



Closed to fire





Evolutions & Trends

Legislation & Liabilities

Systems & Solutions



Europe's leading

Developer of purposeful fire & smoke control solutions



Purposeful Business Leadership



221

Full time employees



15%

People in R&D



€0 → €50.000.000

Turnover evolution from 1985 to 2024



**Production
site
Belgium**

MTO, finish GGD & R&D



**Production
site
Slovakia**

Production GGD



**+25
countries**

Extensive partner
network



Purposeful Product Leadership



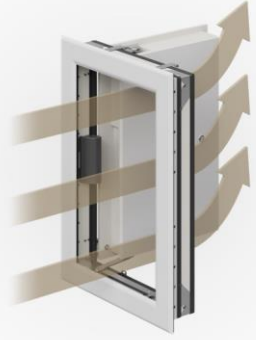
CRS60 + ONE

- + optimal free air passage & minimal pressure loss
- + hassle-free installation
- + maximum designer flexibility
- + extra safety layer
- + lower power consumption

Kamouflage AP
Free Area & dP

The Kamouflage AP offers the best free area and pressure drop in its class.

The Kamouflage AP features an innovative design that eliminates the need for a traditional grill, drastically reducing obstructions to airflow. Its unique ability to open fully to 90° in all dimensions ensures that the available free area is maximised, resulting in an exceptionally low pressure drop across the damper.



The ONE is the same
... and more



Markage MB

CE 1366-10, 12101-8
MA - Manual Activation
C10.000
Multi- & Single-Compartment
2400 by 1600 mm
Smoke Control Damper

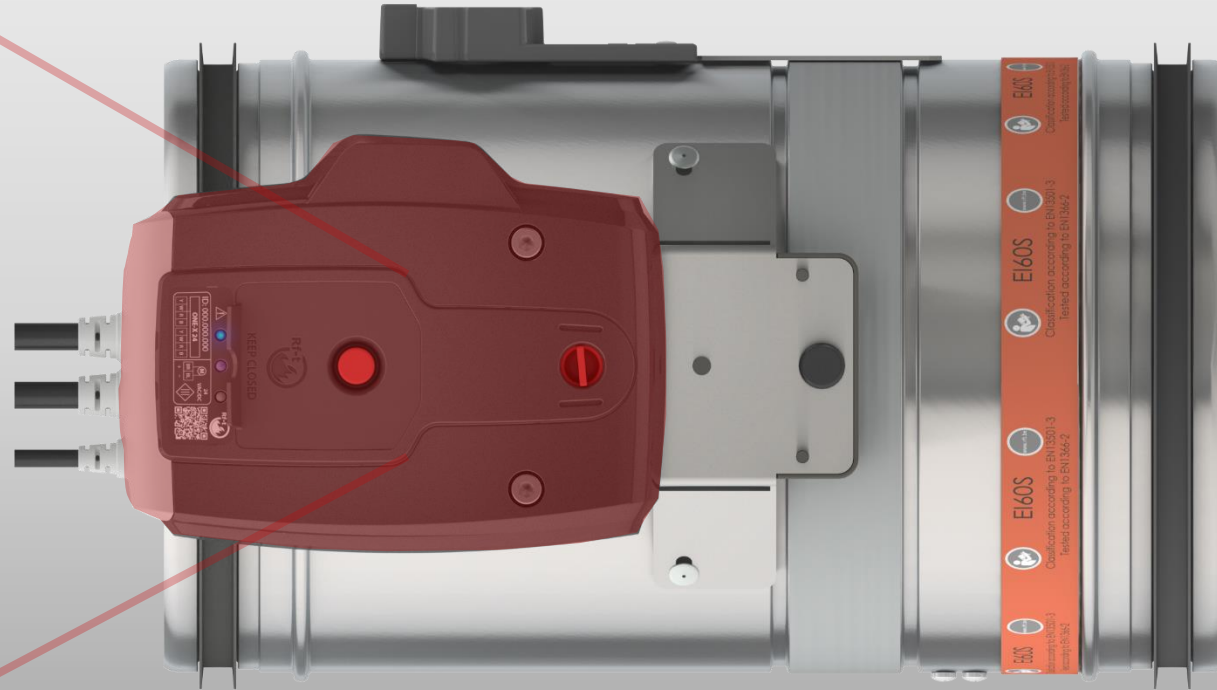
Products which make a difference !



Purposeful Innovation Leadership



Integrated communication module.



ZENiX

Controls & components integration leads to lowest possible liabilities





Serving our partners **In more than 25 countries**

With CE as “legal” basis
and
evolving markets & customer needs
as “development” focus



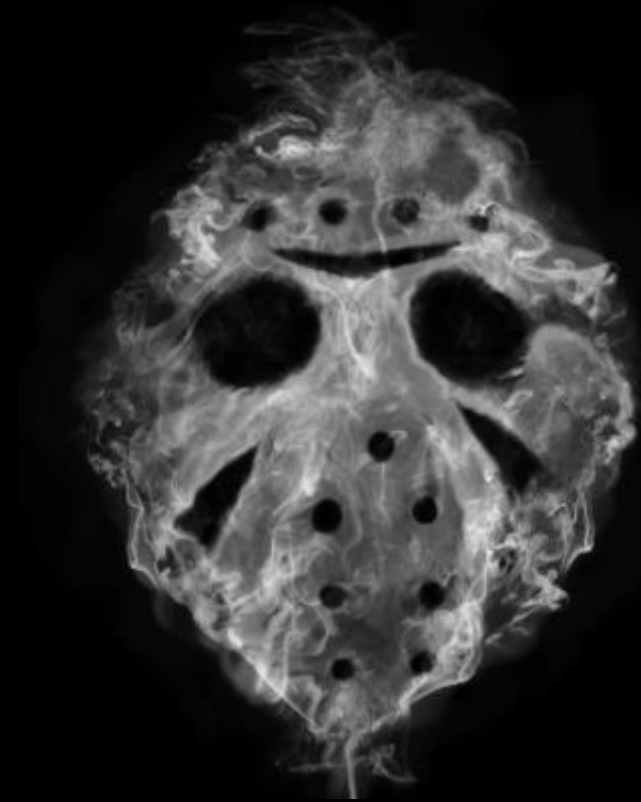


Evolutions & Trends

- Smoke Control is focus n° 1
- Liabilities (mitigation) is focus n°1 (also)
- Automation is exponentially evolving
- Sustainability is becoming a differentiator
- “New” segments are “exploding”
- “New” walls are coming in “fast”
- Safety and construction increasingly “merge”
- ... what about in Estonia ?



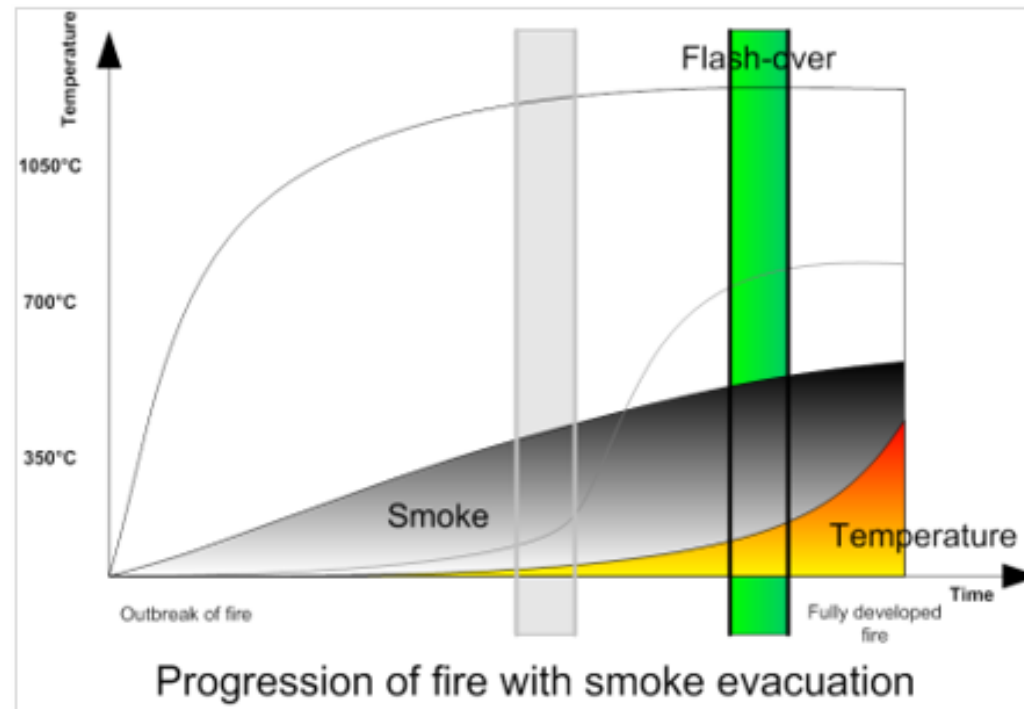
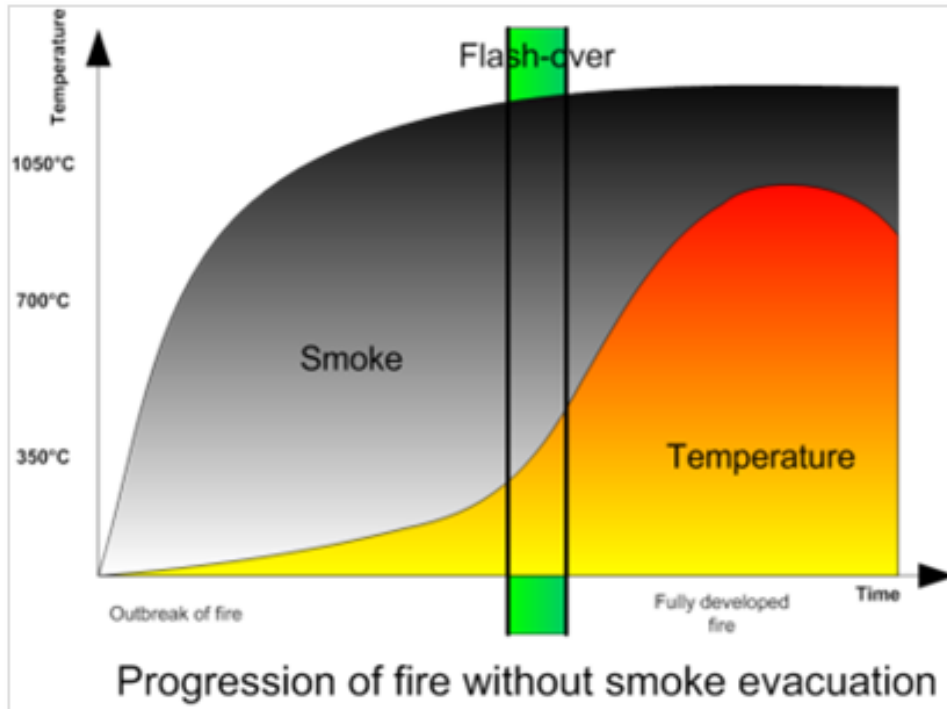
Smoke versus Fire



