
Berlin – all change!

Current status electric buses in Berlin

Berliner Verkehrsbetriebe (BVG)

Dr. Daniel Hesse

22. November 2018

With more than 1.2 million passengers a day our bus services are a major pillar of public transport in Berlin

BVG



Four electric buses of the R&D project „E-Bus Berlin“ (2013 - 2016) are running on line 204 since September 2015

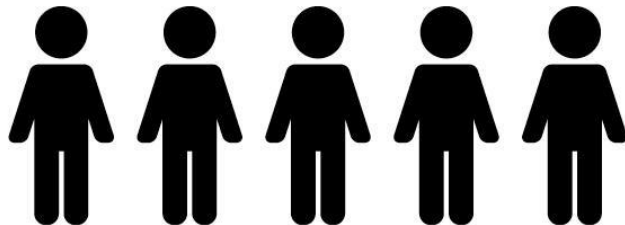
BVG



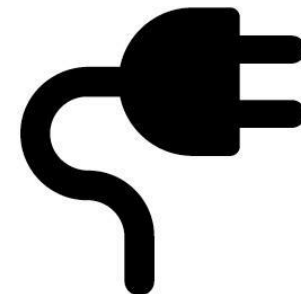
#BerlinSteigtUm



Shifting private car rides to
shared mobility



Shifting to
electric drives



The BVG follows a path into a locally emission-free public transport system deploying different technologies

BVG

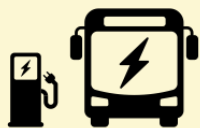
Global climate protection

Local air pollution control

Goal 2030 : locally emission-free bus fleet

A variety of alternative drive technologies are available

E-EN



E-Bus
(depot charging)

E-
Metro-
Bus



E-Bus
(Opportunity-Charging)

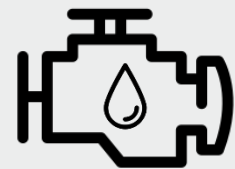
feasibility
study



E-Bus
(trolley battery
hybrid)



H₂-Fuelcells
(-Hybrid)



H₂-combustion

Long lead time before implementation → Standard-technology is not defined yet
→ **Parallel and continuous tracking of technology development**

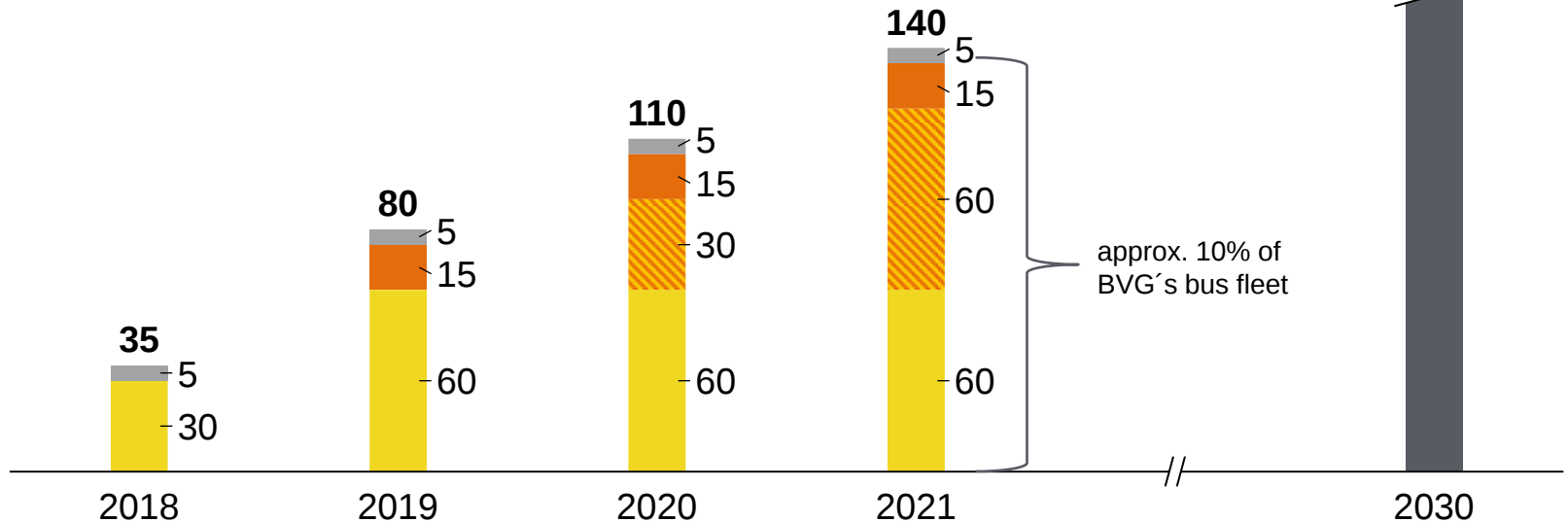
Till 2030 our bus fleet will be completely converted

