What is an approved system

Euralarm AGM / Alan Elder / 29 October 2020

Approved systems

Topics

- Euralarm & the extinguishing section
- Feature of gaseous extinguishing systems
- System performance and critical considerations
- European standards
- Elements of an approved system
- Approved system certification

About Euralarm

About Euralarm

Euralarm represents the extinguishing, electronic fire and security industry, providing leadership and expertise for industry, market, policy makers and standards bodies. Our Members make society safer and secure through systems and services for fire detection and extinguishing, intrusion detection, access control, video monitoring, alarm transmission and alarm receiving centres. Founded in 1970, Euralarm represents over 5,000 companies within the fire safety and security industry valued at 67 billion Euros.

Euralarm Members are national associations and individual companies from across Europe, formed into 4 sections :

Fire, Security, Services and Extinguishing

Supported by TC's : Advocacy, Horizontal Compliance, Marketing & Finance

More information:
Press office Euralarm
E-mail : pressoffice@euralarm.org
Website : www.euralarm.org

Extinguishing Section

- Euralarm Extinguishing Section
  - Johnson Controls : Alan Elder (Section Chair)
  - SikkerhedsBranchen : Torbjorn Laursen (Section Vice Chair)
  - FFMI : Gilles Mangialenti
  - FIA : Guy Middleton
  - Siemens : Gerd Huelsen
  - SES : Markus Mueller
  - Technifuego AESPI : Carlos Perez
  - Wagner : Frank Lewandowsky
  - 3M : Bart Goeman
  - Technical Manager : Michael Scharnowsky

Extinguishing Section

- Publications
  - Guidance on the Periodic Testing of Transportable Gas Cylinders used in Fire Fighting Systems
    - Euralarm is aware that there are some areas involved in the performance of hydrostatic testing that can lead to serious safety issues. Transportable cylinders under the TPED and ADR are required to go through periodic testing for re-certification. The guidance addresses the issues related to the importance of procedures related to periodic testing and subsequent refilling of the cylinders
    - Moisture control, reuse of valves, drying prior to filling
  - Guidance on Gaseous Systems : approved system versus approved components
    - Use of approved components in the absence of systems approval, system approvals and what system approval means
  - Lithium Ion Battery Fire Protection – new work item - in progress

Why gaseous firefighting systems

- Gaseous firefighting systems
  - Protection of contents and business continuity
  - Designed to extinguish fires, not to control or suppress
  - Three dimensional protection
  - Do not leave residues
  - Electrically non-conductive
  - Oxygen reduction (inert gases and carbon dioxide)
  - Heat absorption (halocarbon agents)

Gaseous firefighting systems

- Clean agents*
  - Volatile
  - Gaseous in use
  - Electrically non conductive
  - No residues
- Carbon Dioxide
  - Local application
  - Normally unoccupied

*clean agent characteristics per definition in NFPA 2001
EN 15004-1 uses the term extinguishants

Gaseous firefighting systems

- Performance Essentials
  - Risk evaluation
  - Hazard evaluation
  - Fire Classification
  - Applicable standards
  - Third party approvals
  - Local regulations
  - System capabilities
  - Detection requirements
  - Other supporting requirements

Assured system performance

- System requirements
  - Compliance
  - Approvals
  - Third party testing
  - Design manual
  - System design
  - Discharge characteristics
  - Nozzle design and placement
- Supporting requirements
  - Interface to detection systems
  - Installation competence
  - Commissioning
  - Room integrity
  - Maintenance & Service
  - Periodic testing (H testing)

Criteria for an approved, certified system

European Standards

European Standards (example)

TC 191 : Parent Committee : Fixed firefighting systems

- WG 2/3 Foam, WG 4 Powder, WG 5 Sprinklers, WG 10 Water Mist

TC 191 / WG 6 : Gaseous Systems & Components

- WG 6 / TG 1 : Components
  - EN 12094 Series (harmonised standards)
- WG 6 / TG 2 : Aerosols
  - EN 15276-1, EN 15276-2
- WG 6 / TG 3 : Gas systems
  - Conversion of ISO 14520 series to EN 15004 series, oxygen reduction system, etc;
- WG 6 / TG 4 : Kitchen systems
  - pr EN 17446

European Standards

- Relevant Standards (examples)
  - EN 15004 (series) Gaseous extinguishing systems and media
  - EN 12094 (series) Components for gas extinguishing systems
  - EN TS 21805 Venting of enclosures
  - EN 16750 Oxygen reduction systems
  - EN 15276 (series) Aerosol systems and components
  - EN 50600-2-5 Data centres facilities (security)
  - EN 16893 Conservation of Cultural Heritage

European Standards

Harmonised standard (example)

- Requirements harmonised against the Construction Products Directive (CPD)
- EN 12094-4 : Fixed firefighting systems – Components for gas extinguishing system
- Part 4 : Requirements and test methods for container valve assemblies and actuators
- Mandatory to adopt as a national standard by all CEN members
- Compliance is mandatory
- CE marking is required in all Member States

Non harmonised standards (example)

- EN 15004 : Fixed firefighting systems – Gas Extinguishing systems
- Part 1 : Design, installation and maintenance, Parts 2-10 : Agents
- Mandatory to adopt as a National Standard by all CEN members
- Not mandatory to comply, except by contract or National rules
- No CE marking required

Component Standards

Harmonised standard (example)

- EN 12094 : Fixed firefighting systems – Components for gas extinguishing systems
- Multiple parts covering key components in a system
- Mandatory compliance (CPD) / CE marking

Assembling a collection of CE marked components approved to EN 12094 does not constitute an approved system

Increasing use of European Standards outside of Europe, but there are lots of opportunities for their use to be misunderstood or abused

Not only an issue for gaseous systems, but applies to water based systems and fire detection

System Design Standards

Gaseous systems design standards

Halocarbon and Inert Gas systems (Clean agents) – European Standards

- EN 15004 -1 General Requirements
- EN 15004 - 2 : FK-5-1-12 (Novec 1230)
- EN 15004 - 4 : HFC-125 (FE-25)
- EN 15004 - 5 : HFC-227ea (FM 200)
- EN 15004 - 6 : HFC-23 (FE-13)
- EN 15004 - 7 : IG-01
- EN 15004 - 8 : IG-100
- EN 15004 - 9 : IG-55
- EN 15004 -10 : IG-541

Carbon Dioxide Systems – No European Standard, so National or International Standards/Rules are often used

- BS 5306 - 4
- UNE ISO 6183
- CEA 4007
- VdS 2093
- APSAD R13 Part 2

Others

- NFPA 2001 : Clean agents
- NFPA 12 : Carbon Dioxide
- ISO 6183 : Carbon Dioxide
- ISO 14520 : Clean agents

The design standard specified in the project specification, has a significant impact on the system offered
Design concentration are often different (higher) in European (& ISO) standards

What is an approved system

Key elements that comprise an approved system

- Hardware / components
  - Performance (covered by EN 12094)
  - Compatibility of the various components (not covered by EN 12094, so must be part of third party certification)
  - Components not covered by the EN 12094 series

- Extinguishing agent
  - Fully tested to establish applicable concentrations
  - Fire scenarios detailed in EN 15004 / ISO 14520 / APSAD R13
  - Concentrations are applicable to the design standard used, generally higher in EN/ISO, than UL/NFPA
  - Must be part of the third party certification
  - UL/NFPA based design concentrations are different (typically lower) to those recognised in EN 15004

- System design manual
  - Clear instructions covering design, installation, service, maintenance and system recharge
  - Detailing how the components go together
  - Listed as part of the third party certification process

What is an approved system

Key elements that comprise an approved system

- Flow calculation software*
  - Included as part of the certification process
  - Includes specific data relevant to the system components used

  * For engineered systems, not necessary for pre-engineered systems

All of these elements are crucial and must be combined to form an approved system

A collection of components approved to EN 12094 does not constitute an approved system

The compatibility of components is not covered by a European standard and must be part of the third party certification

End user should request documentary evidence of approvals (certificates)

Approval Bodies

Third party certification bodies (examples only : not exhaustive)

Certification Body	Standard	Certification Mark
VdS	VdS 2344, VdS 2454	VdS
LPCB	LPS 1230, LPS 1666	LPCB
CNPP	APSAD R13	A2P Systemes, EAG
CNBOP	Internal tech file	CNBOP
FM	FM 5600	FM
UL	UL 2166, UL 2127	UL
Relevant system components CE marked according to EN 12094, to be placed on the market in Europe		

All the system approval processes lead to the delivery of a certificate issued by the third party certification body. The scope of the approval should be clearly stated on the certificate, **complete system** or **components**, manufacturer and should be current

UL listed and FM approved systems are complete component, fire testing and system listings detailed in a listed/approved installation manual

Certification

Example : VdS

Scope of the approval (components/system)

Zertifikat Certificate

Anerkennung
von Bauteilen und Systemen
Approval
of Components and Systems

VdS

Holder of the Approval
Macron Safety Systems (UK) Limited
Burlingham House, Hewett Road, Gapton Hall Industrial Estate
GB-NR31 0NN Great Yarmouth, Norfolk

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom valid from	gültig bis valid until
S 313006	24	21.06.2017	20.06.2021

Gegenstand der Anerkennung
Subject of the Approval
IG-541 - Feuerlöschsystem/ IG-541 - fire extinguishing system
Typ / type "Tyco Inergen IG 541 iFlow System"

Verwendung
Use
in ortsfesten IG-541-Hochdruck - Feuerlöschanlagen
in fixed IG-541 high pressure fire extinguishing systems

Anerkennungsgrundlagen
Basis of the Approval
VdS 2344:2014-07
VdS 2454:2013-07

Köln, den 12.05.2017

Dr. Reinermann
Geschäftsführer
Managing Director

i. V. Hesels
Leiter der Zertifizierungsstelle
Head of Certification Body

Die Anerkennung
umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung
- mit den Bestandteilen nach Anlage 1,
- dokumentiert in den technischen Unterlagen nach Anlage 2,
- zur Verwendung in den angegebenen Einrichtungen der Brandschutz- und Sicherungstechnik.

Bei der Anwendung des Gegenstandes der Anerkennung sind die Hinweise nach Anlage 3 zu beachten.

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Anerkennung sind der VdS-Zertifizierungsstelle – mitsamt den erforderlichen Unterlagen – unverzüglich zu übermitteln.

This Approval
is valid only for the specified component/system as submitted for testing
- together with the parts listed in enclosure 1
- documented in the technical documents according to enclosure 2
- for the use in the specified fire protection and security installations.

When using the subject of the approval the notes of enclosure 3 shall be observed.
This certificate may only be reproduced in its present form without any modifications including all enclosures. All changes of the underlying conditions of this approval shall be reported at once to the VdS certification body including the required documentation.

VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

Ein Unternehmen des Gesamtverbandes der Deutschen Versicherungswirtschaft e.V. (GDV), durch die DAkkS akkreditiert als Zertifizierungsstelle für Produkte in den Bereichen Brandschutz und Sicherungstechnik

A company of the German Insurance Association (GDV) accredited by DAkkS as certification body for fire protection and security products

Zertifikat Certificate

Anerkennung
von Bauteilen und Systemen
Approval
of Components and Systems

VdS

Inhaber der Anerkennung
Holder of the Approval
LPG Técnicas en Extinción de Incendios S.A.
Mestre Joan Corrales, 107-109
ES-08950 Esplugues de Llobregat, Barcelona