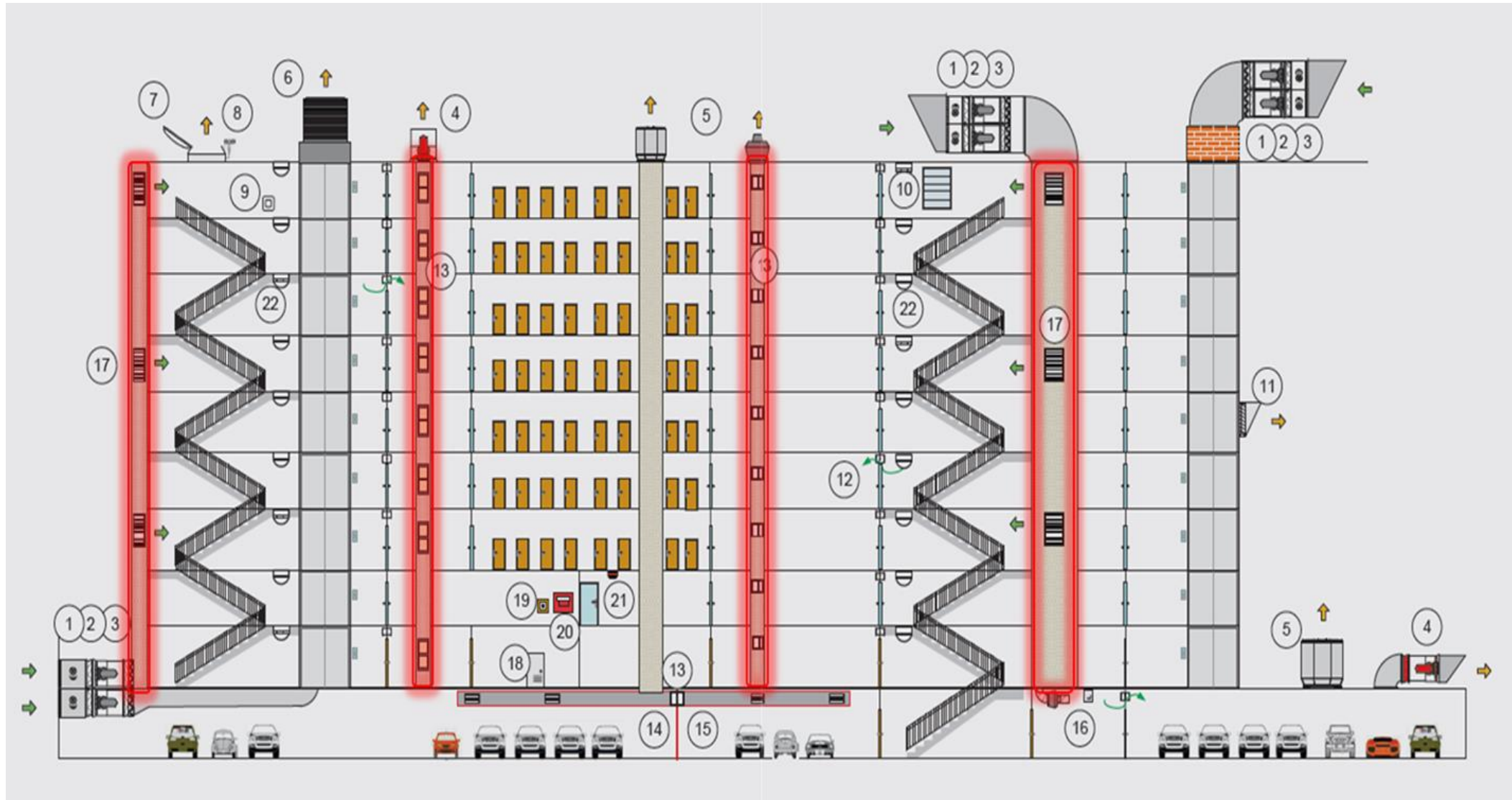
SMOKE IS A
**SERIAL
KILLER**

Purpose of a Smoke Control Solution

Contain fire progression (time) & prevent flash-over (people and investment)



High Rise : Two Stairway (UK) architecture – PDS example



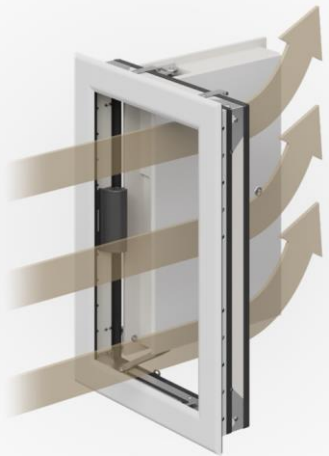
Sustainability incl. Energy & Accoustics

Kamouflage AP

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ONE needs the **lowest consumption in the market (approx. 50% of competition), in standby position.**

ONE needs “no” power to keep the **blade open**

- Other brands need power ...



Kamouflage AP

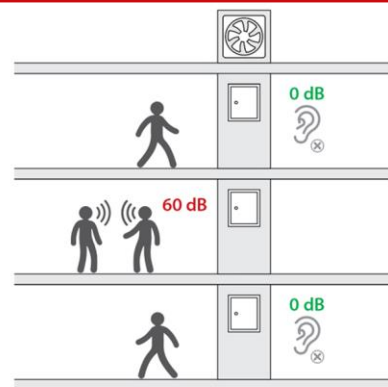
Acoustic insulation

The Kamouflage AP provides superior sound insulation

Rw (C, Ctr): 33 (-2,-3)

The Kamouflage AP helps to reduce cross talk between floors via the smoke control ducts/shafts.*

The acoustic attenuation of the Kamouflage AP is equivalent to that of double and even some triple insulating glazed units.**



* cross talk between 2 floors means that sound passes 2 Kamouflage AP dampers connected by duct or shaft. The sound attenuation will ≥ 60 dB making even shouting not audible.

** double glazing 6-15-6mm or $\geq$ triple glazing 4-12-4-12-4mm

ONE dampers yield the **lowest pressure drops**

Allowing for smaller system components like AHU's and hence lower system power consumption



AI driven GigaX - Hyperscale - Mega Campus



Feature	MegaCampus Data Center	Traditional Data Centers
Scale	Massive, housing millions of servers across hundreds of acres.	Smaller facilities, typically with a few thousand servers.
Location	Often built in remote areas with access to cheap land and renewable energy.	Usually located closer to population centers for lower latency.
Power Consumption	Can leverage economies of scale to negotiate lower energy costs and potentially utilize renewable energy sources.	Higher energy costs due to smaller scale and reliance on traditional grids.
Cost		



Copilot

Main Data Center Developments in Estonia

1. Greenergy Data Centers:

- **Location:** Tallinn
- **Details:** This is the largest and most energy-efficient data center in the Baltic region. The facility spans 14,500 square meters and has a campus power capacity of 31.5 MW. It runs on renewable energy and aims for a power usage effectiveness (PUE) of 1.2 ¹ ².

2. MCF Group Estonia:

- **Location:** Saue Parish, Harju County
- **Details:** This data center campus is being developed with a significant investment and is expected to be one of the largest in Estonia. The first phase was planned to be completed by May 2021 ³.

Gigawatt, AI-Driven Mega Campuses in Estonia

Currently, there are no specific gigawatt-scale, AI-driven mega campuses announced or under development in Estonia. However, the existing data centers like Greenergy and MCF Group Estonia are significant steps towards enhancing Estonia's digital infrastructure and could potentially scale up to meet future AI and computational demands.



EV driven "giga" battery plants





Legislation & Liabilities

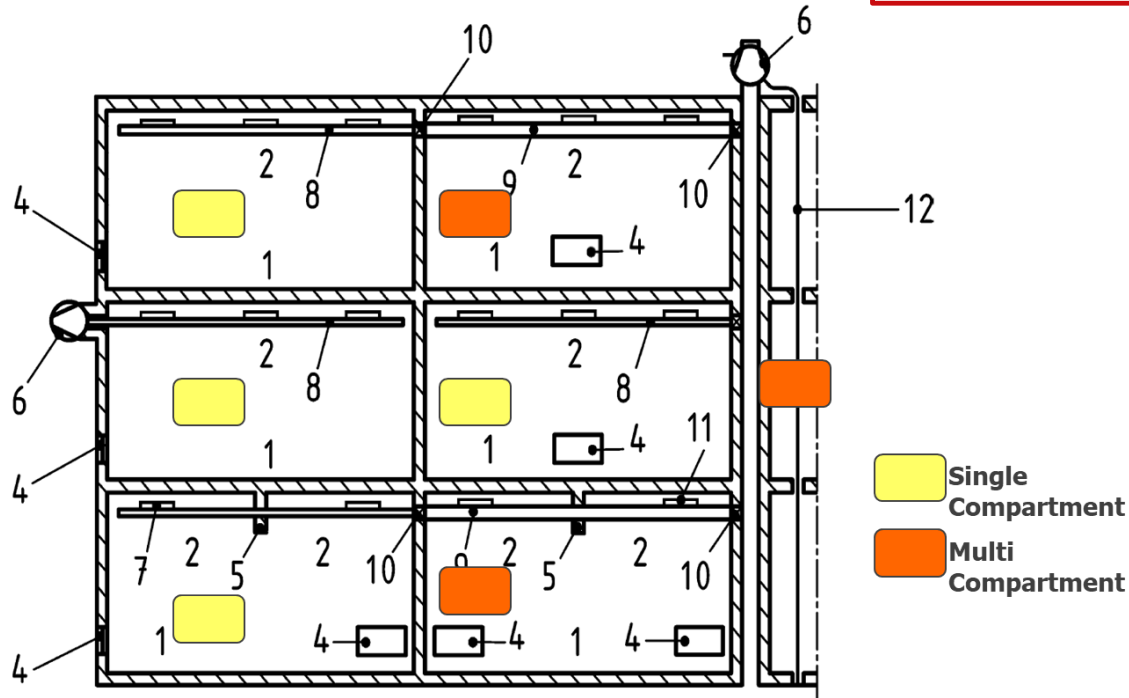
- Norms keep “evolving”
- Installation becomes “traceable”
- Product standards are “pending”
- Liabilities are “increasing”



1366-10 - 2024 country based interpretation

- NEN-EN 12101-13_2022 en
- NEN-EN 12101-6_2022 en
- EN 1366-10_2011+A1_2017 en
- EN 1366-2_2015(E)
- EN 12101-8;2011(E) - Smoke control dampers
- EN 15650-2010(E) - Duct mounted fire dampers

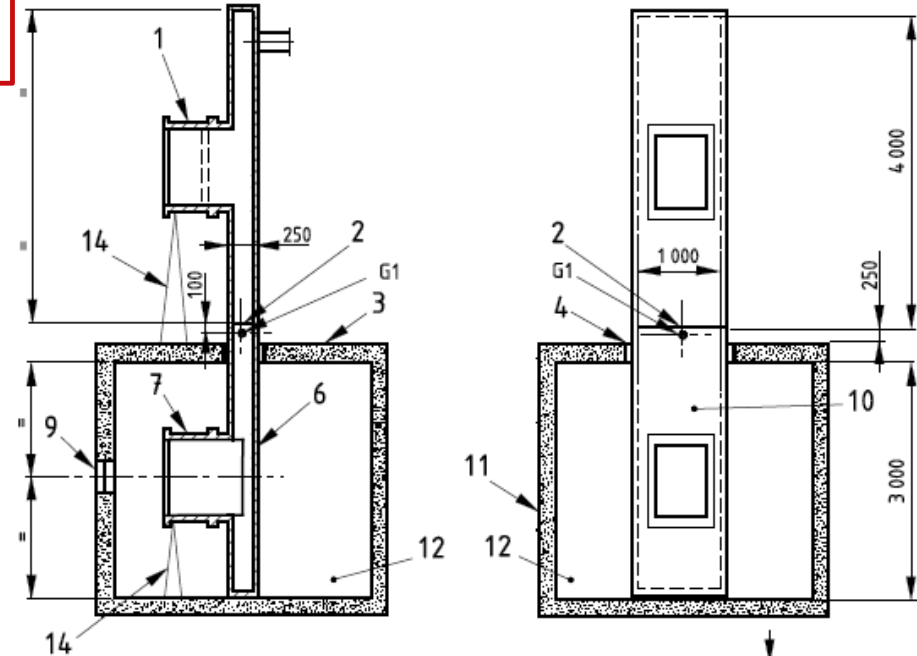
- E, I and S criteria
 - Tested to:
 - 1*) 1366-2 (FD)
 - for wall specified products only (not duct specified)
 - 2*) 1366-10 (SD)
- Duct mounted
 - SCD inside and outside the oven, connected by a duct
 - Criterion: retain safety position (open / closed)
- Wall mounted
 - Criterion: remaining damper opening $\geq 75\%$ of the original



NEN-EN 1366-10:2011+A1:2017

EN 1366-10:2011+A1:2017 (E)

Dimensions in millimetres



Kamouflage AP

All-purpose smoke control damper

The Kamouflage AP is a v_{edw} -classified smoke control damper that responds to the recent/forthcoming changes in the EN1366-10 test standard for smoke control dampers and local regulations in some of the EU-countries.

Its one-fits-all characteristics set new standards for flexibility in relation to different smoke control systems, combining aesthetics with ease of operation and installation, as well as aerodynamic, acoustic and thermal performance.



New Dutch legislation “covers” cold smoke

SC60-COSMO

Brand- en rookwerende vlinderklep



Productvoorstelling SC60-COSMO

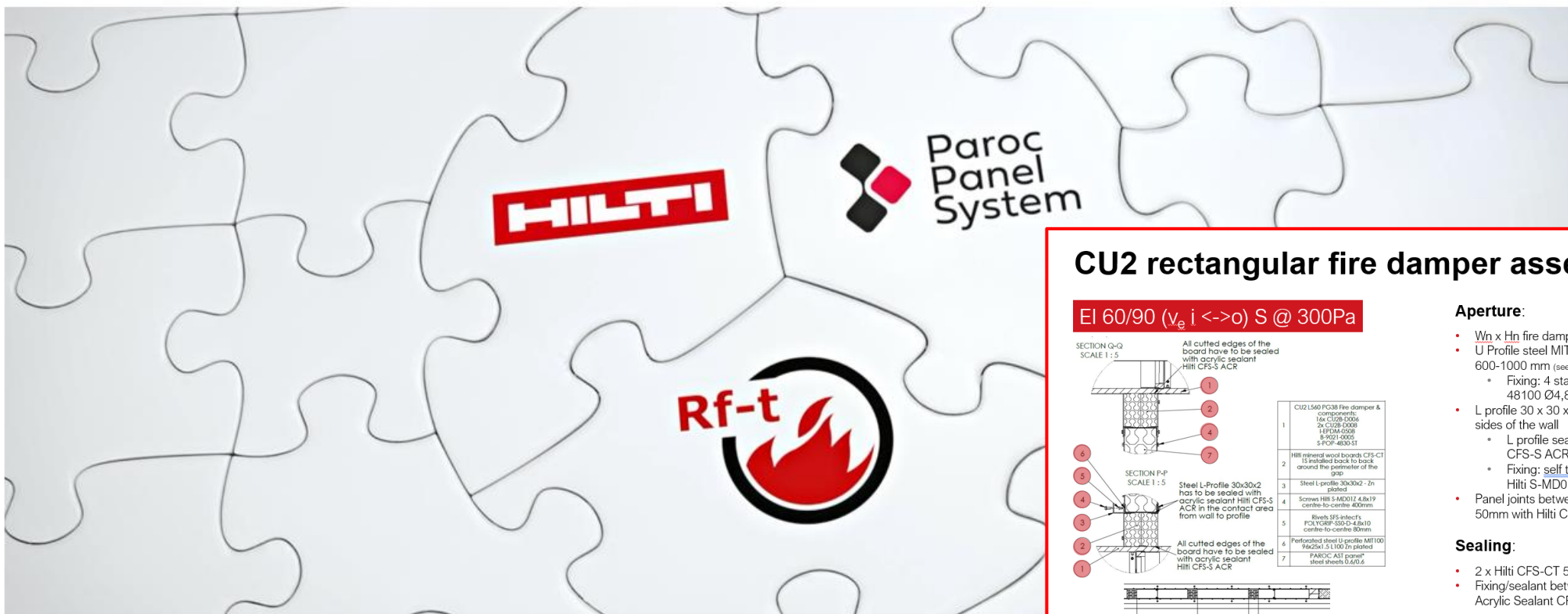
De brand- en rookwerende vlinderklep SC60-COSMO voldoet zowel aan de WDBO- als de WRD-eisen. De klep wordt geplaatst ter hoogte van de brandscheiding en biedt een brandweerstand tot 60 minuten. De SC60-COSMO voldoet eveneens aan de WRD-eisen Sa en S200 zoals bepaald in de NEN 6075:2020. De SC60-COSMO moet worden geplaatst in luchttoevoer en -afvoerkanalen. Omdat de SC60-COSMO getest is volgens de testnorm voor brandkleppen met een onderdruk van 300Pa, hoeft bij brand het ventilatiesysteem niet uitgeschakeld te worden en mag de mechanische toe- en afvoer aan blijven.

De SC60-COSMO mag toegepast worden in woningbouw, waarbij de klep geplaatst wordt op de scheiding tussen de centrale toe- en afvoerschacht en elke wooneenheid. De klep is gecertificeerd voor plaatsing in massieve en flexibele wanden, maar ook in massieve schachtwanden of asymmetrische gipskarton wanden. De SC60-COSMO is eveneens gecertificeerd voor toepassing in (thermisch en akoestisch) geïsoleerde luchtkanalen.

Installation becomes "traceable": e.g. DW145

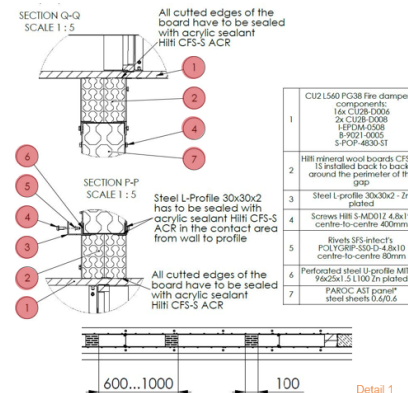
CR60 FIRE DAMPER

Whitewall "standard" is "pending"



CU2 rectangular fire damper assembly

EI 60/90 (v_e i <-> o) S @ 300Pa



Aperture:

- $W_n \times H_n$ fire damper assembly (1) + max 100/150mm*
- U Profile steel MIT100 96x25x1.5 L100 (6), c/c distance 600-1000 mm (see Detail 1)
 - Fixing: 4 stainless steel Rivets SFS Intec Polygrip® SS0 D 48100 Ø4,8 x 10mm (5)
- L profile 30 x 30 x 2mm steel (3) all around the aperture on both sides of the wall
 - L profile sealed to the panel along the perimeter with Hilti CFS-S ACR
 - Fixing: self tapping zinc plated steel flange screw Hilti S-MD01Z 4,8 x 19mm, c/c distance: 100mm (4)
- Panel joints between Paroc panels from aperture on sealed over 50mm with Hilti CFS-S ACR

Sealing:

- 2 x Hilti CFS-CT 50mm 166kg/m³ back to back** (2)
- Fixing/sealant between boards/Paroc wall and boards/CR2: Hilti Acrylic Sealant CFS-S ACR

* 100mm for 90° fire resistance / 150mm for 60° fire resistance

** for 100mm wall thickness. For 120 or 150mm walls, 3 x Hilti CFS-CT 50mm are required

Rf-Technologies Fire Dampers in Sandwich Panel Walls

Towards CE-certified solutions



Liabilities are here to stay



Design related liabilities in Fire & Smoke Safety

- **Legislation**

- CE / UKCA Norms, BSA 2022, Applications & related installations

- Fire versus smoke

- **Execution versus design**

- Architectural objectives

- E.g. space constraints

- Customer / project requirements

- E.g. energy consumption

- **Customer & partner satisfaction**

- “Flawless and timely” execution from design to delivery and commissioning

As an example, the person designing and selecting the fire dampers should understand:

1. The principles of compartmentation
2. The standards and principles for testing FDs and SCDs
3. The applications of FDs and SCDs
4. The correct procedures for the selection and installation of FDs
5. Building services spatial coordination
6. The correct procedures for access to regular testing, maintenance etc. for FDs.
7. Demonstrate good behavioural and ethical competence.

Recognition is given that the required knowledge may not be held by a single party, therefore, the involvement of a manufacturer at the early stage of design, who can support the dutyholder with respect to the certified applications of the dampers, should be considered.

stall to delivery and





ZERO-ing in on LIABILITIES



What is the difference between fire and smoke

CE	Test	Classification	Product	Activation	Pressure
Fire Damper	EN 1366-2	EN 13501-3	EN 15650	Fuse Automatic (Controls)	General: 300Pa Rf-t: 500Pa
Smoke Control Damper	EN 1366-10	EN 13501-4	EN 12101-8	NEVER Fuse Automatic (AA) Hot (MA) Manual (MA)	Upto 1500Pa

! Important Note !

a (UK) smoke fire damper = a motorized fire damper,
and
not at all a smoke control damper !



Smoke Control Damper Examples



Markage MB

CE 1366-10, 12101-8

MA - Manual Activation

C10.000

Multi- & Single-Compartment

Smoke Control Damper



EI 90/120 (v_{ed} h_{od} i↔o) S 1000 C_{10.000} MA MULTI

Kamouflage MP



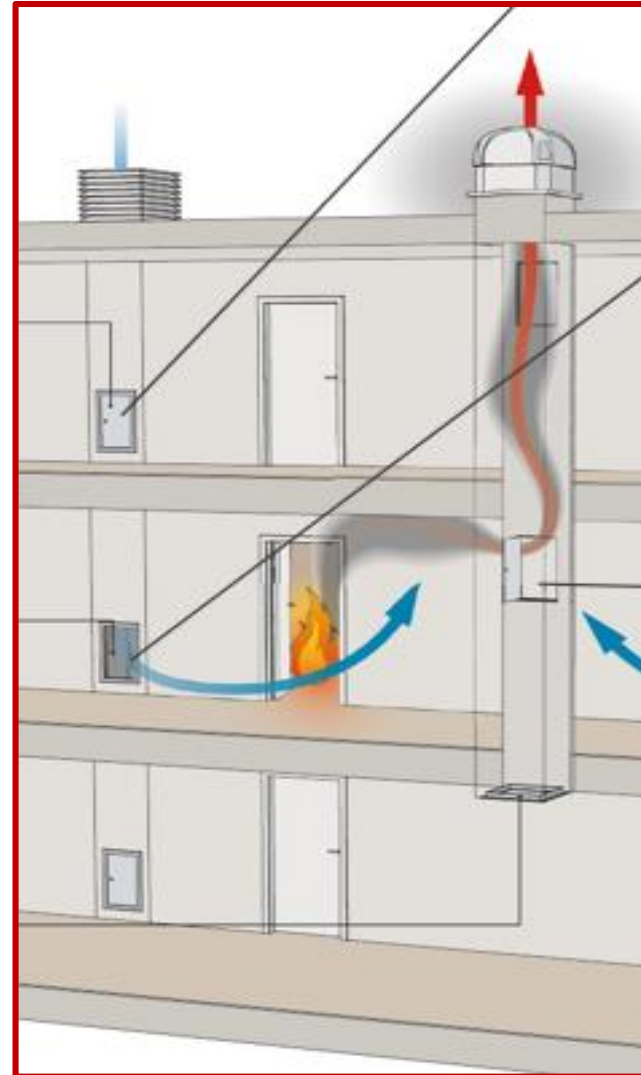
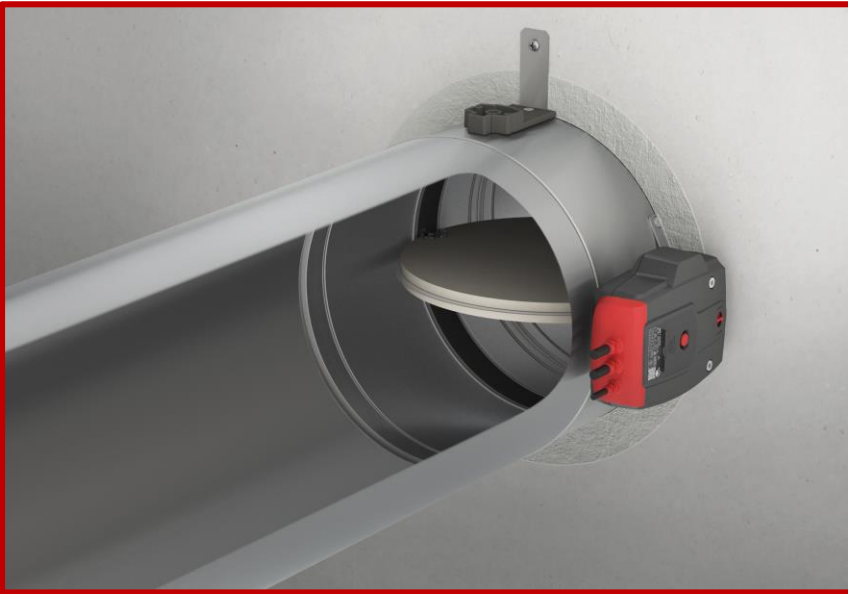
Aesthetical Options: Colour & Cladding



