SLOVENSKI STANDARD
SIST EN 414:1995

01-november-1995

Varnost strojev - Pravila za načrtovanje in predstavljanje varnostnih standardov

Safety of machinery - Rules for the drafting and presentation of safety standards

Sicherheit von Maschinen - Regeln für die Abfassung und Gestaltung von Sicherheitsnormen

Sécurité des machines - Règles pour l'élaboration et la présentation des normes de sécurité

Ta slovenski standard je istoveten z: **EN 414:1992**

ICS:

13.110	Varnost strojev	Safety of machinery

SIST EN 414:1995 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 414:1992

February 1992

UDC 62-78:006.88(083):614.8

Descriptors: Safety, safety of machinery, standard, specifications

English version

Safety of machinery - Rules for the drafting and presentation of safety standards

Sécurité des machines - Règles pour l'élaboration et la présentation des normes de sécurité

Sicherheit von Maschinen - Regeln für die Abfassung und Gestaltung von Sicherheitsnormen

This European Standard was approved by CEN on 1992-02-21. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Page

Contents list

Foreword 3

0 Introduction 3

1 Scope 3

2 Normative references 4

3 Definitions 4
3.1 Type A standards 4
3.2 Type B standards 4
3.3 Type C standards 4

4 General principles 5

5 Preparation for drafting 7
5.1 General 7
5.2 Determination of the necessity and/or priority for standardization 7
5.3 Definition of the scope 8
5.4 Identification of hazards and hazardous situations 8
5.5 Assessment of the risk caused by each hazard 8
5.6 Definition of the safety objectives to be met, and determination of the hazards for which requirements and/or measures are needed 8
5.7 Determination of requirements and/or measures to remove the hazard and/or limit the risk 9
5.8 Verification of compliance with the requirements and/or measures identified in 5.6 and 5.7 9

6 Format of a safety standard 9
6.1 General 9
6.2 Clause "Foreword" 10
6.3 Clause "Introduction" 10
6.4 Clause "Scope" 10
6.5 Clause "Normative references" 11
6.6 Clause "Definitions - Terminology - Symbols and abbreviations" 11
6.7 Clause "List of hazards" 12
6.8 Clause "Safety requirements and/or measures" 12
6.9 Clause "Verification of the safety requirements and/or measures" 14
6.10 Clause "Information for use" 15
6.11 Annexes 16

Annex A (normative) List of hazards related to EN 292 17

Annex B (normative) Procedure to be followed if type A and type B standards are unavailable 21

Annex C (informative) General format of CEN/CENELEC standards 22

Annex D (informative) Example for the structure of clause "Safety requirements and/or measures" 23

Foreword

This standard has been prepared by CEN/TC 114/WG 4 "Rules for the drafting and presentation of safety standard" under the direction of CEN Technical Committee 114 "Safety of machinery". It is one of a series of standards requested by CEN/BT in the programme mandated from the European Commission in support of the "Machinery Directive" (89/392/EEC).

This standard is a type A standard (see 3.1) and is intended for use by Technical Committees writing type B and type C standards (see 3.2 and 3.3).

0 Introduction

CEN/CENELEC have embarked on a programme of work to produce a series of related machinery safety standards as part of the European process for harmonization. It has been necessary to propose rules for the preparation, drafting and presentation of these safety standards to supplement the PNE rules which set out general principles and requirements for all European standards. This standard both makes use of and refers to the principles and concepts established in EN 292. In addition, ISO/IEC Guide 51 has been taken into account as far as possible at the time of drafting.

It is intended to revise EN 414 at an early date to take account of subsequent standards and legislation.

1 Scope

This standard specifies requirements for the drafting and presentation of European machinery safety standards, primarily to achieve consistency of the various standards to be prepared.

It also gives requirements on the criteria for the selection of new work items and for procedures to allow standards to be prepared and produced in an efficient and effective way.

This standard gives requirements which are supplementary to the PNE rules when this is necessary because of the special requirements of machinery safety standards. It does not duplicate the text of the PNE rules when these are unchanged.

This standard applies primarily to the drafting of type C standards (see 3.3). It may also apply to type B standards (see 3.2) but the foreseeable variation in the format of these standards prevents general application. When requirements specifically apply to type B standards, this is indicated.

The PNE rules and EN 292 have to be used in conjunction with the present standard when preparing a new safety standard, or when revising an existing safety standard.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1 :1991	Safety of machinery - Basic concepts - General principles for design - Part 1 : Basic terminology, methodology.
EN 292-2 :1991	Safety of machinery - Basic concepts - General principles for design - Part 2 : Technical principles and specifications.
ENV..... [1]	Safety of machinery - Terminology.
EN..... [2]	Safety of machinery - Risk assessment.
EN..... [3]	Safety symbols - Optical and acoustical signals - Colours.

