Eress Forum 2013

Highlights

This document is a compendium of the conclusions from Eress Forum 2013. European authorities, infrastructure managers, railway undertakings, metering suppliers, railway energy related companies and research institutes, gathered in Vienna on May 15, to discuss the status of energy metering, settlement and billing, its development and further needs.

European regulation update

The infrastructure manager should become a sort of distribution system operator in the energy market

Energy metering is a burning issue for new entrants in the railway market. It impacts the position of rail against road transport, but it can also give rise to discrimination against certain operators.

Energy meters enable railway undertakings to buy the exact energy they consumed. This supports the policy objectives of the European Commission: increasing sustainable mobility and creation of a non-discriminatory and competitive railway market.

In November 2012 the European Parliament adopted a recast of the Directive regarding the railway market. The minimum access package in the Network Statements shall comprise the use of electrical supply equipment for traction current. Traction current is an additional service and must be supplied upon request to railway undertakings in a non-discriminatory manner (discounts are not allowed). The rail regulatory body can correct problems in the market. The regulator can impose tariffs.

The infrastructure manager should become a sort of distribution system operator in the energy market. The consumption of the end-consumers receiving traction current shall be measured.

The draft version of the new TSI (Technical Specification for Interoperability) regarding rolling stock includes no obligation to install meters yet, but this might change. The new Energy

TSI should include data processing and settlement of data coming from on-board energy meters.

The European Commission considers the costs of metering and settlement known, but finds a shortage on data regarding the benefits. The Commission is interested in reviewing this existing data together with the industry, including Eress.

Bart Van der Spiegel presented a joint EIM (European Rail Infrastructure Managers) and CER (Community of European Railway and Infrastructure Companies) Position Paper regarding the new Energy TSI. The Interoperability Directive (revised by 2011/18/EC) requests to define in subsystem Energy the trackside of the electricity consumption measuring system. The trackside includes more than only collecting the data. Data has to get allocated to the correct end-user and exchanged to relevant parties in energy market.

The new draft of Energy TSI does not define the minimal requirements for settlement systems. The joint EIM and CER Position Paper gives a solution and proposes to add the minimal requirements for settlement systems in the Energy TSI.

The fourth railway package

Enno Wiebe, CER representative, presented the fourth railway package. The railway sector has today 11.000 national rules regarding the authorisation to run throughout Europe. The fourth railway package will limit this to the requirements from the TSI's and the notified national rules.

The European Commission is interested in reviewing the existing data together with the industry, including Eress

ERA will become a one-stop shop for authorisation and certification

This will represent a significant reduction in the time needed to get authorisation for new vehicles.

ERA (European Railway Agency) will become a one-stop shop for authorisation and certification. The NSA (National Safety Authority) will stay responsible for supervision. If authorisation is only needed for one Member State, the NSA will remain the correct body to give authorisation. In case of request for authorisation for many Member States, ERA will address the relevant NSA to assess the conformance regarding the notified national rules.

Third party access

Juha-Matti Vilppo, from Liikennevirasto, explained that the Finnish infrastructure manager prefers railway undertakings to purchase traction current directly in the energy market.

The transmission or grid system operator of the electricity market will invoice grid costs to the infrastructure manager of the railway market. The energy supplier will invoice the losses in the traction system (substation and overhead contact line) to the infrastructure manager and the energy at pantograph level to the railway undertaking. The grid fee of the infrastructure manager will include the grid costs from the transmission or grid system operator and the losses in the traction system, which will be handled in Erex.

All new trains in Finland will have energy meters. Existing trains will get retrofitted during the next 10 years. All new meters will be EN 50463 compliant. Current meters are

accepted. Estimations for non-metered trains are based on kWh/km combined with Wh/tonnes-km.

Erex will receive data from both meters and the traffic management system and will export data to the energy market and prepare grid fee invoices to the railway undertakings.

Juliana Mironova from NRIC (Bulgarian infrastructure manager), added that the railway market directive explicitly refers to third energy market packet. This was also concluded by the Bulgarian court. Different suppliers should be able to deliver traction energy. NRIC created a different entity that can operate as supplier of traction energy in competition with other energy suppliers.

Testing energy meters

Ben Winters from Eastvision, presented the status of a test project with energy meters in the Netherlands, where Erex is part of. The goals here are getting experience with the complete metering process and comparing metering data against the current calculations.

According to Maarten Spriet, SNCB Logistics wants to use less energy by introducing energy meters, effective monitoring and improving train driving skills. SNCB Logistics already achieved energy reductions with more efficient rolling stock and more efficient planning. Extra savings should be reached by avoiding unneeded stops and giving feedback to drivers on their driving style. The economic benefits of energy savings are directly reflected on the invoices that SNCB gets from Eress partner, Infrabel.

SNCB Logistics wants to use less energy by introducing energy meters, effective monitoring and improving train driving skills

Conformity assessment of energy meters

The Notified Bodies from Germany, EBC and Austria, SCHIG, gave some explanations on conformity assessment of energy meters.

