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Plastics piping systems used for the rehabilitation of pipelines — Classification and overview of strategic, tactical and operational activities

Systèmes de canalisation en plastique destinés à la réhabilitation des réseaux enterrés — Classification et vue d'ensemble des activités stratégiques, tactiques et opérationnelles

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 8, *Rehabilitation of pipeline systems,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 11295:2022), which has been technically revised.

The main changes are as follows:

— references have been updated;

— twelve existing definitions have been modified (3.1.3, 3.1.13, 3.1.14, 3.1.15, 3.1.16, 3.1.17, 3.1.18, 3.2.1, 3.2.2, 3.2.4, 3.2.6 and 3.3.2);

— fourteen new terms have been defined (3.1.5, 3.1.6, 3.1.7, 3.1.8, 3.1.22, 3.1.23, 3.1.24, 3.1.25, 3.2.15, 3.2.17, 3.2.18, 3.2.26, 3.2.27 and 3.2.29).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Pipeline systems are continuously required to satisfy physical, chemical, biochemical and biological demands. These demands depend on planning, material, construction, type and period of use.

When pipeline systems become operational, they constitute a valuable asset to the network owner. For this reason, adequate management, including monitoring the performance of the pipeline system, is common practice. For general guidelines and requirements on asset management, ISO 55000, ISO 55001 and ISO 55002 are applicable.

For the specific case of pipelines for water supply and wastewater collection, detailed information on the overall management of the networks is provided by ISO 24516-1 and ISO 24516-3.

In the case of loss of performance of a pipeline system, reactive measures initially focus on improving regular maintenance procedures, including cleaning. In case of deterioration or other serious defects, more stringent measures to rehabilitate the pipeline become necessary.

Rehabilitation is carried out when there is a need to restore or upgrade the performance of a pipeline system. Rehabilitation can consist of repair, renovation or replacement. In recent years, the rehabilitation of pipeline systems has become increasingly important and will continue to be so.

This document provides information on the design process when considering rehabilitation of an existing pipeline, in order of sequence:

a) investigation and assessment of the deficiencies of current performance of the existing pipeline;

b) determination of viable options, based on performance criteria and process-related factors;

c) specification of the selected type of technique and the required pipe material;

d) the installation;

e) testing the performance before the pipeline is put back into service.

The techniques used for the renovation and trenchless replacement of existing pipelines are classified in technique families and the typical characteristics of each are described in general terms.

It is the responsibility of the designer to choose and design the renovation or trenchless replacement pipeline system.

Plastics piping systems used for the rehabilitation of pipelines — Classification and overview of strategic, tactical and operational activities

1 Scope

This document establishes the steps of the overall process of pipeline rehabilitation, comprising:

— strategic and tactical activities:

  a) investigation and condition assessment of the existing pipeline;

  b) pipeline rehabilitation planning.

— operational activities:

  c) project specification;

  d) applications of techniques;

  e) documentation of the design and application process.

This document defines general terms of pipeline rehabilitation and establishes the classification of families of renovation and trenchless replacement techniques, with description of their respective features.

This document is applicable to underground drains and sewers and underground water and gas supply networks.

This document does not apply to:

— new construction provided as network extensions;

— calculation methods to determine, for each viable technique, the characteristics of lining or replacement pipe material needed to secure the desired performance of the rehabilitated pipeline;

— techniques providing non-structural pipe liners;

— techniques for repair.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1043-1 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp