



Fast Charging in Weak Grids

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ads-tec GmbH Energy Storage

Headquater - Nürtingen



- Headquater in Nürtingen since May 2014
- approx. 8000 qm² area for backoffice, sales, prototype production, research, and development

Production - Dresden



- Production site in Wilsdruff near Dresden since September 2009
- approx. 2500 qm² production area
- approx. 2000 qm² logistics and storage area

Industrial Computing



Terminals, Industrial PCs
and Tablet PCs



Industrial Router
and Firewall

Big-LinX®

Remote Service
Cloud Solution

Energy Storage



Home & Small Business
2 kWh to 50 kWh



Industry & Infrastructure
50 kWh and more

Scalable Li-Ion Storage Systems

Core Competence

Components

Battery Cells
+
Inverters



ads-tec Core Competence

Module Fabrication
+
Battery Management
+
Energy Management



„Turnkey“ Energy Storage Solutions

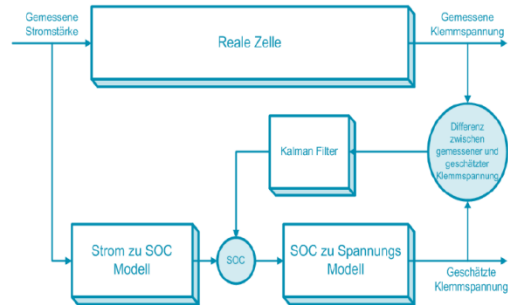
Monitoring
+
Remote Control
+
Lifecycle Management



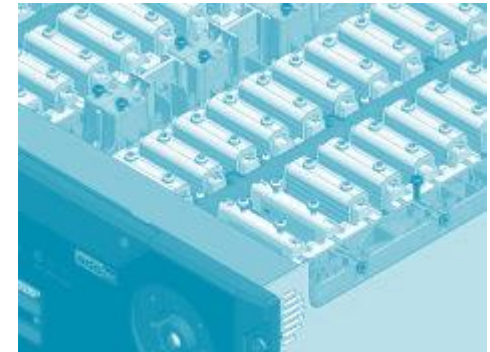
100% Technology



Safety



Durability



Efficiency

100% In-hose development for Mechanics / Electronics / Software

Project Overview



More than 100MWh sold...

Europe

+ America, Australia, Africa

Various Applications

- Frequency Control Reserve
- Grid Stabilization
- Peak Shaving
- PV-Diesel-Hybrid Micro Grids
- EV Charging Infrastructure



Fast Charging in Weak Grids

Will the future be electrified?

What is one of the main challenges for establishing electro mobility?

How can this challenge be solved?

Impressions from the IAA 2017

Conventional Power Train (modern automatic transmission)



- complex structure, many parts
- high invest in machinery
- comprehensive assembly
- large installation space

Electric Power Train



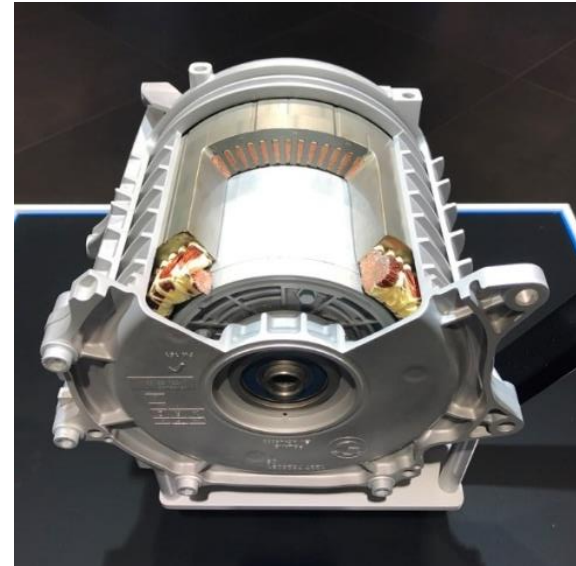
- simple structure, low parts
- low invest in machinery
- simple assembly
- small installation space

