SLOVENSKI STANDARD
SIST EN 14681:2007/kFprA1:2009

01-november-2009

Varnost strojev - Varnostne zahteve za stroje in opremo za proizvodnjo jekla z elektriļ nimi obloļ nimi peļ mi

Safety of machinery - Safety requirements for machinery and equipment for production of steel by electric arc furnaces

Sicherheit von Maschinen - Sicherheitsanforderungen für Anlagen und Einrichtungen zur Erzeugung von Stahl mittels Elektrolichtbogenofen

Sécurité des machines - Exigences de sécurité pour les machines et les équipements pour la production d'acier par four à arc électrique

Ta slovenski standard je istoveten z: **EN 14681:2006/FprA1**

ICS:

13.110	Varnost strojev	Safety of machinery
25.180.10	Elektriļ ne peļ i	Electric furnaces

SIST EN 14681:2007/kFprA1:2009 **en,de**

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English Version

Safety of machinery - Safety requirements for machinery and equipment for production of steel by electric arc furnaces

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This draft amendment is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 322.

This draft amendment A1, if approved, will modify the European Standard EN 14681:2006. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN 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 CEN Management Centre has the same status as the official versions.

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

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Foreword

This document (EN 14681:2006/FprA1:2009) has been prepared by Technical Committee CEN/TC 322 “Equipments for making and shaping of metals - Safety requirements”, the secretariat of which is held by DIN.

This document is currently submitted to the Unique Acceptance Procedure.

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 Annexes ZA, ZB and ZC which are integral parts of this document.

The new safety requirements as stated in this document comply with the additional relevant Essential Requirements of the new Machinery Directive 2006/42/EC.

Once this document is cited in the Official Journal of the European Community under the new Machinery Directive 2006/42/EC and has been implemented as a national standard in at least one member state, it confers a presumption of conformity with the new relevant Essential Requirements of that new Directive and associated EFTA regulations.

1 Modification to clause 2 Normative references

Replace the list of references with the following:

EN 614-1, *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 842, *Safety of machinery — Visual danger signals — General requirements, design and testing*

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 981, *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 1037:1995, *Safety of machinery — Prevention of unexpected start-up*

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

EN 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

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 12198-3, *Safety of machinery — Assessment and reduction of risks arising from radiation emitted by machinery — Part 3: Reduction of radiation by attenuation or screening*

EN 12464-1, *Light and lighting — Lighting of work places — Part 1: Indoor work places*

EN 13463-1:2009, *Non-electrical equipment for use in potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 13463-5, *Non-electrical equipment intended for use in potentially explosive atmospheres — Part 5: Protection by constructional safety “c”*

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

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

EN 60204-11; *Safety of machinery — Electrical equipment of machines — Part 11: Requirements for HV equipment for voltages above 1000 V a.c. or 1500 V d.c. and not exceeding 36 kV (IEC 60204-11:2000)*

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

EN 60519-4:2006, *Safety in electroheat installations — Part 4: Particular requirements for arc furnace installations (IEC 60519-4:2006)*

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

EN ISO 6682, *Earth-moving machinery — Zones of comfort and reach for controls (ISO 6682:1996, including Amd 1:1989)*

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

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

EN ISO 11202:1995, *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, *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 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 13850:2008, *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 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 machinery — 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*

Throughout the document:

Replace references to "EN 294" *and/or* "EN 811" *with* "EN ISO 13857" *or* "EN ISO 13857:2008".

Replace references to "EN 418" *with* "EN ISO 13850" *or* "EN ISO 13850:2008".

Replace references to "EN 954-1" *with* "EN ISO 13849-1:2008".

Replace references to "EN 1050" *with* "EN ISO 14121-1".

Replace references to "EN 13463-1:2001" *with* "EN 13463-1:2009".

Replace references to "EN 60519-4:1997" *with* "EN 60519-4:2006".

2 Modification to sub-clause 5.1.5.1 Hydraulic and pneumatic fluid systems

Replace headline of 5.1.5.1 with the following:

"Hydraulic, pneumatic, cooling and lubrication systems".

3 Modification to sub-clause 5.1.7 Ergonomic principles

Replace whole 5.1.7 with the following: "

5.1.7 Ergonomic principles

5.1.7.1 General

EN 13861 shall be used as a guideline for considering ergonomic aspects in the design of EAF.

Particular consideration shall be given to EN 614-1, EN 614-2, EN 894-1, EN 894-2, EN 894-3, EN 60447 and EN ISO 11064-1.

Due to the process-heat the equipment for sampling and temperature measuring requires a long balanced lever and the tasks for sampling and temperature measuring shall be possible to do in accordance with good ergonomic principles according to EN 614-1.

Filling of fine grained material or other substances that can cause slippery surfaces should be done in such a way that no spillage occurs.

All areas where staff have to work shall be easy to reach and easy to evacuate.

Particular attention shall be paid to the following:

a) dedicated lifting aids or anchoring points for common lifting devices shall be provided whenever frequent lifting or heavy tooling of machines is required;

b) eyebolts or similar aids shall be fitted to heavy components to lift them; they shall also be fitted with handles, hand-holds or grips with a slip-resistant (e. g., knurled) surface;

c) work areas used for manual handling of components shall be so designed that they are free of obstructions so that the operator is not hindered in his movements; the work area shall be sufficiently spacious to handle manual loads close to the body;

d) where components require periodical maintenance, access shall be provided, according to 5.1.9

e) slip-resistant surfaces, according to 5.1.9;

f) vibration protection, according to 5.1.20;

g) heat protection, according to 5.1.19;

h) lighting of the working areas shall be in accordance with EN 1837 or local regulations.

5.1.7.2 Particular ergonomic requirements during installation and maintenance

Supporting structures provided to enable machinery parts to be assembled on site shall be designed and fabricated to ensure stability and minimize manual handling.

Dedicated lifting aids, or anchoring points to allow common lifting devices, shall be provided wherever the frequent lifting of heavy tooling or machine parts is required.

Machine parts, such as electric motors, should be located on top of structural supports and shelves rather than suspended.

The positioning of electric junctions, fluid power and electrical connections and similar, can adversely affect a workers posture during installation and subsequent maintenance. The location of such items shall ideally be between 400 mm and 1 600 mm above the workers standing level and within the reach of the upper limbs according EN ISO 13857.

The ideal placement for handwheels, levers etc. shall be between 700 mm and 1 600 mm above the workers standing level to minimize physical effort."

4 Modification to sub-clause 5.1.14 Loss of energy

Replace the last two paragraphs with the following:

"Where applicable, an emergency power supply shall be provided which meets the requirements of EN 50171.

In case of re-supply of energy after interruption, any uncontrolled re-start shall be avoided, see EN 1037.

The control systems and devices shall meet the requirements of 9.4 of EN 60204-1:2006 and Clause 5 of EN ISO 13849-1:2008."