

## **SLOVENSKI STANDARD** SIST EN 13617-1:2004+A1:2009

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### Bencinski servisi - 1. del: Varnostne zahteve za izdelavo in lastnosti avtomatov za točenje bencina, razdeljevalnikov in oddaljenih črpalnih enot

Petrol filling stations - Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units

Tankstellen - Teil 1: Sicherheitstechnische Anforderungen an Bau- und Arbeitsweise von Zapfsäulen, druckversorgten Zapfsäulen und Fernpumpen VIEW

Stations-service - Partie 1: Exigences relatives à la construction et aux performances de sécurité des distributeurs à pompe immergée, distributeurs de carburants et unités de

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Petroleum products and natural gas handling equipment

SIST EN 13617-1:2004+A1:2009

en,fr,de

# iTeh STANDARD PREVIEW (standards.iteh.ai)

# EUROPEAN STANDARD NORME EUROPÉENNE **EUROPÄISCHE NORM**

# EN 13617-1:2004+A1

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**English Version** 

### Petrol filling stations - Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units

Stations-service - Partie 1: Exigences relatives à la construction et aux performances de sécurité des distributeurs de carburants et unités de pompage à distance

Tankstellen - Teil 1: Sicherheitstechnische Anforderungen an Bau- und Arbeitsweise von Zapfsäulen, druckversorgten Zapfsäulen und Fernpumpen

This European Standard was approved by CEN on 5 May 2004 and includes Corrigendum 1 issued by CEN on 25 Janvier 2006 and Amendment 1 approved by CEN on 21 May 2009.

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### Foreword

This document (EN 13617-1:2004+A1:2009) has been prepared by Technical Committee CEN/TC 393 "Equipment for storage tanks and for service stations", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This document includes Amendment 1, approved by CEN on 2009-05-21 and Corrigendum 1, issued by CEN on 25 January 2006.

This document supersedes EN 13617-1:2004.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\underline{A}$   $\underline{A}$ .

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags AC (AC).

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

A For relationship with EU Directives, see informative Annexes ZA, ZB and ZC, which are integral parts of this document. (A1

This European Standard "Petrol filling stations" consists of 4 parts. https://standards.iteh.ai/catalog/standards/sist/0800e6dd-8bae-4c7b-8191-

Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units

Part 2 A) deleted text (A) : Safety requirements for construction and performance of safe breaks for use on metering pumps and dispensers

Part 3 A deleted text (A : Safety requirements for construction and performance of shear valves

Part 4 A) deleted text (A) : Safety requirements for construction and performance of swivels for use on metering pumps and dispensers

Annex A is normative. Annex B is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, 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 United Kingdom.

### Introduction

This document is a type C standard as stated in A EN ISO 12100-1 and EN 12100-2 A.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of the type C standard.

It has been assumed that the use of the equipment for dispensing of fuels will be by untrained persons (user / dispenser), while other aspects of the operation, maintenance, etc, will be by designated and trained personnel (station personnel or operator).

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#### 1 Scope

This European Standard applies to metering pumps, dispensers and remote pumping units to be installed at petrol filling stations, designed to dispense liquid fuels into the tanks of motor vehicles, boats and light aircraft and into portable containers at flow rates up to 200  $I \cdot min^{-1}$ , and intended for use and storage at ambient temperatures between -20 °C and +40 °C. An Measures in addition to those required by this standard may be required for use and storage at temperature outside this range. The need for and nature of additional requirements should be determined by the manufacturer, if necessary after consulting the client.

This European Standard deals with all significant hazards, hazardous situations and events relevant to metering pumps, dispensers and remote pumping units, when they are used as intended and under the conditions foreseeable (A) by the manufacturer (see clause 4).

A) This European Standard gives health and safety related requirements for the selection, construction and performance of the equipment.

This European Standard does not deal with noise and with hazards related to transportation and installation.

This European Standard does not include any requirements for metering performance.

Vapour recovery efficiency rates are not considered within this European Standard.

This European Standard is not applicable to metering pumps, dispensers and remote pumping units which are manufactured before the date of publication of this document by CEN.

