



Building trust in sprinkler systems

Joint presentation by

Ron de Bruijn – Riskonet BV

Willem van Oppen – Centre for Crime Prevention and Safety (CCV)

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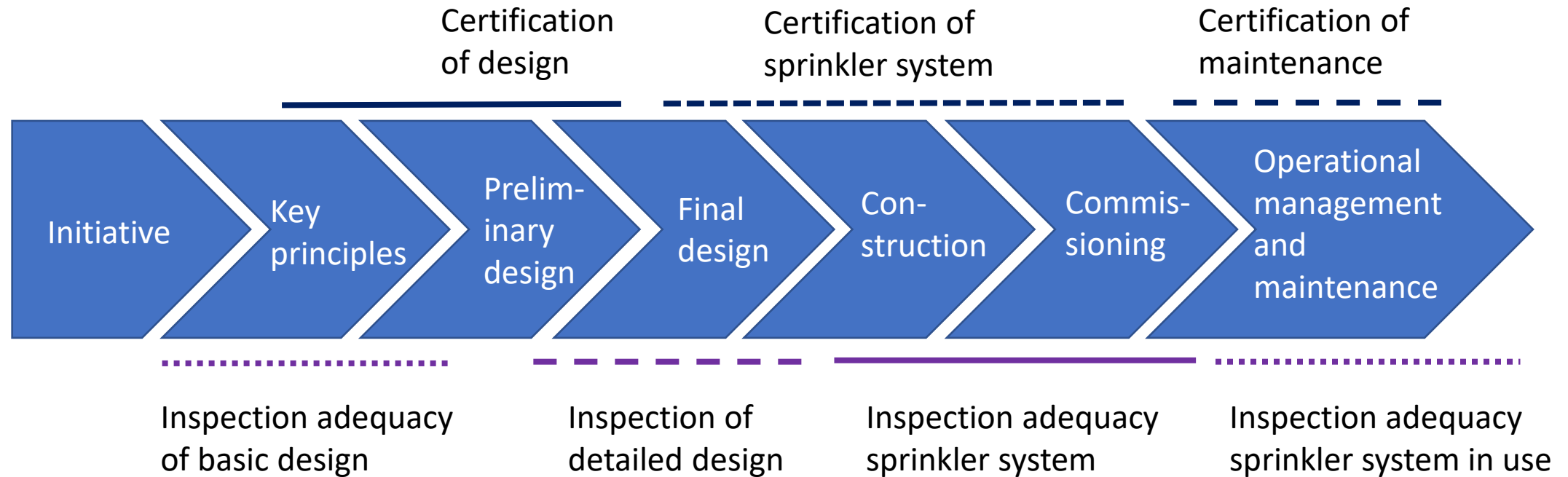


Introduction

- Making your acquaintance
- How to build trust in sprinkler systems
- Five examples from all over Europe
- Mirrored to quality assurance of sprinkler systems in The Netherlands



Dutch system of quality assurance



- Independent third party certification and inspection bodies
- Inspection and certification accredited by Dutch accreditation body RvA

FINLAND



In this case the original system design has been made by a Finnish insurance company in 1989. During those times, insurance companies gave system design frames, such as installation type, hydraulic design criteria, storage classifications etc.

The storage and IBC's with flammable liquids were at the location from the start.

An independent third party inspects the site every year and every year a YES conclusion is given.

The inspection firm does not have the mandate to change or the original design criteria and therefore there is still a YES and no recommendations.

The building owner is convinced that there is an adequate protection in place.

Adequacy of sprinkler protection

Finnish case in NL:

- Inspection body will find the system inadequate
- Inspection report with NO conclusion – system does not meet adequacy requirements
- no (mandatory) inspection certificate

Important:

- What question is the inspection body required to answer?
 - Adequacy of fire sprinkler system for this building in use
 - Occupancy permit
 - Damage control from a risk management perspective
 - Conformity of the system with the principle original design (even if that is erroneous)

GERMANY

In this case it concerns a newly built general purpose warehouse.