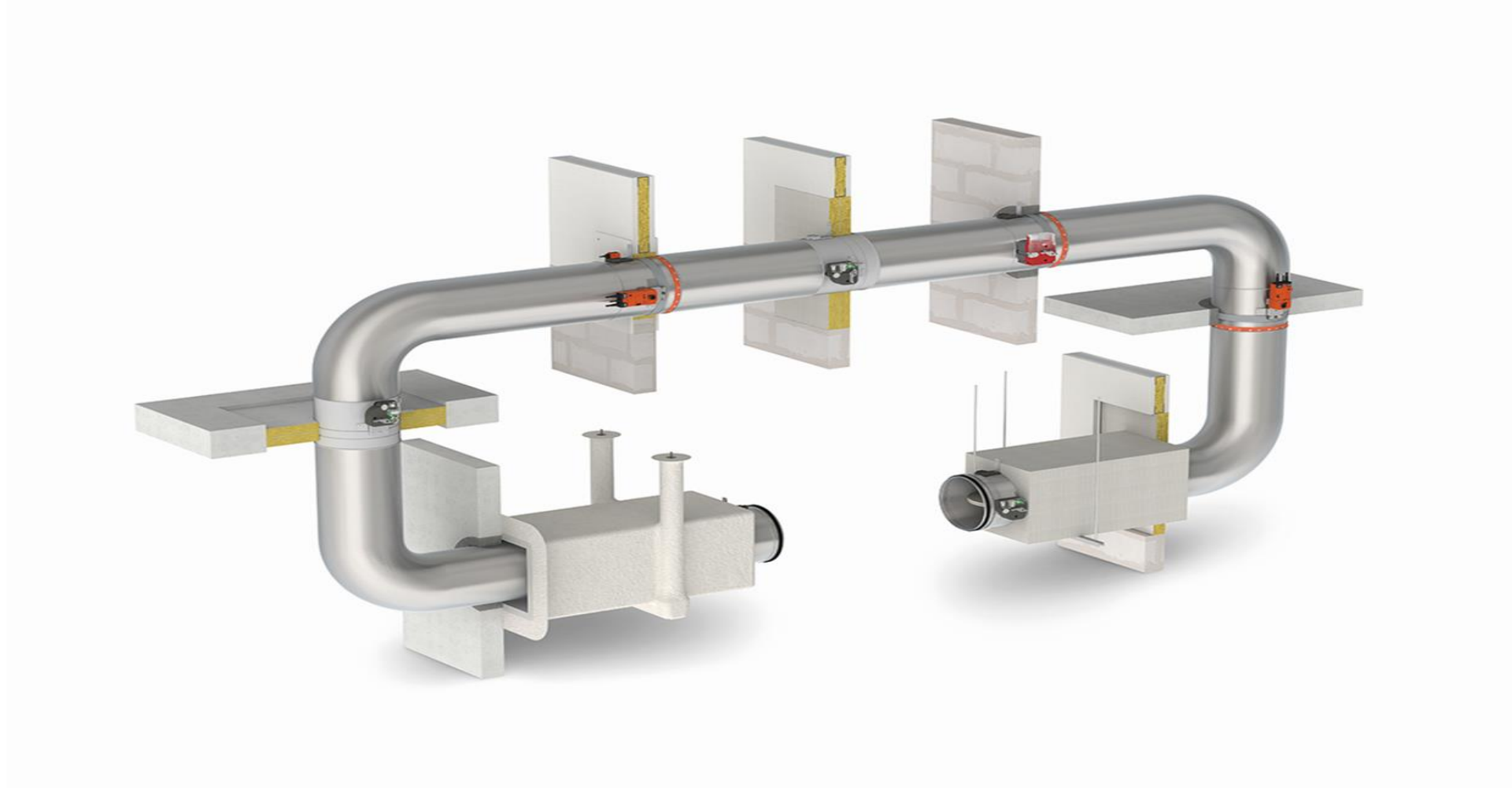
EI 60/120 S (v_{ed} i↔o) 1500 AA multi



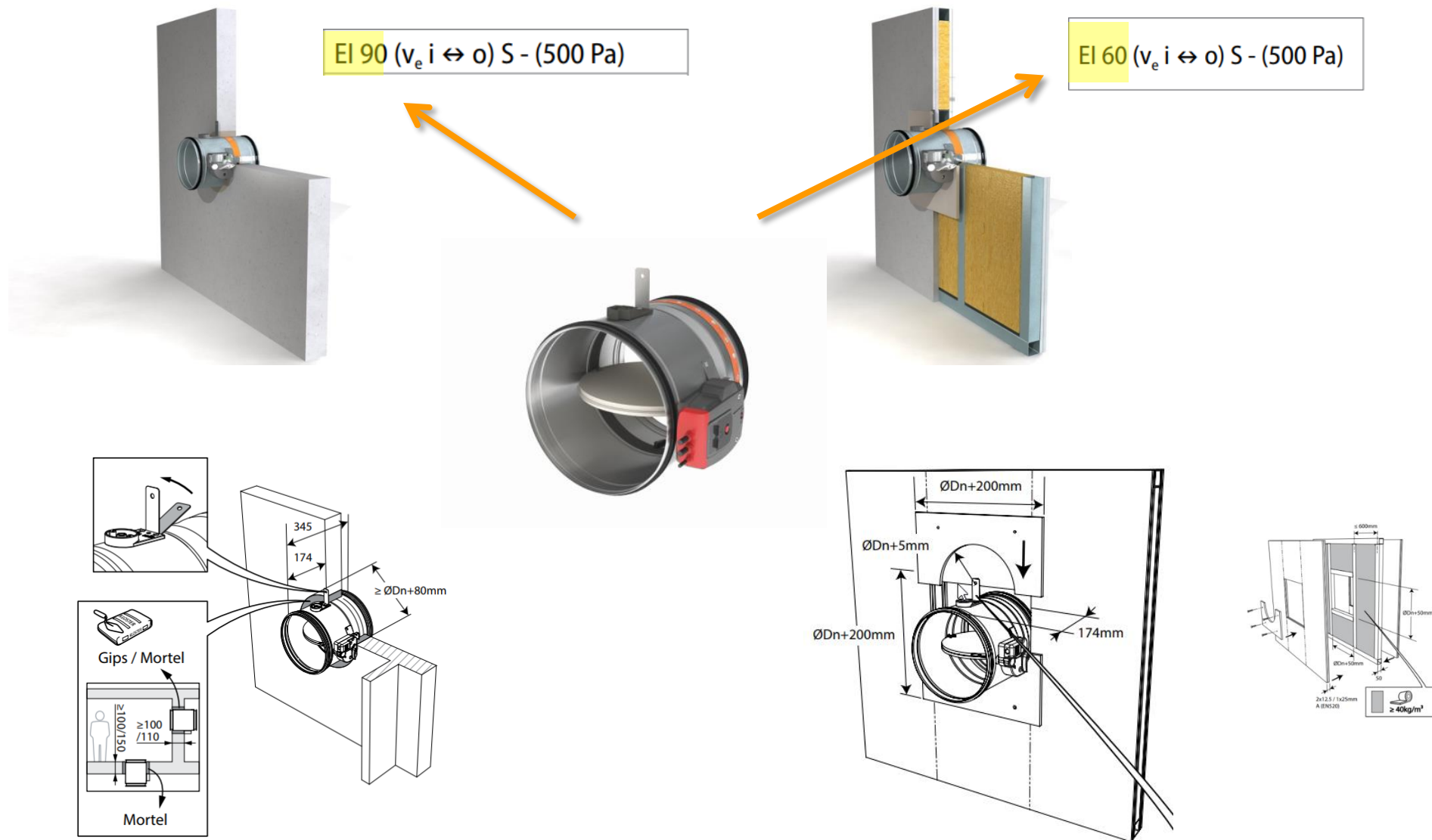
Fire vs Smoke Control Failsafe-Wise ?



Installation is an integral part of CE - UKCA



Installation is an integral part of CE - UKCA



Installation is an integral part of CE - UKCA

- **Extensions:** Per EXAP, Extended Application
 - If a fire test was passed for the required time +10% longer, then the extended field of application rules apply.

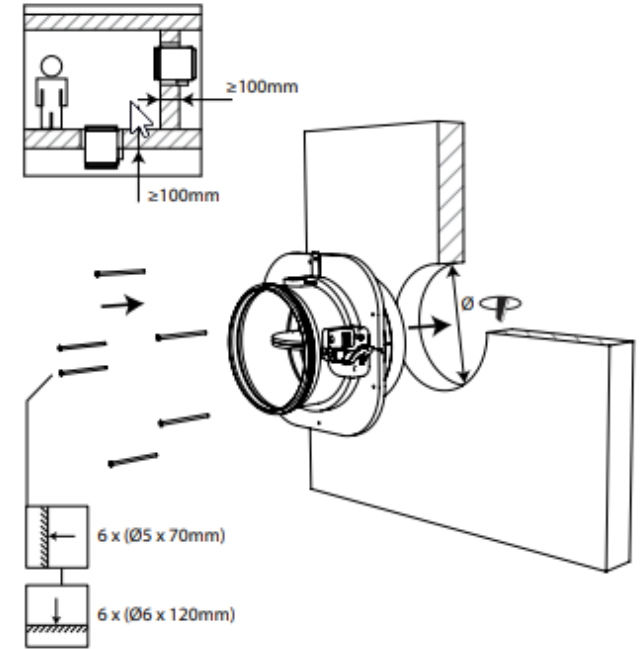
X.44	Change in gap between the damper and the supporting construction	Increase in size	See rule	See rule	See rule	Increase in area up to 50 % permitted
X.45		Decrease in size	See rule	See rule	See rule	Decrease permitted where there is sufficient room for installation of the seal.