NOTE Liquefied petroleum gas (LPG) is not a liquid fuel in the sense of this European Standard. <u>SIST EN 13617-1:2004+A1:2009</u>

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#### 2 Normative references

A) 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 228, Automotive fuels — Unleaded petrol — Requirements and test methods

A1 deleted text (A1

EN 1360, Rubber hoses and hose assemblies for measured fuel dispensing — Specification

EN 12874, Flame arresters — Performance requirements, test methods and limits for use

EN 13012, Petrol filling stations — Construction and performance of automatic nozzles for use on fuel dispensers

EN 13463-1:2001, Non-electrical equipment for potentially explosive atmospheres — Part 1: Basic method and requirements

A) EN 13483 (A), A) Rubber and plastic hoses (A) and hose assemblies with internal vapour recovery for measured fuel dispensing systems — Specification

 $A_1$  deleted text  $\langle A_1 \rangle$ 

EN 60079-0:2006, Electrical apparatus for explosive gas atmospheres — Part 0: General requirements (IEC 60079-0:2004, modified)

EN 60079-1:2007, Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d" (IEC 60079-1:2007)

EN 60079-7:2007, Explosive atmospheres — Part 7: Equipment protection by increased safety "e" (IEC 60079-7:2006) [Art]

EN 60079-10, Electrical apparatus for explosive gas atmospheres — Part 10: Classification of hazardous areas (IEC 60079-10:2002) (A)

EN 60079-14, Electrical apparatus for explosive gas atmospheres — Part 14: Electrical installations in hazardous areas (other than mines)  $\mathbb{A}$  (IEC 60079-14:2002)  $\mathbb{A}$ 

A) EN 60079-15, Electrical apparatus for explosive gas atmospheres — Part 15: Construction, test and marking of type of protection "n" electrical apparatus (IEC 60079-15:2005) (A)

EN 60204-1:2006, Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified) (A)

EN 60529, Degrees for protection provided by enclosures (IP code) (IEC 60529:1989)

EN 60730-2-10, Automatic electrical controls for household and similar use — Part 2: Particular requirements for motor starting relays [A] (IEC 60730-2-10:2006) (A)

EN 60947-3, Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3:1999)

EN 60950-1, Information technology equipment — Safety — Part 1: General requirements A (IEC 60950-1:2005, modified) (A

EN ISO 1182, Reaction to fire tests for building products — Non-combustibility test (ISO 1182:2002) (standards.iteh.ai)

EN ISO 12100-1:2003, Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003) EN 13617-1:2004+A1:2009

https://standards.iteh.ai/catalog/standards/sist/0800e6dd-8bae-4c7b-8191-EN ISO 12100-2:2003, Safety of machinery Basic concepts general principles for design — Part 2: Technical principles (ISO 12100-2:2003)

EN ISO 13849-1, Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)

EN ISO 14121-1, Safety of machinery — Risk assessment — Part 1: Principles (ISO 14121-1:2007) (A)

ISO 11925-3, Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 3: Multi-source test

HD21.13 S1, Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 13: Oil resistant PVC sheathed cables with two or more conductors

HD22.4 S3, Rubber insulated cables of rated voltages up to and including 450/750 V — Part 4: Cords and flexible cables

#### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in AD EN ISO 12100-1 (AD and the following apply.

#### 3.1

#### air and/or vapour separator

device used for continuously separating and removing air or gases contained in the liquid

#### 3.2

#### delivery hose assembly

flexible delivery system to which the nozzle is connected

#### 3.3

#### column extension

fabrication extending upwards from a metering pump/dispenser hydraulic housing

#### 3.4

#### metering pump

measuring system containing its own pumping system to draw and deliver liquid fuel from a supply tank or tanks into the tanks of motor vehicles, boats and light aircraft and into portable containers

#### 3.5

#### dispenser

measuring and delivery system similar to that of a metering pump but without an integral pumping system

#### 3.6

#### multi product metering pump/dispenser

unit designed to deliver liquid fuels where the customer can choose from more than one product, this may include systems where the fuel delivered is a mix of more than one base fuel

#### 3.7

#### remote pumping unit

suction pump assembly mounted remotely from a dispenser

#### 3.8

#### filling station

establishment providing for the delivery of liquid fuels into the tanks of motor vehicles, boats and light aircraft and iTeh STANDARD PREVIEW into portable containers

#### 3.9

#### hazardous area

area in which an explosive gas atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of apparatus

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#### 3.10

non-hazardous area according to EN 60079-10

#### 3.11

metering unit

device for continuously measuring the amount of liquid fuels delivered

#### 3.12

safe-break according to A EN 13617-2 (A

#### 3.13

#### type of protection

the specific measures applied to electrical apparatus to avoid ignition of a surrounding explosive atmosphere

[A] EN 60079-0:2006 (A]

#### 3.14

#### metering pump/dispensers hydraulic housing

housing which provides physical protection to the liquid and/or vapour equipment

#### 3.15

automatic delivery nozzle (nozzle) according to EN 13012

#### 3.16

vapour recovery nozzle according to EN 13012

# (standards.iteh.ai)

#### 3.17

#### nozzle boot

location, normally a partially enclosed housing, where the nozzle or vapour recovery nozzle is stored when not in use

#### 3.18

#### nozzle sensor

device detecting the nozzle position in the nozzle boot

#### 3.19

vapour barrier

sealing system to limit hazardous areas

#### 3.20

#### shear valve (impact check valve)

normally open valve(s), activated by impact and heat, which closes to prevent flow from a pressure source and remains closed after activation

#### 3.21

#### sight glass

device to allow checking that all, or part, of the measuring system is completely filled with liquid

#### 3.22

#### vapour recovery system

system in and attached to the metering pump/dispenser to feed back the vapours displaced from the fuel tank and led back into the vapour return lines to the storage tank RD PREVIEW

#### 3.23

#### vapour pump

# (standards.iteh.ai)

pump positioned in the vapour recovery system to supply vacuum for vapour suctioning

### 3.24

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#### screen

perforated cladding fabrication which may be provided to enhance the visual appearance of a pump or dispenser or to provide another related function

#### 3.25

#### vapour pipe

tubing of the vapour recovery system, excluding the vapour recovery delivery hose assembly and vapour recovery nozzle

#### 3.26

#### retraction system

system to assist the stowage of delivery hose assembly or vapour recovery delivery hose assembly

#### 3.27

#### hose cassette

separate assembly primarily for the storage of delivery hose assembly(s) or vapour recovery delivery hose assembly(s)

#### 3.28

#### normal operation

situation when the equipment, protective systems, and components perform their intended function within their design parameters (see also 5.2.2 a) of EN ISO 12100-1:2003)

NOTE Minor release of flammable material may be part of normal operation. For example, releases of substances from seals which rely on wetting by the fluid which is being pumped are considered to be minor releases.

NOTE Failures (such as a breakdown of pump seals, flange gaskets or releases of substances caused by accidents) which involve repair or shut-down are not considered to be part of normal operation. [see EN 1127-1:1997]

#### 3.29

#### cladding

external panels that serve no structural, load bearing, purpose but which contribute to the physical protection of the contents of the housing

#### 3.30

#### vapour trap

unventilated part of a structure where vapours can accumulate creating an area of greater hazard than its immediate surroundings

#### 3.31

#### preset delivery (preset)

delivery where the maximum volume (cost) for that delivery is fixed, either directly at the metering pump/dispenser or remote from the metering pump/dispenser, before the delivery commences

#### 3.32

#### preset slowdown

last part of a preset delivery where the flow rate is limited by the metering pump/dispenser to allow accurate completion of the delivery

#### 3.33

#### flow rate

volume flow delivered, in l·min<sup>-1</sup> or m<sup>3</sup>·h<sup>-1</sup> under normal working conditions

#### 3.34

### potential ignition source iTeh STANDARD PREVIEW

any part of a process that is able to cause an ignition of an explosive atmosphere (standards.iteh.ai)

#### 3.35

#### high hose inlet joint

delivery hose assembly connection at a location on equipment that will be at a height greater than 2 m above ground level when the equipment is installed

#### 3.36

#### de-mountable joint

joint which is designed to be assembled and disassembled

#### 3.37

#### satellite delivery system

remote delivery system connected to a metering pump/dispenser

#### 3.38

#### check valve

normally closed, opened by flow of liquid in normal working conditions

#### 3.39

#### catastrophic failure

irreversible damage resulting in an unsafe condition

#### 3.40

#### routine test

test performed on each unit on completion of manufacture

#### 3.41

#### powering up sequence

internal sequence of events that follows the application of electrical power to the equipment

#### 4 List of significant hazards

This clause contains the significant hazards and hazardous situations, as far as they are dealt with in this European Standard, identified by a risk assessment significant for metering pumps, dispensers and remote pumping units used for the dispensing of liquid fuels, and which require action to eliminate or reduce risks.