- The authorities require an adequate protection system in line with the occupancy (Risikogerecht)
- An approved engineering firm (Brandschutzgutachter) provides a protection concept (Löschanlagenkonzept) with multiple options and issues that to the developer.
- The developer appoints a sprinklerfirm who mixes the various options into a design which does not match any standard



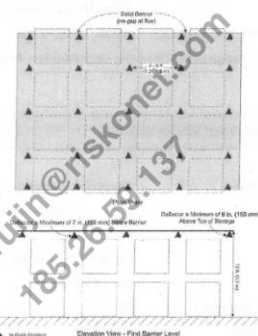
Dies wird durch die folgenden baulichen, anlagentechnischen und betrieblichen Maßnahmen des vorbeugenden Brandschutzes umgesetzt:

- Die Räume werden ausschließlich zur Lagerung genutzt bzw. stehen mit der Lagerung in einem direkten funktionalen Zusammenhang. Dies gilt auch für die angrenzenden Räume.
- Die Räume werden mit einer risikogerechten automatischen Feuerlöschanlage ausgestattet.
- Jeder Lagerabschnitt wird mit für das Lagergut undurchlässig zusätzliche Maßnahmen mindestens aufnehmen kann. Die Anforderungen werden unter der Nr. werden bei der Planung und A

Löschanlagenkonzept HE3 Enterprise - Logistikzentrum, Schwalmtal

Dieses Konzept ist ausschließlich für das vorliegende Objekt gültig und darf nicht auf andere Objekte übertragen werden. Eine Vervielfältigung des Konzeptes bedarf der Zustimmung des Verfassers. Das Konzept darf nur vollständig weitergegeben werden!

Die Lagerung in mehrreihigen Regalen erfordert die selben Auslegungsparameter wie oben beschrieben. Jedoch ist der Gangsprinkler in jedem Querschacht anzuordnen (siehe auch Bild unten oder FM Global DS 7-29 Scheme A für mehrreihige Regale).



Vor

3.2.5

Das Löschanlagenkonzept der Brosig 01.04.2020 ist Bestandteil der Genehmigungen hinsichtlich der Lagergüter/Löschanlagen. Das Konzept ist der Genehmigungsbehörde zu prüfen. Das Konzept ist der Genehmigungsbehörde zu teilen. -A-

The owner and tenant now have two chances

1. The authorities will accept an incorrect system
2. The authorities will understand the mistakes made and not accept an incorrect system as they can argue that the system is not "Risikogerecht".

The insurer has accepted the situation as it is part of a larger contract



Fire Safety Design: certification, inspection

Example of key principles 'lost in translation' – process derailed

German case in NL:

- Certified sprinkler system design (consulting firms)
- But no certificate after commissioning – installer has to check on design criteria

Fire safety process is important – inspection body involved as of design phase

- Inspection of detailed design: nonconformity
- Inspection cannot lead to – mandatory – inspection certificate



FRANCE


In this case it concerns an existing sprinkler system designed and installed over 25 years ago.

- The system is part of the occupancy permit and the authorities require an APSAD certificate
- It is a food facility and the insurer is expecting an adequate protection
- The company who maintains the system also does the certification
- The APSAD inspection report shows **12 recommendations** of which **2 are potentially impacting the adequacy** but not yet lead to a NO conclusion

- The owner has a third party reviewing the system in detail which has found **163 major deviations** of which at least half has a direct impact on the adequacy.


DT004/2/06-15

		COMPTE-RENDU DE VERIFICATION SEMESTRIELLE D'UN SYSTEME SPRINKLEURS	Q1
DOMAINE 1	Extinction automatique à eau	Edition 2014	
Cachet de l'entreprise titulaire de la certification APSAD de service de vérification ⁽¹⁾ pour ce domaine sous le n° 128-2/19/E1 UXELLO 21 Rue Robert Schuman ZAC Du Breuil 54850 MESSEIN		Nom et adresse du risque visité DUC Grande Rue 89770 CHAILLEY	
Référence vérificateur 1797/89/SP		Contact : M.Rollin	Téléphone : 03 86 43 55 79
Nature de l'activité exercée : abattoir et préparation Fascicule du risque 7 Actuel : 778 d'origine : 778		PAA N° 5318	Date(s) de la vérification 11/02/2021 VS1.2021
Installateur d'origine TPI		Date(s) de la vérification précédente 25/08/2020	
Installateur actuel UXELLO			
Date de mise en service initiale 18/08/1995 et 2005			
Date de la dernière visite du CNPP 16/07/2009			
Date du dernier certificat N1 28/09/2012			
Editions référentiel(s) R1 APSAD applicables et éventuellement complétées par :		<input type="checkbox"/> 57 + VIII <input type="checkbox"/> 74 <input type="checkbox"/> 79 <input type="checkbox"/> 84 <input type="checkbox"/> 90 <input checked="" type="checkbox"/> 94 <input type="checkbox"/> 2002 <input type="checkbox"/> 2008 <input type="checkbox"/> 2014 Révision	
		<input type="checkbox"/> NF EN 12845 <input type="checkbox"/> NFS 62210 <input type="checkbox"/> NFPA... <input type="checkbox"/> CEA <input type="checkbox"/> Autre :	
Préambule Le présent document se base uniquement sur les prescriptions du référentiel APSAD R1. Toutes les rubriques de ce document doivent être systématiquement renseignées et actualisées à chaque vérification semestrielle, à l'exception des rubriques encadrées pour lesquelles les vérifications peuvent être effectuées sur une périodicité plus longue (la date de la dernière vérification doit être précisée). Les chapitres ou paragraphes qui ne concernent pas le système ce document doivent être rayés de ce document. La réponse aux questions à choix multiple doit être donnée en cochant la (les) mention(s) utile(s) : <input checked="" type="checkbox"/> Oui <input type="checkbox"/> Non signifie Oui			
Toute situation non satisfaisante doit entraîner un commentaire dans le § VIII « points de non-conformité ». Les améliorations proposées doivent figurer dans le § IX « observations et améliorations proposées ».			
CONCLUSION GENERALE			
<input type="checkbox"/> Vérifications partielle (voir § VIII et/ou IX)			
<input type="checkbox"/> Système sans remarque particulière			
<input type="checkbox"/> Données d'entrée et caractéristiques du système non fournies ou incomplètes. Mise en échec si absence répétée			
<input checked="" type="checkbox"/> Obsei			
<input checked="" type="checkbox"/> Points			
<input checked="" type="checkbox"/> Points			
XII – Etat de l'installation à l'issue de la visite			
Date	106 Au terme de la présente vérification l'installation a-t-elle été laissée en ordre de marche malgré les points éventuels mentionnés ci-dessus ? <input checked="" type="checkbox"/> Oui <input type="checkbox"/> Non		
22/02/2021	107 La présente vérification a été effectuée par S. PETIT		
22/02/2021	108 En présence de _____ M. ROLLIN		
22/02/2021	A CHAILLEY		
	Le 11/02/2021		

