
**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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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 General terms	2
3.2 Terms related to techniques	3
3.3 Terms related to services conditions	5
4 Abbreviated terms	5
5 Pipeline rehabilitation process	6
6 Investigation and condition assessment of the existing pipeline	6
6.1 Performance criteria	6
6.1.1 General	6
6.1.2 Hydraulic requirements	8
6.1.3 Structural requirements	8
6.1.4 Environmental requirement	8
6.1.5 Operational requirements	8
6.2 Investigation of performance	9
6.2.1 General	9
6.2.2 Hydraulic investigation	10
6.2.3 Structural investigation	10
6.2.4 Environmental investigation	11
6.2.5 Operational investigation	11
6.3 Condition assessment	11
6.4 Risk analysis	12
6.5 Control measures	12
7 Classification and characteristics of rehabilitation techniques	13
7.1 Overview	13
7.2 Classification of renovation techniques	14
7.2.1 General	14
7.2.2 Lining with continuous pipes	14
7.2.3 Lining with close-fit pipes	16
7.2.4 Lining with cured-in-place pipes	19
7.2.5 Lining with discrete pipes	23
7.2.6 Lining with adhesive-backed hoses	26
7.2.7 Lining with spirally-wound pipes	28
7.2.8 Lining with pipe segments	31
7.2.9 Lining with a rigidly anchored plastics inner layer	32
7.2.10 Lining with sprayed polymeric materials	34
7.2.11 Lining with inserted hoses	36
7.3 Classification of trenchless replacement techniques	37
7.3.1 General	37
7.3.2 Pipe bursting	38
7.3.3 Pipe removal	40
7.3.4 Horizontal directional drilling (HDD)	42
7.3.5 Impact moling	45
7.3.6 Pipe jacking	47
8 Selection of rehabilitation techniques	50
8.1 General	50
8.2 Pipeline system layout	50
8.3 Hydraulic performance	51

8.4	Structural performance	52
8.4.1	General	52
8.4.2	Non-pressure pipes	52
8.4.3	Pressure pipes	53
8.5	Environmental impact	56
8.6	Construction constraints	57
8.7	Project specification	57
9	Implementation of rehabilitation techniques	58
9.1	Preconstruction activities	58
9.2	Assessment of conformity of products	59
9.3	Inspection, storage and handling of the materials on site	59
9.4	Application of rehabilitation technique	59
9.4.1	Preparatory work	59
9.4.2	Construction	60
9.5	Acceptance control	60
9.5.1	General	60
9.5.2	Inspection	60
9.5.3	Leak tightness testing	61
9.5.4	Sampling	62
9.6	Completion of the work	62
9.6.1	Finishing off the rehabilitation work	62
9.6.2	Lateral reinstatement	62
9.7	Documentation of the process	62
	Bibliography	64

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by 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 third edition cancels and replaces the second edition (ISO 11295:2017), which has been technically revised.

The main changes compared to the previous edition are as follows:

- Title is renewed from “*Classification and information on design and applications of plastics piping systems used for renovation and replacement*” to “*Plastics piping systems used for the rehabilitation of pipelines — Classification and overview of strategic, tactical and operational activities*”;
- [Clause 5](#) has been added, describing the whole process of pipeline rehabilitation with references to the other clauses for further details;
- [Clause 6](#) has been added, dealing with the strategic and tactical activities necessary to decide whether to rehabilitate; parts of the content of the former Clause 8 are included in this new clause;
- Former Clauses 5, 6 and 7 have been combined into [Clause 7](#) with largely unchanged content;
- [Clause 8](#) has been added, outlining the further tactical and operational steps needed to specify the rehabilitation project; parts of the content of the former Clauses 8 and 9 are included;
- [Clause 9](#) still covers installation aspects but has been revised to include content on acceptance control.

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, requiring adequate management, including monitoring the performance of the pipeline system. 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.

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.

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

1 Scope

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

- information on strategic and tactical activities:
 - a) investigation and condition assessment of the existing pipeline;
 - b) pipeline rehabilitation planning.
- information on and requirements for operational activities:
 - c) project specification;
 - d) applications of techniques;
 - e) documentation of the design and application process.

Definitions and classification of families of renovation and trenchless replacement techniques are provided, and their respective features described. Areas of application covered include underground drainage and sewerage networks and underground water and gas supply networks.

The following aspects are not covered by the scope of this document:

- 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 pressure pipe liners;
- techniques for local repair.

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

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.