

Gaseous fire systems and the insurance sector

Phil Morrell, Engineering Specialist, FM Global

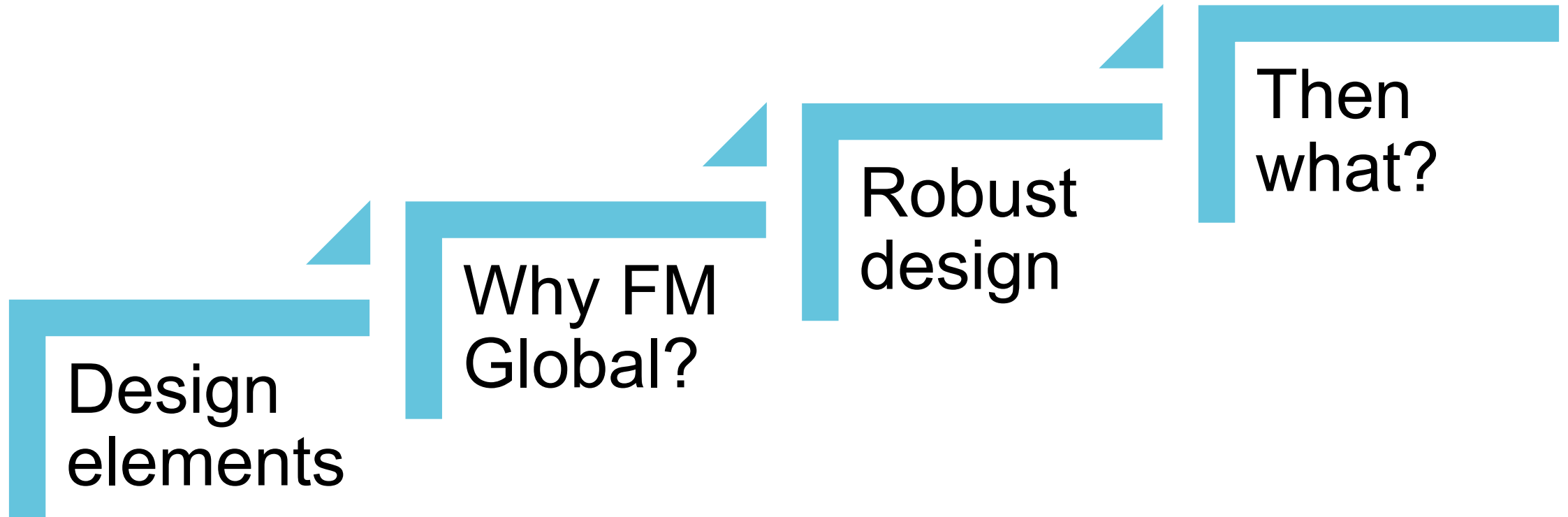
Vikki Dodds, Learning Specialist, FM Global



Wednesday, May 8, 2024

11:45 - 12:30

Breakout Room 4 - Meeting Room 5





Gaseous systems

Quick overview

Two types of agent



Brand name

Agent name

Inert gas

Argonite

IG-55

Inergen

IG-541

Halocarbon

(Synthetics)

FM-200

HFC-227ea

Novec 1230 (Sapphire)

FK-5-1-12

How the agents work

	Inert gas	Halocarbon
Mechanism	Reduces oxygen	Interrupts combustion
Concentration	34-42% in 120 secs	4-9% in 10 secs
Toxicity	Max 52%	Max 10%
Stored as	Gas	Liquid (+ N2)
Weight of agent	Slightly heavier than air	6-12 x heavier than air
Pressure venting	Positive only	Negative, then positive