 ⁽¹⁾ Cert. Page



Signature du Délégué de l'organisme vérificateur

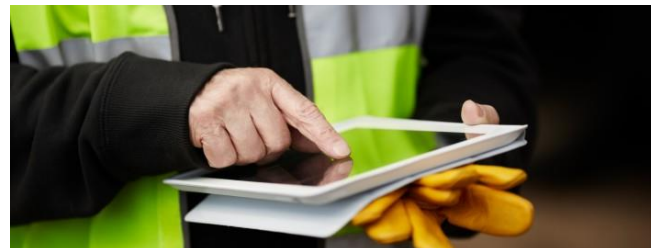


System in use: certification & inspection

No independent inspection body

French case in NL:

- Third party certification of maintenance (contractor, maintenance) – on the nominal state of the installation, not on adequacy of the system
- Third party inspection on adequacy of sprinkler protection of premises in use



UNITED KINGDOM

An existing sprinkler system designed and installed many years ago.

- The system is installed on request of a local UK based insurer in the 1980-ies and since then modified and changed many times.
- The system is recognized by the local authorities and part of the occupancy permit.
- During this period the insurer has visited the site multiple times.
- The facility is then sold to a global company
- For the first year a local inspector of the new insurer visits the site and does not have any recommendations
- Year two a non-UK inspector visits the site and finds multiple serious deviations.
- The system is considered non adequate
- Unclear what this means for the approval by the authorities

FIRE PROTECTION

Automatic Sprinklers: The production areas (Unit 1 and 2) are protected by AFFF foam system which is pre-primed using a balanced proportioning system. The remaining production areas including maintenance stores, Main and Tin shed and Unit 4 are protected by a wet automatic sprinkler system in accordance with LPC/ BS 5306 Part 2. Warehouses 1, 2 and 3 are protected by automatic sprinkler system in accordance with the same standard. Areas not protected by the sprinkler system is Warehouse 4, main office (Building No.1/2), production office (Building No.6), Canteen building and the Grade 2 listed Conference and meeting rooms. Other detached buildings such as compressor house and utilities room are not protected by automatic sprinkler system.

Redesigning sprinkler protection: certification & inspection

UK: only limited requirements of local authorities, fire safety is left to insurers

UK case in NL:

- Building regulations: yearly inspection of installation, inspection certificate mandatory
- Independent third party inspection: NO conclusion, no inspection certificate
- Building permit revoked
- Possibly no insurance due to lacking fire risk protection



