

*3rd Electric Road Systems Conference 2019
Frankfurt am Main, Germany, 7th to 8th of May 2019*

Regulative framework for overhead contact lines for trucks on motorways – The AMELIE project aiming at a European approach of financing and billing for ERS

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Summary

According to current laws, overhead contact lines for trucks on motorways are integral part of both the motorway and the electricity distribution grid. Accordingly they fall under two regulatory and financing systems. In some parts these regulator systems match, even though they regulate subjects the specific regulation was not intended for. Especially regarding the two independent but partly contradictory financing systems (i.e. motorway tolls or user charges and electricity network charges) the legislator's decision is required, whether ERS should be financed as part of the motorway, the electricity distribution grid or a mixed or alternative financing approach is preferred.

1 Research Questions and initial assumptions

The AMELIE project is aiming at European approaches for interoperable ERS infrastructures in general and specifically for billing methods for electric trucks operating on overhead contact lines on motorways. The billing methods must be designed with reference to the financing approaches for ERS. If the overhead line is solely classified as part of the motorway (electrified motorway), it would naturally be financed as part of the motorway. If the overhead line is solely classified as part of the electricity distribution grid, it would naturally be financed as part of this grid. Any other regulation and financing options would have to be marked out in differentiation to these basic financing systems. The general regulatory classification of the ERS is therefore determining every further analysis of financing and billing options for the ERS. The further research of AMELIE therefore is based on three basic statements, derived from the German regulative framework:

1. As law stands overhead contact lines are integral part of the motorway on which they are being built and in combination with it serve the same purpose, a long-distance traffic. Both together are an integrated electrified motorway. The electrified motorway falls under the motorway regulation and the motorway financing system, as far as the legislator does not choose to develop a different approach¹
2. As law stands overhead contact lines are integral part of the electricity distribution grid. They fall under the energy law regulations and the energy grid financing system, as far as the legislator does not choose to develop a different approach¹
3. Both financing approaches could serve as a financing system for the full costs of the comprehended infrastructure. Therefore, the legislator needs to make a decision in favour of one of the existing

basic financing systems or for the development of an alternative financing approach, that could be a mix of the two existing systems or a completely new approach.

The AMELIE project will further seek to verify these initial assumptions considering national regulative frameworks of major European countries currently discussing ERS projects. Moreover the superordinate layer of common European regulation will be examined and discussed.

2 Preliminary Results

2.1 Overhead contact lines as integral part of the motorway (electrified motorway)

Under the current German law, the overhead lines build at motorways are an integral part of the motorway. Consequences are:

- The national government (in Germany der Bund) will play an important role in the planning, financing and billing process of the infrastructure. The circumstances of involving private operators vary significantly under national regulation but are generally possible.
- The national motorway planning regulations and procedures apply to the electrified motorway ensuring an integrated planning.
- The overhead lines are subject to common utilization like every other part of a public road. There use is predominantly regulated by the national traffic codes and should easily and without much adjustment fit into the current motorway traffic.
- Tolls and user charges for the electrified motorway must meet the requirements of Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures²

The same results can be anticipated for the legislation of other European countries as well, but need confirmation and detailing in terms of national specifics. To exclude the overhead lines from technical road transport and traffic regulation might be possible but would be very impractical. On the other hand, financing of overhead lines does not necessarily have to be integrated into the financing of the motorway. Nevertheless an alternative financing system would require a detailed differentiation and regulation of the costs on national level and might require an adjustment of the Directive 1999/62/EC.

2.2 Overhead contact lines as integral part of the electricity distribution grid

From the point of view of German energy law, the overhead lines built at motorways including the substations for line feeding and all supply lines up to the connection to the higher grid level form extensions of the electricity distribution grid. The directive 2009/72/EC³ concerning common rules for the internal market in electricity as well as the national energy law (in Germany the energy industry code) apply to the overhead lines. For other EU-member-states the application of the national energy law can be anticipated as well. The EU and the national legislators must decide either to exclude the overhead lines from this regulation or to adjust it to the specific circumstances.

The application of European and national energy law to the overhead line has various implications and requires further research. The motorway and traffic regulation never had to fit with the energy law in the way as the overhead lines at motorways with open access to every haulage company require. They work together very well in some parts but contradict each other in other parts. Essentially the energy law establishes common rules to improving a competitive electricity market in Europe, open and non-discriminatory access to the market for competitors, open and non-discriminatory access to grid and energy for customers, unbundling of the electricity transmission or distribution system and the electricity supply and a competitive but transparent and reliable market for metering point operations. These essentials are required for ERS as well and should be considered by the legislator whether he decides for an integrated regulation of grid and overhead line or for a separate regulation.

From the financial perspective the main results of the application of the energy law would be:

- The requirements of unbundling apply, with the consequence that electric energy costs would need to be charged by an electricity supplier different from the grid operator of the overhead line.
- Electricity network charges could apply as financing tool for the whole cost of the overhead line if the legislator does not choose to exclude some or all the infrastructure from the costs of the grid charged with the grid fees.

3 Balancing possibilities – next steps towards a European approach

Motorway tolls as well as network charges represent financing systems for the full costs of the overhead line. They need to be balanced in a way that the legislators decide for one of them or provides a detailed distinction which costs should be related to the motorway and which costs should be related to the electricity distribution grid. Predominant weight is to be assigned to user's expectations and derived acceptance criteria. Alternative financing approaches could be developed by both – technology providers and the legislator(s) – to offer a wider range of technical opportunities and combinations.

If an overhead line for trucks on motorways is to be built, it must be financed only once. In terms of fairness the “polluter pays principle” may be considered and thus opens further political steering possibilities. To charge haulage companies with only one bill for their electric trucks it could be advisable to integrate the energy costs into the billing for the tolls or user charges for the motorway. But the possibilities are ample, and it is up to the legislator to find a common ground with potential operators, customers and other stakeholders for financing the electrified motorway.

The authors of this paper are keen to discuss these findings with European partners on the background of their national regulative frameworks at the ERS conference.

References

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Matthias Hartwig (Ass. jur.), studied law and economics and works as senior researcher at IKEM since 2011. He is head of the mobility team since 2014. In his projects and various publications, he dealt with legal issues of mobility, in particular energy law, transport legislation, road traffic law and road planning law, railway law, passenger transport law, freight traffic law, incentive and subsidy models and the economic law framework of mobility (state aid, public procurement and antitrust law). During his eight years at IKEM, Matthias Hartwig led many national, European and international projects in the fields of automated driving, digitalisation and interconnection of traffic and transport, public transport, electric mobility, electrification of road freight transport with overhead lines, freight transport/combined transport, law of utilization of public and private space (regarding parking, charging infrastructure and new mobility and logistics concepts) and autonomous and AI systems in domestic and industrial applications.

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