SLOVENSKI STANDARD
SIST-TS CEN/TS 15173:2008

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Sistemi oskrbe s plinom - Seznam referenc za sistem celostnega upravljanja plinovodnega sistema (PIMS)

Gas supply systems - Frame of reference regarding Pipeline Integrity Management System (PIMS)

Gasversorgungssysteme - Liste der Referenzen für ein Leitungsintegritäts-Managementsystem (PIMS)

Systèmes d'alimentation en gaz - Cadre de référence portant sur le système de management de l'intégrité des canalisations (PIMS)

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CEN/TS 15173

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English Version

Gas supply systems - Frame of reference regarding Pipeline Integrity Management System (PIMS)

Systèmes d'alimentation en gaz - Cadre de référence portant sur le système de management de l'intégrité des canalisations (PIMS)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This Technical Specification (CEN/TS 15173:2006) has been prepared by Technical Committee CEN/TC 234 “Gas supply”, the secretariat of which is held by DIN.

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

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 is a copy of document WOC4/SG4.2 of the International Gas Union (IGU) as presented at the symposium of IGU in Tokyo (June 2003).

1 Scope

The scope is defined in 4.2 "Boundary of the PIMS".

2 Normative references

Not applicable.

3 Symbols and abbreviations

CEN - Centre Européen de Normalisation

CMS – Company Management System

EGIG - European Gas pipeline Incident data Group

EN – European standard elaborated by CEN

FMECA - failure modes, effects and criticality analysis

GIS - Geographical Information System

IGU – International Gas Union

ISO – International Standardisation Organisation

PDCA - Plan-Do-Check-Act cycle

PIMS – Pipeline Integrity Management System

WOC/SG – Study Group of an IGU Working Committee

4 PIMS

4.1 General

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 (see diagram below).

PIMS is based on such principles as:

- adoption of high technological standards in 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.

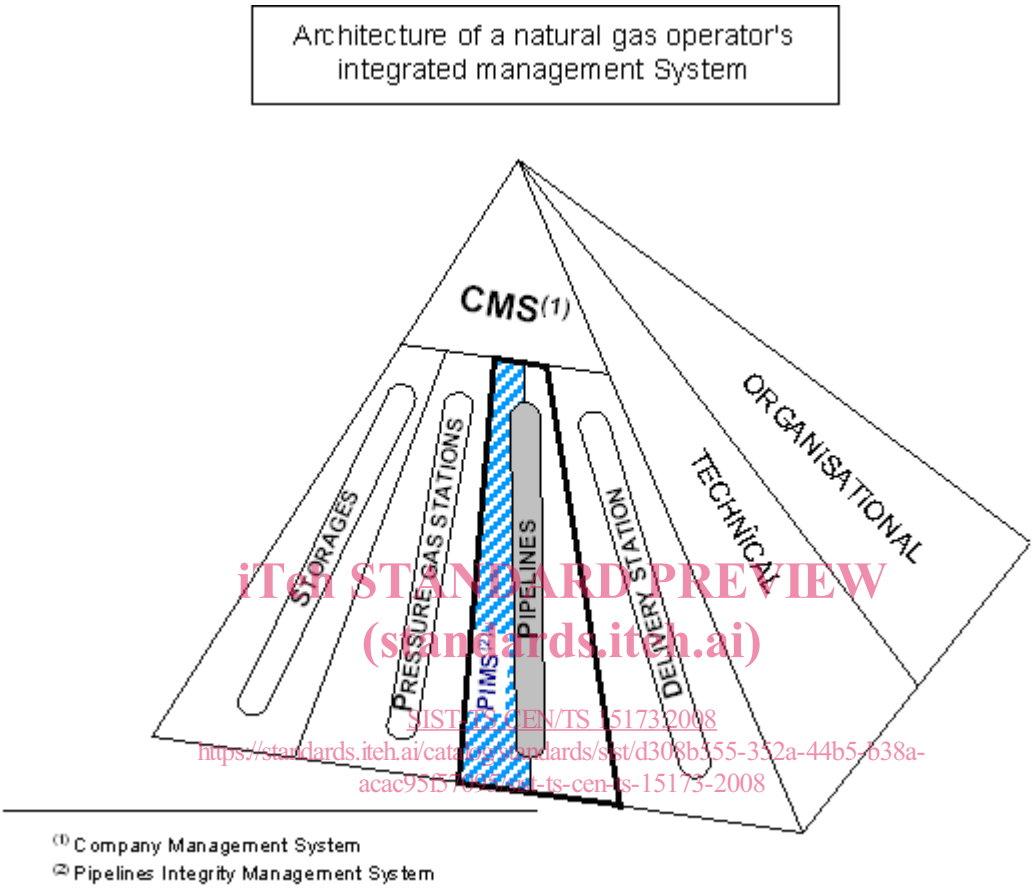

Figure 1 — Architecture of a natural gas operator

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 ».

