SLOVENSKI STANDARD
SIST EN 13611:2008/oprA1:2010

01-februar-2010

Varnostne in nadzorne naprave za plinske gorilnike in plinske aparate - Splošne zahteve - Dopolnilo A1

Safety and control devices for gas burners and gas burning appliances - General requirements

Sicherheits-, Regel- und Steuereinrichtungen für Gasbrenner und Gasgeräte - Allgemeine Anforderungen

Équipements auxiliaires pour brûleurs à gaz et appareils à gaz - Exigences générales

Ta slovenski standard je istoveten z: **EN 13611:2007/prA1**

ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
27.060.20	Plinski gorilniki	Gas fuel burners

SIST EN 13611:2008/oprA1:2010 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
EN 13611:2007

prA1

October 2009

ICS 23.060.40

English Version

Safety and control devices for gas burners and gas burning appliances - General requirements

Equipements auxiliaires pour brûleurs à gaz et appareils à gaz - Exigences générales

Sicherheits-, Regel- und Steuereinrichtungen für Gasbrenner und Gasgeräte - Allgemeine Anforderungen

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 58.

This draft amendment A1, if approved, will modify the European Standard EN 13611:2007. 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.

CEN members are the national standards bodies of 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.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Figures

Tables

Foreword

This document (EN 13611:2007/prA1:2009) has been prepared by Technical Committee CEN/TC 58 “Safety and control devices for burners and appliances burning gaseous or liquid fuels”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

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 EC Directive(s).

For relationship with EC Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document.

Introduce the following modification to EN 13611:2007:

Foreword

Add the following wording after 11th paragraph of EN 13611:2007, Foreword:

Primarily in industrial applications it is common practice to rate the safety of a plant based on values describing the likelihood of a dangerous failure. These values are being used to determine Safety Integrity Levels or Performance Levels when the system is being assessed in its entirety.

CEN/TC58 standards for safety relevant controls do go beyond this approach, because for a certain life span for which the product is specified, designed and tested a dangerous failure is not allowed at all. Failure modes are described and assessed in greater detail. Measures to prevent from dangerous situations are defined. Field experience over many decades is reflected in the CEN/TC 58 standards. Requirements of these standards can be considered as proven in practice.

It can not be presumed that any Safety Integrity Level or Performance Level assessment alone would imply that requirements of a CEN/TC 58 standard have been met.

To be able to provide parameters to allow for any formal Safety Integrity Level or Performance Level system assessment the Annex J of this document defines a methodology to derive the relevant parameters from the requirements of this standard.

Annex J:

Add the following informative Annex J "Special requirements to determine a Performance Level (PL) or a Safety integrity level (SIL)" after the last Annex I and before the Annex ZA of EN 13611:2007.

Annex J
(*normative*)

Method for the determination of a Safety integrity level (SIL)

J.1 Scope

This Annex is only applicable to controls for which the manufacturer specifies a SIL Level.

This Annex specifies a a set of additional requirements to EN 13611:2007 to determine the safety integrity level (SIL) according to EN 61508 for electrical/electronic/programmable electronic control systems in industrial and thermo processing applications classified as class B or class C according to EN 13611. The highest safety integrity level according to the method used in this annex is SIL 3 maximum, independent of the hardware architecture.

The current status of this document does only include requirements for controls operated in high demand or continuous mode according to EN 61508-4:2001, 3.5.12.

J.2 Normative References

EN 61508-1:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements (IEC 61508-1:1998 + Corrigendum 1999)*

EN 61508-2:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2000)*

EN 61508-3:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 3: Software requirements (IEC 61508-3:1998 + Corrigendum 1999)*

EN 61508-4:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 4: Definitions and abbreviations (IEC 61508-4:1998 + Corrigendum 1999)*

EN 61508-6:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3 (IEC 61508-6:2000)*

EN 61508-7:2001, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 7: Overview of techniques and measures (IEC 61508-7:2000)*

EN 62061:2005, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

EN ISO 9000:2005, *Quality management systems - Fundamentals and vocabulary (ISO 9000:2005)*

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

IEC 61508-6:2000, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3 (IEC 61508-6:2000)*

IEC 72/766/CDV:2008, *IEC 60730-1, Ed. 4: Automatic electrical controls for household and similar use — Part 1: General requirements (IEC 60730-1:1999, modified + A1:2003, modified)*

SN 29500-1:2004-01, *Expected values, General* [1)]

SN 29500-1 H1:2008-02, *Note 1 on Part 1: Expected values, General, Date of issue* [1)]