Conventional Power Train



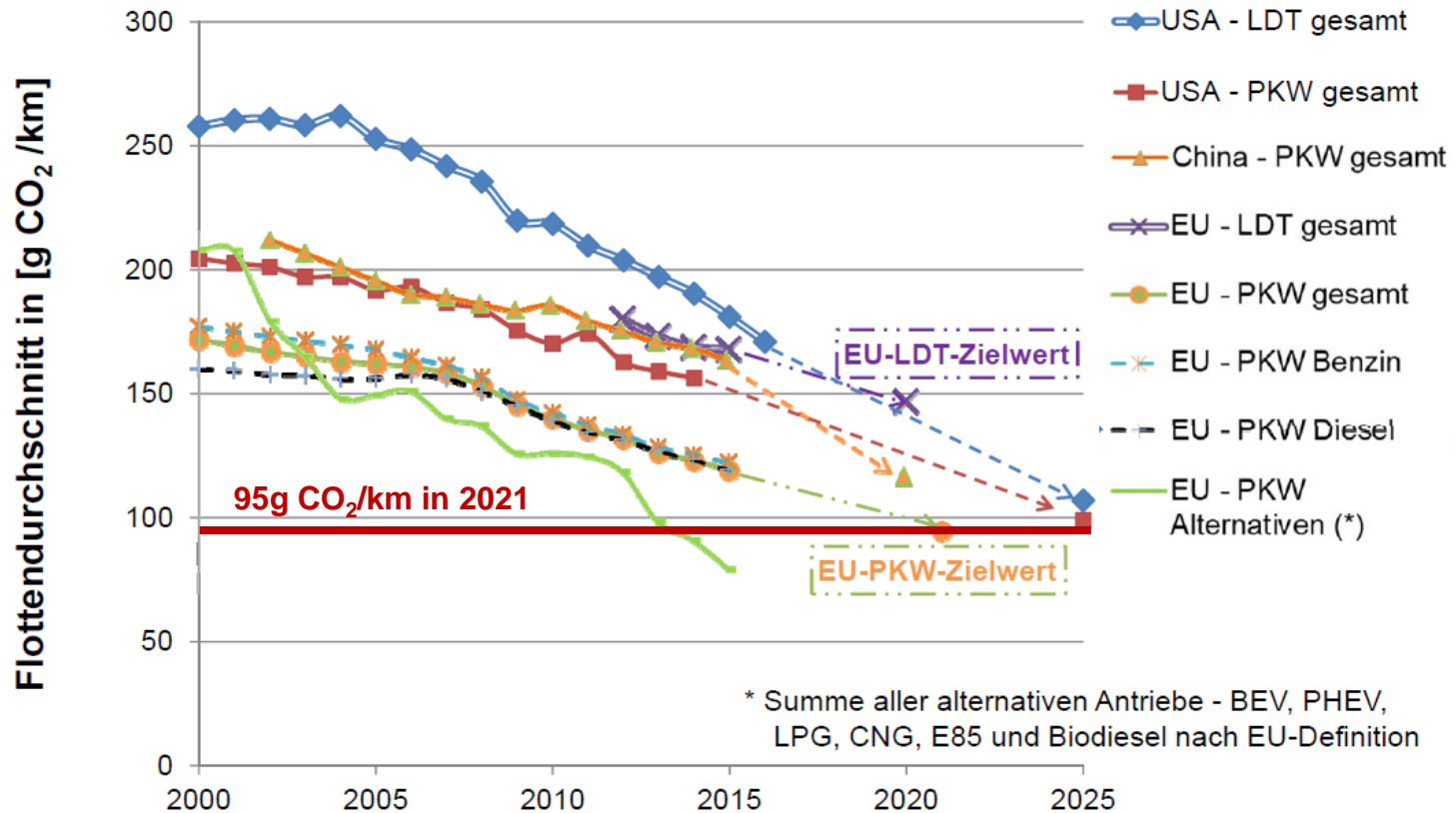
- CO2 and NOX
- no energy recuperation
- efficiency approx. 30%

Electric Power Train



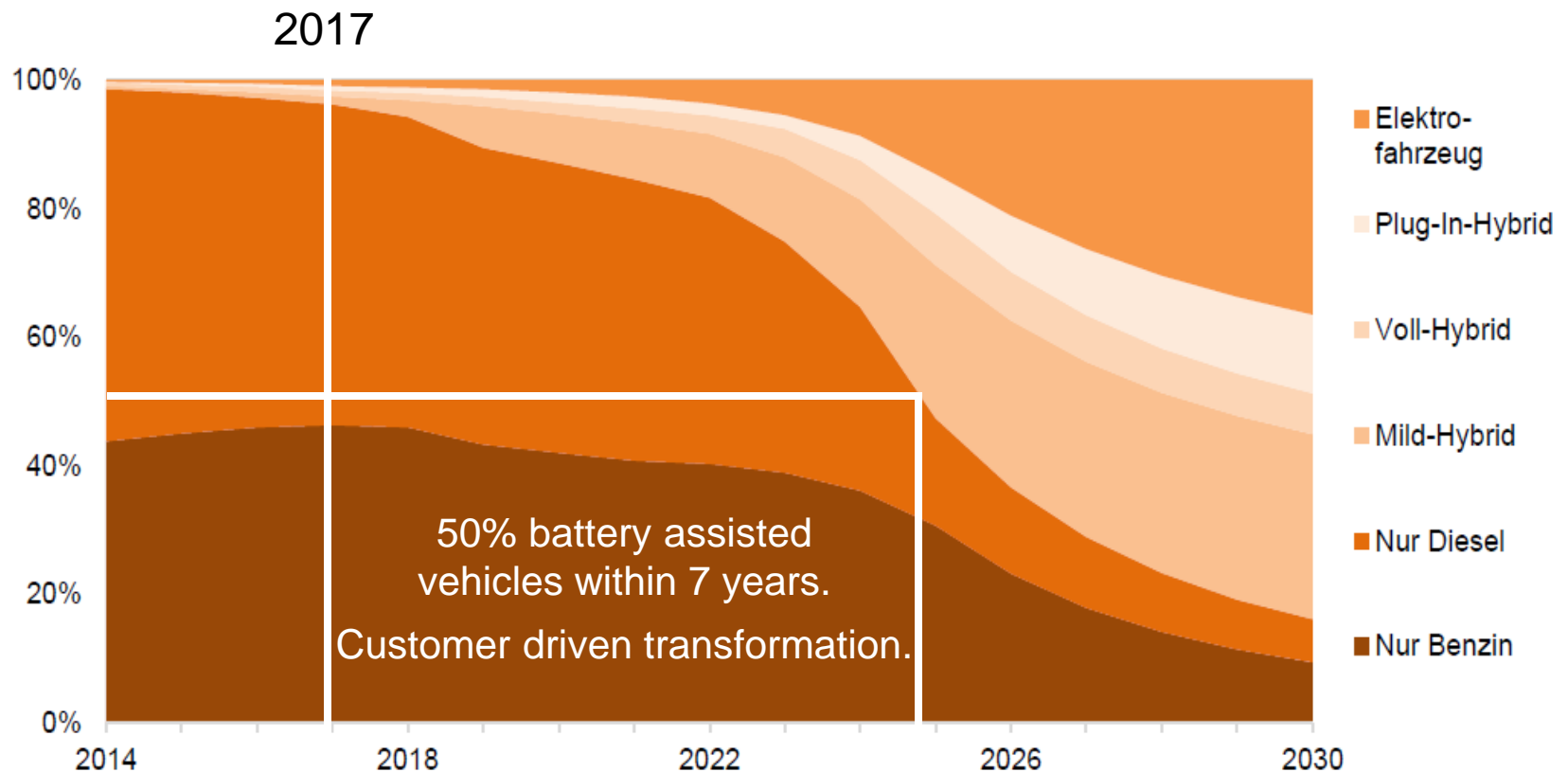
- no CO2 and no NOX
- energy recuperation
- efficiency > 90%