4.2 Boundary of the PIMS

The structure in the scope of PIMS is 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.

4.3 Objective of the frame of reference

The frame of reference aims at describing the resources (mainly organisation and know how) and activities, for which the gas transport operator is responsible, that help to ensure the safety and protection of environment. Authorities are also responsible for other matters (such as land use planning and emergency schemes) which are not described in the report.

The frame of reference presents, in the broadest possible manner, all the resources and activities provided for above. These resources and activities are nevertheless implemented according to the technical and economic requirements specific to each structure.

It should be noted that, for more precision about these resources and activities, it is possible to refer to the following standards, which often meet the minimum requirements of this frame of reference and give more details:

- EN 1594: Pipelines for maximum operating pressure over 16 bar - Functional requirements (applicable in Europe),
- ISO 13623: Petroleum and natural gas industries - pipeline transportation systems (applicable outside Europe),
- national pipeline standards.

The present document aims at serving:

— as a frame of reference for natural gas pipeline operators,

  — It is based on the best practices of natural gas pipeline operators and takes into account remarks of natural gas pipeline operators.

    NOTE The IGU 1998 survey and "Pipeline Integrity Management and Safety" report conducted by the WOC 4/SG 4.3 and presented to the 21st IGU World Gas Conference (Nice, France 2000) have identified best practices. This work supports this frame of reference.

— in the medium term as a frame of reference for authorities,

  — it supports the efforts made by the natural gas pipeline operators

— as a guide for optimal natural gas pipeline management.

  — it gives means of support for management

  — it demonstrates the coherency of the security, environment and quality management systems.

This framework provides guidance on the safe management of pipelines.

It is based on the principles of the maintaining of the high safety level reached by Gas pipeline operators, proved by the good historical data and of its improvement when possible and necessary.

5 PIMS architecture

The resources and activities ensuring the integrity of natural gas pipeline materials are organised into processes.

These processes are described in the table below:

Table 1

Process	Role in the PIMS	
	Main services	**Example resources**
1. Equipment	• Project management and project design and construction supervision regarding constructions and modifications	• Design rules • Pipeline construction techniques
2. Operation- Maintenance	• "Routine" inspection and maintenance • Preventive maintenance • Corrective maintenance programmes • Emergency management	• Ground, vehicle, and aerial inspection • Emergency plan • Intensive potential measurements • Intelligent pigging • Repair techniques
3. Training	• Definition of training programmes • Participation in training programmes • Assessment of training programme efficiency	• Training institutes • Training programmes • Job descriptions
4. Purchasing	• Eligibility of suppliers • Purchasing process • Production and construction-work follow-up	• Performance tests • Manufacturing and construction-work inspectors
5. Communication	• Public information • Communication strategies • Team meetings	• Advertising pamphlets • In-house newsletter • Bulletin boards
6. Safety	• Safety analysis • Work regulations and permits / authorisations • Incident investigation • Safety Management Reviews	• Safety management system • Safety assessment tools • Experience feedback databases
7. Environment	• Environmental analysis • Environment Management reviews	
8. Quality	• Drafting / updating of procedures • Inspection / calibration of measuring devices • Quality Management reviews	• Documentation system
9. Standards, Technology and Regulations Watch	• Company exchanges of information • Participation in congresses • Contacts with institutions	• Government gazette • Standards body • Journals
10. System management	• Responsibilities • PIMS continuous improvement programme • PIMS reviews	• PIMS IGU frame of reference • Performance appraisal

Processes 1 and 2 are main processes ("skills"), enabling the natural gas pipeline operator to perform his primary tasks.

Processes 3 to 9 are horizontal / auxiliary to processes 1 and 2.

Process 10 is a global process that ensures the system's coherency (PIMS).

Each individual process is co-ordinated by a management loop: policy, planning, implementation and operation, inspection and corrective action, management review.