Two modes of operation

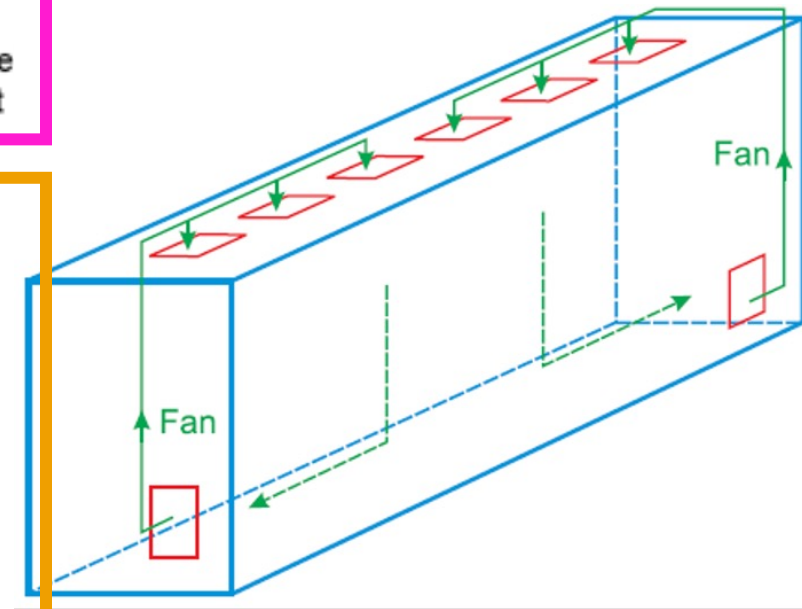
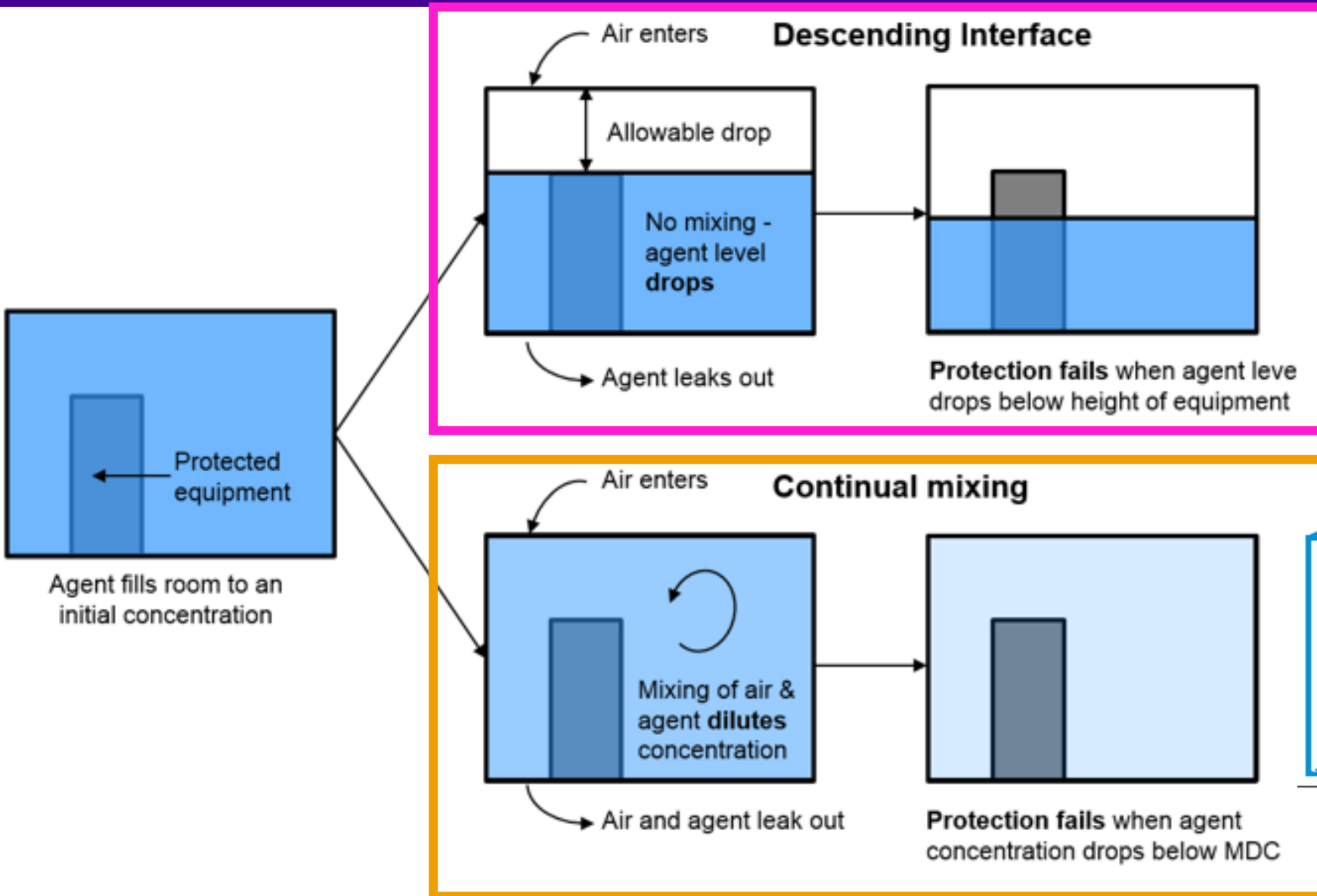