CEN/CENELEC Internal Regulations, Part 3 : Rules for the drafting and presentation of European standards (PNE rules) (July 1990).

3 Definitions

For the purposes of this standard, the definitions given in ENV ..... "Safety of machinery - Terminology" apply.

Safety standards are classified into three main types defined as follow :

3.1 Type A standards (fundamental safety standards) giving basic concepts, principles for design, and general aspects that can be applied to all machinery.

3.2 Type B standards (group safety standards) dealing with one safety aspect or one type of safety related device that can be used across a wide range of machinery :

- type B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise),

- type B2 standards on safety related devices (e.g. two-hand controls, interlocking devices, pressure sensitive devices, guards).

3.3 Type C standards (machine safety standards) giving detailed safety requirements for a particular machine or group of machines.

---

1) Draft standard prepared by CEN/TC 114/WG 3.
2) Draft standard prepared by CEN/TC 114/WG 14 : see EN 292-1 clause 6 in the meantime.
3) Draft standard prepared by CLC/TC 44X-CEN/TC 114/JWG 4.

4 General principles

4.1 All safety standards shall comply with the basic concepts, principles for design, and general aspects stated in type A standards.

4.2 Type B and type C standards cover the design and/or construction of machines. Type B standards shall consider one aspect or one type of device, and type C standards one type of machine or one group of machines.

Type B and type C standards shall not repeat or paraphrase the text of other reference standards (see 4.4 of the PNE rules)[4].

NOTE 1 : In type B standards, for a better understanding it acceptable to repeat a basic definition or concept, the scope of the standard, and/or basic requirement given in EN 292 .

NOTE 2 : Standards may be divided into two or more parts to assist the work of the drafters, to make the use of the standard easier, or for reasons of urgency (see 1.8 of the PNE rules)

4.3 Type B standards shall :

a) cover one safety aspect or one type of safety related device, if possible in one standard, by reference to other standards when appropriate, and taking into account all possible applications,

b) deal as far as possible with objectives rather than design details, especially for safety related devices, to minimize restrictions on design,

c) define, as necessary and practicable, more than one performance category to allow for different applications. The standard shall give the basis and/or reasons for each performance category.

NOTE : Different applications may require different performance categories because of, for example :

- the probability of the occurrence of injury or damage to health,
- the highest foreseeable severity of this injury or damage to health,
- the possibility of averting or avoiding the hazard.

4) Self contained booklets on a specific type of machine may be produced in the future.

4.4 Type C standards shall cover as far as possible in one standard all the hazards relevant to one type of machine or one group of machines :

a) by reference to relevant type A standards, especially to EN 292 regarding principles for design and all general, minor or secondary aspects,

b) by reference to relevant type B standards and performance categories (see 6.8.2),

NOTE : Any type B standard may be used as a reference standard if the final version is available as prEN before finalizing a type C standard for circulation to TC members for TC inquiry.

c) by reference to other standards (e.g. type C standard) where such hazards are adequately covered (see 4.5),

d) by defining safety requirements and/or measures in the standard, when reference to other standards is not possible and risk assessment and priorities show this is required (see 5.4 to 5.6).

Where it is decided not to cover all hazards (e.g. because this will cause an unacceptable delay in the drafting of the standard) this shall be specified clearly in the scope of the standard and the hazards treated shall be listed (see 5.6).

4.5 When requirements appropriate to more than one type of machine or one group of machines have been identified, consideration shall be given to the creation of a type B standard (see 6.11.1).

4.6 ISO and IEC standards shall be used where appropriate when drafting CEN/CENELEC safety standards.

Reference to ISO/IEC standards shall be in accordance with 4.4.5 of the PNE rules and shall be dated.

When reference is required only for information, it shall be introduced by "see for example ISO/IEC ..." and the referenced standards shall be listed in an informative annex entitled "Bibliography" (see subclauses 2.3.3.3 and 2.5.1 of the PNE rules).

When a normative reference is required, the standard shall :

a) either reproduce the text of the ISO/IEC standard, in the body of the EN or in a normative annex, and indicate clearly its origin by "(extract from ISO/IEC ...)",

b) or make reference to a definite clause(s) or subclause(s) of the ISO/IEC standard (without reproducing it),

c) or make reference to the whole ISO/IEC standard.

Particular attention shall be payed to any reference quoted in a part of an ISO/IEC standard which is used in a CEN/CENELEC standard.

