




SIEMENS



Siemens eHighway

The efficient and cost-effective solution
for heavy duty road transport

Road-freight emissions are a major challenge

Explanation ENUBA

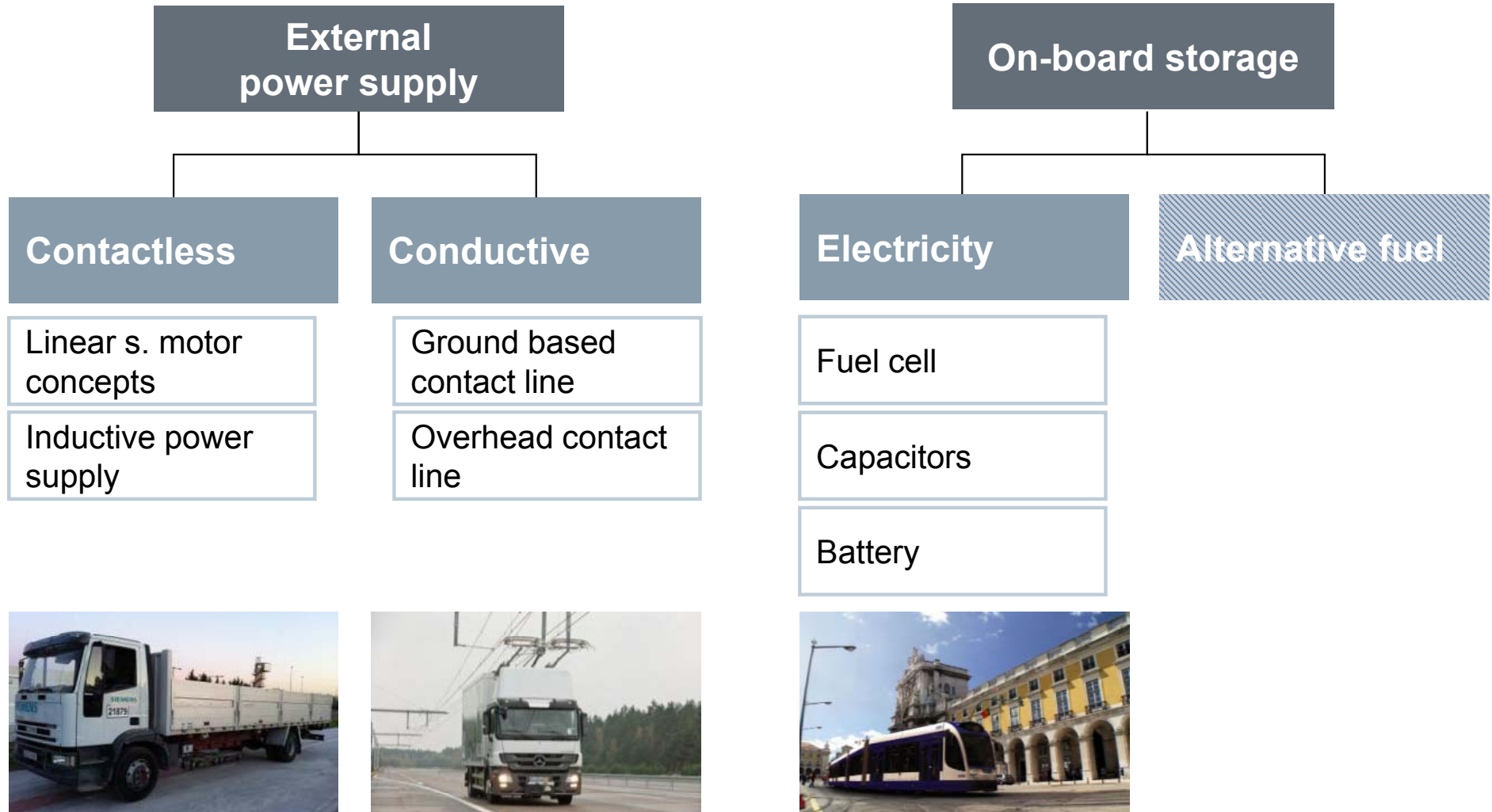
- Average annual growth rate for heavy duty trucks 2000 - 2050: 2.4%
(Mobility 2030 Report des World Business Council for Sustainable Development (WBCSD))
- Freight traffic in Germany is expected to grow by 116% from 2005 to 2050
(Prograns study conducted for Bundesministerium für Verkehr, Bau und Stadtentwicklung, BMVBS)
- Goal of the EU-Commission:
Reduce CO₂-Emission to 80% of 1990 level by 2050
- Logistics optimization and capacity investment of rail system cannot significantly reduce heavy duty road transport
- Heavy duty road transport is responsible for a third of overall transportation-related CO₂-emissions – technical solutions are still absent



An electric alternative is missing

Electrified logistics concepts comprise external power supply and on-board storage systems