Fig. 4. Continuous agent mixing

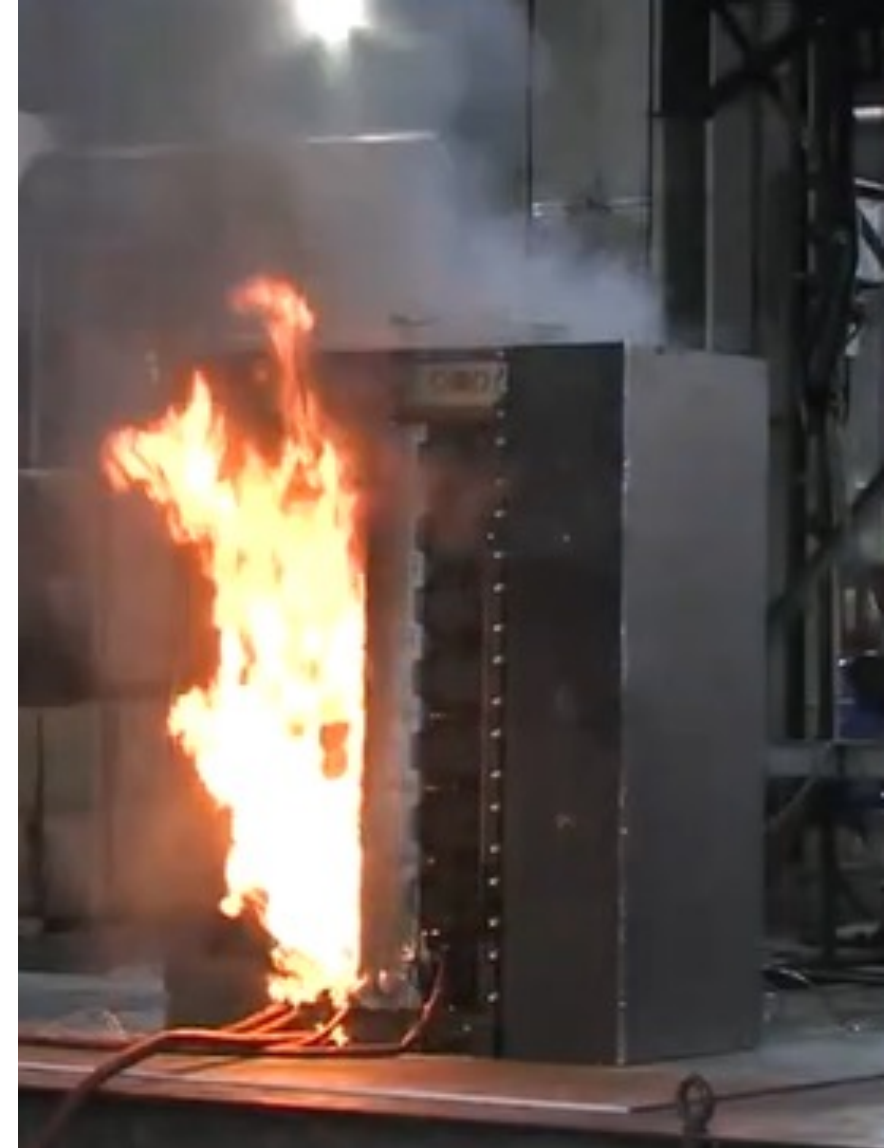


**Why does
FM Global
get involved?**

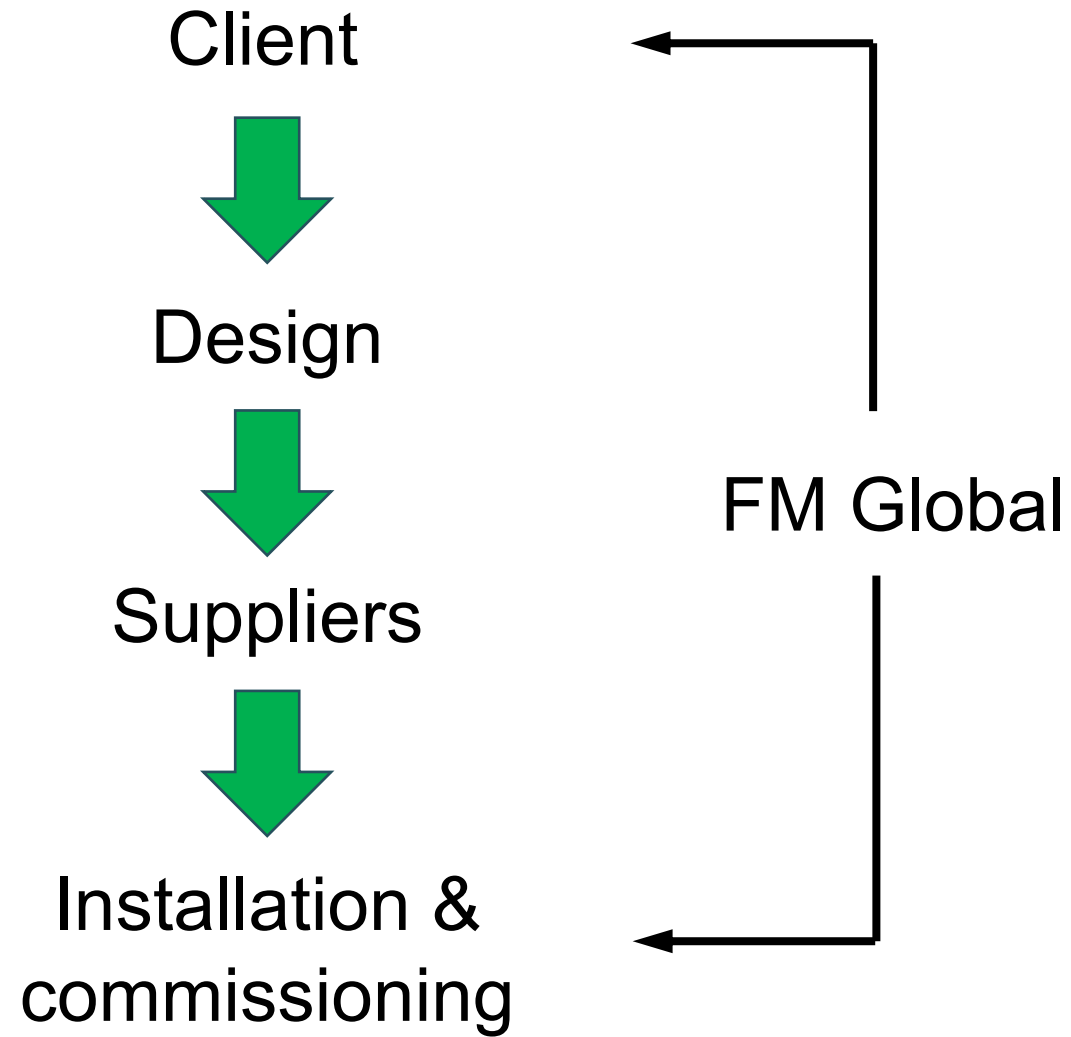
Why does FM Global get involved?