Cumulated e-bus procurement



2030 goal – 100% e-bus fleet

-  implemented e-buses (R&D projects)
-  E-MetroBus (articulated e-buses)
-  standard e-buses (possibly articulated)
-  e-bus ramp-up
-  2030 target



* 4 e-buses since 2015 (finished R&D project *E-Bus Berlin*) + 1 e-bus since 2018 used in R&D project *Mobility2Grid*

**including additional buses required due to e-bus operation; additional buses required due to new UMP (urban mobility plan) are not included.

The first batch of 30 single-deck standard e-buses has been acquired and will be delivered starting from March 2019

15

E-buses EvoBus eCitaro



15

E-buses Solaris new Urbino



	EvoBus eCitaro	Solaris new Urbino 12 electric
Battery capacity	300 kWh (240 kWh)	243 kWh (210 kWh)
Battery type	Lithium-NMC batteries	
Motor	Electric portal axle ZF AVE130 2 x 110 kW	
Passenger cap.	29 seats/36 standing places	28 seats/37 standing places
Special features	Big destination front display, passenger info systems, CCTV, blind spot cam	

The electrification of MetroBus-Lines faces additional requirements. Therefore opportunity charging will be tested

BVG

MetroBus-Lines are characterised by



short cycle times

high passenger volumes

24h- operation

only big buses
(articulated buses and double decker)

direct and reliable connections

E-MetroBus R&D Project targets to implement a solid e-bus operation under high load conditions of a MetroBus-Line

Project partners:



Towards a zero emission public transport BVG deals with several challenges. Therefore an integrated strategy will be developed

BVG



2030 goal – 100% e-bus fleet

Challenges



battery range



bigger vehicles



energy consumption of auxiliary systems (e. g. heating)



IT systems



depots and inner-city charging points



financing



energy grid and smart charging



increasing demand of public transport in Berlin

Summary

- BVG buses play a major role in the public transport network of Berlin
- Due to global climate protection and local air pollution control BVG follows a path into a locally emission-free public transport system. According to the Berlin Mobility Act BVG will convert its bus fleet with alternative drives until 2030
- E-Buses with depot charging and opportunity charging are within the scope of the BVG e-bus ramp-up 2018-2021. A feasibility study researches technical and operational requirements of a trolley battery hybrid system in Berlin.
- Insights from the ramp-up will form the basis of future e-bus strategies
- Following challenges towards a complete electric bus fleet are particularly relevant:
 - Battery range limits
 - Inner-city decentralized charging points
 - Bigger vehicles (especially double-decker buses)

Thank you for your attention!

Contact

Dr. Daniel Hesse

Berliner Verkehrsbetriebe (BVG)

Mail: daniel.hesse@bvg.de

BVG is Germany's largest company of inner-city public transport and one of the biggest in Europe. We run our subways, trams, buses and ferry boats in Berlin for over a billion customers (and counting) each year, and have been doing so for the last 90 years. BVG keeps Berlin going by day and by night, dependably, with more than 3,000 vehicles. We are committed to gradually converting our bus fleet into a fully electric one and to developing new mobility solutions. Our achievements as one of Berlin's main employers (15,000 employees) have been widely recognized.



Experience

Since 2017	Head of Section Infrastructure Alternative Drives at Berliner Verkehrsbetriebe (BVG), Berlin, Germany
2012 – 2016	Senior Consultant at Berliner Energieagentur GmbH, Berlin, Germany
2011	Senior Consultant at The CO-Firm GmbH, Berlin, Germany
2007 – 2010	Senior Associate at McKinsey & Company, Berlin, Germany
2003 – 2007	Research Assistant at Imperial College, London, UK

Education

Ph.D. in Mechanical Engineering
Dipl.-Ing. (Master's degree) in Mechanical Engineering