

PROTOTYPING FOR THE FUTURE: THE CLASSEN® TURF RAKE GETS AN ELECTRIFYING UPGRADE

VANGUARD™



See how the Vanguard™ 48V 1.5kWh* Commercial Battery (Si1.5) transformed Classen's versatile turf rake with quiet power and optimized efficiency.

The evolution of battery technology is changing the game for turf and landscape professionals. From cleaner air and reduced noise pollution to fewer maintenance requirements and improved operation, the sustainability and efficiency benefits are clear. Leading original equipment manufacturers (OEMs) like Classen, a manufacturer of turf renovation equipment, are actively developing next-generation electric solutions to stay competitive in a rapidly changing industry.

A long-time customer of Briggs & Stratton, Classen has leveraged Vanguard® commercial engine technology for 20 years. So this turf equipment manufacturer knew it was

in good hands when turning to Vanguard for help in developing electrified prototypes of its existing gas-powered equipment.

Among the initial prototypes on the development docket were a turf rake, a seeder and a walk-behind blower.

“A lot of our industry is headed toward electrification, so when the opportunity came up for us to work with Vanguard to bring electric power to our product line, it made a lot of sense for us, especially since Vanguard offers a turnkey approach,” says Martin Dain, Product Manager for Classen. “We were eager to get a prototype out in the field so we could get feedback from our customers on the electric versions of our equipment, and Vanguard was up for the challenge.”

UNMATCHED EXPERTISE IN POWER SOLUTIONS

Leveraging more than 115 years of application expertise, Vanguard works with OEMs like Classen to find the right solutions for equipment design and power requirements. When looking to transition its gas-powered turf rake to electric power, Classen consulted the engineering experts at the Briggs & Stratton Power Application Center (PAC) for help in navigating its electrification journey. Vanguard was there to provide engineering support from the start with design and component spec'ing all the way through to testing and deployment of the prototype in the field.

*Total energy measured using a 0.2C discharge per IEC 61960-3:2017



“This was our first time repowering a turf rake at the PAC. So, while the piece of equipment was brand new to us, we knew we could take the data and information we had from other repowers to make informed assumptions. Then, as the project progressed, we were able to confirm and solidify those initial hypotheses,” says Josue Benjamin Pimentel Lozano, Electrical Engineer at the Briggs & Stratton PAC.

This project was a unique opportunity for Vanguard to gain experience in electrifying a turf rake.

“We have some of the best engineering minds in our PAC and they can leverage learnings from past projects and adapt them to come up with the best power solution for our OEM customers,” says Jason Steadman, Business Development Executive for Briggs & Stratton.

The PAC started by creating a load profile for the turf rake, using insights based on the gas-powered model’s performance data and load needs to identify the ideal battery solution for the application. Leveraging this data, Vanguard recommended the **48V 1.5kWh Commercial Battery (Si1.5)** paired with the **MC2000 Vanguard Motor Controller** and **MVG3000 Motor** as the ideal battery system that would meet the power and performance requirements.

As a power application expert, Vanguard is on a mission to make the electrification process as simple as possible for OEMs. The company is doing that by offering an integrated battery system made up of components all manufactured by Vanguard. This helps streamline integration and expedite the power process for customers like Classen so they can go to market sooner.

“For commercial customers like those that Classen serves, downtime is never good. Their equipment is their livelihood so they need something that will run reliably,” says Steadman. “This desire for reliable uptime led us to recommend a swappable battery configuration for



Vanguard offers high-power motors and motor controllers (pictured above) that seamlessly integrate and complete a full battery system for OEM application needs.

Classen, due to the flexibility it offers in commercial applications. Classen really liked the fact that with the Si1.5 they have the ability to swap out a depleted battery for a freshly charged one so contractors can keep tackling the job at hand.”

PUT TO THE TEST

After finalizing the battery system and design of the electrified turf rake, Vanguard was able to build the prototype and move into the next phase of the electrification process; performing comprehensive battery testing.