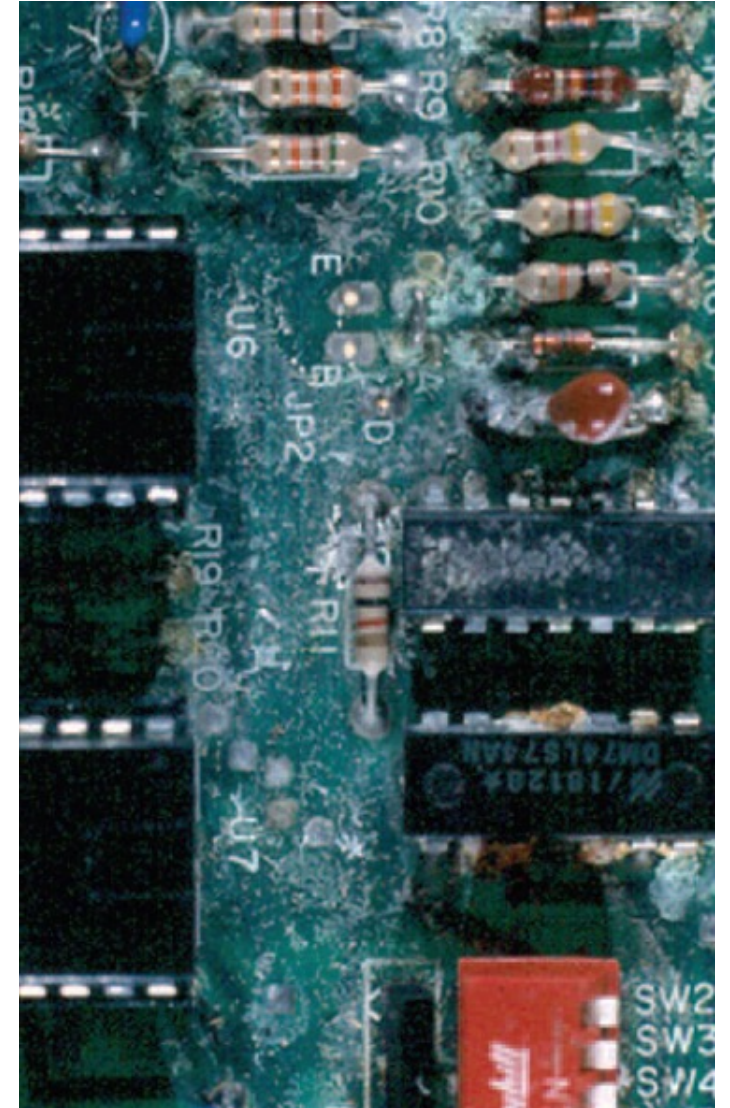
1. Specialised **property** insurer
2. Research and test facility
3. Publish data sheets
4. FM Approved equipment 
5. Engineering → Underwriting