BELGIUM



2205-5 Sprinkler system-2

Risk rating	Reduction of loss estimates	Impact	Extreme
Impact rating	--	Cost indication	250.000 – 400.000
Observation	The building's ceiling sprinkler system is designed as an ESFR sprinkler system, using FM datasheets. The design is based on K 200 sprinklers with a minimum pressure of 3,5 bar on the sprinklers. The internal building height varies between 11,5 and 12,0 meters. With the chosen design, no storage is actually possible in accordance with FM Datasheet 8-9. For ESFR protection for internal building heights up to 12,0 meters, the following design criteria must be implemented for storage in pallet racks and in bulk (palletized and solid Piled):		
	<ul style="list-style-type: none"> > Class I to Class III commodities: K 200 @ 5,2 bar > Class IV and Cartoned Unexpanded Plastics: K 200 @ 5,2 bar > Cartoned Expanded Plastics: K 320 @ 5,2 bar > Uncartoned Unexpanded Plastics: K 320 @ 5,2 bar 		

INS/FID/02001H01/RGE/22-352/R - p 1/14

Site de contact / Contactatie van ANPI vzw
Division Inspections
Grainstraat 1
Parc scientifique Fleming
B-1348 Louvain-la-Neuve
België / België
T +32 10 47 52 11
F +32 10 47 52 07
info@anpi.be

CEGELEC FIRE SOLUTIONS nv
T.v.a. Dhr. Van Acolyen Tim
Atomveldstraat 10 bus 4
6450 Denderhoutem
België

O/Ref. : 53241
U/Ref. : 53241

INSPECTIEVERSLAG INS/FID/02001H01/RGE/22-352/R - 2022.12.22

Aanvrager:		Contact :	
Firma : CEGELEC FIRE SOLUTIONS nv	Adres : Atomveldstraat 10 bus 4	Contact : Dhr. Van Acolyen Tim	Tel. : +32 493 31 50 99
Land : België	ZIP/Stad : 6450 Denderhoutem	Fax : +32 53 84 14 42	E-mail : tim.van-acolyen@fresolutions.cegelec.com
Plaats inspectie/Plaats monstername:		Contact :	
Firma : MG PARK FORTY - ECLAIR	Adres : Donkerstraat 63	Contact : --	Tel. : --
Land : België	ZIP/Stad : 1740 Ternat	Fax : --	E-mail : --
Installateur/Fabrikant:		Contact :	
Firma : CEGELEC FIRE SOLUTIONS nv	Adres : Atomveldstraat 10 bus 4	Contact : Dhr. Van Acolyen Tim	Tel. : +32 493 31 50 99
Land : België	ZIP/Stad : 6450 Denderhoutem	Fax : +32 53 84 14 42	E-mail : tim.van-acolyen@fresolutions.cegelec.com
Opdracht : Keuring	Onderwerp : Automatisch hydraulisch vaste blussysteem (Sprinkler)	Inspecteur : Rudy Geeroms	
Opdrachtdatum : 2022-12-08			

Dit verslag bevat 14 bladzijden

RESULTATEN:
De resultaten worden bekomen in het kader van de opdracht bevestigd door de aanvrager of door het certificatieschema, en dit conform de voorschriften vermeld in dit verslag in rekening houdend met de bestaande situatie op de dag van de opdracht (zie Bijzonderheden). De resultaten zijn enkel van toepassing op de aangegeven gedeeltes van de installatie, systeem, component of dienstverlener gespecificeerd in dit verslag.

De installatie is conform met opmerkingen.



R. Geeroms Inspecteur
 +32 499 75 44 12
Tim Devreker Head of Division Inspections
 +32 499 75 44 12

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Site social / Neutshapovljive zvele : anpi vzw, Grainstraat 1, Parc scientifique Fleming, B-1348 Louvain-la-Neuve
T +32 10 47 52 11 - F +32 10 47 52 07 - info@anpi.be
TVA/BTW BE 0881.851.751 - BNP PARIBAS FORKIS - IBAN BE11 0014 9325 1948 - BIC GEBABEB3 - RPN/RPN Bruxelles www.anpi.be

INS FID PROC. 022 INSPECTION MISSION 2715 BE N RGE 2233 BROUWU HDR N v.2

Samenvatting

Onderwerp	In orde/ Niet in orde/ NVT	
1. Dossier	In orde	
2. Hydraulische beveiliging	2.1 Sprinklersysteem	Niet in orde
	2.2 Stapelhoogte	Nvt
	2.3 Controlepost	In orde
3. Waterbron	In orde	
4. Toezicht op de installatie en sturingen	In orde	
5. Systeemactivatie	Nvt	
6. Schuimsysteem activatie	Nvt	

A newly built facility designed as a multipurpose warehouse but in use as a food processing plant

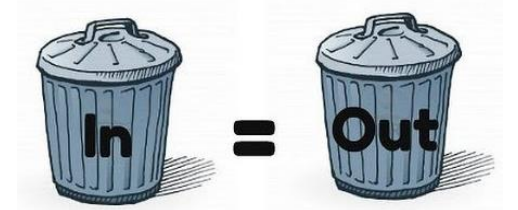
- The system is installed by the developer as part of the occupancy permit and modified to meet the requirements of the tenant.
- A real estate company plans the buy the asset
- As part of the due diligence the site is inspected
- The sprinkler is newly designed against an outdated FM standard
- Approval by an independent inspection firm who approved the design and the current use.
- A re-inspection done recently by a Dutch inspection firm confirms the major deviations from the outdated standard but and major differences with the most recent and valid standard.
- The acquiring company has demanded a significant amount of money in escrow to cover the modification cost.