5 Preparation for drafting

5.1 General

Before a safety standard on machinery is drafted, the need for the standard shall have been established, using the criteria given in 5.2.

NOTE : The result of the procedure may provide informations which can be used in the scope (see 5.3).

Then, the procedure given in 5.3 to 5.8 and annex B shall be carried out in the order indicated, to provide information to allow an appropriate standard to be drafted."

5.2 Determination of the necessity and/or priority for standardization

The need for standardization and its priority shall be determined from the answers to the questions contained in 5.2.a to 5.2.g.

a) Is there a demand for European standards arising from regulatory bodies or other interested bodies such as professional bodies, employee or employers associations, trade unions, accident prevention organizations, consumer organizations, standardization bodies, etc. ?

b) Is there a need for a standard to support other safety standards (e.g. terminology, rules for drafting standards) ?

c) Are there hazards generating significant risk to the safety or health of persons ?

d) Is there or will there be in the foreseeable future a sufficient number of related machines or devices to justify the production of a standard ?

e) Are there national standards/specifications giving specific requirements, either directly or by reference to another document, which may be barriers to internal European trade ?

f) Are there proven professional, national or international standards or other standards available so as to give reasonable expectation for positive and rapid results ?

g) Is there sufficient expertise, collective knowledge and experience, of design, use and accident-history on the subject ?

NOTE : These questions should also be considered when a technical committee is developing or extending its program of work.

5.3 Definition of the scope

The precise limits of the machine or group of similar machines to be standardized shall be established and include the following (see 5.1 of EN 292-1) :

a) definition of the machine or group of similar machines,
b) determination of the intended use of the machine (see 3.12 of EN 292-1),
c) determination of the space limits (see 5.1 of EN 292-1),
d) determination of the foreseeable "life limit", when applicable,
e) definition of the field of application.

5.4 Identification of hazards and hazardous situations

Using the list contained in annex A :

a) identify the hazards that the machine is likely to generate (see clause 4 of EN 292-1),

b) identify the danger zones, and the operating conditions that give rise to each hazard,

c) identify the situations which may lead to hazards causing injury or damage to health (see clause 4 of EN 292-1).

5.5 Assessment of the risk caused by each hazard (see clause 6 of EN 292-1, and EN ..... "Safety of machinery - Risk assessment").

Follow the procedure in EN ..... "Safety of machinery - Risk assessment" to :

a) estimate the probability of the occurrence of an injury or damage to health (see 6.2.a of EN 292-1),

b) assess the foreseeable severity of this injury or damage to health (see 6.2.b of EN 292-1),

c) identify and analyse the technical and human factors affecting the risk.

5.6 Definition of the safety objectives and determination of the hazards for which requirements and/or measures are needed (see table 2 in EN 292-1)

Using the result of the procedure given in 5.4 and 5.5 :

a) define safety objectives,

b) determine hazards for which it is sufficient to refer to other standards for requirements and/or measures to meet these objectives,

c) determine which hazards need specific requirements and/or measures in the standard to meet these objectives.

5.7 Determination of requirements and/or measures to remove the hazard and/or limit the risk

It shall be done in the following order :

a) by design without using safeguarding (see clause 3 of EN 292-2),

b) by safeguarding (see clause 4 of EN 292-2),

c) by communication links if necessary to convey information to the user (see clause 5 of EN 292-2),

d) by any other precautions (see clause 6 of EN 292-2).

NOTE : The principle is to remove the hazard or limit the risk limited as much as possible by risk reduction by design without relying on guards or other methods of safeguarding. If this is not possible, other means should be defined to ensure safety using the three-stage method given in table 2 of EN 292-1. The various phases of the "life" of the machine should be taken into consideration as defined in clause 3.11 of EN 292-1.

5.8 Verification of compliance with the requirements and/or measures identified in 5.6 and 5.7

For each safety requirement and/or measure, a method of verification shall be defined as necessary and possible :

a) by testing,
b) by calculation,
c) by any other method of verification, if testing and calculation are not appropriate.

It shall be determined :

- whether appropriate test/calculating methods (or other methods of verification) are available in another standard, and

- if it is necessary to draft such methods.

6 Format of a safety standard

6.1 General

The format of a safety standard shall comply with the PNE rules (see annex C) and the specific requirements for safety standards on machinery contained in 6.2 to 6.11.

NOTE : A standard need not contain all the normative technical elements shown in annex C and it may contain normative technical elements other than those shown. Both the nature of the normative technical elements and their sequence are determined by the needs of the standard being prepared. It is generally desirable to include any element (e.g. diagrams, tables) which may facilitate the understanding of the standard.