ELISA
Electrified, Innovative Heavy Freight Transport on Highways

Experiences with planning and construction of the ELISA pilot site / eHighway Hessen

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7th of May 2019
3rd Electric Road Systems Conference 2019, Frankfurt am Main
Hessen is a Leading Transport Hub for Europe

Average traffic load of motorways in the Frankfurt RheinMain Area: approx. 130,000 veh/day

Hesse: 66,000 veh/day
Germany: 52,000 veh/day

368,000 veh/day at Frankfurter Kreuz (Frankfurt interchange)
Hessen is a Leading Transport Hub for Europe

Verkehrszentrale Hessen (Traffic Center Hessen): with advanced transport technologies for safety and efficiency

Intelligent control and information systems

Bundling competences and responsibilities

Road traffic authority for highways
The Traffic Center Hessen
Ensuring traffic safety and efficiency
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Line control systems
approx. 300 km
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Line control systems
approx. 300 km

Roadworks management
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Roadworks management

Line control systems
approx. 300 km

Hard shoulder running
approx. 100 km
The Traffic Center Hessen
Ensuring traffic safety and efficiency

Roadworks management

Network control system
60 VMS for traffic information and rerouting advice

Line control systems
approx. 300 km

Hard shoulder running
approx. 100 km
The Traffic Center Hessen
Ensuring traffic safety and efficiency

- Roadworks management
- Network control system: 60 VMS for traffic information and rerouting advice
- Line control systems: approx. 300 km
- Data analysis
- Hard shoulder running: approx. 100 km
- Elisa
- Frankfurt via Frankfurt Kreuz
- Statu Hinter Wi. Kreuz: 8 Minuten
The Traffic Center Hessen
Ensuring traffic safety and efficiency

- Line control systems
  approx. 300 km
- Data analysis
- Roadworks management
- Network control system
  60 VMS for traffic information and rerouting advice
- Hard shoulder running
  approx. 100 km
- 24/7 service

Frankfurt via Frankfurter Kreuz
Staßfurt via Wi. Kreuz
+8 Minuten
Innovation Lab for ITS: The next generation of road traffic and transport technologies has been developed and tested here.
ELISA Trial Track

Highway Link
A5 Frankfurt – Darmstadt

4 lanes + hard shoulder / side strip per direction

133,500 vehicles/day (DTV 2016)
Proportion of HGV traffic: approx. 10%

Overall length:
10 km electrification of the right lane
Special Challenges

System to be planned, approved, commissioned, constructed, accepted and started-up operative within two years after funding notification

Legal building permission procedure and tendering procedure for the catenary to be finished within 7 months
→ Both processes to be executed simultaneously

No system specification available
→ Call for tenders based on a functional description
→ Negotiation procedure to optimize system design within the tendering procedure
Planning and approval process

The system was legally defined as „road accessory“

In order to achieve an abridged project approval the following circumstances had to be ensured:

- Consent of all shareholders and competent authorities
- Existing prior rights remain protected
- There are no further rules and/or formalities that demand a more extensive project approval procedure

The proactive involvement of shareholders ranging from public agencies over authorities started in mid-2017 and continued all throughout the construction phase
Milestones

28 Jul 2017: Building permission

1 Aug 2017: Execution planning and construction contracted

22 Dec 2017: Execution planning approved

6 Mar 2018: Start of construction
Milestones


20. Jul 2018: Catenary assembly begins

3. Aug 2018: Installation of Transformer substations
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In numbers

279 Foundations

223 Masts (side area)

6 Masts in central strip

215 Carrier beams

2 Transformer substations

10 km Catenary

Blog: mobil.hessen.de/elisa
Website: ehighway.hessen.de
Milestones

23. Nov 2018: Finalization of construction

27. Nov 2018: Press event: First truck connects to catenary

4. Dec 2018: Commissioning of Control Station

3.-5. Dec 2018: Commissioning runs and further tests
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Introductory phase until mid-2019
Test runs for preparation of data acquisition, operation, education and public relations.

Delivery of vehicles to logistic partners from mid 2019.

Standard operation from mid-2019 until end of 2022 for delivery vehicles of logistic partners. 24/7 operation and scientific monitoring.
Operating the ELISA-System

The ELISA control station will be integrated into the control room of the Verkehrscentrale Hessen (VZH). 24/7-monitoring will be possible. The qualified personnel will be able to de-energize and ground the system in case of emergency.
Elektrifizierter, innovativer Schwerverkehr auf Autobahnen