Seadmete ohutus. Ohutusnõuded torutäite ja vormimise pöörlevatele veskitele ning lõppviimistlusliinidele

Safety of machinery - Safety requirements for tube forming and rolling mills and finishing line equipment

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13675:2004+A1:2010 sisaldab Euroopa standardi EN 13675:2004+A1:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 13675:2004+A1:2010 consists of the English text of the European standard EN 13675:2004+A1:2010.
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English Version

Safety of machinery - Safety requirements for tube forming and rolling mills and their finishing line equipment

Sécurité des machines - Prescriptions de sécurité pour formeuses et laminoirs à tubes et de lignes de parachèvement

Sicherheit von Maschinen - Sicherheitsanforderungen an Rohrform- und -walzwerke und Adjustageanlagen

This European Standard was approved by CEN on 1 April 2004 and includes Amendment 1 approved by CEN on 21 February 2010.

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Contents

Foreword

This document (EN 13675:2004+A1:2010) has been prepared by Technical Committee CEN/TC 322 “Equipment for making and shaping of metals — Safety requirements”, 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of an identical text or by endorsement, at the latest by October 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.

This document includes Amendment 1, approved by CEN on 2010-02-21.

This document supersedes EN 13675:2004.

The start and finish of text introduced or altered by amendment is indicated in the text by tags 〈A1〉 〈A1〉.

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.

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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Annexes A and B are normative. Annexes C and D are informative.

An assessment of the foreseeable risks arising from the use of the plant/machinery was carried out when this standard was drafted by CEN/TC 322/WG 3, comprising experts from the following countries: Denmark, Germany, Italy, Sweden and the United Kingdom.

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, Croatia, 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

〈A1〉 This document is a type-C standard as stated in EN ISO 12100.

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

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

Where for clarity an example of a preventative measure is given in the text, this should not be considered as the only possible solution. Any other solution leading to the same risk reduction is permissible if an equivalent level of safety is achieved.

This European Standard assumes that the equipment is operated and maintained by trained personnel. 〈A1〉

1 Scope

This European Standard describes the health and safety requirements of fully automated plant used in the process of tube forming, rolling and finishing (hereafter referred to as "plant"). It describes the foreseeable, significant hazards, hazardous situations, and events arising from plants and from particular machines integrated to form the plant; it does not describe the full health and safety requirements for each particular machine. It indicates preventive measures for avoiding the hazards and reducing the risks. It deals not only with circumstances where the machinery is used as intended, but also includes other conditions foreseen by the manufacturer, such as foreseeable faults, malfunctions or misuse.

This European Standard specifies the requirements to ensure the safety of persons which are to be met during the design, assembly, transport, commissioning, operation, maintenance and decommissioning of the equipment.

This standard assumes that installations are operated and maintained by adequately trained and competent personnel. Manual intervention for setting, adjustment and maintenance is accepted as part of the normal use of these machines.

This standard assumes that the machinery is used with adequate workplace lighting conforming to ▌A1⟩ EN 12464-1 ⟨A1▌ or to local regulations.

This standard applies to:

Automated plant and equipment operated for the production of metal seamless hot and cold finished tubes and welded tubes. A list of machines which could make up different plants is shown in Annex D (informative).

This standard covers:

For seamless hot-finished tubes: from material charging downstream of the heating furnace through the rolling process and up to, but not including any intermediate storage equipment or the downstream finishing lines.

For seamless cold-finished tubes: from material charging through the rolling process to the discharging equipment but not including any storage equipment.

For welded tubes: from coil charging through strip preparation, forming and welding equipment up to, but not including any intermediate storage equipment or the downstream finishing lines.

For the tube finishing line: from tube charging to the discharging equipment to the storage.

The following items are outside the scope of this standard:

—complete risk assessment of single machines which are used to form a plant

—furnaces;

—quenching equipment;

—spiral tube manufacture;

—large diameter tube welding manufacture using three-roll bending machines, U-ing and O-ing press lines and their finishing lines;

—butt welding machinery for the manufacture of endless strips;

—irradiation units (material testing by e. g., ultrasonic and X-ray testing units);

—centrifugal casting machines;

—machine tools used for e. g., threading, chamfering, stamping and marking machines;

—storage equipment.