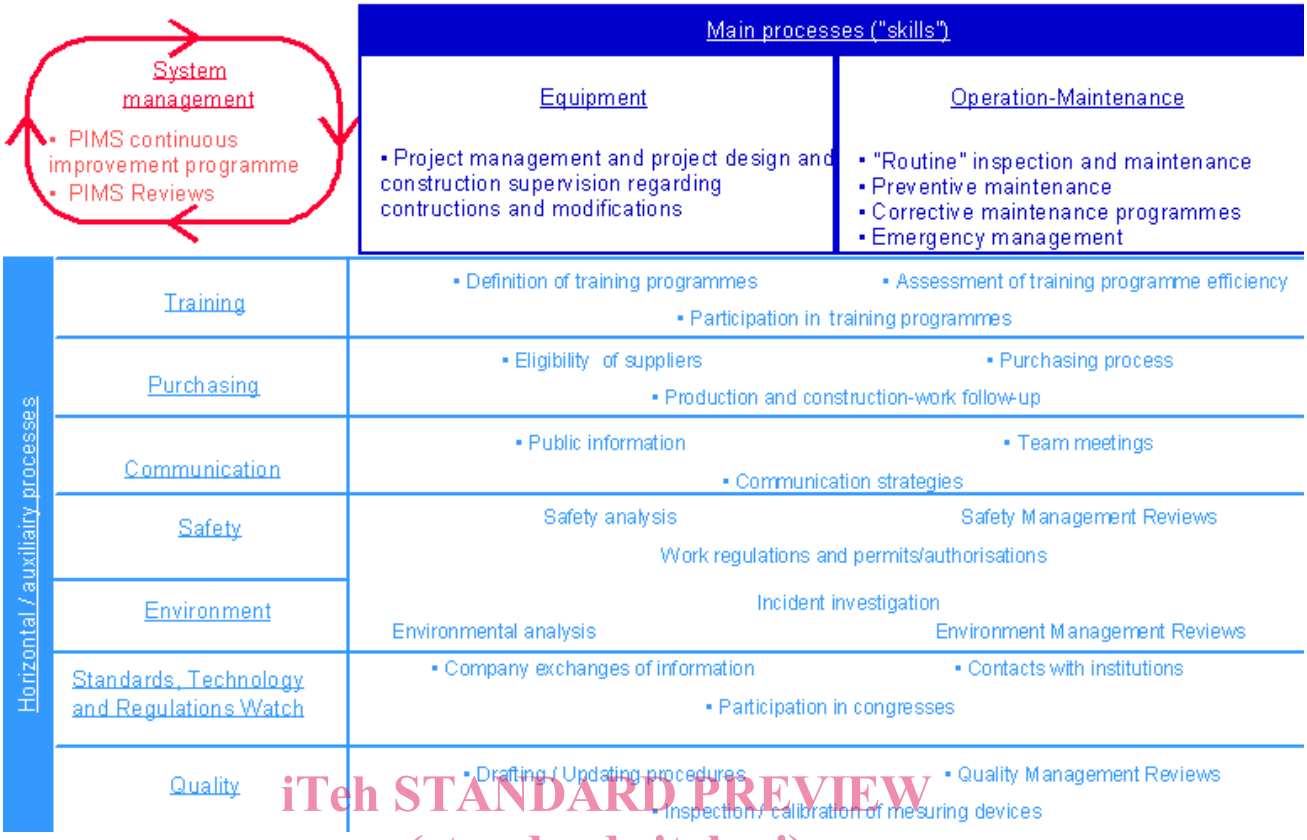

Figure 2 — PIMS architecture diagram

6 System management process

6.1 General

This section provides a summary description of the activities specific to the management process that contributes to the safety and protection of environment.

Operators can manage the safety/environment aspects of all the resources and activities they are involved in, through the use of a safety/environment management system based on the requirements of a frame of reference. The standards here after are examples of such a frame of reference: ISO 14000, BS 8800, OHSAS 18001, or DNV ISRS© standards.

In this context, 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.

6.2 Management commitment

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.

6.3 Organisation and responsibilities

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 verify 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.

6.4 Hazard identification an control

Potential hazards for environment and safety from the transport activity may be identified and assessed. Appropriate controls and systems are implemented to reduce and manage those hazards.

The organisation may define and set up procedures in order to identify the hazards, assess their relevance and implement the necessary control measures, both in routine and non-routine activities.

The organisation includes the assessment results and the effects of the controls in the company policy when relevant.

6.5 Planning and performance monitoring

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 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 consequences severity;

— 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).

6.6 Information management

Environmental and Safety information are controlled to ensure that they are accurate, relevant and readily available to enable safe operations.

Procedures for ensuring that this information is communicated to and from employees and other interested parties may be defined.