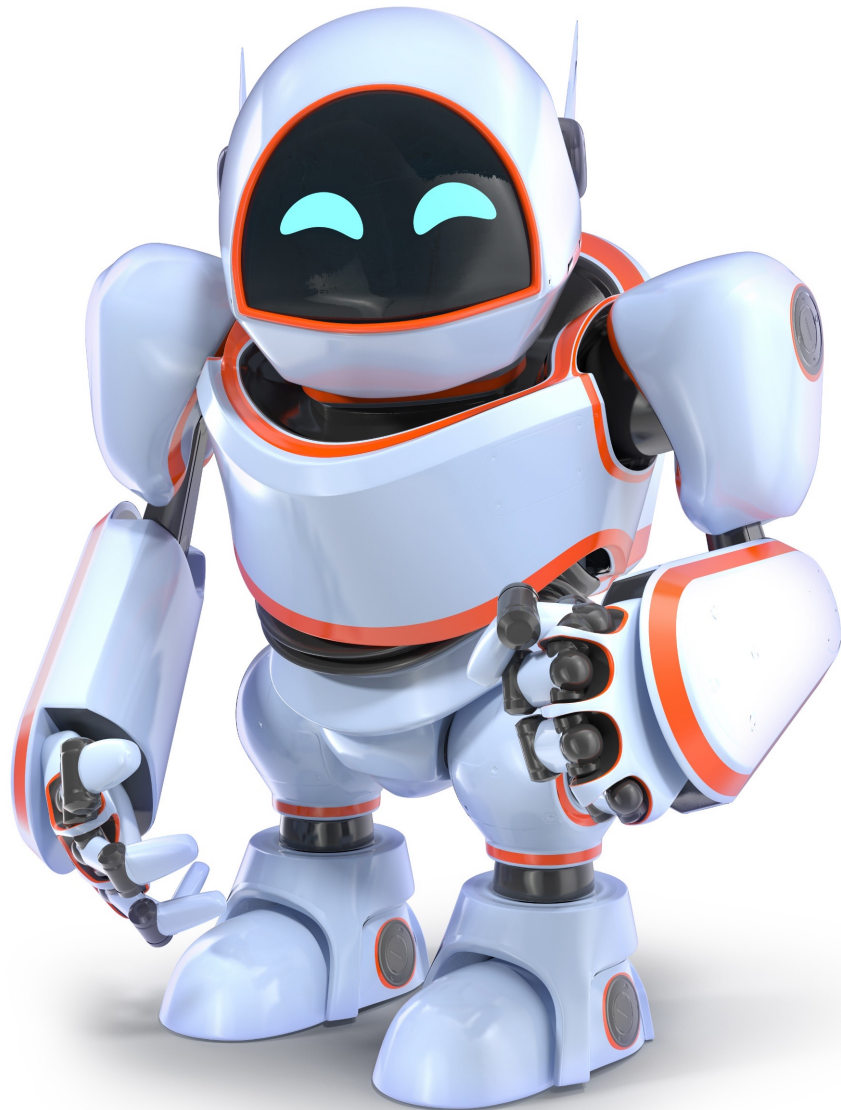


How is FM Global involved?



