enabled monitoring system.

## A LOOK AT A MOWER CONNECTED FUTURE

Delta Systems develops “Tech Tractors” to highlight its technologies for commercial and consumer mowers and other power equipment

**BY MIKE BREZONICK**

**A**s demands for efficiency, safety and convenience have increased, the trend toward intelligent, connected equipment has become nearly universal. And it’s apparent that ultimately, no segment of the engine-powered equipment industry will be immune.

Yet some markets are embracing the technology faster than others and in certain instances, part of the delay is that equipment manufacturers are not always fully aware of what the possibilities and benefits could be for their machines — and their customers.

That was part of the thinking Delta Systems had in mind in developing its “Tech Tractors” — commercial and consumer mowers fitted with an array of the company’s technologies, such as touchscreen displays, pushbutton starters, backup cameras, object detection systems and Bluetooth-enabled monitoring systems.

The commercial version of the Tech Tractor was showcased at the GIE+Expo event in Louisville, Ky., and privately demonstrated to individual manufacturers over

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Information from many of the advanced systems on the Tech Tractor is accessible via Bluetooth and the Delta Blue app. Delta Systems relies on Bluetooth rather than more sophisticated communications protocols in response to the significant price sensitivity of turf and other markets.

the last year. “We wanted to go beyond a whiteboard or a PowerPoint,” said Bill Michaels, Delta’s vice president of sales and marketing. “We had it at GIE, but over the summer we also had nine OEMs come in and operate the mower themselves.

“It was really a showcasing of where we are as a company and how we have the ability to develop all of these products and integrate them for our customers. And we thought having machines that our customers could literally ride and drive was more effective than seeing a presentation.”

Based in Streetsboro, Ohio, Delta Systems is a 45-year-old supplier of switches, displays and controls primarily for outdoor power equipment, with some business also in construction and utility vehicles, power generation and marine applications. In its second generation of family ownership, Delta is a longtime supplier to manufacturers such as MTD, John Deere, Husqvarna Outdoor Products and Briggs & Stratton.

For each Tech Tractor, the company started with a standard piece of equipment — the consumer version based on a Snapper riding mower and the commercial platform using an Exmark zero-turn radius mower.

Among the most notable highlights of the commercial unit are:

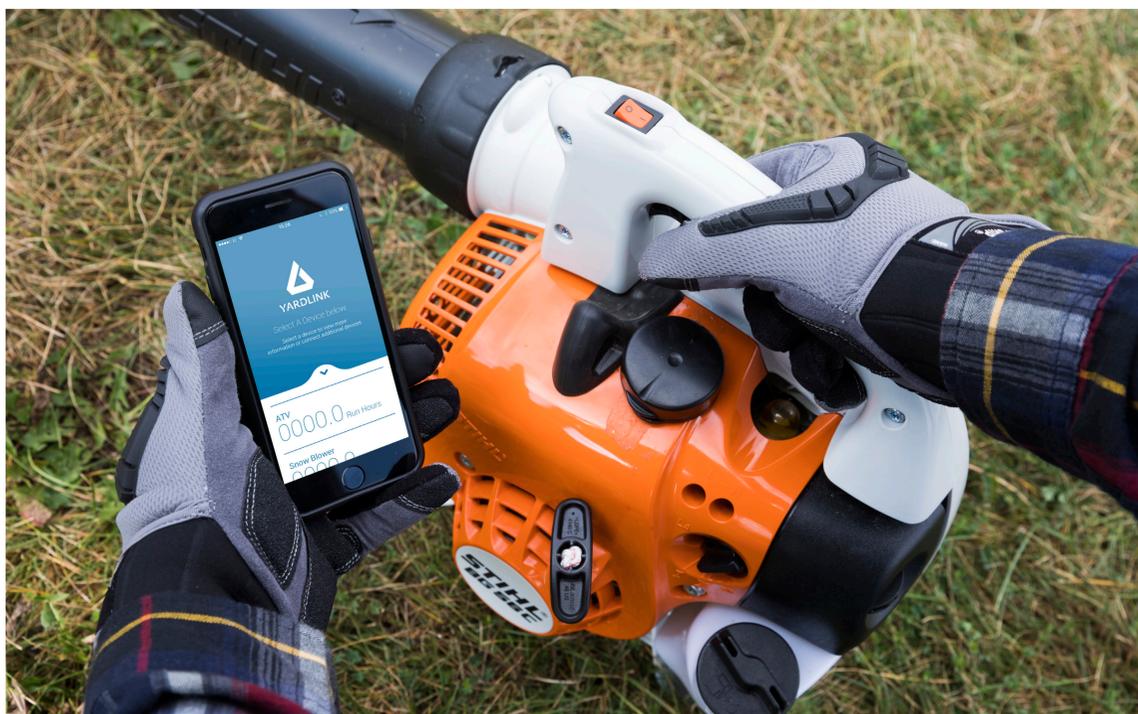
- A 4.3 in. touchscreen display. Fully customizable, it can display a wide range of machine operating parameters, such as fuel level, engine speed, operating hours, battery level, etc. It can also provide maintenance reminders and alerts and is J1939 capable, the company said. The IP67-rated module is designed for high visibility in all light conditions and can be operated by users wearing gloves.
- A pushbutton ignition system. Push-to-start and optional push-to-stop feature is designed to make starting simpler, Delta Systems said. Fitting in the same space as a standard ignition key switch, the unit is fully sealed, eliminating the ingress of contaminants that can occur with key switches.

