



# SLOVENSKI STANDARD

## oSIST prEN 17975:2023

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**Vzdrževanje - Proces nadzora tveganj, povezanih z energijami in fluidi, pri vzdrževalnih opravilih - Napotki**

Maintenance - Energies and fluids risks control process for maintenance tasks - Guidance

Wartung - Kontrolle Risiken in Bezug auf Energien und Flüssigkeiten während der Wartungsarbeiten

Maintenance - Maîtrise des risques liés aux énergies et fluides lors des opérations de maintenance

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## Maintenance - Energies and fluids risks control process for maintenance tasks - Guidance

Maintenance - Maîtrise des risques liés aux énergies et  
fluides lors des opérations de maintenance

Wartung - Kontrolle Risiken in Bezug auf Energien und  
Flüssigkeiten während der Wartungsarbeiten

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>5</b>
<b>Introduction</b> .....	<b>6</b>
<b>1 Scope</b> .....	<b>7</b>
<b>2 Normative references</b> .....	<b>7</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>3.1 Terms and definitions related to plants and activities</b> .....	<b>8</b>
<b>3.2 Terms and definitions related to energies and energy lockout</b> .....	<b>8</b>
<b>3.3 Terms and definitions related to risks and hazardous phenomena</b> .....	<b>11</b>
<b>3.4 Terms and definitions related to organization</b> .....	<b>11</b>
<b>3.5 Terms and definitions related to people</b> .....	<b>12</b>
<b>4 Links between securing energies and maintenance processes</b> .....	<b>14</b>
<b>4.1 Boundaries and interfaces</b> .....	<b>14</b>
<b>4.2 Place of securing energies and fluids within maintenance processes</b> .....	<b>14</b>
<b>4.3 Interactions with other safety mitigation in maintenance</b> .....	<b>15</b>
<b>4.4 Equipment design and modification</b> .....	<b>15</b>
<b>4.5 Relation to severe hazard and emergency response management</b> .....	<b>16</b>
<b>4.6 Boundaries between maintenance and operating activities</b> .....	<b>16</b>
<b>5 Risk analysis</b> .....	<b>18</b>
<b>5.1 General issue: Systematic risk analysis mindset</b> .....	<b>18</b>
<b>5.2 Risk analysis methodology when applied to maintenance tasks</b> .....	<b>18</b>
<b>5.3 Specificities of risk analyses related to energies and fluids within maintenance tasks</b> .....	<b>19</b>
<b>5.3.1 Maintenance risk control methodology for energies and fluids within maintenance tasks</b> .....	<b>19</b>
<b>5.3.2 Main elements to be considered when analysing maintenance activity</b> .....	<b>20</b>
<b>5.3.3 Impact of safety device technology</b> .....	<b>21</b>
<b>5.3.4 Effects of items configurations</b> .....	<b>21</b>
<b>5.4 Sources of the main hazards to be considered (energy, fluids, products that are sources of dangerous phenomena)</b> .....	<b>22</b>
<b>5.5 Design and methodology for selecting an energy and fluid lockout process</b> .....	<b>22</b>
<b>5.5.1 Introduction - energies and fluids risk control process</b> .....	<b>22</b>
<b>5.5.2 Process application table</b> .....	<b>23</b>
<b>5.5.3 Risk prioritization and mitigation</b> .....	<b>25</b>
<b>5.5.4 Selection of processes given existing configurations</b> .....	<b>25</b>
<b>5.5.5 Application to degraded (abnormal) situations</b> .....	<b>27</b>
<b>5.6 Updating energies and fluids specific risk analysis</b> .....	<b>27</b>
<b>5.6.1 Updating the risk analysis during a maintenance activity</b> .....	<b>27</b>
<b>5.6.2 Updating the risk analysis before applying Standard Operating Procedures (SOP)</b> ..	<b>27</b>
<b>5.7 “Memo” flowchart of risk analysis</b> .....	<b>28</b>
<b>6 Energy and fluid lockout processes</b> .....	<b>29</b>
<b>6.1 Energy and fluid lockout process</b> .....	<b>29</b>
<b>6.1.1 General</b> .....	<b>29</b>
<b>6.1.2 Reinforced isolation by lockout/tagout of energies and fluids (RI)</b> .....	<b>30</b>

