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PRODUCTS · TECHNOLOGY · INDUSTRY NEWS

POWER GENERATION SETS & SYSTEMS

Backing Up The Bible

The Dredge That Saved Leland

New from Signal Power is a light tower that combines battery, solar, an onboard diesel generator and plug-in shore power sources into a portable, integrated LED lighting system.

THE SOLAR/DIESEL/ PLUG-IN LIGHT TOWER

Battery, solar, diesel gen-set plug-in shore power combined in one package

Light-emitting diode (LED) technology is rapidly replacing both incandescent and florescent sources across the whole spectrum of lighting applications. But, like any new technology, LEDs come with a learning curve and the lessons learned by early adopters inevitably lead to enhanced performance in second and subsequent generation applications.

A case in point is the new Hybrid Tower recently introduced by Signal Power, Chattanooga, Tenn. The new light tower combines battery, solar, an onboard diesel generator and plug-in shore power sources into an integrated LED lighting system that delivers light output comparable to traditional incandescent systems along with application flexibility, the company said.

"The first generation of LED towers disappointed a lot of users," said Signal Power President and CEO Doug Zukowski. "The first adopters basically chose the wrong LEDs and that was compounded when the initial crop of solar-powered LED towers couldn't compete with traditional towers in terms of light output. Those experiences gave the technology a bad name with a lot of end-users."

28 LEDs on a PCB

Signal Power designed the light tower around a proprietary light panel using a Cree LED equipped with a special lens designed for the application. There are 28 LEDs mounted on a proprietary printed circuit board that is installed in a light fixture designed specifically for mobile platform applications.

"The fixtures are extremely tough," Zukowski continued, "but they put out as much light as an incandescent fixture while operating at 150° F or less."

Signal Power took full advantage of the LED's low operating temperature by making the fixtures on the Hybrid Tower quickly detachable. The fixtures can be mounted on the tower, on the corners of the power unit, on the ground, or on remote stands connected to the power unit by a cord.

The low operating temperatures also make it practical to place electronic tools like cameras, air/weather monitors or radar atop the tower above the lights, Zukowski said.

Signal Power said the light fixtures are not only cooler, but are robust, as well. That makes it feasible to mount them

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in unusual locations like the underside of a bridge deck, in a trench or underneath mining equipment, all of which have been done successfully, Zukowski said.

"Our LED Hybrid Towers meet both DOT and FAA open air lighting anti-glare standards," Zukowski added. "That means Hybrid Towers can be used for ground level area lighting on highways and airports which gives end-users even more flexibility."

Flexible power

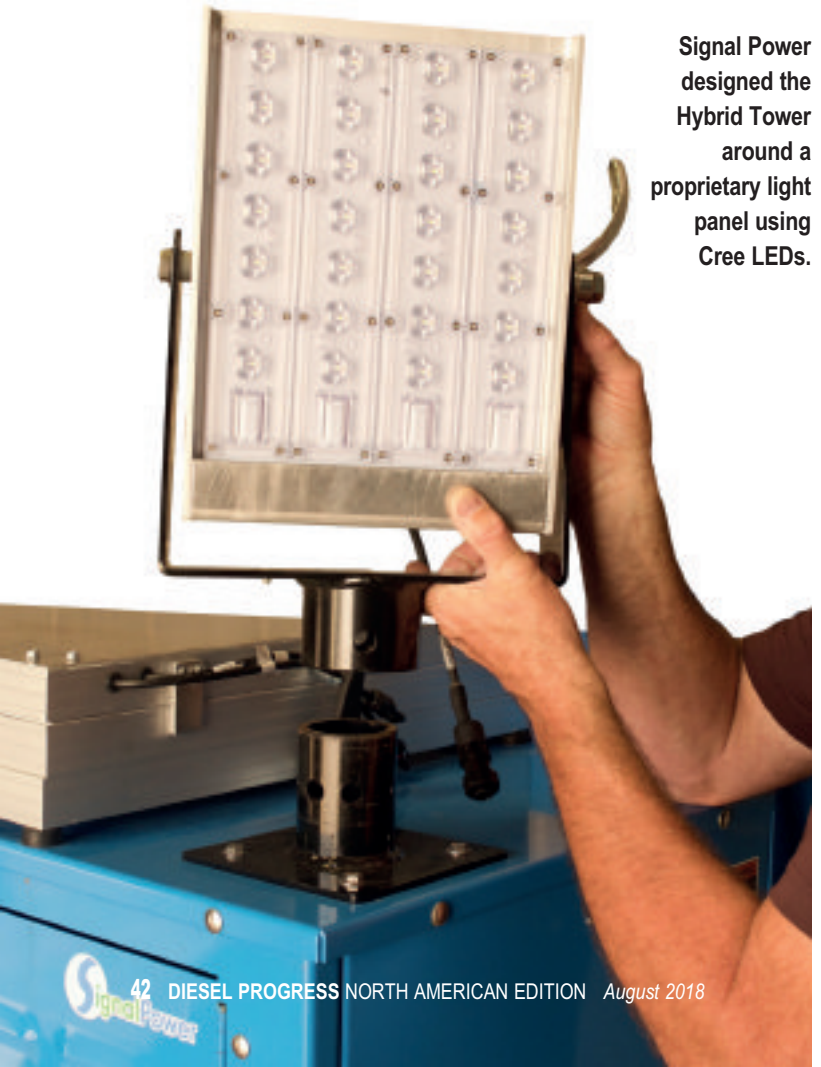
Signal Power said it decided to design a truly hybrid system that combined solar, battery, gen-set, and plug-in capabilities seamlessly. The major challenge was to create a control that automatically switched between the different sources without operator intervention. The result is a patented control system that does exactly that.

