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Hyperloop systems — Standards Inventory and Roadmap

National foreword

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Hyperloop-Systeme - Normeninventar und Fahrplan

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European foreword

This document (CEN/CLC/TR 17912:2023) has been prepared by Joint Technical Committee CEN/CLC/JTC 20 “Hyperloop systems”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

0 Introduction

0.1 General

The objective of this document is to initially gather relevant existing standards as well as legislative documents in order to identify the standards that can be potentially utilized in hyperloop. Some of these standards are generic, technology agnostic and as such can also be applicable to hyperloop. A set of the standards developed specifically for other transport modes and industries are a useful reference for the future standards development in hyperloop. Especially the type of standards that will be required in specific areas of system design provide for the first steps towards a standardization roadmap for the hyperloop standards.

This document identifies the main areas of the standardization roadmap and provides the first inventory of standards and legislative documents relevant to hyperloop Systems.

This document will be subject to future modifications and additions which will be incorporated into the future versions. This takes into account the fact that the hyperloop technology is in full development.

0.2 Context

The hyperloop is a new technology which is being developed by several companies around the globe.

The hyperloop is a new means of transportation for large volumes of passengers and cargo, based on new or emerging technologies such as low pressure environment or magnetic levitation, able to travel at very high speeds, protected from bad weather conditions and other external conditions, with very low environmental impact in terms of energy consumption, emission of greenhouse gases and other pollutants, and noise emission.

A new means of transportation as ambitious and innovative as the hyperloop will need a large set of standards to achieve different goals such as safety and security, efficiency, low time to market, and compliance to regulations.

Following the expectation that there are several existing standards that could be (partially) reused, this document aims at helping to identify those and the respective areas.

0.3 Purpose

The standards inventory contained in this document is created to take these standards, directives and regulations into account, as input to the development of standards for hyperloop, and hence serve as a valuable tool for the hyperloop industry and legislative authorities and regulators.

1 Scope

1.1 General

The original scope from N17 (NWI CEN/CLC TR Hyperloop systems - Standards inventory and roadmap) reads as follows:

This document lists the relevant standards from various fields and provides a standardization roadmap for hyperloop systems. The roadmap will provide guidance on the applicable standards from various fields, those that need amending and the new-to be developed standards.

1.2 Methodology

The CEN-CENELEC/JTC 20 has listed the relevant documents (standards, directives, etc) from various fields in order to provide a baseline for a standardization roadmap for hyperloop systems. The resulting document hence enhances the scope as it provides guidance on the applicable relevant documents from various fields that the working group has identified, analysed and proposed for an application in the hyperloop field.

The following document is a first inventory that identifies

— those standards that the WG considers fully applicable,

— those deemed useful with certain adaptations for an application in hyperloop (or serving as an input for new, specific hyperloop standards to be created),

— and those that the WG considers not directly applicable for hyperloop purposes.

In addition, this document identifies relevant regulations, directives and related documents as well as some potential areas where new hyperloop standards will be needed.

It needs to be stated that the WG has done its best endeavour to identify the (partial) reusability for hyperloop based on the available information (high-level descriptions of the standards, tables of contents, summary documents etc).

In a next step, a roadmap will provide some guidance regarding those areas and point at new-to be developed standards for which a need has been identified. The yet-to-be-created roadmap will also sketch out the concrete steps to be taken w.r.t. to the development of the necessary hyperloop standards.

Moreover, an alignment with the other WIs will be performed, as it is important that all WIs are aligned and use the same language.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp