SLOVENSKI STANDARD
SIST-TS CEN/TS 15174:2008

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Sistemi oskrbe s plinom - Smernice za sistem upravljanja varnosti plinovodov za prenos zemeljskega plina

Gas supply systems - Guideline for safety management systems for natural gas transmission pipelines

Gasversorgungssysteme - Leitfaden für Sicherheitsmanagementsysteme für Erdgastransportleitungen

Systèmes d'alimentation en gaz - Ligne directrice pour les systèmes de management de la sécurité des canalisations pour le transport de gaz naturel

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This Technical Specification (CEN/TS) was approved by CEN on 25 June 2005 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Foreword

This Technical Specification (CEN/TS 15174:2006) has been prepared by Technical Committee CEN/TC 234 “Gas Supply Systems”, the secretariat of which is held by DIN.

There is a complete suite of functional standards prepared by CEN/TC 234 "Gas Supply" to cover all parts of the gas supply system from the input of gas to the transmission system up to the inlet connection of the gas appliances, whether for domestic, commercial or industrial purposes.

In preparing this Technical Specification a basic understanding of Quality Management Systems and gas supply systems by the user has been assumed.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This Technical Specification describes the management of pipeline systems. It covers design, construction, commissioning, operation, maintenance and abandonment, all in order to provide a pipeline system for the safe and secure transmission of gas.

The text of this Technical Specification is based upon the existing documents EN ISO 14001 (Environmental Management Systems), EN 1594 (Pipelines for maximum operating pressures over 16 bar – Functional requirements) and CEN/TS 15173 (Frame of reference regarding Pipeline Integrity Management System). Among the EN ISO standards, EN ISO 14001 appears to be the most appropriate reference for a Safety Management System for natural gas transmission pipelines no reference is given to EN ISO 9000 series.

Not all the references specifically cover pipeline management. However they give a good overall guide as far as the topic in question is concerned.

1 Scope

This Technical Specification is applicable to pipelines for the transmission of processed, non-toxic and non-corrosive natural gas according to ISO 13686 in on land gas supply systems, where:

— the pipeline elements are made of unalloyed or low-alloyed carbon steel;

— the pipeline elements are joined by welds, flanges or mechanical couplings;

— the pipeline is not located within commercial or industrial premises as an integral part of the industrial process on these premises except for any pipelines and facilities supplying such premises.

This Technical Specification applies both to new and existing pipelines and covers pipelines which begin after the gas producer's metering station and ends at the boundary of the delivery station on the premises of the customer. Installations like Under Ground Storage, Compressor stations and LNG plants are excluded from this scope.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 1594:2000, *Gas supply systems - Pipelines for maximum operating pressure over 16 bar - Functional requirements*

EN ISO 14001:2004, *Environmental management systems – Requirements with guidance for use(ISO 14001:2004)*

CEN/TS 15173:2006, *Gas supply systems - Frame of reference regarding Pipeline Integrity Management System (PIMS)*

3 Management System Matrix

3.1 Guidance for the user

This clause contains important notes for the user of this Technical Specification. Understanding provisions below are necessary for the proper interpretation of this Technical Specification.

This Technical Specification is intended for use by individuals who possess a basic appreciation of quality management, environmental management, pipeline operation, maintenance and integrity issues.

This Technical Specification proposes the topics as given in the matrix in 3.2 to be included in a Safety Management System.

The structure is a general framework that is meant to cover general needs of pipeline operators with special emphasis on safety aspects of pipeline management (e.g. public safety, pipeline condition monitoring, etc.). Where there are preferences over either of the topics included or the structure itself, it is at the user's discretion to make the necessary adjustments according to specific needs.

The majority of the 18 topics contain more than one reference. The user may see this as duplication. The aim of this Technical Specification was not to make a prioritised selection of the "best" references quoted under each topic, but rather to leave at the user's discretion to make his own choice.

The text of the references quoted in this Technical Specification is the original text. However to achieve the required level of consistency between texts from different sources, expressions in brackets help the user in the proper interpretation of certain phrases.

There may be other existing documents under a single topic not referred to in this Technical Specification that give more specific guidance for the relevant topic, however the intention of this Technical Specification is to include widely known, used and available documents.

There are objects and structures referred to under certain topics, which are outside the scope of this Technical Specification (e.g. compressor stations). The Safety Management System proposed in this Technical Specification covers only pipelines as defined in the scope. However it is at the user's discretion to include other objects and structures in its own management system.

Different approaches used in the wording of texts referred to in this Technical Specification may suggest to the user that there are references more important than or have precedence over others (e.g. use of shall, should, must etc). It is at the user's discretion to interpret these differences properly and apply a uniform approach.

3.2 Matrix

3.2.1 Management system

3.2.1.1 Management system

General requirements *(EN ISO 14001:2004, 4.1)*

The organization (pipeline operator) shall establish and maintain an environmental management system, the requirements of which are described in Clause 4 of EN ISO 14001:2004.

Safety and Environment - Principles *(CEN/TS 15173:2006, 9.4.1)*

(…) natural gas transport operator (pipeline operator) may implement a safety / environmental management system, following an external frame of reference. Such reference systems have a very wide scope and go beyond PIMS' requirements. However, the specific safety / environmental activities described below may be implemented in the PIMS.

Quality systems (*EN 1594:2000, Clause 4)*

The life of a pipeline for transmission of gas can be divided into three phases:

— the design;

— the construction and testing;

— the operation and maintenance.

A quality system should be applied to the design, construction, testing, operation and maintenance activities in accordance with this Standard.

Reference may be made to the EN 9000 series of standards or to equivalent quality assurance systems.

After the pipeline has been commissioned, the integrity should be maintained by a precisely defined programme of operation, maintenance and condition monitoring (a pipeline integrity management system).

Competent personnel capable of assessing the quality of the work within the scope of this standard shall be employed for in all activities in the design, construction, testing and operating phases.

PIMS – General (*CEN/TS 15173:2006, 4.1)*

PIMS is defined as Pipeline Integrity Management System. It is a safety management system, whose field is pipeline integrity. The field does not cover occupational health.

Each natural gas pipeline operator has a system to manage all its resources and activities. This management system is specific to each operator. It generally integrates all the following activities: storage, compression, transportation and delivery of natural gas.

PIMS is based on such principles as:

— adoption of high technological standards in the construction;

— carrying out of proactive measures for ensuring that the pipeline system is maintained fit for purpose;

— working out of emergency procedures;

— incidents investigation;

— training of personnel,

— definition of roles and responsibilities of personnel.

It follows the basic principle plan, do, check and act (PDCA) which includes policy, planning, implementation and operation, inspection and corrective actions, and management review.

In this management system, the PIMS represents all the resources (organisation, equipment, know-how, etc.) and activities provided by each natural gas pipeline operator to control the hazards associated with its natural gas transport network. (see boundary of PIMS below)

The goal of the PIMS is to manage:

— the safety of the employees and the public;

— the protection of urban, natural or industrial environment;

— the service life and reliability of industrial equipment (natural gas transport network)

taking technical and economic requirements into account.

NOTE Further in the document, these three items are summarised by the expression “safety and protection of the environment”

Boundaries of the PIMS *(CEN/TS 15173:2006, 4.2)*

The structures in the scope of PIMS are on-shore pipelines and related equipment (insulating devices, disconnecting devices, pre-pressure reduction devices, cathodic protection equipment and simple interconnections).

The delivery points, "complex" interconnections, storage facilities, terminals and compressor stations are not included in this scope.

3.2.1.2 Management policy, objectives and targets

Management commitment *(CEN/TS 15173:2006, 6.2)*

The top management provides visible and active leadership in developing and maintaining a supportive culture of Environmental and Safety matters.

The top management may define an Environmental and Safety Policy in which overall objectives and a commitment to maintain or improve environmental and safety performance are clearly stated.

System management process (*CEN/TS 15173:2006, 6.1 – last paragraph)*

(….) safety / environment policies and objects can be defined. Management then undertakes to develop and implement a safety / environment management system and continuously maintain, or improve its efficiency, if necessary.

Policy (*EN 1594:2000,* 10.1.1)

The pipeline operator is responsible for formulating the policy with regard to pipeline operation and maintenance (pipeline related) activities. The object of the policy is to ensure that the system carries the gas safely, economically and without interruption.

The status of the pipeline system can, however, be influenced by the reliability of the individual items of equipment and/or by the operation and the maintenance of the pipelines. In order to meet good performance standards, all necessary precautions and provisions shall be taken to:

— ensure safe operation of the pipeline system;

— monitor its condition;

— carry out maintenance safely and effectively;

— deal effectively and responsibly with incidents and emergencies.

— These precautions and provisions shall be incorporated into the management system.

Environmental (and safety) policy (*EN ISO 14001:2004,* 4.2)

Top management shall define the organization's (pipeline operator's) environmental (and safety) policy and ensure that it

— is appropriate to the nature, scale and environmental and safety impacts of its activities, products or services;

— includes a commitment to continual improvement and prevention of pollution;

— includes a commitment to comply with relevant legislation and regulations, and with other requirements to which the pipeline operator subscribes;

— provides the framework for setting and reviewing environmental and safety objectives and targets;

— is documented, implemented and maintained and communicated to all employees;

— is available to the public.

Safety and environment (*EN 1594:2000,* 10.1.2)

All operations and maintenance (pipeline related activities) shall be carried out safely, in such a way as to minimize the impact on the environment as far as reasonably practicable, and shall be consistent with the requirements of national legislations or relevant rules.

All reasonable precautions shall be taken to ensure the safety of the personnel and the public at large and to protect property, plant and the environment.

Objectives and targets (*No reference*)

The organization (pipeline operator) shall establish and maintain documented environmental (and safety) objectives and targets, at each relevant function and level within the organization.

When establishing and reviewing its objectives, an organization (a pipeline operator) shall consider the legal and other requirements, its significant environmental (and safety) aspects, its technological options and its financial, operational and business requirements, and the views of interested parties.

The objectives and targets shall be consistent with the environmental (and safety) policy, including the commitment to prevention of pollution.

3.2.1.3 Management planning

Environmental (and safety) management programme(s) (*No reference*)

The organization (pipeline operator) shall establish and maintain (a) programme(s) for achieving its objectives and targets. It shall include:

— designation of responsibility for achieving objectives and targets at each relevant function and level of the organization;

— the means and time-frame by which they are to be achieved.

If a project relates to new developments and new or modified activities, products or services, programme(s) shall be amended where relevant to ensure that environmental (and safety) management applies to such projects.

Planning and performance monitoring (*CEN/TS 15173:2006,* 6.5)

Planning to achieve safety objectives is required with performance indicators to measure and monitor the implementation of Environmental and Safety Policies on a regular basis.

The (pipeline) operator sets up a Performance Measurement framework in order to demonstrate effective management of pipeline safety and environmental performance according to:

— the incidents that can happen;

— the severity of the consequences;

— the operational control (i.e. air emission, patrolling, intelligent pigging and so on)

— the elements of the Management System (i.e. public awareness, visit to landowners, training courses and so on).

3.2.1.4 Legal and other requirements

Legal and other requirements (*No reference*)

The organization (pipeline operator) shall establish and maintain a procedure to identify and have access to legal and other requirements to which the organization (pipeline operator) subscribes, that are applicable to the environmental (and safety) aspects of its activities, products or services.

3.2.1.5 Implementation

Structure and responsibility (*EN ISO 14001:2004,* 4.4.1)

Management shall provide resources essential to the implementation and control of the environmental (and safety) management system. Resources include human resources and specialized skills, technology and financial resources.

Roles, responsibility and authorities shall be defined, documented and communicated in order to facilitate effective environmental (and safety) management.

The organization's (pipeline operator's) top management shall appoint (a) specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for:

— ensuring that environmental (and safety) management system requirements are established, implemented and maintained in accordance with this International Standard;

— reporting on the performance of the environmental (and safety) management system to top management for review and as a basis for improvement of the environmental (and safety) management system.

Organisation and responsibilities (*CEN/TS 15173:2006, 6*.3)

The organisation and responsibilities for the management of Environmental and Safety may be defined and documented.

The role, responsibility, accountability, authority and interrelation of the personnel who manage, perform or verifies work affecting environmental and safety matters are defined:

— in the provision of resources, ensuring staff awareness of relevant hazards and the compliance with the environmental and safety policy;

— in the identification, recording and follow-up of corrective or improvement actions;

— in the control of abnormal situations including emergencies;

— in the identification of training needs, the provision of training and the evaluation of its effectiveness;

— in the implementation of the system.

Organization (*EN 1594:2000,* 10.2)

One of the primary tasks of maintenance and operating organization (pipeline operator) is to match resources to the workload. The objective of such matching is to achieve the agreed pipeline performance at optimum resource costs. This objective can be achieved in many ways and depends on the policy of the pipeline operator. As regards the organization of operation and maintenance (pipeline related activities) of a pipeline system, the minimum requirements are:

— *organization chart:*

  The pipeline operator shall keep an up-to-date chart of its management and maintenance organization.

— *responsible persons:*

  The pipeline operator shall identify the responsible persons and their deputy or deputies for specific fields of activity including, if applicable, authorization of permits to work.

— *personnel and training:*

  The relevant personnel shall be familiarized with and have access to the operating instructions. The pipeline operator shall provide adequate training for it to ensure the safe pipeline related activities of the pipeline.

3.2.1.6 Training, awareness and competence

Training, awareness and competence (*EN ISO 14001:2004,* 4.4.2)

The organization (pipeline operator) shall identify training needs. It shall require that all personnel, whose work may create a significant impact upon the environment, have received appropriate training.

It shall establish and maintain procedures to make its employees or members at each relevant function and level aware of:

— the importance of conformance with the environmental (and safety) policy and procedures and with the requirements of the environmental (and safety) management system;

— the significant environmental (and safety) impacts, actual or potential, of their work activities and the benefits of improved personal performance;

— their roles and responsibilities in achieving conformance with the environmental (and safety) policy and procedures and with the requirements of the management system, including emergency preparedness and response requirements;

— the potential consequences of departure from specified operating procedures.

Personnel performing the tasks which can cause significant environmental (and safety) impacts shall be competent on the basis of appropriate education, training and/or experience.

Training – General (*CEN/TS 15173:2006,* 9.1.1)

All personnel – (employees of the natural gas transport (pipeline) operator, but also of the subcontractors) are selected, trained and developed to carry out their respective technical duties in a safe and efficient manner.

In addition, the pipeline operator may define and set up procedures to ensure that its employees working at each level are aware of: