

**Guidance on Gaseous Systems:
approved system versus approved
components**

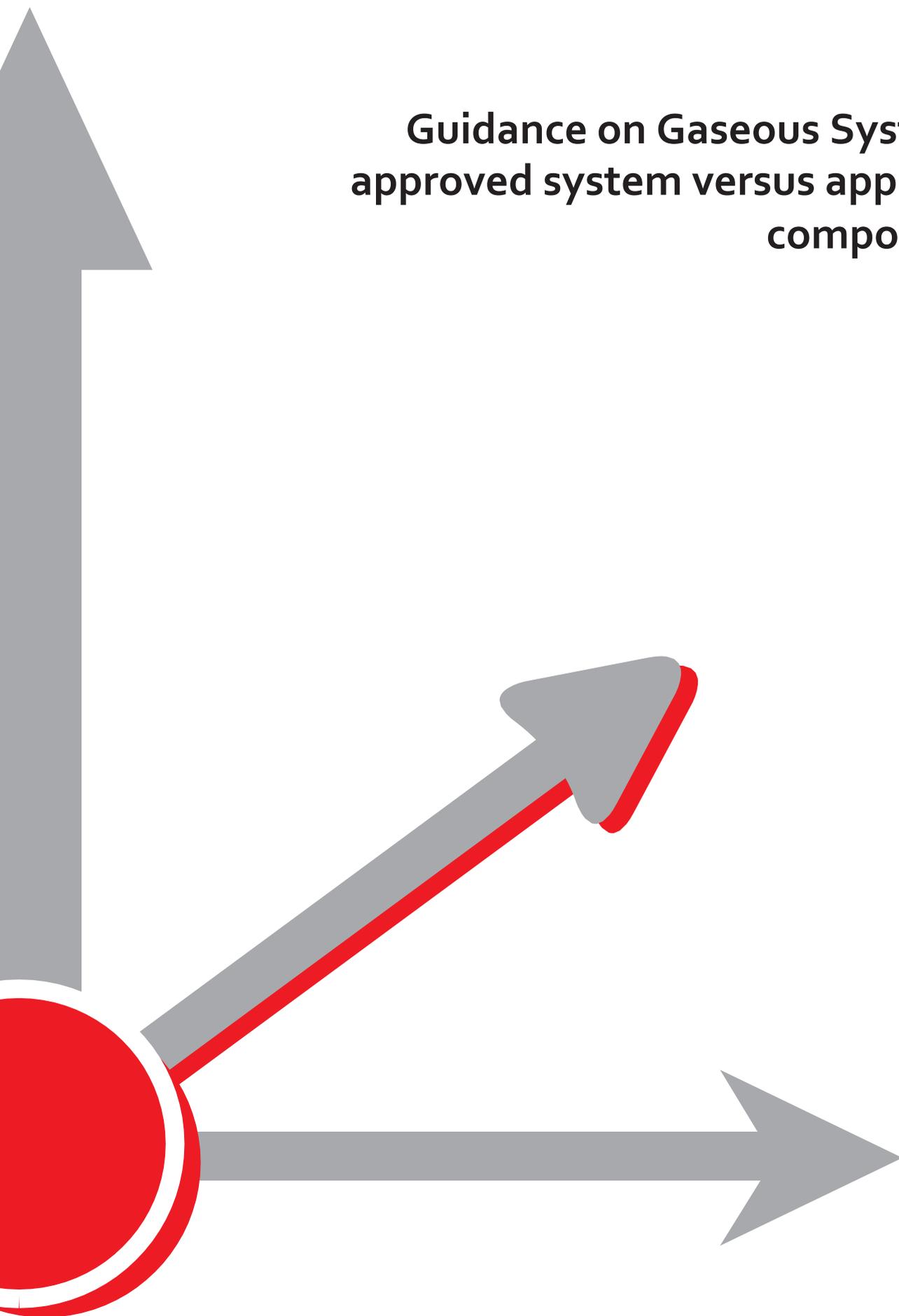


Table of contents

1. Introduction	4
2. Scope	4
3. Gaseous fire extinguishing systems – major constituents	4
4. What an approved system means.....	4
5. Major approval schemes in Europe	5

Foreword

This Guidance Note is intended as a general guidance and is not a substitute for detailed advice in specific circumstances. Although great care has been taken in the compilation and preparation of this publication to ensure accuracy, Euralarm cannot in any circumstances accept responsibility for errors, omissions or advice given or for any losses arising from reliance upon information contained in this publication.

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Note: The English version of this document is the approved Euralarm reference document.

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Euralarm Guidance for the Fire Protection Industry

1. Introduction

Gaseous fire extinguishing systems are a very effective way to protect critical hazards and high value assets, when it is important to have no collateral damage caused by the extinguishant or residues. For any kind of electric risk (Data Centre, IT rooms, Control rooms, Switchgear rooms, etc.) or very sensitive/valuable assets or materials (Art, Antiques, Rare books, etc.), they are often the first choice. An additional factor is personal safety as many of these applications are occupied, either permanently or occasionally.

The correct performance of a gaseous fire extinguishing system is therefore essential not only to quickly extinguish a fire but also to protect human life. It is important to understand how to assess the efficiency and reliability of a gaseous fire extinguishing system.

Numerous quality marks are available to validate the compliance to rules and standards. However, it may be difficult for non-specialists such as end users to get a good understanding of the meaning of all these marks before selecting a particular gaseous extinguishing system.

The aim of this paper is to make any person involved in the choice of a system aware of the major differences between quality marks and to help them make a decision based on clear and balanced information.

2. Scope

This paper specifically covers gaseous fire extinguishing systems only, but the content may also be applicable to other fire extinguishing or fire prevention systems.

3. Gaseous fire extinguishing systems – major constituents

Certified, approved Gaseous Fire Extinguishing systems consist of 4 major parts:

- Hardware (system components)
- Extinguishing agent
- Design, installation, commissioning and maintenance manual
- Flow Calculation (see note)

All clean extinguishing agents used are electrically nonconductive and leave no residue (further reference to gaseous systems in this document imply approved, certified systems using clean extinguishing agent).

Note: For any engineered gaseous system, hydraulic design software is used to calculate the entire system to ensure the correct distribution of the extinguishing agent. The design calculation software is part of the certification process of the system.

4. What an approved system means

A system approval is essential to ensure the correct and reliable performance of the system:

i. Full System approval

In addition to the minimum test requirements for individual components according to the EN 12094 series of standards, including for example EN 12094 Part 4 covering quick opening valves, it is essential that the assembly of components is tested together as a system and as such, the system also carries a system approval.

This is obtained after complying with the different fire scenario's defined in standards such as EN 15004-1, ISO 14520-1, APSAD R13, UL 2166, UL 2127, FM 5600 and validated/witnessed by suitably qualified independent third-party certification bodies such as, VdS, CNPP, LPCB, FM, UL, etc.

The components used during the system approval tests are fully detailed in the approved design, installation, commissioning and maintenance manual. Either the reference to the technical documentation of the components or the reference to the manual are listed as part of the certification/approval.

ii. Use of approved components, in the absence of a system approval

In the absence of a full system approval, the use or assembly of components that have not been tested together as part of a complete system is not proven and the performance is therefore unknown. Not having the full system- and component certification raises serious questions about the reliability of the system.

iii. System design standards

Systems should be designed to meet the applicable European standard where available or a recognized alternative standard, if a European standard is not available.

For systems using inert or halocarbon clean agents, EN 15004 would be the applicable standard:

- EN 15004 – Part 1, covers the general requirements that apply to all clean agent systems.
- EN 15004 – Parts 2 – 10 cover the specific properties and design information for each of the specific clean agents

For CO₂ systems there is no European standard and so national or international standards or other rules may be used. Examples would include:

- BS 5306 – Part 4
- UNE ISO 6183
- ISO 6183
- NFPA 12
- CEA 4007
- VdS 2093
- APSAD R13 – Part 2

5. Major approval schemes in Europe

European Standards have been published to cover both components and the design of system. When European standards are published, competing national standards must be withdrawn.

Component standard: Most components used in systems are required to be CE marked in accordance with the Construction Products Regulations. This is mandatory and it is illegal to place a relevant product on the market without a CE mark. A relevant product is one for which an EN 12094 component standard has been published, although not every component used in a system is currently covered by a European Standard.

System design standard: For systems, the requirements in standards (such as EN 15004 design standard) are voluntary unless contained within national regulations and as such it is important that additional considerations are given to ensure the expected performance of the system which includes the compatibility of all components

Compatibility of components: The compatibility of components within a system is currently not covered by EU standards and is instead part of the system certification. The use of approved components coupled together does not guarantee the performance of a system. They need to be technically and functionally compatible together and with any other components needed that are not covered by a European Standard.

So it is important that, to ensure the efficacy of a system, an independent third party certification body examines and tests that system to establish its firefighting performance and the compatibility of all approved components and to test components for which an EN 12094 standard does not exist.

The table below presents a non-exhaustive list of approvals and approval schemes that are relevant in Europe through several certification bodies.

System		
Third party certification body	Standard	Mark
VdS	VdS 2344 VdS 2454	VdS
LPCB	LPS 1230 LPS 1666	LPCB
CNPP	APSAD R13	A2P Systèmes EAG
CNBOP	Internal technical file	CNBOP
FM	FM 5600	FM
UL	UL 2166	UL
	UL 2127	

Relevant systems components should be CE marked accordingly to EN 12094.

All these system approval processes lead to the delivery of a certificate by the third-party certification body. The scope of the approval should be clearly stated on the certificate and the certificate should state the manufacturer and be in date.

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