FprEN 15882-2_2014 (Extended application of results from fire resistance tests for service installations - Part 2: Fire Dampers):

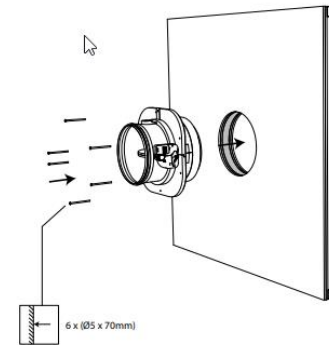
Designing-in a "near" ZERO liabilities solution – 1S



Wall type		Sealing	Classification
Rigid wall	Aerated concrete $\geq 100\text{mm}$	Not applicable	El 60 ($v_e i \leftrightarrow o$) S - (500 Pa)

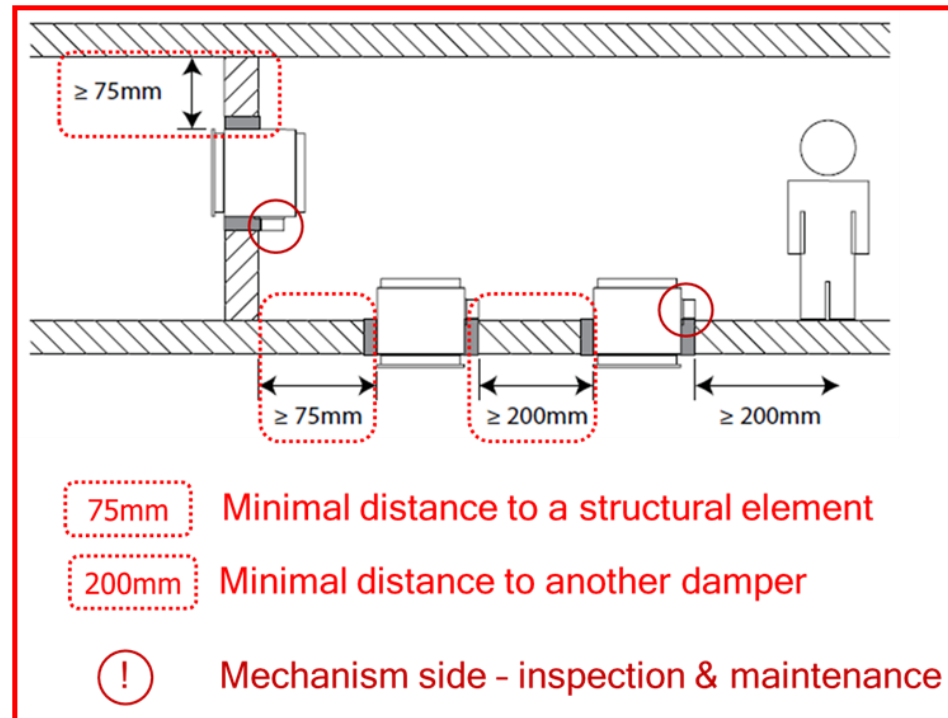


CR60-1S



Installation is an integral part of CE - UKCA

- A CE certification is only valid per the actual tested installation AND sealing !
 - Including structure and sealing dimensions
- Additional limitation:
 - **Minimal distance**
 - <75 mm Wall / Ceiling
 - <200 mm Damper
 - **CE is NOT valid!**
 - Unless ...





Systems & Solutions

- White Walls
- CLT Walls
- Asymmetrical Shaft Walls
- Remote of Wall Installations
- Structural Deflection



Cross Laminated Timber

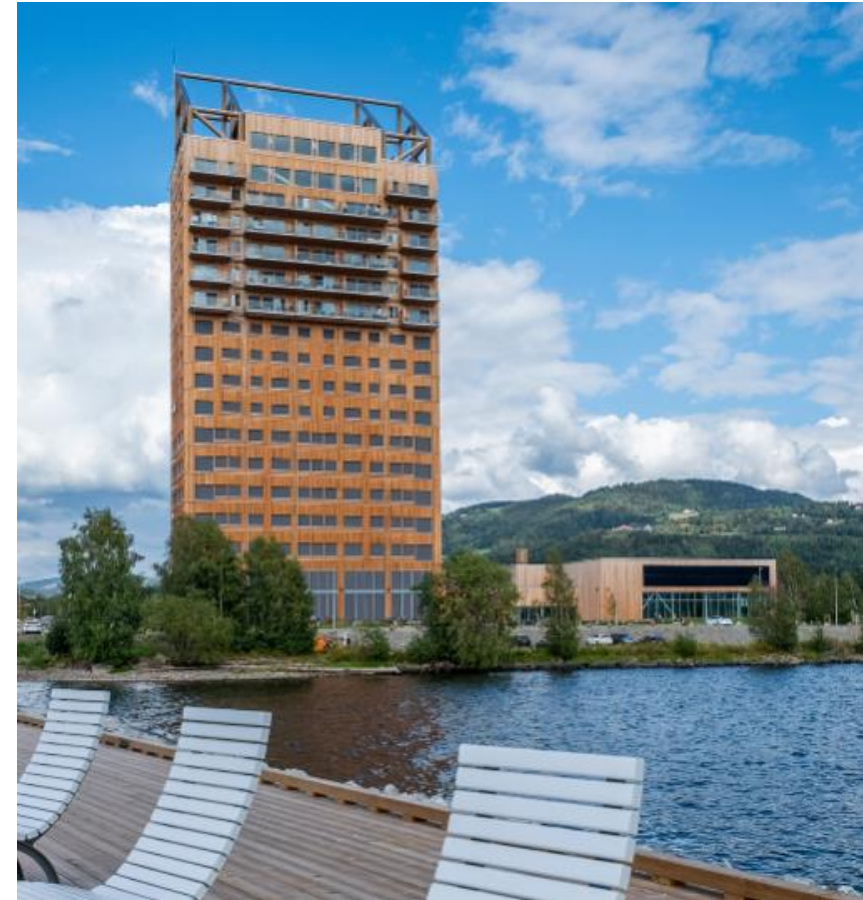
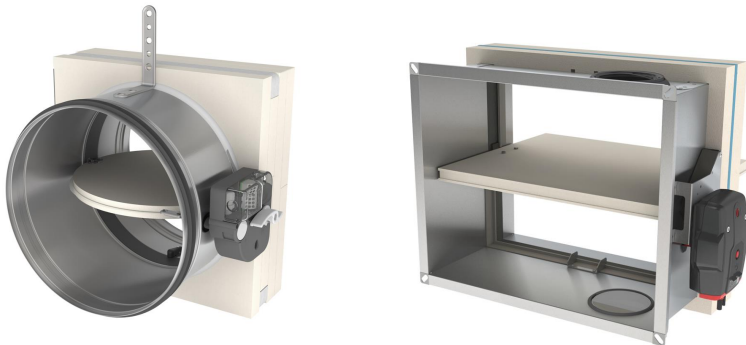


Copilot

Sure! Here are some recent developments in the use of CLT in Estonia and Finland:

Estonia

1. **First CLT Apartment Buildings:** Estonia's first CLT apartment buildings are being constructed in Põlva. The project involves a 4-story building with 14 apartments and a 3-story building with 10 apartments. The structural solution includes load-bearing exterior walls made of 5-layered CLT panels and floor panels between floors ¹.
2. **Modern CLT School:** Viimsi State Secondary School, constructed using CLT, is the largest wooden public building in Estonia. The use of CLT allowed for faster construction and cost savings ².
3. **Airtightness Testing:** Scientists at Tallinn University of Technology (TTÜ) are testing the airtightness of novel timber materials, including CLT, to ensure proper usage in construction ³.

