TRADE PRESS RELEASE

MEDIA INQUIRIES

Caterpillar IPSD Trade Press Media Representative
Annette Ward: Ward_Annette@cat.com

Caterpillar Joins Flory Industries and Holt of California on Successful Electrified Powertrain Prototype for Nut Harvesting Equipment

February 19, 2025 – Caterpillar today announced the results of its prototype demonstration project for a battery-powered field elevator with Flory Industries, a global leader in the production of nut-harvesting equipment.

Completed during the fall harvest season in the Central Valley region of California, USA, the field test successfully showed how a 600-volt battery-powered powertrain can deliver the performance, reliability and durability currently provided in this application by a conventional 74-horsepower diesel engine while reducing maintenance and operating with zero tailpipe emissions.

Supported by Holt of California, the local Cat® dealer, the prototype was tested over seven weeks in the almond and walnut orchards in California, with one site being Heinrich Farms, a 1,200-acre crop farm based in Modesto. Here, the unit operated an entire 10-hour workday on a single charge, loading 422,000 lbs. of nuts into trailers throughout the test.

To overcome the constraints of being off-grid, Heinrich Farms fully recharged the electrified field elevator overnight during non-working hours using the Cat® XES60 Compact ESS mobile battery energy storage system, which provides up to 56.8 kWh of capacity.

“The electrified field elevator from Flory was reliable and unloaded our harvest as fast as conventional equipment powered by diesel engines while generating far less noise,” said Jerad Heinrich, orchard manager for Heinrich Farms. “It lasted an entire day of work without stopping for a recharge, and we’re eager to use it again for our next harvest as the technology continues to progress.”

The project was the first presentation of a prototype machine by a third-party original-equipment manufacturer (OEM) using Caterpillar’s battery-powered solution. Based on the positive results of the demonstration, Flory plans to offer pilot units to select customers later this year, with full production expected in 2026.

“The elevator is a perfect application for electrified machines since it sits idle for most of the workday,” said Tyler Hupp, product development manager for Flory Industries. “This collaboration was an opportunity to

100 YEARS CATERPILLAR

show our commitment to delivering advanced technologies to our customers that improve performance sustainably."

Ideally Suited for Electrification

Field elevators are utilized for harvesting all tree nut crops, which include almonds, pecans, hazelnuts, macadamias and pistachios. Used for transferring nuts into trailers or stockpiles, field elevators can process anywhere from 50,000 up to 250,000 lbs. of nuts every day during the fall harvest season.

Typically field elevators powered by diesel engines spend about 80% of their duty cycles at low idle in between loads, which accounts for about 45% of their total fuel consumption. These long periods of non-productive operation interspersed with the need for instantaneous power make the elevator an ideal target for electrification.

By replacing the traditional engine with an electrified powertrain, the new system can eliminate up to 126 lbs. of carbon emissions per machine in the field daily while eliminating diesel fuel purchase, transport and storage costs and reducing ambient noise for nearby workers.

With the support of the XES60, the field elevator was able to work off-grid during the day and be charged overnight.

Advancing Caterpillar's Battery Electric Program

Caterpillar supported the project by evaluating system requirements; optimizing system architectures; managing system controls development, calibration, and verification; and performing final system validation.

Engineers integrated the batteries with inverters, motors, electronic controls, digital services and other critical technologies in a power-dense solution that addresses common user concerns while demonstrating the numerous benefits.

The electrified powertrain featured Caterpillar's new prototype battery, which uses lithium-ion technology and features a modular design to boost performance while minimizing packaging. Caterpillar is developing a range of batteries for the off-highway industry.

Holt of California applied its specific knowledge of Flory's equipment architecture and duty cycles to provide day-to-day engineering, integration and testing support.

Flory engineers coordinated the demonstration project from the Flory Industries' headquarters and development center in Salida, Calif., with support from Caterpillar and Holt of California's teams located in the Sacramento area. Flory has specified Cat diesel engines for powered equipment throughout its fleet of

agricultural equipment since 2002. The company currently uses U.S. EPA Tier 4 Final Cat engines for self-propelled harvesters, shuttle trucks, elevators and brush shredders.

The battery-powered elevator is designed to be configured with Cat Connect, enabling equipment owners and Cat dealers to remotely monitor performance during operation and charging cycles. This intelligence can then be leveraged to improve productivity by optimizing in-use and on-charge processes.

“We’ve gained valuable insights from working with Flory to apply our knowledge of electrification and high-voltage systems to the challenging environments of working California farms,” said Steve Ferguson, senior vice president of Caterpillar Industrial Power Systems. “This project demonstrated how Caterpillar is successfully aligning with fellow innovators to develop technologies that maximize the performance and reliability of electrified machines at real-world worksites. Caterpillar can provide customers with access to the full ecosystem of components to insights and the charging infrastructure.”

Click here for more information on Cat battery systems.

###

 —

TRADE PRESS RELEASE

NOTE TO EDITORS

About Caterpillar:
With 2024 sales and revenues of $64.8 billion, Caterpillar Inc. is the world's leading manufacturer of construction and mining equipment, off-highway diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. For 100 years, we've been helping customers build a better, more sustainable world and are committed and contributing to a reduced-carbon future. Our innovative products and services, backed by our global dealer network, provide exceptional value that helps customers succeed. Caterpillar does business on every continent, principally operating through three primary segments – Construction Industries, Resource Industries and Energy & Transportation – and providing financing and related services through our Financial Products segment. Visit us at caterpillar.com or join the conversation on our social media channels at caterpillar.com/en/news/social-media.html.

Caterpillar rolls out products and services in each of its regions at different time intervals. Although every effort is made to ensure that product information is released only after Caterpillar has received confirmation from its independent dealer network, plants, and marketing subsidiaries that products and services are available in the relevant region, editors are kindly requested to verify with a Cat dealer for product availability and specifications.

Release Number: 25PR36 — February 2025

For Release: Worldwide