6.1.3	Standard isolation (by lockout of energies and fluids).....	33
6.1.4	Neutralization of energies and fluids by the control system.....	36
6.1.5	Specific provisions for activities involving energies and fluids .....	38
6.2	Organizational prerequisites .....	41
6.3	Securing steps.....	42
6.3.1	Technical steps – Isolation steps flowchart .....	42
6.3.2	Means of checking the removal or neutralization of the energies and fluids.....	43
6.3.3	Determining the “key points” .....	43
6.3.4	Specific case related to the fitting of plugs .....	44
6.4	Specific features of “PARENT/CHILD” Energy and fluid lockout .....	44
7	Energies and fluids source control.....	45
7.1	General .....	45
7.2	Energy and fluids source control devices .....	46
7.2.1	Type .....	46
7.2.2	Location.....	47
7.2.3	Identifiers and markers .....	47
7.2.4	Maintenance .....	47
7.3	Compensatory measures .....	48
7.4	LOCKOUT Administration.....	49
7.4.1	Principle.....	49
7.4.2	Lockout devices.....	49
7.4.3	Secure access to handling devices.....	50
7.4.4	Procedure for removing locking devices .....	50
7.5	USE OF TAGS and LOCKS.....	50
7.5.1	Tags memo .....	50
7.5.2	Locks management .....	51
7.6	Specific features – Design and modification of equipment .....	51
7.7	Energies and energy lockout device identification sheet .....	51
7.7.1	General .....	51
7.7.2	Content .....	52
7.7.3	Validation .....	52
7.7.4	Updating.....	52
7.7.5	Exclusions.....	52
8	Organizational provisions.....	53
8.1	Organizational provisions .....	53
8.2	Quality rules related to energy lockout.....	53
8.3	Energies and fluids competences management and training.....	53
8.3.1	Warning.....	53
8.3.2	Principle.....	53
Annex A (informative)	Organizational provisions.....	55
A.1	Organizational provision .....	55
A.2	Organizational quality rules.....	58
A.3	Energies and fluids lockout competences, training .....	60
A.4	Example: designation of competent people for energy lockout and maintenance operations .....	62
Annex B (informative)	Main elements to be considered when analysing maintenance activity .....	64
Annex C (informative)	Non-exhaustive list of energy sources and phenomena.....	67

## prEN 17975:2023 (E)

C.1	General.....	67
C.2	Energies.....	67
C.3	Fluids and products.....	69
Annex D (informative) Preparation of energy lockout steps.....		71
Annex E (informative) Example of the types of isolation categories for pipes.....		73
E.1	Definitions.....	73
E.2	Category B types (reinforced isolation).....	74
E.3	Category A types (standard isolation).....	77
E.4	Examples of practical diagrams for category B (reinforced isolation).....	78
E.5	Examples of practical diagrams for category A (standard isolation).....	82
Annex F (informative) Mechanical energy lockout.....		84
F.1	General.....	84
F.2	Gravity-related mechanical risks.....	84
F.3	Mechanical risks caused by actuators.....	84
F.4	Ventilation-related mechanical risks.....	85
F.5	Mechanical risks caused by the effects of arching and walls.....	85
Annex G (informative) Specific rules for PARENT/CHILD energies and fluids lockout processes.....		86
G.1	Specific rules for “PARENT/CHILD”.....	86
G.2	Removal of a “PARENT” Energy and fluid lockout.....	87
G.3	“PARENT/CHILD” Energy and fluid lockout.....	87
G.4	“PARENT” energy and fluid lockout.....	88
G.5	“CHILD” energy lockout.....	89
G.6	Dedicated software management of “PARENT/CHILD” energy lockout.....	89
G.7	Management of “PARENT/CHILD” energy lockout without dedicated software.....	90
Annex H (informative) Document examples.....		91
H.1	Set of document example.....	91
H.2	LOTO form model example.....	93
H.3	Tag model example.....	94
Annex I (informative) Specific case of cryogenic (pipe freezing), expansion or inflatable plugs.....		96
I.1	General.....	96
Bibliography.....		97

## European foreword

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This document is currently submitted to the CEN Enquiry.

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## Introduction

Many occupational accidents are caused by a failure to manage energy sources during maintenance activities. These accidents have serious impacts on people, assets and activities.