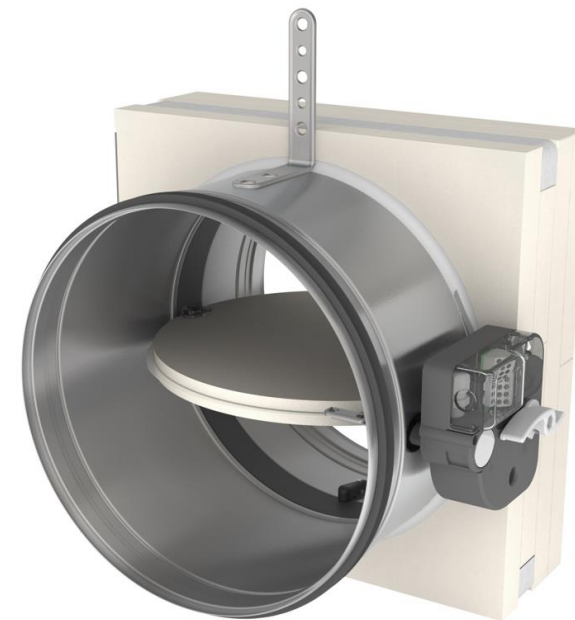
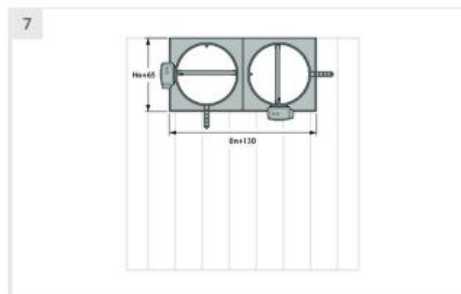
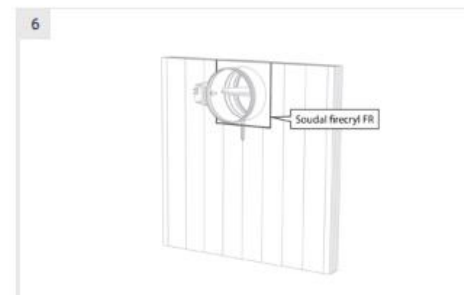
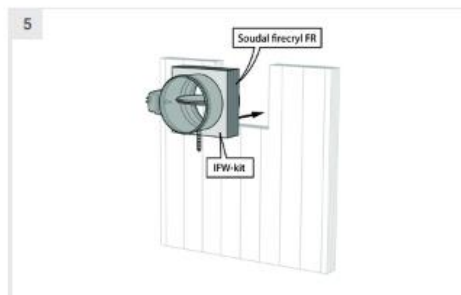


Cross Laminated Timber

INSTALLATION IN CLT WALL WITH IFW INSTALLATION KIT

The product was tested and approved in:

> Cross-laminated timber ≥ 100 mm | EI 90 ($v_{\infty} \leftrightarrow o$) S - (300 Pa) | Installation kit IFW | Type of installation: built-in, 0-360° | Minimal distances authorised: | $\varnothing$ 100-315 mm



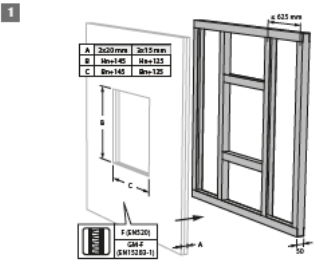
Asymmetrical Shaftwall

Asymmetrical flexible wall (shaft wall)	Metal studs gypsum plasterboard Type F (EN 520) ≥ 90 mm	Installation kit	4	EI 90 (v _a i ↔ o) S - (300 Pa)
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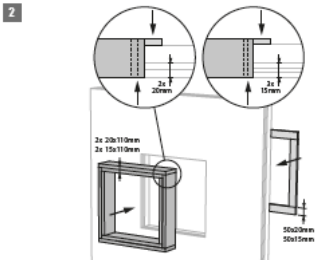
Installation in shaft wall with IFW installation kit

The product was tested and approved in:

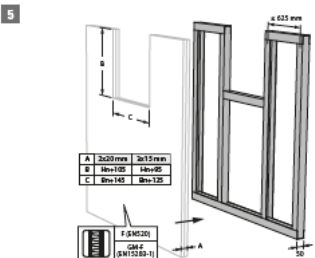
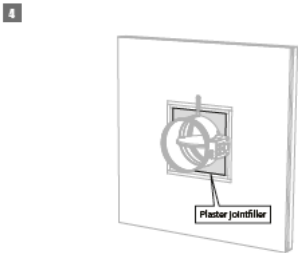
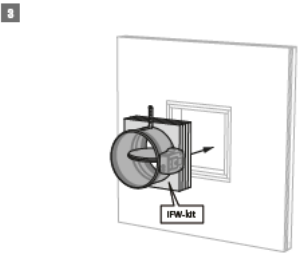
Range	Wall type	Sealing	Classification
Ø 100-315 mm	Asymmetrical flexible wall (shaft wall)	Metal studs gypsum plasterboard Type F (EN 520) ≥ 90 mm Installation kit IFW	EI 90 (v _a i ↔ o) S - (300 Pa)



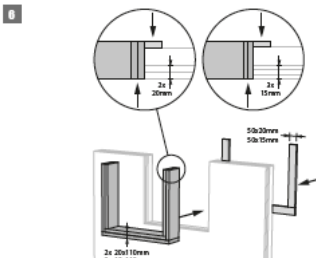
1. Depending on the shaft wall system, the cladding is 15 or 20mm thick.



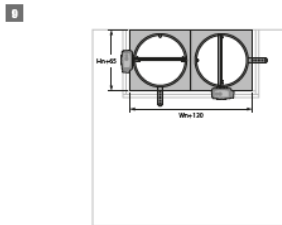
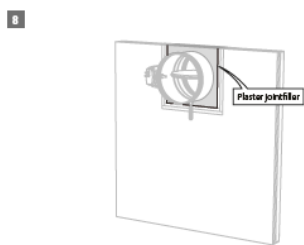
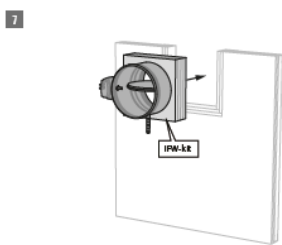
2. Alternatively, the aperture framing can also be stepped.



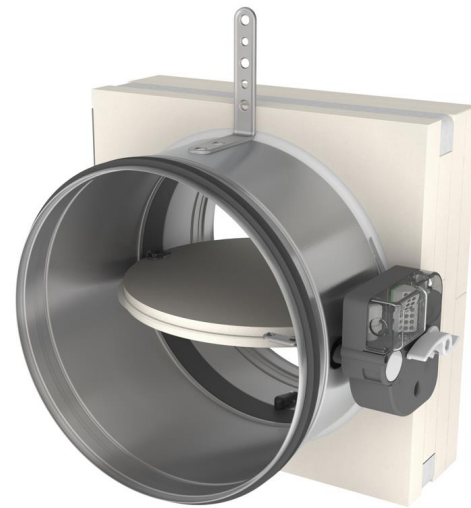
5. The fire damper may be placed at minimum distance from the ceiling/floor slab.



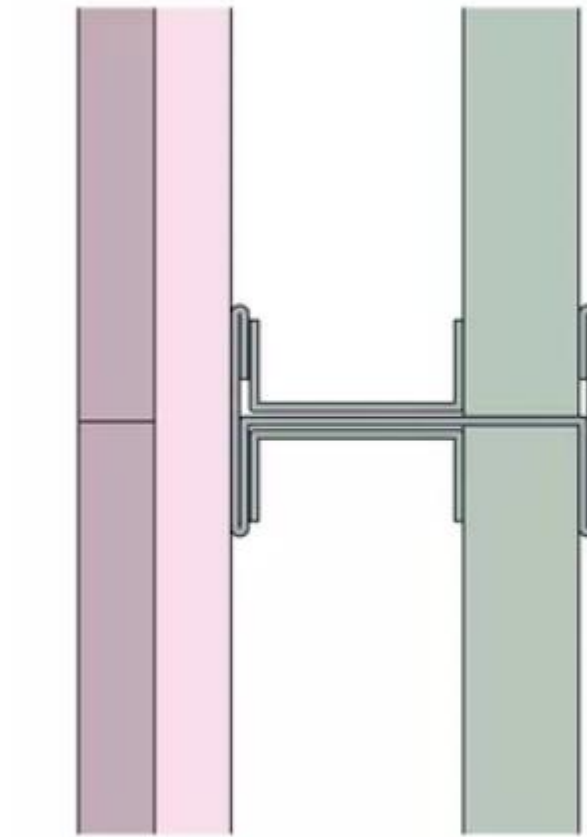
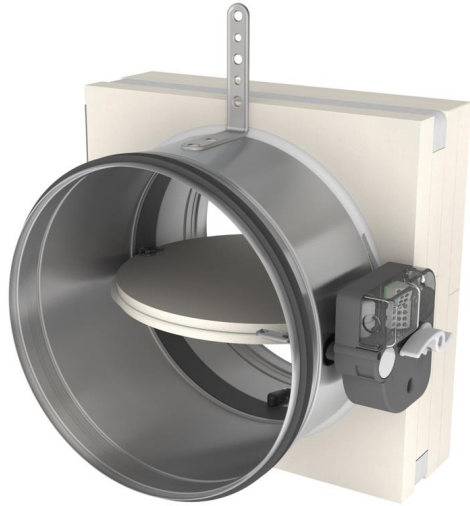
6. Alternatively, the aperture framing can also be stepped.



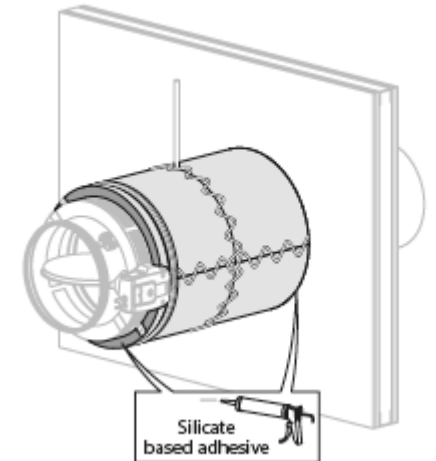
9. The fire dampers may be placed at minimum distance from each other and from the ceiling/floor slab.