Before using this standard it is important to carry out a risk assessment of equipment to check that it has the hazards identified in this clause.

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Significant hazards according to 🕑 EN ISO 14121-1 🔄		Significant hazards, danger zones, hazardous situations or events, associated with the covered machinery	Safety requirement
No.	Type of hazard	_	Clauses of this standard
1	Mechanical hazards due to:		
	— machine parts or work pieces, e.g.		
	a) shape;		
	b) relative location;		
	c) mass and stability (potential energy of elements		
	which may move under the effect of gravity);		
	d) mass and velocity (kinetic energy of elements in		
	controlled or uncontrolled motion);		
	e) inadequacy of mechanical strength.		
	f) moving parts	Drive belts and/or shafts	5.3.6.2, 7.3
1.9	High pressure fluid injection or ejection hazard	Fluid in the hose, pipes etc.	5.3.1.5, 5.3.1.6, 5.3.3.2, 5.3.4
2	Electrical hazards due to	rds itch ai)	—
2.1	Contact of persons with live parts (direct contact)	Electrical components e.g. motors, solenoid valves, control systems, lighting	5.3.2
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	Electrical components 7 e.g. motors, solenoid valves, control systems, lighting	5.3.2
2.4	Electrostatic phenomena	Charging of belts, hoses and cladding	5.3.4.1, 5.3.3.4
			5.3.4.3
3	Thermal hazards, resulting in:	—	_
3.1	Burns and other injuries by possible explosions	Ignition of possible explosive atmosphere by electrical or non-electrical parts or electrical charge	5.1, 5.2, 5.3
7	Hazards generated by materials and substances	—	_
	(and their constituent elements) processed or used by the machinery		
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts	Tightness of components, pipes, hoses	5.3.3, 5.3.4,

### Table 1 — List of significant hazards

	Hazards according to 🔄 EN ISO 14121-1 🔄	Significant hazards, danger zones, hazardous situations or events, associated with the covered machinery	Safety requirement
7.2	Fire or explosion hazard	Sparks or high temperatures from electrical and non-electrical parts in combination with explosive atmospheres	5.1, 5.2, 5.3
10	Unexpected start-up, unexpected overrun/ overspeed	-	—
	(or any similar malfunction) from:		
10.1	Failure/disorder of the control system	Explosive atmospheres due to unexpected liquid flow	5.3.1.2, 5.3.4.2,
10.2	Restoration of energy supply after an interruption	Explosive atmospheres due to unexpected liquid flow	5.3.1.2
10.3	External influences on electrical equipment	Explosive atmospheres due to unexpected liquid flow	5.3.1.2, 5.3.2.1
10.5	Errors in the software	Explosive atmospheres due to unexpected liquid flow	5.3.1.2
10.6	Errors made by the operator (due to mismatch of machinery with human characteristics and abilities)	Explosive atmospheres due to unexpected liquid flow REVIEW	5.3.1.2, 5.3.1.3, 7.2
11	Impossibility of stopping the machine in the best possible conditions	Explosive atmospheres due to unexpected	5.3.1.2, 5.3.1.3 5.3.4.2
13	Failure of the power supply SIST EN 13617	Explosive atmospheres due to unexpected	5.3.1.2
14	Failure of the control circuit 2c3dc4effa42/sist-en-	rds/sist/0800c6dd-8bac-4c/b-8191- Explosive atmospheres due to unexpected Iquid flow	5.3.1.1, 5.3.1.2, 5.3.1.3
			5.3.2
15	Errors of fitting	Leakage	7.3
16	Break-up during operation	Leakage	5.3.1.1, 5.3.1.4, 5.3.1.6,
			5.3.4.7
17	Ealling or ejected objects or fluids	Moving parts and ejected fuel	534 536
10	Loss of stability / overturning of machinery	Stability of the disponsor in normal use	5316 615
10		Vohiolo movement	5347 73
			0.0.4.1 1.0

Table 1 (concluded)

### 5 Safety requirements and/or protective measures

#### 5.1 Explosion protection measures

**5.1.1** Explosion protection measures should be taken in accordance with annex B.

**5.1.2** Equipment, components and protective systems used within hazardous areas, shall be suitable as a minimum requirement for Explosion Group IIA with temperature class T3 as defined in  $\triangle$  EN 60079-0  $\triangle$  and EN 13463-1.