

BRAUNSCHWEIG, GERMANY

# PRIMOVE E-BUS

First inductively charged e-bus project for passenger operation



In Braunschweig, Germany, we completed our first **BOMBARDIER PRIMOVE** e-bus project for passenger operation, transforming a 12-kilometre section of the city's bus network into an eco-friendly electric route served by 12-metre and 18-metre **PRIMOVE** equipped e-buses.

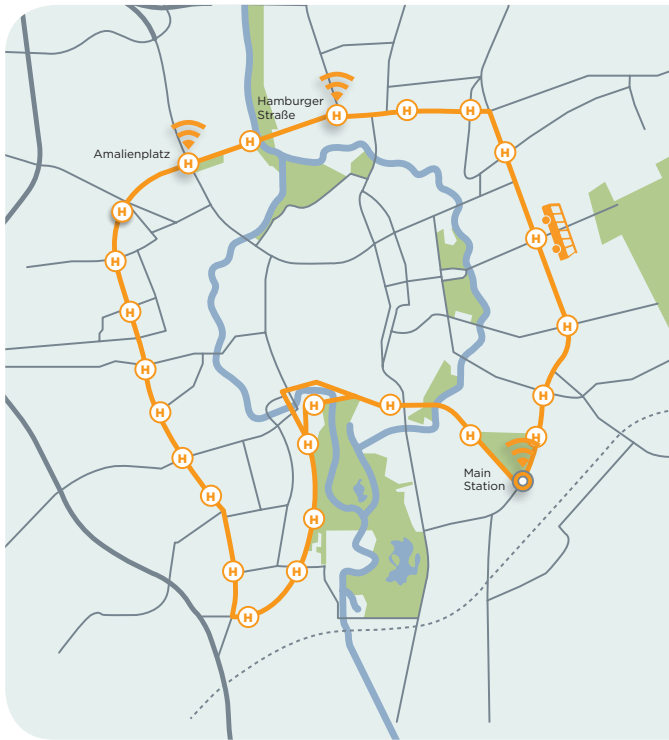
The circular bus line M19 is the first regular route in Germany to be served by electric buses that are charged inductively. With 26 stops on a 12-kilometre route and an average speed of 18 km/h, the line is perfect for confirming the viability of high power inductive opportunity charging for city bus lines.







Passenger service has started with a 12-metre e-bus in March 2014, followed shortly by 18-metre articulated e-buses in December 2014 built by Solaris. This presents a world premiere since it is the first time that 18-metre electric buses have replaced conventional buses. The new e-buses are equipped with the invisible **PRIMOVE** wireless charging and high power **PRIMOVE** battery systems.

Under the name "EMIL" (Elektromobilität mittels induktiver Ladung), we are conducting the project in close collaboration with public transport operator Braunschweiger Verkehrs GmbH, local energy company BS | Energy and the Technical University of Braunschweig. The project is funded by the German Federal Ministry of Transport and Digital Infrastructure.

**primove**  
true e-mobility

**BOMBARDIER**  
the evolution of mobility



	<b>Bus line M19</b> Journey time Journey time in % Headway	<b>12 km</b> 39 minutes 80 % 10 minutes (weekday) 15 minutes (weekend)
	<b>Charging stations</b> Charging time	<b>2</b> 30 seconds
	<b>End stops</b> Charging time	<b>2</b> up to 11 minutes
	<b>Depot</b> Charging time	<b>1</b> up to 15 minutes
	<b>Bus stops (total)</b>	<b>26</b>
	<b>Number of e-buses</b> 12-metre 18-metre	<b>5</b> 1 4

### Customized charging for different sized e-buses

Both the 12-metre and 18-metre e-buses are fully charged overnight at the depot. With the *PRIMOVE* system's fast and efficient charging, and dwell times of more than 10 minutes at the end stop, the 12-metre e-bus recharges primarily during its regular halt at the end stop.

The 18-metre e-buses require more energy. To ensure maximum battery lifetime, one additional charging station has been installed at Amalienplatz. This customized approach to charging infrastructure ensures uninterrupted service with clean e-mobility on an existing line.

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The PRIMOVE e-buses in facts		
	12-metre e-bus	18-metre e-bus
<b>Bus</b>	Solaris Urbino 12 electric (12.0 m) • Weight (empty): 13,000 kg • Capacity: 34 seated, 41 standing	Solaris Urbino 18 electric (18.0 m) • Weight (empty): 17,000 kg • Capacity: 51 seated, 75 standing
<b>Charging system</b>	<i>PRIMOVE</i> charging 200 • Charging power: 200 kW • Efficiency: > 90 % • Grid connection: AC 400 V or DC 750 V	<i>PRIMOVE</i> charging 200 • Charging power: 200 kW • Efficiency: > 90 % • Grid connection: AC 400 V or DC 750 V
<b>Battery system</b>	<i>PRIMOVE</i> battery 60 • Type: Li-ion • Capacity: 60 kWh • Voltage: 660 V	<i>PRIMOVE</i> battery 90 • Type: Li-ion • Capacity: 90 kWh • Voltage: 660 V
<b>Propulsion system</b>	Vossloh Kiepe propulsion system 12 m: • Drive power: 160 kW • Auxiliary Operating Supply Voltage: 400V AC • 24 V DC supply	Vossloh Kiepe propulsion system 18 m: • Drive power: 240 kW • Auxiliary Operating Supply Voltage: 400V AC • 24 V DC supply
<b>Approval</b>	TÜV SÜD certified	TÜV SÜD certified

Co-funded by the German Federal Ministry of Transport and Digital Infrastructure



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