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Implementation of a High-Speed Railway, design Phase

International Railway Solution to be classified in volumes of UIC

VI - Traction

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The International Railway Solution

The International Railway Solutions (IRSs) are structured in a General Part and in some eventual Application Parts.

The General Part is valid worldwide, while the Application Parts are valid for a specific railway application, based on a geographical or on a service implementation.

The eventual Application Parts may thus be added according to the current needs of the Railway Community.

Structure of the International Railway Solution:

IRS 60673: Implementation of a High Speed Railway, design phase

General part

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Summary

IRS 60673 is the fourth part of the Implementation of a High-Speed Railway series. It describes the relevant operating models and outlines the methods used to formulate operating and maintenance plans and estimate operating and maintenance costs. It also provides detailed descriptions of the various sub-systems, interfaces and design drawings, and outlines methods for preparing bills of quantities and calculating total costs.

Foreword

General

High Speed Railway (HSR) refers to any railway with a commercial train service at a speed of 250 km/h or above.¹

Designing, constructing and operating a new HSR system is a complex task with many influences, stakeholders, requirements, challenges and objectives which must all be considered.

The HSR system must comply with rigorous technical requirements with respect to design, construction and operation.

The objectives of a HSR are to:

- Support population and economic growth,
- Enable social and economic development in regional and urban areas,
- Relieve existing and future systems of traffic congestion,
- Help support land use objectives designed to achieve sustainable ecological and environmental outcomes, given continued urbanisation, higher-density living and the growth of regional centres.

HSR projects are implemented in five phases, i.e. emerging phase, feasibility phase, design phase, construction phase and operation phase.

The IRSs for implementation of a HSR are:

IRS 60670 Implementation of a High-Speed Railway, definition and features.

IRS 60671 Implementation of a High-Speed Railway, emerging phase.

IRS 60672 Implementation of a High-Speed Railway, feasibility phase.

IRS 60673 Implementation of a High-Speed Railway, design phase.

IRS 60674 Implementation of a High-Speed Railway, construction phase.

IRS 60675 Implementation of a High-Speed Railway, operation phase.

This IRS concerns the design phase.

This IRS provides recommended practices. However, in light of future technological development in different countries, the main technology requirements mentioned in this IRS are for reference only, and users of this IRS may adapt them according to their own particular circumstances.

1. The definition of HSR may vary between different countries.

Scope

This IRS stipulates objectives, key points, inputs, outputs, stakeholders involved, empowerment, risks and mitigating measures and the financial aspects involved in the various stages.

This IRS applies to operating and maintenance plans and to the detailed design of a HSR project.

Normative references

1. International Railway Solution (IRS)

International Union of Railways (UIC)

IRS 60672: Implementation of a High-Speed Railway, Feasibility Phase

IRS 60674: Implementation of a High-Speed Railway, Construction Phase

IRS 60662: Railway application - High Speed - Maintenance of High Speed Lines

2. International Standards

International Organization for Standardization (ISO)

ISO 9000: Quality management systems - Fundamentals and vocabulary

ISO 9001: Quality management systems - Requirements

ISO 9004: Managing for the sustained success of an organization - A quality management approach

ISO/TR 10013: Guidelines for quality management system documentation

ISO 14001: Environmental management systems - Requirements with guidance for use

British Standard Occupational Health and Safety Assessment Series (BS OHSAS)

OHSAS 18001: Occupational Health and Safety Management Systems - Requirements

Terms and definitions

Operating and maintenance plan

The operating and maintenance plan is the end result of a process of analysing the HSR's operational features, determining the exploitation model, formulating the operating and maintenance plan and estimating operating and maintenance costs on the basis of design criteria, subsystems and their features.

Detailed design

Detailed design is the process of designing HSR subsystems and interfaces on the basis of applicable standards, rules and regulations, approved preliminary design documents, environmental impact assessment and RAMS requirements, culminating in detailed design drawings, bills of quantities and total costs.

Implementation of a high-speed railway, design phase

General Part