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Wabtec's All-Battery Locomotive, FLXdrive, Lowers Freight Train's Fuel Consumption by More Than 11 Percent in California Pilot

- FLXdrive is the world's first 100% battery-powered, heavy-haul freight locomotive
- On a mission to net-zero emissions, the FLXdrive battery locomotive uses 18,000 batteries to cut the world's carbon footprint

PITTSBURGH, May 17, 2021 – Wabtec Corporation (NYSE: WAB) announced today a rail industry first as its FLXdrive battery-electric locomotive delivered more than an 11-percent average reduction in fuel consumption and greenhouse gas emissions for an entire train. It is the equivalent of over 6,200 gallons of diesel fuel saved and approximately 69 tons of CO2 emissions reduced.

These outcomes are the result of a three-month pilot with BNSF Railway, the largest railroad in the U.S., where the FLXdrive, the world's first 100-percent battery locomotive, was put to the test in revenue service across more than 13,320 miles of hilly terrain in San Joaquin Valley, California – a territory surrounded by mountains. The region is classified as a non-attainment area, where the air quality is worse than the National Ambient Air Quality Standards.



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sustainable mode of transportation. Building on our long history of pioneering train energy management technologies, this demonstration of coupling 2.4 megawatt hours of battery storage into the mix fully validated our assumptions for the potential for this next generation technology to further drive efficiencies and greenhouse gas reductions. At more than 6 megawatt hours, Wabtec's next version of FLXdrive technology will have an opportunity to reduce fuel consumption and emissions by up to 30 percent – putting the industry on the cusp of a once-in-a-generation improvement in energy savings and emission reductions.”

The California pilot program was part of a \$22.6 million grant from the California Air Resource Board awarded to Wabtec, BNSF and the San Joaquin Valley Air Pollution Control District. The 430,000-pound FLXdrive in the pilot boasts 18,000 lithium-ion battery cells. The battery locomotive charged at the rail yard and recharged during the trip through regenerative braking. The FLXdrive manages the overall train energy flow and distribution through its Trip Optimizer system, an intelligent cruise control system programmed through artificial intelligence to respond to every twist and grade of the track in the most energy-efficient way possible.

Wabtec's next step is to build a second-generation locomotive with a battery capacity of more than 6 megawatt hours – a level of energy that can reduce a locomotive consist's fuel consumption and carbon emissions by up to 30 percent, even while hauling several thousand tons of freight in a mile-long train. A fleet of second-generation FLXdrives will be commercialized and could enter supply chain routes in the next few years.

Wabtec's goal is to develop the next generation of zero-emission locomotives. The company has a clear path to power new locomotives – and repower existing locomotives – with batteries, hydrogen internal combustion engines, and hydrogen fuel cells. It is part of Wabtec's vision for the rail industry to play a key role in building a clean energy economy and reduce carbon emissions globally by up to 300 tons per year.

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Wabtec, GE Transportation and Faiveley Transport, the company has unmatched digital expertise, technological innovation, and world-class manufacturing and services, enabling the digital-rail-and-transit ecosystems. Wabtec is focused on performance that drives progress, creating transportation solutions that move and improve the world. The freight portfolio features a comprehensive line of locomotives, software applications and a broad selection of mission-critical controls systems, including Positive Train Control (PTC). The transit portfolio provides highly engineered systems and services to virtually every major rail transit system around the world, supplying an integrated series of components for buses and all train-related market segments that deliver safety, efficiency and passenger comfort. Along with its industry-leading portfolio of products and solutions for the rail and transit industries, Wabtec is a leader in mining, marine, and industrial solutions. Based in Pittsburgh. Visit: www.WabtecCorp.com.

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FLXdrive results (PDF)

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At Wabtec, we help our customers overcome their toughest challenges by delivering rail and industrial solutions that improve safety, efficiency and productivity.

Wabtec Corporation

30 Isabella Street
Pittsburgh, PA 15212 - USA
Phone: **412-825-1000**
Fax: **412-825-1019**



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