This standard does not establish any requirements concerning electromagnetic disturbances.

This standard is not applicable to tube rolling and forming mills and finishing line equipment, manufactured before the date of publication of this standard by CEN.

NOTE The words "Tube" and "Pipe" are synonymous in this standard.

2 Normative references

[A1] 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. [A1]

[A1] EN 349:1993, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 614-2, *Safety of machinery — Ergonomic design principles — Part 2: Interactions between the design of machinery and work tasks*

EN 626-1:1994, *Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers*

EN 842, *Safety of machinery — Visual danger signals — General requirements, design and testing*

EN 853, *Rubber hoses and hose assemblies — Wire braid reinforced hydraulic type — Specification*

EN 854, *Rubber hoses and hose assemblies — Textile reinforced hydraulic type — Specification*

EN 856, *Rubber hoses and hose assemblies — Rubber-covered spiral wire reinforced hydraulic type — Specification*

EN 857, *Rubber hoses and hose assemblies — Wire braid reinforced compact type for hydraulic applications — Specification*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 953:1997, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

EN 981:1996, *Safety of machinery — System of auditory and visual danger and information signals*

EN 982:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics*

EN 983:1996, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics*

EN 999:1998, *Safety of machinery — The positioning of protective equipment in respect of approach speeds of parts of the human body*

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up*

EN 1063, *Glass in building — Security glazing — Testing and classification of resistance against bullet attack*

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1299, *Mechanical vibration and shock — Vibration isolation of machines — Information for the application of source isolation*

EN 1837, *Safety of machinery — Integral lighting of machines*

EN 12198-1, *Safety of machinery — Assessment and reduction of risks arising from radiation emitted by machinery — Part 1: General principles*

EN 12254, *Screens for laser working places — Safety requirements and testing*

EN 13861, *Safety of machinery — Guidance for the application of ergonomics standards in the design of machinery*

EN 14253, *Mechanical vibration — Measurement and calculation of occupational exposure to whole-body vibration with reference to health — Practical guidance*

EN 50171, *Central power supply systems*

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

EN 60447, *Basic and safety principles for man-machine interface — Marking and identification — Actuating principles (IEC 60447:2004)*

EN 60825-1:2007, *Safety of laser products — Part 1: Equipment classification and requirements (IEC 60825-1:2007)*

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1:2007)*

EN 61310-2, *Safety of machinery — Indication, marking and actuation — Part 2: Requirements for marking (IEC 61310-2:2007)*

EN 61496-1, *Safety of machinery — Electro- sensitive protective equipment — Part 1: General requirements and tests (IEC 61496-1:2004, modified)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 7731:2005, *Ergonomics — Danger signals for public and work areas — Auditory danger signals (ISO 7731:2003)*

EN ISO 9692-2, *Welding and allied processes — Joint preparation — Part 2: Submerged arc welding of steels (ISO 9692-2:1998)*

EN ISO 11064-1, *Ergonomic design of control centres — Part 1: Principles for the design of control centres (ISO 11064-1:2000)*

EN ISO 11202, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ (ISO 11202:1995)*

EN ISO 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

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

EN ISO 13850:2006, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

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

EN ISO 14122-1, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of a fixed means of access between two levels (ISO 14122-1:2001)*

EN ISO 14122-2, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways (ISO 14122-2:2001)*

EN ISO 14122-3, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2001)*

EN ISO 14122-4, *Safety of machinery — Permanent means of access to machines and industrial plants — Part 4: Fixed ladders (ISO 14122-4:2004)*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*

ISO 7000, *Graphical symbols for use on equipment — Index and synopsis* A1

3 Terms and definitions

A1 For the purpose of this document, the terms and definitions given in EN ISO 12100:2003 and the following apply.

NOTE Definitions used in EN and ISO standards referred to in this European Standard are also valid for this European Standard. A1

3.1
product/material
metal being in forming or rolling process (e.g., billets, hollow blooms, tubes and pipes)

3.2
pulpit
enclosed room in which the control desk and monitoring facilities for a machine or equipment are located

3.3
control stand
free standing control desk (usually situated adjacent to the machine or equipment)