Ecological and Political need for Eletromobility



Quelle: EEA Report No 27/2016, ICCT Briefing 07, 2017

Market Development for Cars in the EU until 2030



Quelle: PwC Autofacts Analyse

Fast Charging in Weak Grids

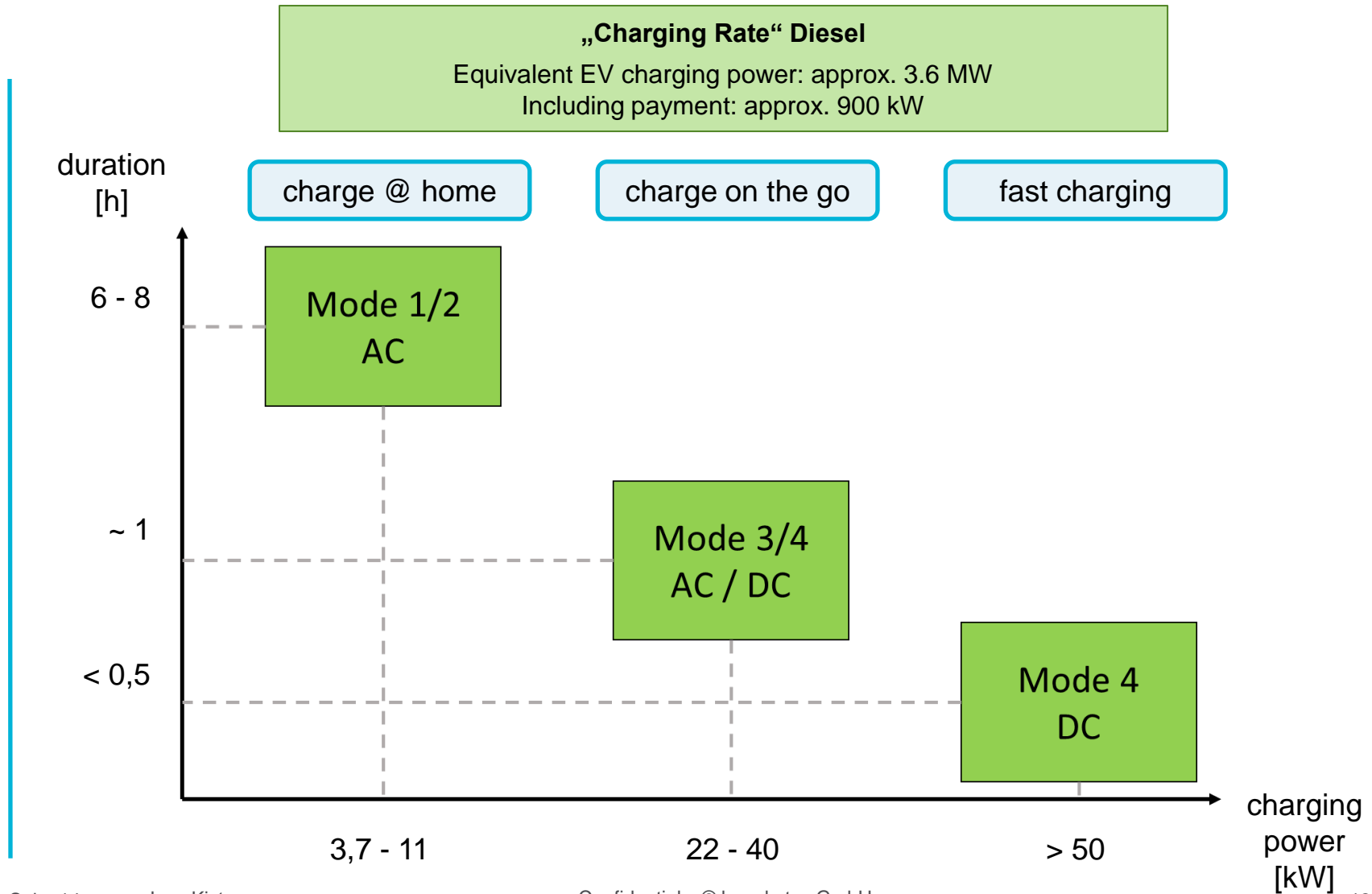
Will the future be electrified?

