BATTERY ELECTRIC LOCOMOTIVE TECHNOLOGY

FLXdrive™

Wabtec is leading the transition to a low-carbon rail network with FLXdrive. The world’s first heavy-haul, 100% battery-electric locomotive.

The FLXdrive heavy-haul commercial battery-electric locomotive can deliver battery capacities to meet various rail application needs. With haulage capabilities comparable to its diesel equivalent, the FLXdrive locomotive is designed to replace a diesel locomotive within a consist, unlocking new levels of operational flexibility.

The heart of the FLXdrive system is the liquid-cooled battery technology and proprietary thermal management system developed to optimize energy output and battery life. Wabtec’s rail-specific battery architecture is designed to maximize safety, reliability, and performance.

In addition to the in-mission regenerative brake charging, FLXdrive locomotives feature a DC fast charging option utilizing a stationary pantograph or plug-in. Future options will include moving-charge capabilities for increased range and uninterrupted operations.

The FLXdrive’s modular and scalable battery architecture is designed to integrate across multiple rail vehicles and environments, including heavy-haul, yard, regional, commuter, hybrid, and specialty locomotives.
**LOCOMOTIVE PRODUCTS FEATURE**

Safe and easy equipment access for maintenance – enhanced LOTO provisions  
Battery safety design - mitigate cell failure impact & propagation  
Exceptional battery capacity and power  
High reliability, efficiency and tractive effort  
Ultra-reliable single axle control propulsion  
Rail purpose Wabtec battery and charging tech  
Service proven traction components  
Industry-leading manufacturing expertise  
Best-in-class energy management technology

Wabtec has developed a wide product portfolio of FLX products to serve the requirements of Global Customers. For customers in North America, South America, and Western Australia, Wabtec has a suite of battery powered Heavy Haul Mainline and Switcher locomotives. These products are suitable to operate in a multi-unit or single consists featuring reliable and safe zero emissions rail solutions. Also, Wabtec has developed a range of battery and electric dual-mode locomotives for customers in regions that have overhead electric catenary systems, which can provide zero emission high traction efficiency in electrified and non-electrified networks allowing long-range operation over traction routes with mixed overhead voltages (25kV AC/15kV AC/1.5kV DC).

**FLX SPECS**

<table>
<thead>
<tr>
<th>FLXdrive 2.0</th>
<th>FLXswitch 6-axle</th>
<th>FLXswitch 4-axle</th>
<th>EuroFLX</th>
<th>Eastern Australia FLX</th>
<th>CIS Battery Shunter</th>
<th>FLXhybrid</th>
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</thead>
<tbody>
<tr>
<td>No. of axles</td>
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<td>6</td>
<td>4</td>
<td>6</td>
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<tr>
<td>Wheel Arrangement</td>
<td>CoCo</td>
<td>CoCo</td>
<td>BoBo</td>
<td>CoCo</td>
<td>CoCo</td>
<td>BoBo</td>
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<tr>
<td>Number of cabs</td>
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<td>1</td>
<td>1</td>
<td>2</td>
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<td>1</td>
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<tr>
<td>Max Battery Capacity (MWh)</td>
<td>8.5</td>
<td>4.6</td>
<td>2.7</td>
<td>1.1 to 2.3</td>
<td>5</td>
<td>2</td>
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<tr>
<td>Traction power (MW)</td>
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<td>3.1</td>
<td>1.8</td>
<td>3.2 to 5</td>
<td>2.5</td>
<td>1</td>
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<td>STE (kN)</td>
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<td>370kN</td>
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<tr>
<td>OH Supply</td>
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**CONTACT**

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