



YANMAR

News Release

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Yanmar America Corporation

ELEO Introduces its New Generation of Battery Systems at CONEXPO



ELEO Technologies will display its next generation of battery systems at CONEXPO in Las Vegas in March 2023.

ELEO will join Yanmar America's Power Solutions Division at ConExpo, South Hall 2nd Level — S84014

Las Vegas, NV (March 14, 2023) – Yanmar Group company, ELEO Technologies B.V, a battery technology manufacturer located in Helmond, the Netherlands, will display its next generation of battery systems at CONEXPO in Las Vegas in March 2023 on Yanmar America's booth in the at South Hall 2nd Level — S84014. The new system offers increased energy density and ultimate integration flexibility following from the unique modular concept.

All-in-one systems integrator of e-powertrains for off-road OEM equipment

Yanmar will establish itself as the all-in-one systems integrator for smart electrified power

solutions tailored to the application-specific needs of individual OEMs. In its capacity as a systems integrator, Yanmar will implement system engineering, design and manufacturing of e-powertrains, while also providing control development, system evaluation, procurement, manufacturing and quality assurance. As Yanmar transitions to an advanced supplier of electrified solutions, the company remains true to its core values of durability, reliability, quality and robustness, together with the commitment to be a reliable and trusted partner for customers - values the company has lived by for more than 110 years.

An important milestone for realizing the urgent environmental challenges that we must overcome is Yanmar's acquisition of battery-technology company ELEO, a fast-growing developer and manufacturer of high-performance modular battery systems. This acquisition will further Yanmar's electrified powertrain capabilities with versatile, customized solutions for off-road applications.

Ultimate flexibility

The new battery system is the second product generation from the Dutch manufacturer after the first generation started production in early 2020. With the new product, ELEO offers industrial OEMs ultimate flexibility from the scalable design to meet the wide variety of requirements present in the off-highway industry. ELEO's unique concept features modular battery modules that come in different sizes created from the same tooling, components, and production process. This allows for an extensive selection of customized packs without the need for extensive engineering. By combining a set of modules, the ideal voltage, capacity, and dimensions can be reached for any application, ranging from 50-800 V and 10-1000 kWh in a wide range of shapes. All customized battery systems are provided as full turnkey solutions and are automatically certified according to R10, UN38.3, IEC62619, SIL-2 and designed to comply with R100-3 and a host of others.

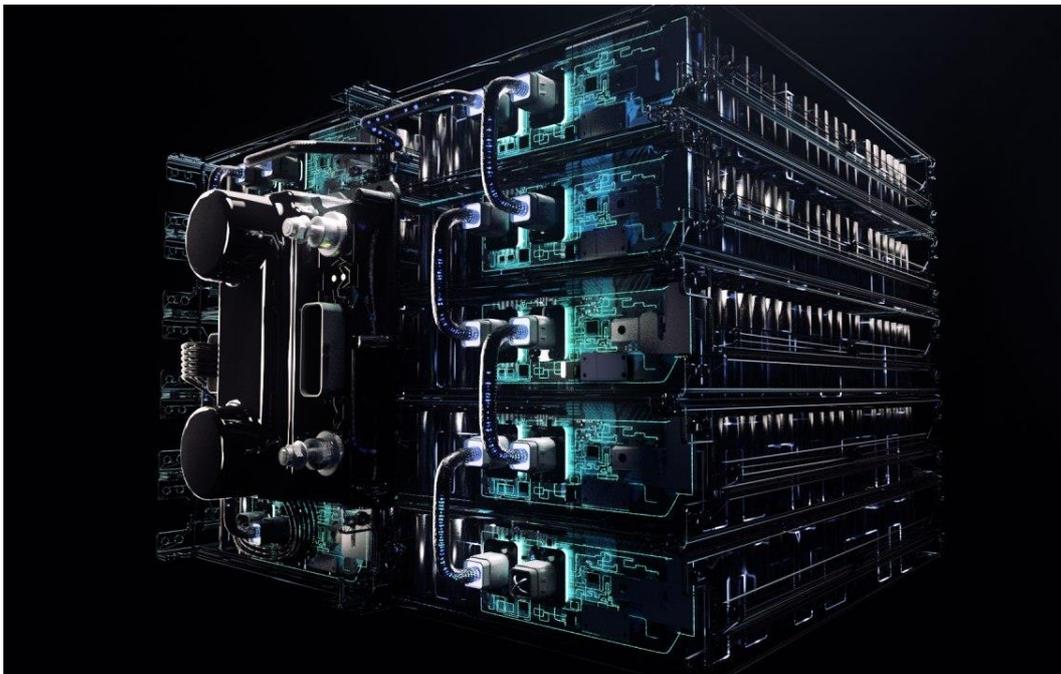


Advanced technology

To deliver customers optimal battery performance, ELEO has developed and integrated advanced technology into its new battery system. State-of-the-art cylindrical cells in combination with optimal packing flexibility enable an industry-leading energy density and maximum autonomy. Additionally, ELEO's unique flexible approach is enabled by its in-house designed Battery Management System (BMS). Each pack has a central pack management unit that collects and controls data from all individual modules, establishing active safety and comprehensive communication to the application. ELEO's BMS accommodates various communication protocols and features highly accurate estimations for state-of-charge (SOC), state-of-health (SOH), and state-of-power (SOP) while better balancing cells in the battery pack. This affirms that the pack is operating at its full potential while enabling optimal user experience.

To ensure maximum performance under all circumstances, ELEO uses a single-surface cooling method that accommodates both passive and active cooling, minimizing temperature differences between all batteries while ensuring maximum performance in both cold and hot environments.

Safety has been top priority in the design process. Thermal runaway propagation prevention technology is integrated in each battery system, which means that in the unlikely event a cell goes into thermal runaway, ELEO's proprietary propagation prevention technology assures no thermal runaway propagation will occur and all surrounding cells are protected—limiting damage to a single replaceable module and thoroughly mitigating any safety risks.



Availability

ELEO has already started the production of its new battery system and is ramping up production at its newly built battery production plant at the Automotive Campus in Helmond, the Netherlands. The batteries have been on display during bauma in Munich in October last year and will be introduced to the North American market from March 14-18 at CONEXPO. For both events ELEO joined Yanmar's booth to highlight the company's efforts towards the decarbonized powertrain as part of its Yanmar Green Challenge 2050. At its new facility, annual battery production capacity has increased tenfold to 500MWh – equivalent of approximately 10,000 battery packs.

About ELEO

Founded in 2017, ELEO Technologies B.V. is a fast-growing battery technology company based in Helmond, the Netherlands. Since its inception, ELEO has been committed to the mission of making high quality battery systems accessible to a wide variety of industrial applications. Based on this vision, ELEO develops and produces advanced modular battery packs which are differentiated by their proprietary battery management system (BMS) and innovative thermal management, bringing significant benefits in terms of safety, reliability, and durability.

About Yanmar America Corporation

Yanmar America Corporation, located in Adairsville, GA, is the regional headquarters of Yanmar Holdings Co., Ltd. a global company based in Osaka, Japan. Yanmar was established in 1912, and in 1933 became the world's first manufacturer to develop a practical small diesel engine. Today, Yanmar is a recognized leader in the design and manufacturing of advanced performance diesel engines and diesel-powered equipment, as well as gas engine-based energy systems. Yanmar America Corporation is located at 101 International Parkway, Adairsville, GA 30103. For more information, please visit yanmar.com/us.

Note: Information contained in the news release is valid at the time of publication and may differ from the most recently available information.

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