"We can operate on batteries and recharge them with the solar panels if there is enough sunlight," Zukowski said. "Or we can operate on 120 Volts from the utility mains and simultaneously re-charge the batteries that way.

"The ability to run on both 120 Volt utility power and batteries even permits the Hybrid Tower to be used indoors. In fact," Zukowski said, "NASA is currently using them to provide lighting in some of its very large warehouses.

"We also have units in use on outdoor movie sets where they are used to provide fill light to keep the on-set light values constant while the ambient light changes over the course of a shooting day. The fact that our LEDs are dimmable, and the Hybrid Tower is silent while running on batteries or 120 Volt utility power makes this possible.

"And in other applications where neither of those methods are available, we can use the diesel gen-set to run the LEDs, re-charge the batteries and still have enough capacity available to provide up to 10 kW of auxiliary power for other devices. So, the Hybrid Tower can be both a light tower and a mobile power source, adding even more flexibility for the end user."



Signal Power designed the Hybrid Tower around a proprietary light panel using Cree LEDs.

Power details

The diesel engine chosen by Signal Power for the Hybrid Tower is a Perkins model 403F.11 light tower engine. The 403F.11 is a 1.1 L, three-cylinder, naturally-aspirated diesel that produces a maximum 24.7 hp (18.4 kW). The 403F.11 meets U.S. EPA Tier 4 final and EU Stage 3b emission standards. The engines are built in Perkins' Griffin, Ga., plant in the United States and a newer Perkins facility in Wuxi, China.

"We received the very first 403F.11 engines built in Griffin," Zukowski said, "and we continue to get engines drop shipped directly from Perkins factories to our facility in Chattanooga complete with radiator and air cleaner and ready for installation."

Zukowski and Perkins Power Corp. (PPC), the Perkins distributor for the Southeastern United States, have had a nearly 20-year relationship covering several business ventures.

"We like the innovative products that Doug has challenged us to power over the years," said PPC General Manager Chuck Scott. "His standard goal is always peak efficiency and maximum durability and we have been able to provide the right engine solution. The 403F.11 for the Hybrid Tower was no exception."

Signal Power uses a special low-noise muffler and acoustic insulation to further minimize the sound signature of the Perkins 403F.11 in the Hybrid Tower power unit.

"Many of the original solar LED towers were marketed as 'green' technology," Zukowski added, "and they were to some extent. But, given their limited performance capabilities they never really displaced many conventional engine-powered units.

"The Hybrid Tower is different because it matches the output of a conventional incandescent light tower with a much smaller carbon footprint. Without using solar or plug-in power, the Hybrid Tower can run for 500 hours on battery power and 22 gal. of diesel fuel. End users also get the benefit of the LED's long service life which can be up to nine years for the Cree we're using." **dp**

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http://hybridledlighttower.com/