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I.S. EN 15380-4:2013

Railway applications - Classification system for railway vehicles - Part 4: Function groups

I.S. EN 15380-4:2013

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véhicules ferroviaires - Partie 4: Groupes des fonctions

Bahnwendungen - Kennzeichnungssystematik für
Schienenfahrzeuge - Teil 4: Funktionsgruppen

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Foreword

This document (EN 15380-4:2013) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2013, and conflicting national standards shall be withdrawn at the latest by July 2013.

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This series of European Standards "*Railway applications — Classification system for railway vehicles*" consists of the following parts:

- *Part 1: General principles;*
- *Part 2: Product groups;*
- *Part 3: Designation of installation sites and locations;*
- *Part 4: Function groups (the present document);*
- *Part 5: Systems, System groups — System requirements.*

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Introduction

The Functional Breakdown Structure is used by all parties involved in the rolling stock product definition phase and the following processes to structure the functional requirements and use cases according to a standardized list of functions. It starts with the concept and spreads across the whole product life cycle. During this period, the level of detail of the structure could be adapted according to the project progress. This means that functions in a product concept catalogue mainly are described by requirements. The transfer into implementable hardware and software takes place later.

The Product Breakdown Structure (PBS) shown in EN 15380-2 and the Functional Breakdown Structure (FBS) shown in EN 15380-4 complement each other. While the PBS, consisting of the standardized list of subsystems and devices, is used for structuring system requirements and related use cases, the FBS standard describes the functions of a vehicle and is used to obtain a correlation between functional requirements and the structure of functions and the related use cases. These structures describe different views on the rolling stock product. The importance of the two structures may be different according to the users' tasks as well the project stage (see also EN 15380-1:2006, Annex C).

The FBS can also be used for specifying tasks as well as for analysing tasks.

The functional assessment supports the whole engineering process and the field of RAMS/LCC (Reliability, Availability, Maintainability, Safety/Life-Cycle Costs). Often during the project process RAMS/LCC values have to be given at a stage when insufficient information regarding the technical solution is available. (At this stage of a project, EN 15380-2 is not applicable.)

In all cases in which functionality is a key issue (e.g. safety and reliability analyses, inspections and testing, maintenance programmes, field data acquisition and related documentation), communication is based on a functional vehicle structure composed of functional groups – particularly when cross-system or interdisciplinary considerations are important.

Functions are grouped into levels regardless of their vehicle specific technical realisation. Hence the function groups and function descriptions were developed without considering how each function may be achieved in practice. This is consistent with the EN 81346 series. This also applies when the functional vehicle breakdown structure is met in tracing vehicle properties, for example during the validation phase. Many of the required properties fixed in the product concept catalogue are realised, diagnosed and rated as functioning or malfunctioning during operation. Only afterwards is the link made to the physical structure and then to the assessment of the function of technical solutions.

There is not necessarily a simple one to one relationship between each function and its technical realisation. A system or item of equipment can contribute to different functions at the same time or in sequence. This means that an entity can be related to different functions and even from different levels (see Annex A).

Assignment of examples for well known function carriers are given for easier understanding.

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