- A backup camera and rear object detection system. The rearview camera uses an NTSC video feed that is automatically activated when the tractor begins moving in reverse. The signal can be viewed on the touchscreen display and the system also can provide messages and warnings. The rear object detection system uses ultrasonic sensing to detect objects as far as 9 ft. away and can detect multiple objects, Delta Systems said. Distance-based audible and/or visual alerts can be provided and the system is designed to detect most materials and surfaces, the company said.
- A tire pressure monitoring system. The system incorporates pressure sensors that uses Bluetooth wireless technology to provide information on tire air pressures. Through an app, the system can also provide suggested pressures based on the specific tires on the mower, the company said.
- A CAN Smart controller that is infinitely customizable to display nearly any type of information that can be measured on a mower, such as battery voltage, engine oil pressure, PTO hours, arms position sensing, park brakes, etc. Through Bluetooth connectivity, the information can be delivered to any smart device in proximity.

Other features of the Tech Tractor include a 700 W power inverter that allows the unit to operate as a mobile generator set to power smartphones, power tools and work lights; a sealed universal PTO switch; and a Hall effect operator presence seat switch.

Most of the technologies on the Delta Tech Tractors are designed to operate with 9 to 16 V electrical systems and can operate in a broad temperature range of -40° to 158°F (-40° to 70°C).

“What we’ve seen, based on marketing and research trends, is that technology is cascading down from automotive to commercial truck, to construction,” Michaels said. “With the consumer of today and especially the consumer of tomorrow — and the oldest millennial in



Delta Systems YardLink is a Bluetooth-enabled, puck-like portable device that can be mounted to any type of engine-powered equipment. Working through the Delta Blue app, YardLink uses engine vibration to track parameters such as engine hours and battery status. Multiple YardLink units can be read through the app, providing the ability to monitor fleets of machines.

two years will be 40 — their expectation is, I'm used to a pushbutton start on my car, I'm used to Bluetooth-enabled 'smart' products.

"We see it as starting to reach a critical mass from a 'want' standpoint. I think a lot of where our OEM customers are is that they're being tasked to put a value to it. In other words, could I go to a Big Box and charge 'X' because I have your connected products on my machine or is the Big Box going to say that's something we either won't pay for or we won't pay beyond a certain price point for it?"

"But I think that's changing. Along with what we do in our coverage in the industry, we do a tremendous amount of research and a lot of voice of the customer. And the things on the Tech Tractors are things users have mentioned to us in our discussions."

Delta Systems is already supplying some aspects of its advanced technology to the market. Its technology is the basis for Cub Cadet's Cub Connect Bluetooth app, which has been available since 2015. It also worked with Briggs & Stratton on its Bluetooth app for portable generators.

The company has also developed its own Bluetooth system for use on virtually any type of engine-powered equipment. YardLink is a portable device that is designed to be attached to any type of machine and it uses engine vibration to track parameters such as engine hours and battery status. Information is then transmitted to the Delta Blue app via Bluetooth.

Weather- and dust-resistant, the system is packaged within a small puck-like device that is mounted via 3M VHB adhesive. Engineered to deliver six months of battery life, the app includes a low battery status warning.

"One of the things with the YardLink app is that you can put multiple pieces of equipment on it," Michaels said. "Your first screen can be a mower, the second can be a trimmer and the third can be a chainsaw so it can be used for a fleet of machines."

All of Delta Systems' connected technologies rely on Bluetooth, rather than more sophisticated GPS or cellular

options, a choice that is deliberate, Michaels said. "There is a tremendous amount of price pressure in our industries," he said. "We understand that, we've taken note of that from our customers and that's part of why our solutions to this point are all Bluetooth driven."

"The feedback we got is that there is a price point that is going to be very scrutinized and the subscription model that you'd use for some of the technologies might work for a very large fleet. But a lot of the people we talk to, their fleets are four or five mowers and they just want something they can connect with Bluetooth there or when they bring it back to their yard. So to this point we've stuck with Bluetooth-connected products just again to keep the price point of our modules at a lower range."

All of Delta Systems' products are manufactured in Streetsboro, with some assistance on the app side from a local company, Michaels said. "We're very good at designing hardware with software and they're good at apps," he said. "So we can go to an OEM and say you're going to be working with Delta Systems, who you've known for a long time, we'll do the module and here's the company we'll work with to do the app part of it. It's all basically in-house."

Michaels said that several of its new technologies were scheduled to be part of production commercial and consumer turf equipment in 2018 and he expects the uptake to accelerate as time goes on. "We believe it's coming to the industry," he said. "The adoption rates have maybe been a little slower than anticipated, but I think that will change over time."

And he added that Delta Systems is "definitely looking at some adjacent markets, especially with these new technologies."

"We can see that a lot of them are on the cusp of moving in that direction," Michaels said. "The demographics alone point to that happening. We're in a good place." **dp**

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