The safety and health of workers prior to and during maintenance tasks on items involves a series of practices and procedures aimed at controlling all energy sources. These practices and procedures enable a worker to be sure that he/she can work on a plant without any accidental energies' reconnection, and avoid that he/she will be exposed to a hazardous working environment.

Depending on the task, the items and the related risk analysis, the safety of workers is based, according to the energies, on the individual or combined implementation of the following specific processes:

- Reinforced isolation by lockout/tagout of energies and fluids (RI);
- Standard isolation by lockout of energies and fluids (SI);
- Neutralization of energies and fluids by the control systems (N);
- Specific provisions for activities involving energies and fluids (SP).

On its own, reinforced isolation by lockout/tagout of energies ensures the full protection of workers. However, the design of existing plants or the type of operations does not always enable such an approach to be applied, which therefore imposes use of one of the three alternative processes set out below.

Various industrial sectors – chemical, metallurgy, agrifood, energy production and power distribution – have adopted “energy lockout” terminologies for many years, according to their industrial context. Each industry has defined a formal system for risk analysis and operating procedures for securing each of the energies it works with. Depending on the various sectors, the terms used for “energy lockout” include reinforced lockout/tagout, standard lockout/tagout, lockout of released energies, LOTO - Lock Out, Tag Out, LOTOTO - Lock Out, Tag Out, Try Out (see OSHA 1910.147), “administrative lockout”, etc.

This standard is therefore concerned with how to best control the risks related to energies and fluids linked to maintenance activities.



## 1 Scope

This document provides users with guidance that help prevent risks related to energies during maintenance activities on plants when in use. It is up to each employer, according to the terms commonly used in the company, to:

- Set out the correlation between the processes described in this document and standard practices;
- Define the roles and responsibilities of the people involved in the energy lockout process.

This document refers to concepts, definitions, rules, recommendations and best practices taken from national and international documents (*lockout/tagout*– “*administrative lockout*” – *Lockout/Tagout (LOTO)* – *Safe isolation*) that cover activities to ensure the safety of worker as regards energies.

This document deals with the prevention of energies and fluids (powders, gases, liquids) related risks; it is noted that some are covered by specific regulations or standards, such as the electrical risk. Environmental issues related to energies and fluids are not in the scope of this document.

The recommendations stated in this document have been drawn up with a view to ensure the safety and health of workers around hazardous energies and fluids, and situations when they are conducting activities on maintenance, settings, changing formats, regardless of the type of activity.

The recommendations relate to activities carried out on items. They are applied before, during and after the operation to:

- The energies supplied, contained, transported or released by plants, products and fluids;
- Risks of lack of presence of vital elements for the worker (breathable air);
- Risks related to the presence of hazardous fluids for the worker and the surrounding personal.

This document is a methodological guideline within the normative maintenance corpus.

## 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.

EN 13306, *Maintenance — Maintenance terminology*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13306 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/>
- IEC Electropedia: available at <https://www.electropedia.org/>

**prEN 17975:2023 (E)****3.1 Terms and definitions related to plants and activities****3.1.1****item**

part, component, device, subsystem, functional unit, equipment or system that can be individually described and considered

Note 1 to entry: In the context of this standard, we consider installations, processes, machinery and working equipment as plants.

[SOURCE: EN 13306:2017, 3.1, modified – modification of note to entry 1 and removal of notes to entry 2 and 3]

**3.1.2****plant**

set of items constituting installations, processes, machinery and working equipment

**3.1.3****release**

authorisation for a temporary transfer of responsibility from the operating officer to the operation manager within the scope indicated in the release document

Note 1 to entry: The release, for works, testing, etc. is an authorization given to a works officer, test officer, etc. in order to work on disabled plants or plants in use.