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom valid from	gültig bis valid until
G 310024	6	30.11.2010	29.11.2014

Gegenstand der Anerkennung
Subject of the Approval
Hochdruck-Behälterventil und Auslöseeinrichtung/
High-Pressure Container Valve and Actuator
"iFlow"

Verwendung
Use
in ortsfesten Gas-Hochdruck-Feuerlöschanlagen
in fixed Gas-High Pressure Fire Extinguishing Systems

Anerkennungsgrundlagen
Basis of the Approval
VdS 2344 : 2005-12
EN 12094-4:2004-10

Köln, den 30.11.2010

Deutscher Akkreditierungs Rat
DAR
DAT-ZE-005/92

Reinermann

i. V. Hesels

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A company of the German Insurance Association (GDV) accredited by "Deutsche Akkreditierungsstelle Technik (DATech)" as a certification body for fire protection and security

Certification

Example : VdS

Scope of the approval (components/system)

Subject : system or component

Certification

Example : VdS

Scope of the approval (components/system)

Subject : system or component

Used in what system

Certification

Example : VdS

Scope of the approval (components/system)

Subject : system or component

Used in what system

Tested to what?

Certification

Example : VdS

Scope of the approval (components/system)

Subject : system or component

Used in what system

Tested to what?

Validity

Guidance on Approved Systems

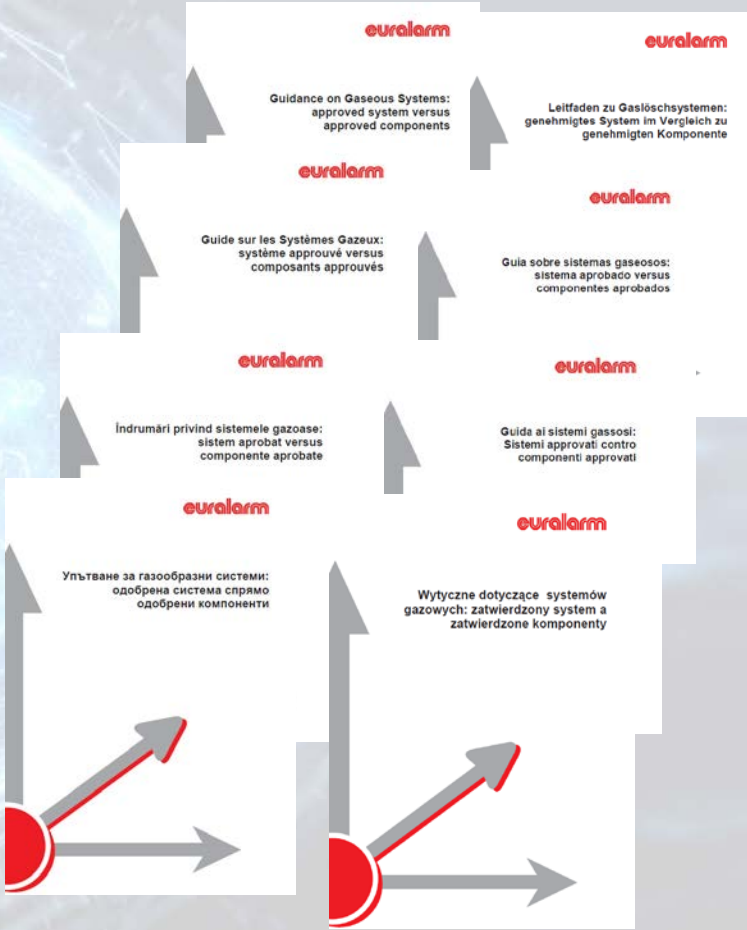
Further reading

Guidance on Gaseous Systems : approved system versus approved components.

Download from the Euralarm website
Public Guidelines

English, French, German, Spanish, Romanian, Italian, Polish available

Bulgarian version in progress



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