Overview alternative concepts



eHighway innovatively combines mature and well-proven technology components

eHighway components

Operation systems



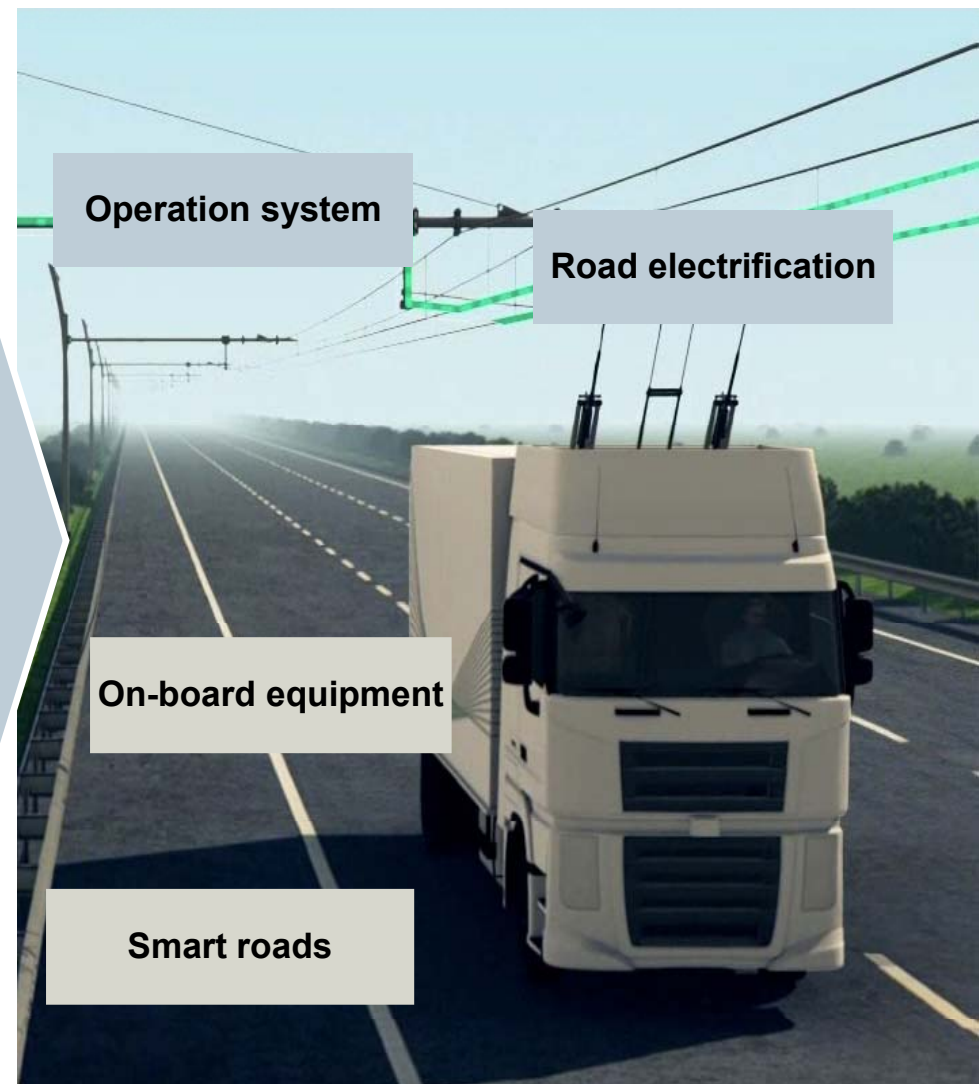
Rail electrification



Intelligent traffic solutions
Rail automation



Electric / automated
vehicles



eHighway is the electric freight transport solution and provides essential value drivers

eHighway key benefits and Siemens added value

Intelligent pantograph

Hybrid drive systems

Traffic management, tolling
Smart road features

Road electrification infrastructure

Medium voltage power supply

Renewable power generation

eHighway key benefits



- **Open, scalable and reliable** overlay system for electrified road transport
- Increased **energy efficiency** in truck operation
- Infrastructure **investment** can be **financed by savings** in truck operation
- Opportunity for truck operation to use **regenerative power**

eHighway improves truck performance and is readily implementable on a large scale

Ease of integration



Adaptable to all situations

- Overhead line solutions for bridges, interchanges, tunnels and low clearances
- Operable on two-lane electrified highways
- No system change in established point-to-point connections

No concessions on truck availability and performance

- No decrease on axle weight rating and load capacity
- Full electric operation up to maximum highway speed

Operability in all traffic situations

- Passing
- Cutting in / out of lanes
- Full electric idling

Siemens eHighway test track

Film clip

Main eHighway applications include shuttle as well as mine transport and long-haul traffic

Potential eHighway applications

eHighway application fields

Shuttle transport

- Solution for high frequency shuttle transport over short and medium distances (<50km)
- Lower fuel consumption and longer lifetime
- Reduction of air and noise pollution



Electrified mine transport

- Connection of pits and mines to storage or transit locations
- Minimization of harmful emissions
- Sustainable, clean and economical mine operation



Electrified long-haul traffic

- Economical and sustainable alternative for road freight transport
- Significant reduction of CO₂ emissions
- Substantial cost savings for freight carriers



eHighway is developing quickly and is ready for commercial use in near future

Positive response



Project

- Signed development cooperation with SCANIA
- 2,1 km with road realistic conditions including curves, sign post, etc and equipped with traffic management systems
- Demonstration on public road and/or in commercial use project planned

Market

- Several potential applications in Scandinavia
- Strong interest in California, port of LA
- Positive feedback from Asian market
- Independent reports confirm the potential of the system

Contact



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