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Translation

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Absolute coordinates for track engineering work -

A Railway Geodesy approach

La base absolue stricte comme support des travaux de voie - Une approche de géodésie ferroviaire
Absolute Koordinaten für Gleisarbeiten - Ein Beitrag zur Bahngeodäsie



UNION INTERNATIONALE DES CHEMINS DE FER
INTERNATIONALER EISENBAHNVERBAND
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Summary

UIC Leaflet 728 is intended primarily for track design, layout, construction and maintenance experts as well as IT professionals specialised in the development of track work support tools.

Some railways have already made the transition to absolute coordinate-based track definition. The objective of the leaflet is twofold, to provide recommendations for railways wishing to introduce absolute coordinates and to provide advice for railways in the process of updating their system of coordinates.

The minimum basic rules to be observed to gain maximum benefit from this working method are connected to:

- **Technology:** Invariant track position during track life cycle, stable geodetic track marks, straightforward inspection and reconstruction of track position, no long-wave track geometry errors;
- **Safety:** Minimal restrictions due to track temperature changes;
- **Interdisciplinarity:** e.g. catenary line positioning after track work;
- **Optimisation** due to integral support of the working processes by fully interoperable, coordinate based track data.

In short, lower costs for improved track quality.

1 - Overview

1.1 - Introduction

To increase the economic efficiency and technical quality of track work, the UIC Track Expert Group has opted for geodetic support for track construction and network-wide track maintenance.

Consequently, some railways have already adopted absolute coordinate-based track definition and others are in the process of introducing it.

UIC Leaflet 728 defines minimum basic rules to ensure that optimum benefit is gained from this working method in the following areas:

- **Technology:** Invariant track position during track life cycle, stable geodetic track marks (see point 3.2 - page 9), straightforward inspection and reconstruction of track position, no long-wave track geometry errors;
- **Safety:** Minimal constraints due to temperature changes of the track;
- **Interdisciplinarity:** e.g. catenary line positioning after track work;
- **Optimisation** due to integral support of the working processes by fully interoperable, coordinate based track data.

In short, lower costs for improved track quality.

1.2 - Objectives

The objective of *UIC Leaflet 728* is to guide railway companies in their absolute coordinate-based track work. The leaflet seeks to supply recommendations both for railways that are introducing absolute coordinates and those that are in the process of updating their existing coordinate systems (see point 3.1 - page 8).

The leaflet can be used as the framework for railway companies' internal, specific norms required for absolute coordinate track work.

1.3 - Target audience

The leaflet is primarily intended for railway experts involved in track design (see point 3.2), track construction, track maintenance and professional computer scientists specialised in the development of track work support tools. For optimisation purposes, collaboration with track machine industry and national mapping agencies (represented at European level by Euref/ExG-G) (see point 3.1), is recommended.