

Definition of component categories

Annex 6 to the GTC for the procurement of rolling stock components (GTC-RKomp)

1 Scope, target and content

This Annex describes the individual component categories and is intended to raise awareness regarding the impact on safety of the products supplied and the services provided. Rolling stock components are categorised in order to enable it to be established whether their use may have an impact on safety, operational reliability or interoperability. Rolling stock components are allocated to the following categories:

- safety-critical components (SK) (*subset of SB*)
- safety-related components (SB)
- operationally critical components (BK)
- interoperability components (IO)
- other components (UE)

2 safety-critical components (SK) falling under the ECM Regulation

2.1 It is necessary to determine and document safety-critical components under the terms of the ECM Regulation (Implementing Regulation (EU) 2019/779). This provides that:

- Documentation for operation and maintenance [...] also includes a list of safety critical components (clause 4.2.12.1)
- Safety-critical components require particular attention and priority in maintenance procedures (preamble, recital 6)

This results in a number of procedural and technical requirements for SBB as regards the operation and maintenance of safety-critical components

Safety-critical components are defined as follows according to section 4.2.12 of the LOC&PAS TSI (Regulation 1302/2014 including all adjustments and amendments): *Safety critical components are components for which a single failure has a credible potential to lead directly to a serious accident as defined in Article 3(12) of Directive (EU) 2016/798.*

Definition of a “serious accident” according to Directive (EU) 2016/798:

“Serious accident” means any train collision or derailment of trains resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other accident with the same consequences which has an obvious impact on railway safety regulation or the management of safety; “extensive damage” means damage that can be immediately assessed by the investigating body to cost at least EUR 2 million in total;

Safety-critical components are typically identified by an FMECA at component level.

Safety-critical components are always a subset of safety-related components (SB)

3 safety-related components (SB)

(Previously known as: safety-relevant)

Safety-related components are defined as follows according to EN 50126-1:

Those responsible for safety. Functions, components, products, systems or processes are designated as safety-related if at least one of their characteristics is used within the safety argumentation for the system concerned. These characteristics may be functional or non-functional. The requirements assigned to the function may be systematic or randomly chosen integrity requirements.

Safety-related components are therefore those:

- *for which single faults give rise to a realistic risk of an accident resulting in the injury of at least one person that do not fall within the definition of safety-critical components;*
- *that form part of a safety function for which, however, single faults do not directly give rise to a risk of an accident resulting in the death or injury of at least one person. These include faults that are liable to impair the reliability of the safety-related function or multiple faults that result in the failure of a safety-related function.*

Safety-related components are typically identified by an FMECA or a fault tree analysis.

4 Operationally critical components (BK)

(Previously known as: operationally relevant)

Components that have an impact on the reliability and availability of rolling stock and their subsystems. These are components:

- the failure of which gives rise directly to an operational disruption resulting in a delay of more than three minutes or a train cancellation (ErZu).
- the failure of which prevents the train from continuing its journey directly owing to the applicable operating requirements.
- that result in the failure of a system that is particularly significant from the customer’s perspective, including in particular air conditioning and sanitary systems.
- that may result in a high risk of failure and/or extended vehicle downtime and/or that may have particularly significant financial implications.
- that must comply with special quality requirements and that should therefore be subject to the “Quality and Risk Management System” (QRM) process.

In the event of an operational fault, the single fault alone shall be considered, i.e. the failure of the respective component results directly in a train delay or cancellation or the failure of a toilet or the air conditioning system in a carriage. The reason for the single fault approach is that it can be assumed that faults will be rectified promptly, with the result that redundancy considerations are not necessary.

Operationally critical components, the failure of which results in operational disruptions on technical grounds, are typically identified by an FMECA at component level.

5 Interoperability components (IO)

The LOC&PAS TSI (Regulation 1302/2014 including all adjustments and amendments) provides that components that are of particular significance for interoperability must be classified accordingly and must be subject to specific requirements during operation and maintenance.

Interoperability components are defined as follows in Article 5.1 of Annex 5 LOC&PAS TSI entitled “Definition”:

- (1) According to Article 2(7) of Directive 2016/797, interoperability components means “any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem, upon which the interoperability of the rail system depends directly or indirectly.”
- (2) The concept of “component” covers both tangible and intangible products (e.g. software).
- (3) Interoperability components described in the section 5.3 below are components:
 - the specifications of which refer to a requirement defined in section 4.2 of this TSI. The reference to the corresponding provision in section 4.2 is set out in section 5.3. This section

defines how the interoperability of the railway system is dependent on the respective components. If assessment at interoperability component level is stipulated as a requirement in section 5.3, assessment for the same requirement at subsystem level is not required;

- for the specifications of which additional requirements may be necessary (e.g. interface requirements). These additional requirements are also set out in section 5.3;
- the assessment procedure for which is described independently from the associated subsystem in section 6.1.

Interoperability constituents are listed and specified in the LOC&PAS TSI, the CCS TSI and the PRM TSI.

6 Other components (UE)

All components that cannot be assigned to any of the above-mentioned component types qualify as other components.