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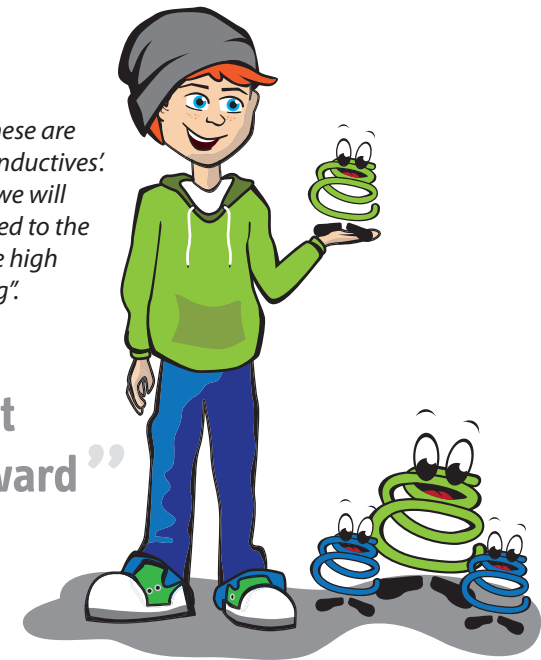
## Braunschweig runs inductive

The first emil-electric bus runs on bus route M19



"Hi, I'm Emil and these are my little friends, the 'inductives'. Together with you we will become acquainted to the technics of inductive high power charging".

"A smart step forward"



## Inductive solution in regular service

What had been launched as the governmental funded joint research project named "emil" (stands for: Electro Mobility by Inductive Charging) became reality on March 27th 2014.

An only electric powered 12-meter solo-bus, using high power wireless (inductive) charging to fill the batteries, now runs with passengers on the 12 kilometer bus route of the M19. The daily only electric powered service on the M19 runs with hardly any disturbance or problems. Best conditions for the next step in this project: To run only electric

powered and inductive charged 18-meter articulated busses by autumn 2014.

These articulated busses will then replace most of the diesel powered busses on this specific line by electric powered busses.



**Emission-free and nearly soundless through Braunschweig in electric busses – a milestone in modern and forward-looking urban public transportation.**

## Wireless charging – the PRIMOVE-technology

The electric busses are provided with the wireless PRIMOVE high power charging system from Bombardier. The batteries are being charged wireless with 200 kW in a very short time on charging stations, that are installed at suitable bus stops during their regular service. While passengers get on and off the bus, the receiving system (pick up) under the bus lowers itself over the charging pad. The wireless, inductive charging begins and ends automatically, when the batteries are fully loaded.

## Inoffensive for passengers, pedestrians and bus-drivers

*Electric magnetic field? Of course, inductive charging needs an electric magnetic field. But it is absolutely harmless to passengers and pedestrians when getting near the loading platform. People with a heart pacemaker are at no time in any danger during the inductive charging operation. By optimizing transfer frequencies and an extensive shielding, the loading system is in its boundary value clearly below German standard. This made it possible for the technical board to authorize the system.*





## Loading station on the bus route

Three inductive charging stations have already been installed in Braunschweig:

One at the bus depot, one at the bus stop “Hamburger Straße” and number 3 at the terminal stop of the M19 at the central station.

A fourth station is going to be built at the bus stop “Amalienplatz”.

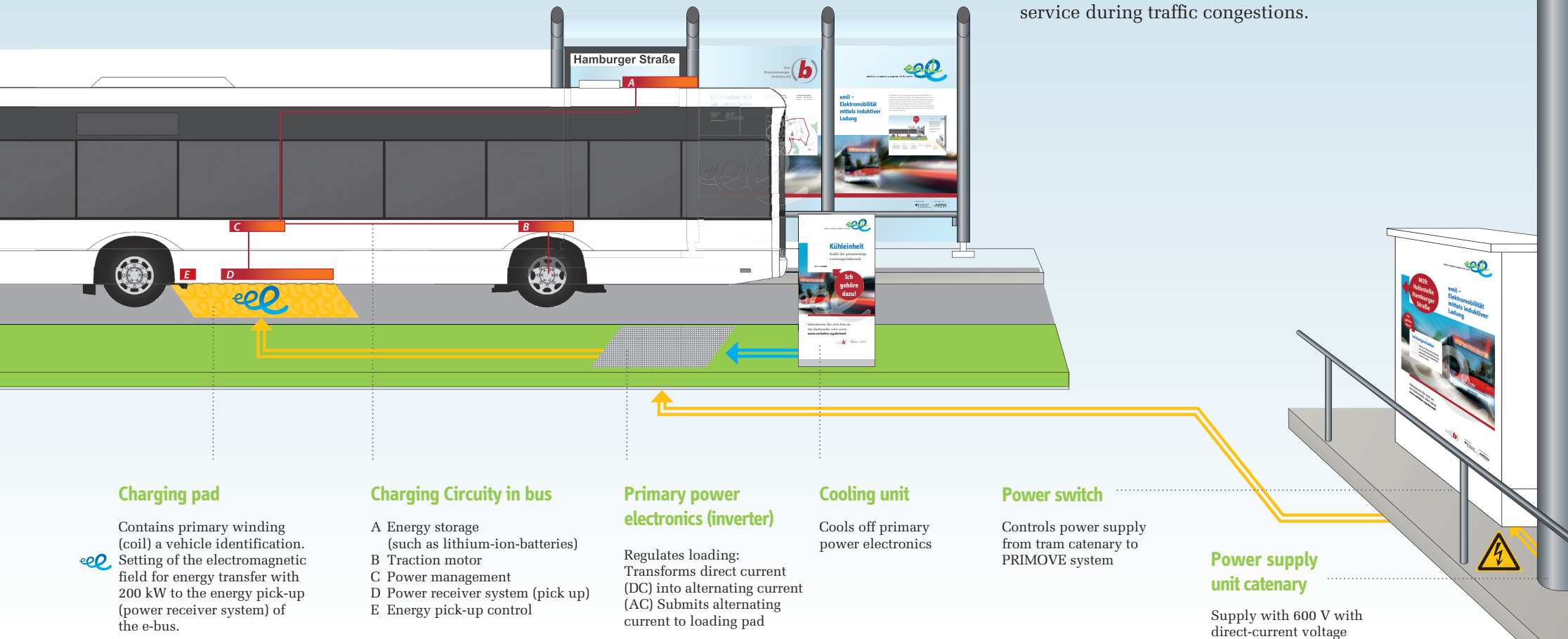
The attendant facilities of the loading technics are built in below grade and integrate well into existing infrastructures. They merge with the environment.

## Inductive charging – picking up energy in a very short time

Both, the 12-meter solo bus and the 18-meter articulated bus will be charged in the bus depot during the night, so they start in the morning with totally filled batteries on their regular tours.

For the rest of the day short loading times of about 11 minutes during the regular stop on the charging station at the terminal stop are enough to refill the batteries.

A little extra loading on tour at the station “Hamburger Straße” and other planned bus stops is necessary to reach the most efficient life expectancy of the batteries and to ensure service during traffic congestions.



**The first worldwide inductive charged electric bus line, charged with 200 kW within a few minutes.**

The city-ring-line M19 is a major bus line in the Braunschweig bus net. It circles the city center from central station, passing the technical university, research institutions, venues, urban industrial parks and residential areas. On her route she cuts across important bus and tram stops and has important ties within the net of public transport.

Being an important bus line in Braunschweig the M19 is well recognized by the public and guests in the city.

**Almost noiseless through the city**

*The e-bus is quiet. The noise emission of an e-bus complies with the noise of an average car. This is about half as much as a modern diesel bus. This makes travelling in an e-bus even more relaxing and it relieves residents living near main roads and bus stops.*



**The city-ring-line M19**

Track	12 km
Bus stops	25
Passengers daily	ca. 6.000
Journey time	39 min.
Journey time in %	80 %
Timing device	10 min. Monday – Friday 15 min. Saturdays; 30 min. Sundays
Diesel busses in operation on M19	Up to 6 articulated busses
Operation of e-busses	March 2015 up to 4 articulated busses
Planning	To run 4 articulated busses on M19

**Charging stations with 200 kW charging power**

Central station, Terminal	Loading time up to 11 min.
Bus stop Hamburger Straße	Loading time minimum: 30 sec.
In planning bus stop Amalienplatz	Loading time minimum: 30 sec.

**Future plan:**

To run all 6 busses on the city line M19 with electric articulated busses.

**Emil – E-mobility by inductive charging – a project that might be a key solution for efficient use of electric powered busses in public transportation.**



“Could the first 18-meter electric articulated bus look like this?”