



# Construction Joins the Electric Market

Diesel fuel still powers most construction equipment, but electric- and even hydrogen-powered versions are trickling into construction sites.

BY JOHN KOSOWATZ

Electric vehicles are cruising U.S. roads and highways in greater numbers on their journey to motoring dominance. Construction jobsites are the next electronic frontier, as manufacturers begin to introduce electronic versions of heavy, medium, and light machines. Their numbers are small at the moment, with some reports suggesting only 1,000 to 2,000 pieces of equipment were sold globally in 2021. An IDTechEX report, however, forecasts that globally electric construction equipment will command a \$105-billion market by 2042.

Not all of the iron will be electrically powered. Manufacturers such as Volvo and Hyundai are fitting articulated haulers, excavators and backhoes with hydrogen fuel cells. The goal is to reduce carbon emissions as diesel-powered construction equipment accounted for 38 percent of total global energy-related carbon-dioxide emissions in 2019, according to the United Nations Environment Programme.

Here are a few of the latest examples of emissionless equipment.

## VOLVO ARTICULATED HYDROGEN-POWERED HAULER



The 350-ton articulated dump truck is Volvo's first stab at manufacturing a hydrogen-fueled heavy dump truck. The prototype is designed for mining and construction and is a collaboration between Volvo and PowerCell Sweden. The fuel cell has 27.5-pound capacity, giving the truck about four hours of operation. It can be refilled, however, in just seven and one-half minutes.

## CAT 950 GC MEDIUM ELECTRIC WHEEL LOADER



The loader is one of four prototype pieces Caterpillar unveiled last year, powered by Cat-designed lithium-ion batteries. Their modular design is engineered to be scalable to customer needs, and includes an onboard AC charger. It also supports an offboard DC fast-charging option, and the batteries can power other machines or be used for other industrial applications.

## HITACHI ELECTRIC MINI EXCAVATOR



The ZX23U-6EB is the Japanese firm's battery-powered mini excavator, designed to work in tight spaces. It has high maneuverability because of its short tail swing, the same as its diesel-fueled cousin. Hitachi also has three other electric excavators, all powered by lithium-ion batteries or cable connection. They will be available in Europe in mid-2003. Hitachi was concerned that the size of heavy batteries would impede mini excavator operations, but the firm successfully miniaturized its powerpack.