

## Reliability and Safety as the Foundation of Modern Railway Technology


### Why this Training Course?

In the railway industry, mastering RAMS (Reliability, Availability, Maintainability, Safety) is not only a normative requirement, but a decisive competitive advantage. Complex systems require a deep understanding of how technical reliability and operational safety intertwine. This training provides the necessary tools to turn the CENELEC specifications into real project successes and to systematically minimise risks.

### Benefits for you

After this **1 (or 2) day training**, you will be able to:

- **Understand RAMS principles:** You have mastered the core terms and their significance for the entire system life cycle according to EN 50126.
- **Apply methods safely:** You can use methods such as FMEA, hazard analysis and risk assessment in practice.
- **Providing safety verifications:** You understand the path to system approval (safety case) and the distribution of roles in the V-model.
- **Optimising system performance:** You will learn how to increase the availability of the overall system through targeted maintainability.

**Gain the methodological confidence required for the development and commissioning of modern railway systems worldwide.** 

### Overview of the Basic Content

- **Introduction & Motivation:** Importance of RAMS in the context of railway projects.
- **The Legal Framework:** Classification of CENELEC standards (EN 50126, 50716, 50129) and legal requirements.
- **RAMS Parameters & Methods in Detail:** Reliability, Availability Maintainability and Safety
- **Analysis Methods:** Practical exercises on FMEA and risk analysis using real examples.
- **The Safety LifeCycle:** From the definition of safety requirements to validation and acceptance.



### Key Data & Organization



**Duration:** 1 day intensive workshop (face-to-face or hybrid possible) or 2 days with extended practical component

**Language:** German or English

**Methodology:** Theory teaching combined with practical exercises

**Prerequisites:** Basic understanding of CENELEC (e.g. through ESE training "Introduction to CENELEC")

**Target group:** All roles involved in safety-related developments and projects.

**Trainer:** Dr. Hansjörg Manz (expert for RAMS management)