Before putting the prototype out in the field, Vanguard put the electric turf rake through its paces with in-depth testing at the PAC. The PAC offers OEMs the ability to put their equipment through application tests to see how it performs under different jobsite conditions, such as extreme temperatures, debris and vibration. The Vanguard engineering team is also able to assist with testing runtime and performance capabilities.

“We try to run the application from fully charged to fully discharged and predict how much time the battery is going to run depending on the power requirements of the equipment,” says Lozano. “We are then able to program the motor controller to increase runtime and ensure that we are creating an integrated system that delivers an optimal performance.”

Classen was initially targeting a runtime of 45 minutes. Vanguard charged past that goal and was able to achieve a runtime of two hours in initial field testing with the Si1.5. After these successful testing results, the electrified prototype was ready to hit the field and get on-the-job feedback from contractors.



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Jason Steadman
Business Development Executive for Briggs & Stratton



AMPED UP

Classen was able to get the new electrified turf rake prototype into the hands of a contractor based in Connecticut for first-hand feedback on how the machine operated. This contractor had converted his entire fleet to electric equipment, so he was no novice when it came to operating battery-powered machinery.

“The feedback has been good. The contractor was able to renovate a quarter-acre property in two hours of runtime,” says Dain. “The machine did all of the things he was expecting out of a turf rake. He appreciated the simplicity of the setup and was really eager to demo other electric machines from Classen.”

Other benefits of the electrified unit that stood out to the contractor included the zero emissions, user friendliness and quiet operation it provided.

“One of the points the contractor made when we recapped his experience was that he was operating in a busy neighborhood. The low noise emissions from the machine allowed families to go about their business and not be interrupted by a contractor doing their job. The low noise level is striking, especially if you’ve ever run gas-powered versions of these machines,” says Dain.

Classen plans to continue to trial the machine in the field with other contractors to gain additional insight into its runtime and performance.

“The two hours that we’ve gotten so far per battery charge enables the contractor to do what they need to do in any one given day as long as they have multiple batteries. I think that’s really the allure of this specific power platform,” says Dain. “The swappable nature of the batteries from Vanguard adds some additional confidence for users getting accustomed to electric power. If a battery is depleted, you can swap out the discharged battery for a charged one, recharge it, and it’ll be ready to go by the time they work through the charge of the other one.”

CHARGING AHEAD TOWARD THE FUTURE

What’s next for Classen’s partnership with Vanguard? Dain says he looks forward to refining the other electric applications they are working on together.

- ▶ [Learn more about Classen turf care equipment.](#)
- ▶ [Learn more about the Vanguard 48V 1.5kWh Commercial Battery \(Si1.5\).](#)

CLASSEN

Having battery standardization across a line of products is an attractive benefit for manufacturers like Classen.

“Being able to take a battery off one application and use it elsewhere is something that Classen was interested in because the company offers a full line of products,” says Steadman. “For example, a contractor would be able to use an electric turf rake on a lawn and then they can take the battery out of that application and put it in their electric overseeder to continue the job. Our Si1.5 battery can act as the all-in-one power source for all your equipment.”

Classen has been impressed with the comprehensive support it has gotten from Vanguard and the experts at the PAC throughout the entire repower process. Dain emphasized that the existing relationship paired with the collaborative approach Vanguard takes throughout the electrification process further bolstered the trust Classen has in Vanguard as their power provider of choice.



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*Martin Dain
Product Manager for Classen*



“There was a certain level of trust that Vanguard had built with us, and so relying on their expertise to help navigate this transition was really sort of a no-brainer. I’ve always found them to be as equally invested in the process as we were,” says Dain. “While electrification is a longer-term strategic initiative for us, Vanguard is still offering us awesome support on the internal combustion engine side. To be able to work together on both fronts is valuable to us. When you find good partners, you look for ways to grow together.”

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