EuroSpec

Project Brief EuroSpec

Alternative traction energy supply and related infrastructure interfaces

1. Project definition

In recent years vehicles driven by alternative energy have become more important due to a long-term strategy to define a more sustainable railway system. Different technologies were developed and the first prototypes have started operation. Battery-hybrid trains and hydrogen-fuel cell-driven trains are most promising. Alternative fuels are another option.

The new technologies are creating some new interfaces between vehicles and infrastructure. Hydrogen filling stations und charging facilities and conditions for battery-hybrid trains must be specified for use in the railway sector. Additionally, the access and accounting systems for using the infrastructure have to be defined.

2. Outline business case

If alternative energies are used on a large scale in the future, interfaces and conditions need to be specified. Otherwise a variety of incompatible components will be developed.

Standards for batteries, charging processes and infrastructure and hydrogen filling processes can reduce costs in development, costs for the procurement of trains and the operating costs. Lead times can be reduced also by standardisation.

3. Project product description

Description of conditions for charging processes using existing catenary components or new charging stations e.g.

- Charging current limit under using existing power supply systems (stand still and during operation)
- Standardisation of new facilities including plugs
- Requirements for accounting systems e.g. tracking system for vehicles

Requirements for interchangeable spare parts for energy storage system like cells, modules and batteries;

Description of assessment basis for ranges, standard distances (perhaps classes of battery ranges);

Description of hydrogen filling station and vehicle tank, especially definition of rate of flow, charging pressure and filling plugs.

4. Project approach

At first the state of development should be evaluated. After that should be determined which interfaces, components or processes need to be specified in detail. If the approach fails different solutions result in higher costs and more complex and less flexible operations.

5. Project planning

Delivery EuroSpec: End of 2020

6. Project management team structure

Chair: DB

Members: SBB, SNCF, RDG, OBB and DB

7. Reference

IEC 62928:2018 Railway applications – Rolling stock – Onboard lithium-ion traction batteries

IEC 62864-1:2016 Railway applications – Rolling stock – Power supply with onboard energy storage system – Part 1: Series hybrid system

UIC 550 - Power supply installations for passenger stock

UIC 552 - Electrical power supply for trains - Standard technical characteristics of the train line

EN 50367:2012 - Railway applications - Current collection systems - Technical criteria for the interaction between pantograph and overhead line (to achieve free access)

ISO 19880 - Gaseous hydrogen - Fuelling stations

Further references will be identified within the working group as a first step.

8. Status

Approved at 10.04.2019