→ There is an ecological, and a political and finally a market need for e-mobility.

What is one of the main challenges for establishing electro mobility?

How can this challenge be solved?

Challenge – Charging Infrastructure



Fast Charging in Weak Grids

Will the future be electrified?

→ There is an ecological, and a political and finally a market need for e-mobility.

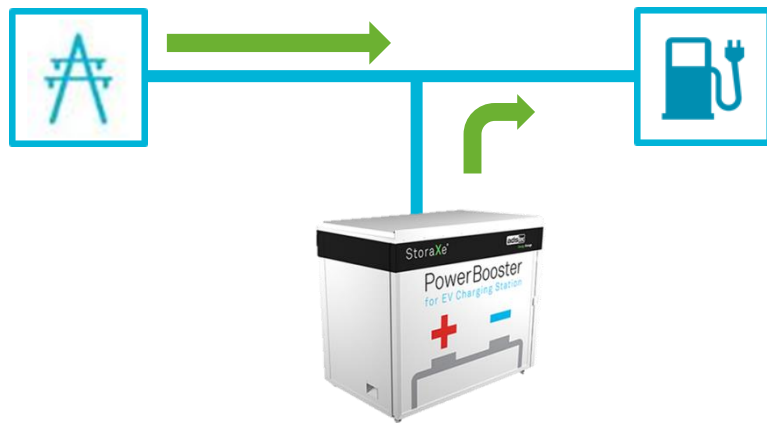
What is one of the main challenges for establishing electro mobility?

→ Providing the power for the charging infrastructure.

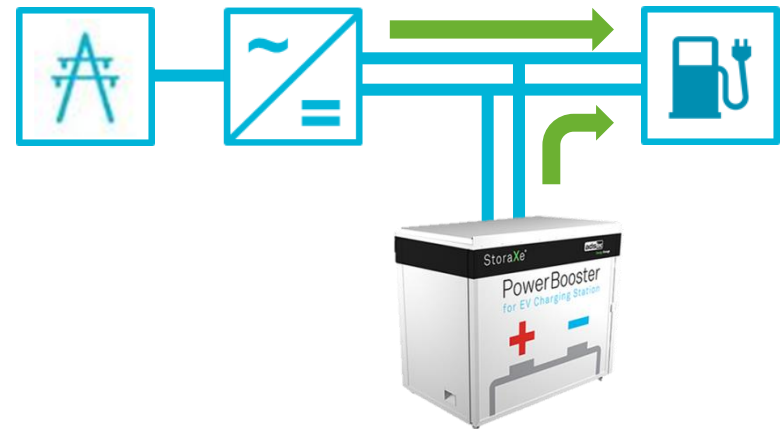
How can this challenge be solved?

Grid Assisted Storage

“AC De-Coupling”