Non conformity and change in use: inspection

Inspection was performed, but under accreditation?

Belgian case in NL:

- Certified sprinkler system designer (consulting firms): design not certifiable
- Certified installer: no certificate for the system at commissioning
- Independent inspection body: nonconformity at inspection basic design, no inspection certificate
- Local authorities: problems for occupancy permit because of
 - Change in use
 - No mandatory inspection certificate
- System of accreditation: filtering of faults, complaints procedure
- Surveillance by national accreditation body is important



Sprinkler systems: value for money

Focus on your customer and how to tie him to your company

- Sprinkler system fit for customer purpose
- Key principles explicit
- System well designed
- Independent surveillance during construction and in use
- Keep chain partners cooperating so that fire sprinkler protection is effective when unexpectedly needed



Building trust in sprinkler systems



Quality of products and services

- Third party certification: bridging the gap between sprinkler designers & installers/contractors, and building developers & tenants
- Offering choices: certified design, certified system, certified maintenance
- Certification ensures that you get what you pay for – adequate fire sprinkler protection

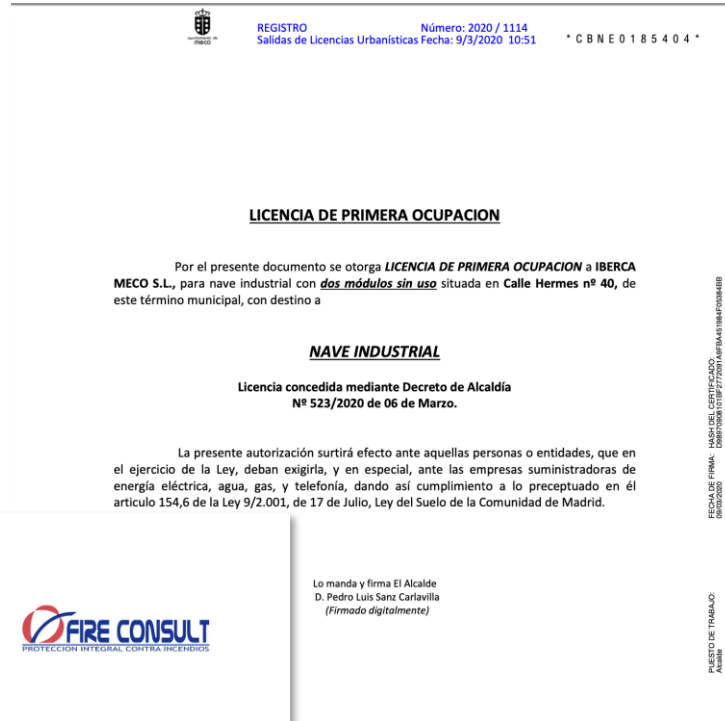
Adequacy of fire sprinkler system in new facilities and facilities in use

- Independent third party inspection in case of high risk (building regulations, insurers risk management)

Note: surveillance by national accreditation body is important



Absence of longitudinal aisle



PROYECTO EJECUTIVO:
INSTALACIÓN PCI NAVE LOGÍSTICA
IBERCA MECO

Constructora: EIGO: Edif Industrial y Gestión de
Obras
Instaladora: Fire Consult S.L.



A newly built facility designed as a multipurpose warehouse

- The system is designed before the occupancy and tenants are known
- The building is delivered empty and is approved by the authorities and an occupancy permit is issued
- A tenant was found who required a certain amount of pallet locations.
- By moving the double row racks as close as possible to each other an additional double row rack can be installed
- No flue spaces left in a building protected with an ESRF system

Change of use and impact on design: inspection

Second example of 'lost in translation'

Change of use of premises after completion also common in The Netherlands

Spanish case in NL:

- Occupancy permit: inspection certificate mandatory
- Inspection of system (on commissioning or in use): nonconformity, inspection report with NO conclusion – system is inadequate
- Inspection cannot lead to – mandatory – inspection certificate