**3.2 Terms and definitions related to energies and energy lockout****3.2.1****energies supplied to items**

energies supplied to the plants by external sources and which are necessary for their operation

**3.2.2****contained energies**

internal, stored, residual or converted energies

**3.2.3****lock-out-tag-out****LOTO**

<lockout> placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed

<tagout> placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed

[SOURCE: OSHA-control of hazardous energy - CPL\_02-00-147]

**3.2.4****lock-out-tag-out-try-out****LOTOTO**

LOTOTO improvement including a phase of verification of absence of energy (Try-Out) before the intervention

**3.2.5****process**

set of interrelated or interacting activities that use inputs to deliver an intended result

[SOURCE: EN ISO 9000:2015, 3.4.1]

**3.2.6****energy lockout**

all of the activities carried out and measures taken in relation to energies, hazardous products or the lack of vital elements that ensure the safety of maintenance workers during their activities on or near to plants, or within their working environment

Note 1 to entry: Securing may combine various processes that are specific to each energy listed in this document, through:

- Reinforced isolation by lockout/tagout of energies and fluids (RI);
- Standard isolation by lockout of energies and fluids (SI);
- Neutralization of energies and fluids by the control systems (N);
- Specific provisions for activities involving energies and fluids (SP).

In additional to the processes listed above, collective and individual protections or organizational measures (procedures, requirements, working methods, permits-to-work, etc.) enable the maintenance worker to carry out activities whilst controlling the risks.

Note 2 to entry: See the list of energies in section 5 “Energy sources and phenomena”.

**3.2.7****reinforced isolation by lockout/tagout of energies****RI**

process that results in the removal – by separation or by a combination of isolating and opening devices (e.g. valve, tap, etc.) – of all energies where the presence, accidental retention, unintended appearance or appearance has hazardous consequences for workers, the environment and plants

Note 1 to entry: Depending on the energies present, bleed, discharge, release, clean-up or mechanical blocking activities may be necessary.

Note 2 to entry: The RI process involves all of the activities and provisions that enable a plant to be secured and kept secure, so that the workers may conduct their maintenance activities.

**3.2.8****standard isolation by lockout of energies****SI**

process that results in the removal – by locking in position a single or double isolating device – of all energies where the presence, accidental retention, unintended appearance or appearance does not have hazardous consequences for workers, the environment and plants

Note 1 to entry: Depending on the energies present, bleed, discharge or release activities may be necessary.

Note 2 to entry: The SI process involves all of the activities and provisions that enable a plant to be secured, so that the workers may conduct their maintenance activities.

Note 3 to entry: It is important to monitor the efficiency of isolation throughout the intervention (no leaks or leaks controlled).

**prEN 17975:2023 (E)****3.2.9****neutralization of energies by the control systems****N**

process that, through design of the control systems, shuts down an item of equipment so that a list of pre-determined tasks may be conducted in safety

Note 1 to entry: The control systems fulfilling safety functions meet reliability requirements, taking into account the risk of failures. The design rules are defined in the design standards (EN 60204-1, EN ISO 13849-1 and EN 62061).

Note 2 to entry: Based on risk assessments, various performance levels are determined with control system architectures adapted to the level of risk.

Note 3 to entry: Securing through control systems addresses risks related to the energies supplied to the plant. Additional measures may be implemented to interrupt or reduce contained energies.

**3.2.10****specific provisions for activities involving energies****SP**

process that results in the implementation of organizational measures enabling observation, diagnostics, testing activities and work on settings for the plant in service to be carried out safely, with energies present

**3.2.11****separate**

action of creating an interruption through a combination of systems, specific systems or the temporary removal of an element of the system to permanently guarantee a lack of energy between the plant and each of the energies present

Note 1 to entry: Terminology related to the process of reinforced isolation by lockout/tagout of energies.

Note 2 to entry: Shared terminology, applicable to all energies.

**3.2.12****isolate**

action of creating an interruption through an action and/or a system to manage a lack of energy between the plant and each of the energies present for a given period

Note 1 to entry: Terminology related to the process of standard isolation by lockout of energies.

**3.2.13****lock out**

action of installing a means of locking the system linked to controlling energy sources so as to prevent it from being handled

**3.2.14****lockout device**

strong mechanical element used to maintain the energy lockout components in a given position

Note 1 to entry: The removal of the lockout device may only be performed as part of a removal procedure by an authorized person.

Note 2 to entry: In order to remove the device, dedicated equipment defined in the procedure must be used (example: a key or another equivalent system).