"New" Asymmetrical Shaftwalls



Remote of Wall : CE certified !





CE certified
Deflection provision





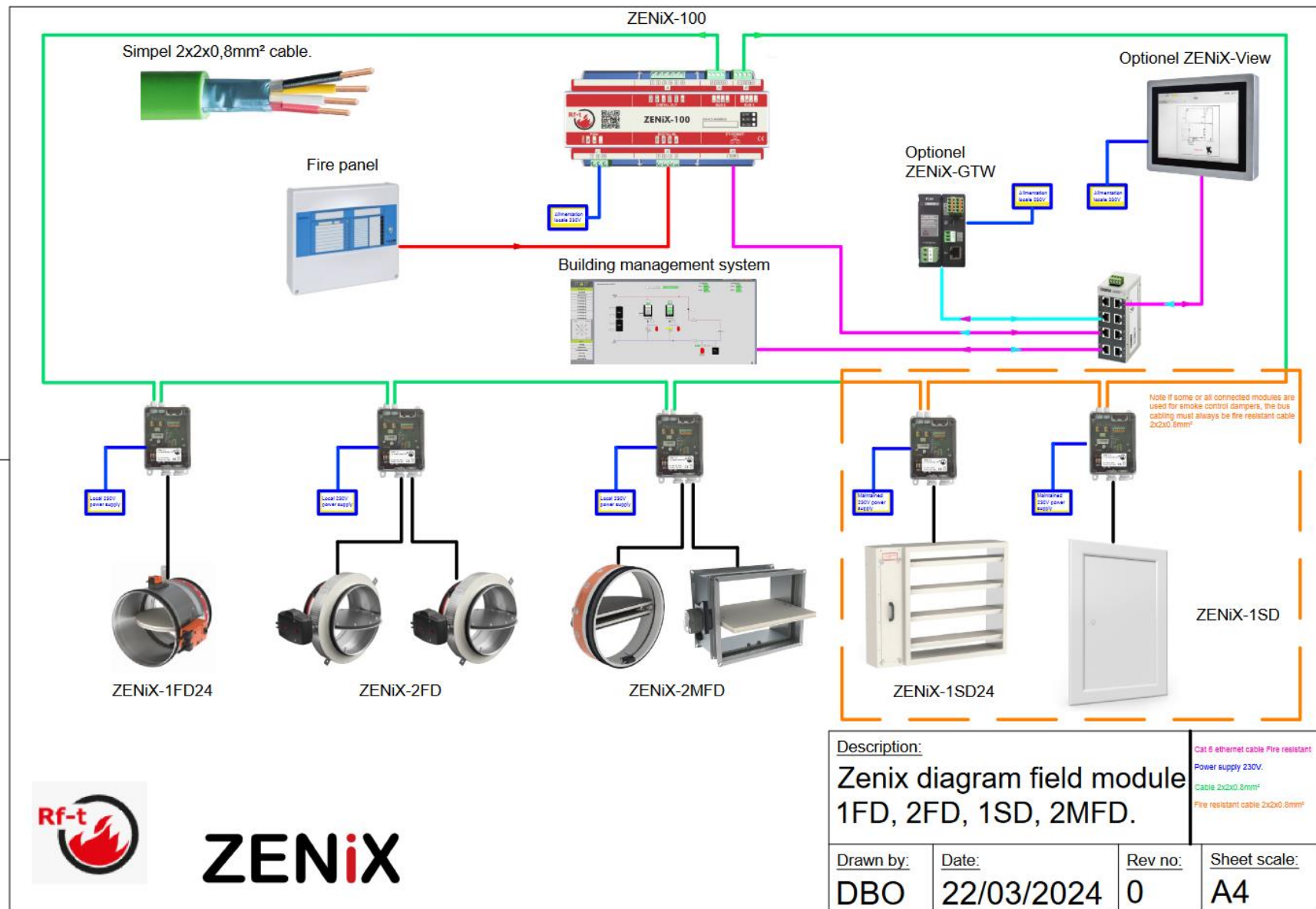
“One-System” Solution

- Rf-Technologies Fire Dampers
- Rf-Technologies Smoke Control Dampers
- ONE and/or Belimo
- ONE-X
- ZENiX



ZENiX

ONE-Supplier System Architecture & Unique Components



ONE-Supplier System Architecture & Unique Components



The diagram illustrates a proposed Zenix system architecture for Vecoflex. Key components and connections include:

- VU120 Modules:** Four modules are shown at the top left, labeled "14 VU120 avec des module de champs 1FD et 2FD". They are connected to a central bus.
- BMS Interface:** A "Système de gestion des bâtiments" (BMS) is connected to a "ZENIX-GTW" gateway unit.
- ONE-X230 Modules:** Three sets of modules are shown, each labeled "Combinaison ONE-X230 avec 2MFD pour SCV90". Each set consists of four actuators and one sensor module.
- Power Supply:** Multiple "Alimentation 24V DC" (24V DC Power Supply) units are distributed throughout the system.
- Central Bus:** A central vertical bus connects all major components.

Description:

Proposition Zenix diagram Vecoflex

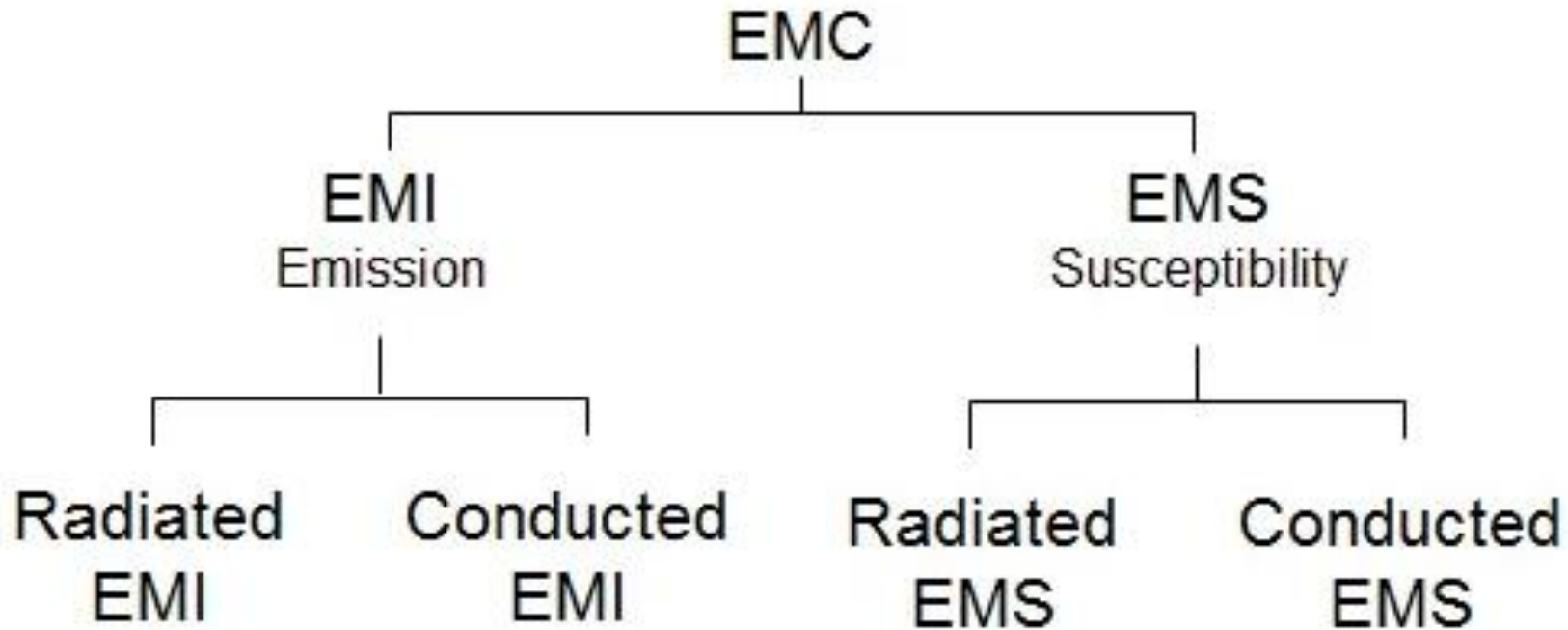
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Proposition Zenix diagram
Vecoflex

Sheet scale:

A4

No ("near" zero) EMC liabilities, with std. Cabling (!)



Simpel 2x2x0,8mm² cable.



ZENiX, Rft Controls Solution, in DATA CENTERS:



DUB 14 & 15 Ireland



OSL 03 & 04 Norway



AMS 06 & Global Switch
The Netherlands



ZENiX, Rft Controls Solution, in Hospitals:



IRA II Belgium



Royal Surrey Hospital &
Yeovil Hospital in the UK

Tergooi & NWZG Alkmaar in the Netherlands



Questions?

ONE, maybe X answer(s) ;-)



Thank you for your interest
you're a fantastic
audience