The manufacturer of the devices should ask for the individual device assessment and for the integration of the devices.

The vehicle manufacturer or the railway undertaking can ask for the assessment of the installation of devices on-board a vehicle.

A notified body can assess in conformity with EN 50463 and/or TSI, based on design review and type test.

This is mandatory in Germany and Austria. Previously, energy meters needed to get assessed according to specifications from the energy market, but these laws were changed. On-board energy meters must now fulfil the requirements from railway market.

In most other countries, on-board meters must only be assessed while mounted on a TSI-compliant vehicle. A voluntary assessment according to EN 50463 and/or TSI is possible and will facilitate acceptance of data coming from these energy meters in other countries.

Different metrological bodies introduced a request for a research project. This potential research project intends to improve testing according to the EN 50463-2, testing on 16,7 Hz and re-verifications on-board, also concerning power quality and EMC aspects.

Energy savings

Metering is a precondition to identify the results of energy savings

Harald Jony from ÖBB, explained that by monitoring 500 train-runs ÖBB has reached a significant energy cost saving in 2012. The ambition is to increase energy cost savings up to 20 million in 2014. Bigger savings will be possible for cargo transport. The 2013 time table has been adjusted to improve energy efficiency, including an advice speed that has been added in to the time table.

Metering improves transparency. Energy metering must be interoperable. Johann Pluy (ÖBB) concluded that: ‘Energy savings also reduce the need for investments in e.g. new substations.’

Terje Stomer (Jernbaneverket) found meters also useful for a better understanding of the losses in the traction system.

Arnold Trümpi from SBB, underlined that energy saving is strategic and highly profitable. Today, 12 persons are working in the energy saving department at SBB. At the end of 2013 the amount of people should increase to 20 persons.

The aim is a reduction of the energy consumption with 600 GWh by 2025. This goal is absolute, while the amount of trains will increase with 20%. The load factor (amount of passengers by seat) must increase. By now, only 30% of seats is occupied.

Metering improves transparency. Energy metering must be interoperable

The energy cost reduction of 2012 was equal to the total benefit of the SBB-passenger division.

Energy savings are mostly intended for saving money not for saving the world

UIC and CER agreed in 2010 to reduce specific energy consumption with 30% by 2030 and with 50% by 2050 (values compared to 1990).

UIC - CER reduction goals on energy consumption:
- 30% by 2030
- 50% by 2050

Stricter limits were agreed for CO2-emissions: -30% in 2020, -50% in 2030 and -100% in 2050. In 2010 specific CO2-emission was already 26% lower for passengers and 41% lower for cargo compared with 1990.
But also other transport modes improve. In 2030, regional trains might need more CO2 by passenger-km than cars. Raimondo Orsini wants the rail sector to stay the most environmental friendly transport mode. Shouldn't we raise our targets?

Valerio Recagno presented the Merlin project. This project aims to investigate and demonstrate the viability of an integrated management system to achieve a more sustainable and optimised energy use in European electric mainline railway systems.

Energy railway terminology

Network Statement
European Directive 2001/14/EC describes the obligation for each rail Infrastructure Manager to publish a Network Statement. These Network Statements present information on rail networks, in particular on commercial and legal access conditions. They aim to provide all train operators wishing to operate services on a given rail network with a single source of up-to-date, relevant information on a fair and non-discriminatory basis.

EU Directive
Directives are prepared by the Commission after consultation with its own and national experts. The aim of a Directive is to achieve a common particular result. When adopted, directives give member states a timetable for the implementation of the intended outcome.

Interoperability Directive
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:057:0021:0028:EN:PDF

Notified body
In the European Union, a notified body is an organisation that has been accredited by a member state to assess whether a product meets certain preordained standards.

Conformity asessment
Activity to determine, directly or indirectly, that a process, product, or service meets relevant technical standards and fulfills relevant requirements. Assessment can include inspection and examination of a product, its design and manufacture.

Metrology
Science of measurement, including all its theoretical and practical aspects.

EN 50463
European standard regarding on-board energy measuring systems.

EN 50463-2
Part of European standard EN 50463 including the real metering aspects i.e. sensors and energy meter.

EMC
Electromagnetic compatibility is the ability of a device to operate faultlessly in a prescribed electromagnetic environment. EMC aims to ensure that equipment items or systems will not interfere with or prevent each other's correct operation.

Pantograph
Apparatus mounted on the roof of an electric train or tram to collect power through contact with an overhead catenary wire.

Quotes about Eress

‘Eress has the same objectives as the European Commission’
Frank Jost, DG Move

‘In October 2005 some pioneers wanted to let liberalised energy market talk with liberalised railway market. The ideas were regarded as crazy and not possible. But they succeeded. Only with good team mates you can get good results’.
Raimondo Orsini, Sustainable Development Foundation

‘In 2013 we have equipped 40TRAXX locomotives with EMS (Energy Metering Systems) and activated for Erex billing purposes’.
Maarten Spriet, SNCB Logistics

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