### 3.3 Terms and definitions related to risks and hazardous phenomena

#### 3.3.1

##### **hazard and hazardous phenomena**

potential source of a damage

[SOURCE: EN ISO 12100:2010, 3.6, modified – removal of notes to entry]

#### 3.3.2

##### **risk**

combination of the likelihood of damage and the severity of this damage

[SOURCE: EN ISO 12100:2010, 3.12]

#### 3.3.3

##### **risk analysis**

process implemented to understand the type of a risk and to determine the level of risk

Note 1 to entry: The risk analysis provides the foundation for assessing the risk and the decisions related to dealing with the risk.

Note 2 to entry: The risk analysis includes an estimation of the risk.

[SOURCE: ISO 31000:2009, 2.21]

#### 3.3.4

##### **risk assessment**

process comparing the results of the risk analysis with risk criteria, in order to determine if the risk and/or its scale are acceptable or tolerable

Note 1 to entry: The risk assessment helps with decision-making on how to deal with the risk.

[SOURCE: ISO 31000:2009, 2.24]

### 3.4 Terms and definitions related to organization

#### 3.4.1

##### **lockout procedure**

organizational procedure setting out the rules for fitting and removing component lockout devices as part of energy lockout

#### 3.4.2

##### **energies and energy lockout device identification sheet**

document identifying the energies and the energy lockout devices for the items in question

Note 1 to entry: It lists all of the energies of the plant in question (supplied, contained and residual energies).

Note 2 to entry: It lists the energy separation, isolation and dissipation devices marked beforehand using tags (see Annex F).

Note 3 to entry: It lists the energy separation, isolation and dissipation activities with the reference of the relevant handling sheet.

**prEN 17975:2023 (E)****3.4.3****operating procedure for energy control**

document determining the type and order of the various states and handling activities involved neutralising energies during an operation on an item

Note 1 to entry: The operating procedure takes into account all of the energies and defines, as per requirements, the initial state and expected final state of the position of the valves.

Note 2 to entry: Depending on the complexity of the plants, it may refer to the application of several handling operation sheets.

**3.4.4****handling operation sheet**

document, specific to a type of energy that indicates the type, the state and order of the actions to be carried out for the process of reinforced isolation by lockout/tagout of energies or standard isolation by lockout of energies

Note 1 to entry: Several handling operation sheets may be grouped together within a single document.

**3.4.5****permit-to-work/work authorisation**

document issued by the employer providing formal authorisation to carry out an operation, after a risk analysis and definition of the prevention and protection measures

**3.4.6****energy lockout certificate**

document delivered before work begins formalising the securing of all of the energies for an item

**3.4.7****energy lockout proficiency certificate**

document through which the employer formally recognised an employee's ability to secure the energies of an item

**3.4.8****degraded situations**

non normal use of equipment, caused by a technical, human or organizational failure or deviation (e.g. incorrect use of standard operating procedure)

**3.5 Terms and definitions related to people****3.5.1****employer**

person or legal entity who employs members of staff and has authority over them

**3.5.2****plant manager**

person who is responsible for an operating site, and is accountable of the whole site safety (responsible authority)

Note 1 to entry: This responsibility can be subdivided and delegated.

**3.5.3****ordering party**

person or legal entity that has the authority to contract a service provider to perform activities in relation to an order

**3.5.4****operations manager**

person in charge of managing operating activities (operation, surveillance, maintenance, etc.) for a plant

**3.5.5****lockout/tagout officer**

person capable of analysing the risks and defining the actions to be taken on the energies, in order to carry out or have carried out the process of reinforced isolation by lockout/tagout of energies or the process of standard isolation by lockout of energies

**3.5.6****lockout officer**

person capable of analysing the risks and defining the actions to be taken on the energies, in order to carry out or have carried out the process of standard isolation by lockout of energies

**3.5.7****lockout/tagout manager**

person in charge of coordinating the actions of the lockout/tagout officer and the lockout officer and ensuring that all of the energy lockout devices have been put in place for a plant

**3.5.8****maintainer**

person performing a maintenance activity

**3.5.9****works officer**

person in charge of managing works

**3.5.10****activity officer**

person in charge of managing interventions and, where appropriate, carrying them out

**3.5.11****operator**

person in charge of actually carrying out an operation

**3.5.12****test officer**

person in charge of actually managing tests; he/she takes the measures needed to ensure his/her own safety and that of any third parties involved during tests

**3.5.13****safety supervisor**

person with the knowledge required to monitor one or more people during completion of an operation in accordance with given instructions, as a compensatory measure