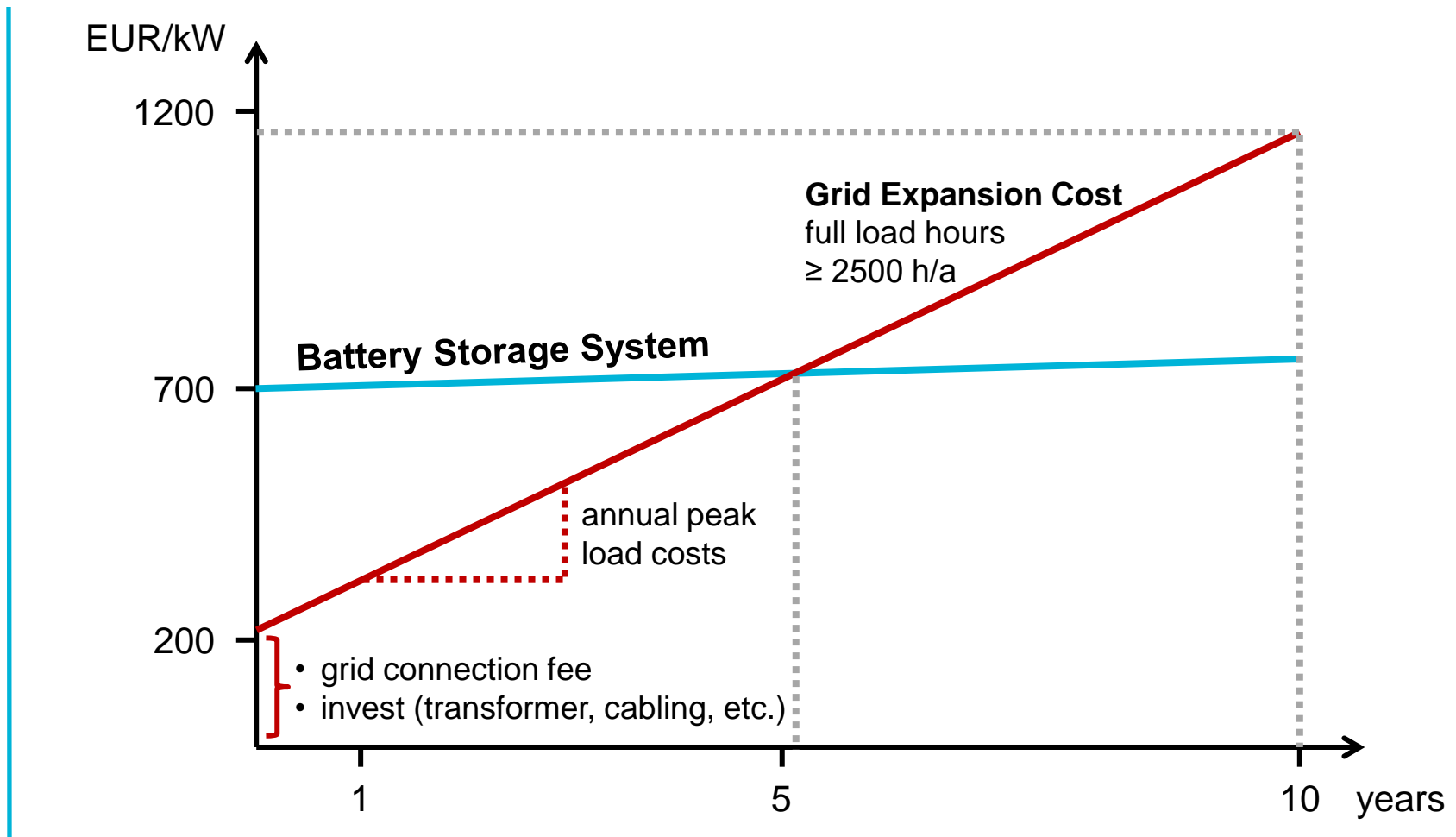


“DC De-Coupling”



$$P_{\text{charge}} = P_{\text{grid}} + P_{\text{battery}}$$

Grid Expansion vs. Storage Assisted Charging



ADS-TEC Power Booster



- AC coupled storage to connect to external charging stations
- two sizes: 120kW and 120kWh or 280kW and 240kWh
- OCCP interface for charge point communication and power control

The 30th International Electric Vehicle Symposium

ADS-TEC High Power Charger (HPC)



ADS-TEC High Power Charger (HPC)



HPC-Dispenser



HPC-Booster

- DC coupled storage assisted charging
- 20 to 100kW grid connection
- up to 320kW fast charging
- up to 140kWh stationary storage
- up to two dispensers per booster
- supports CCS1/2, CHAdeMO and GB/T
- temperature range -30°C to $+60^{\circ}\text{C}$

Summary

Will the future be electrified?

→ There is an ecological, and a political and finally a market need for e-mobility.

What is one of the main challenges for establishing electro mobility?

→ Providing the power for the charging infrastructure.

How can this challenge be solved?

→ Storage assisted charging is a technological and economic alternative to grid extension.

Thank you for your attention!



Energy Storage