SN 29500-2:2004-12, *Part 2: Expected values for integrated circuits* [1)]

SN 29500-3:2004-12, *Part 3: Expected values for discrete semiconductors* [1)]

SN 29500-4:2004-03, *Part 4: Expected values for passive components* [1)]

SN 29500-5:2004-06, *Part 5: Expected values for electrical connections, electrical connectors and sockets* [1)]

SN 29500-7:2005-11, *Part 7: Expected values for relays* [1)]

SN 29500-9:2005-11, *Part 9: Expected values for switches and buttons* [1)]

SN 29500-10 :2005-12, *Part 10: Expected values for signal and pilot lamps* [1)]

SN 29500-11:2007-07, *Part 11: Expected values for contactors* [1)]

SN 29500-12 :2008-02, *Part 12: Expected values for optical components* [1)]

SN 29500-15:2008-02, *Part 15: Expected values for electromechanical protection devices in low voltage networks* [1)]

J.3 Terms and definitions

Shall be according to Clause 3 with the following addition:

J.2.1
common cause factor
ß
fraction of undetected failures that have a common cause (common cause factor)
[IEC 61508-6:2000, B.1]

J.2.2
failure modes and effects analysis
FMEA
analytical technique in which the failure modes of each hardware component are identified and examined for their effects on the safety-related functions of the control
[IEC 72/766/CDV:2008, H.2.20.2]

J.2.3
failure modes, effects and diagnosis analysis
FMEDA
FMEA (refer to J.3.2) taking into account any automatic diagnostics to detect failures

---

1) Published by: Siemens AG, Corporate Technology, CT IRC LIS, Otto-Hahn-Ring 6, 81739 München, Germany, phone: +49 (89) 636-40682, fax: +49 (89) 636-40688.

J.2.4
common cause failure
failure, which is the result of one or more events, causing coincident failures of two or more separate subsystems resulting in a failure of the control (function)

J.2.5
proof test interval
Interval between two proof tests

NOTE For further information refer to EN 61508-4:2001, 3.8.5.

J.2.6 diagnostic test interval
Interval between two automatic diagnostic tests which have a specified diagnostic coverage

NOTE For further information refer to EN 61508-4:2001, 3.8.7.

J.4 Symbols

fit **F**ailure **i**n **t**ime (failure rate of components):
Number of components which fail within 10^9 hours of operation (1 fit = 10^{-9} 1/h).

PFH_D **P**robability of **d**angerous **f**ailures per **h**our for continuous or high demand mode

λ_D Rate of dangerous failures per hour

λ_{DU} Rate of undetected dangerous failures per hour

λ_{DD} Rate of detected dangerous failures per hour

SFF Safe failure fraction

DC Diagnostic coverage

B_{10d} Mean number of cycles until 10 % of electromechanical components fail dangerously [EN ISO 13849-1]

J.5 Special requirements to determine a Safety Integrity Level (SIL)

J.5.1 Functional safety

This annex deals with the requirements resulting from EN 61508 and which apply in addition to the requirements of EN 13611.

The hardware requirements of clause J.5.4 are based on EN 61508-2.

For software the requirements of IEC 72/766/CDV:2008, Annex H, which are based on EN 61508-3, apply.

The requirements are only applicable to controls performing safety-related control functions (class B or class C). If the circuit of a device includes components which are not relevant for safety-related control functions, only the absence of interaction with the safety-relevant components has to be considered.

J.5.2 Management of functional safety

J.5.2.1 Methods of fault prevention

Methods of fault prevention shall be applied in all of the following phases:

- Specification of safety requirements
- Design and construction
- Implementation
- Integration of hardware and software
- Definition of operation and maintenance activities with respect to functional safety

The methods to avoid faults shall be based on a formal system, called Functional Safety Management System.

J.5.2.2 Functional Safety Management System

J.5.2.2.1 General

The manufacturer of a control shall draw up and specify

- management and technical activities which are necessary to achieve the required functional safety of the control;
- responsibilities applicable to persons, departments and organizations responsible for activities relating to the development of a control.

The management activities shall include definitions of actions and responsibilities; scheduling and resource allocation; training of relevant personnel; consistency checks after modifications.

NOTE For detailed examples refer to EN 61508-7:2001, B.1.1.

The management activities shall include procedures for periodic review and maintenance of the Functional Safety Management System.

J.5.2.2.2 Documentation

The functional safety management system shall include requirements for the documentation of each activity or procedure.

The documentation management shall consider the following aspects:

- Information to be documented
- Availability of documentation
- Accurate documentation
- Standardised documentation
- Company documentation structure
- Document revision index