Millions of reasons to get this right



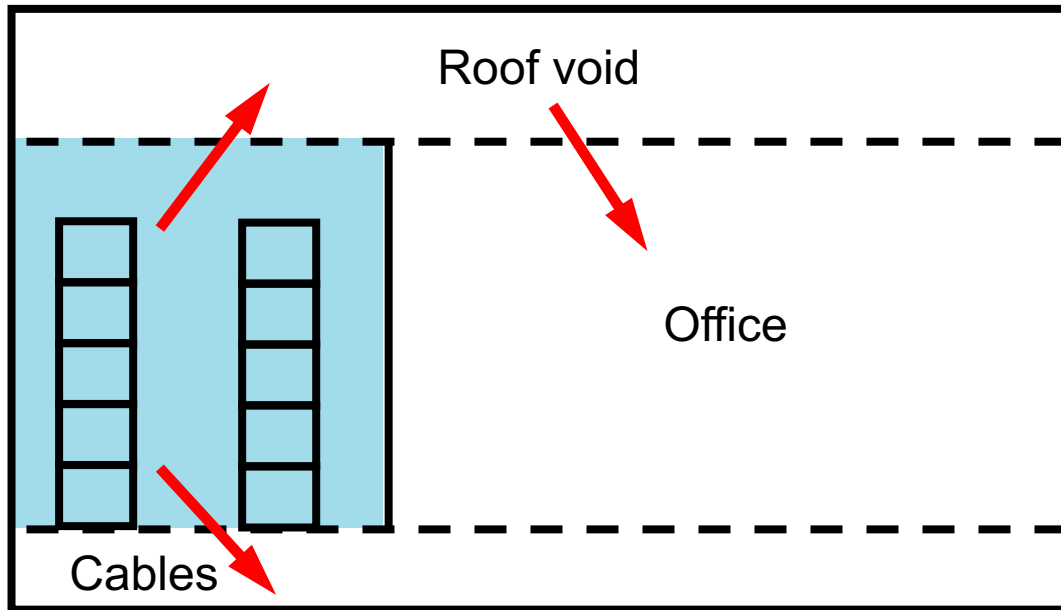


**What makes a
robust design?**

Are there fire sprinklers?

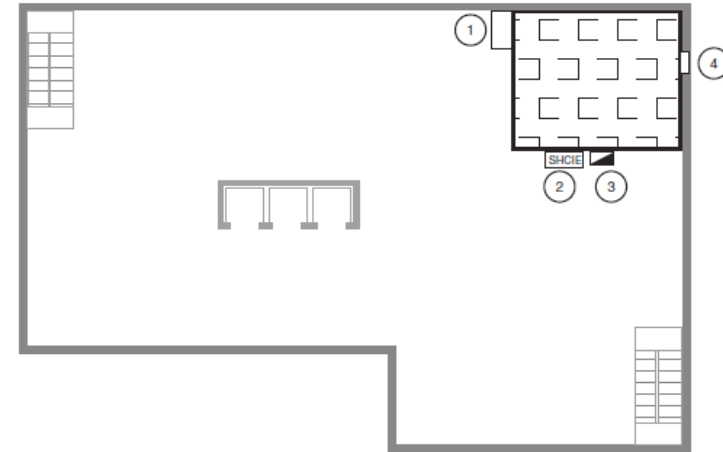


Is the design sound?



GASEOUS FIRE EXTINGUISHING SYSTEM BLOCK PLAN

ACME INDUSTRIES, MAIN ST NEWTOWN LEVEL 3 COMPUTER ROOM



- ① AGENT CONTAINER STORAGE
- ② SPECIAL HAZARDS CONTROL & INDICATING EQUIPMENT
- ③ POST DISCHARGE VENTILATION CONTROL PANEL
- ④ UNCLOSABLE OPENING (1.1m²)

THE GASEOUS SUPPRESSION SYSTEM HAS BEEN DESIGNED AND INSTALLED TO AUSTRALIAN STANDARD AS 4214 - 2017 WITH THE FOLLOWING PARAMETERS

PROTECTED SPACE(S)	IN-ROOM & SUB-FLOOR
GROSS VOLUME	179m ³
NET VOLUME	179m ³
AGENT	HFC-227ea
DESIGN FUEL	HIGHER HAZARD CLASS A
DESIGN CONCENTRATION	8.50%
AGENT QTY. REQUIRED	128kg
ESTIMATED MAX CONCENTRATION	8.67%
PRESSURE RELIEF VENT AREA (MIN)	0.68m ²
REQUIRED HOLD TIME (MIN)	10 min
COMMISSIONED HOLD TIME	11.3 min
HOLD TIME CRITERIA	MECHANICAL MIXING
MAX PROTECTED HEIGHT	N/A

INSTALLED BY: **ABC GAS SUPPRESSION CO.**

MONTH AND YEAR OF INSTALLATION: **JANUARY 2017**

FIGURE 5 BLOCK PLAN

Installation and commissioning – What can go wrong?



Testing and maintenance – Covered by AS1851, so...?



Door fan test – Can you trust it?



Pressure relief vents – Not all are created equal



afpairtech.co.uk



pumafire.co.uk



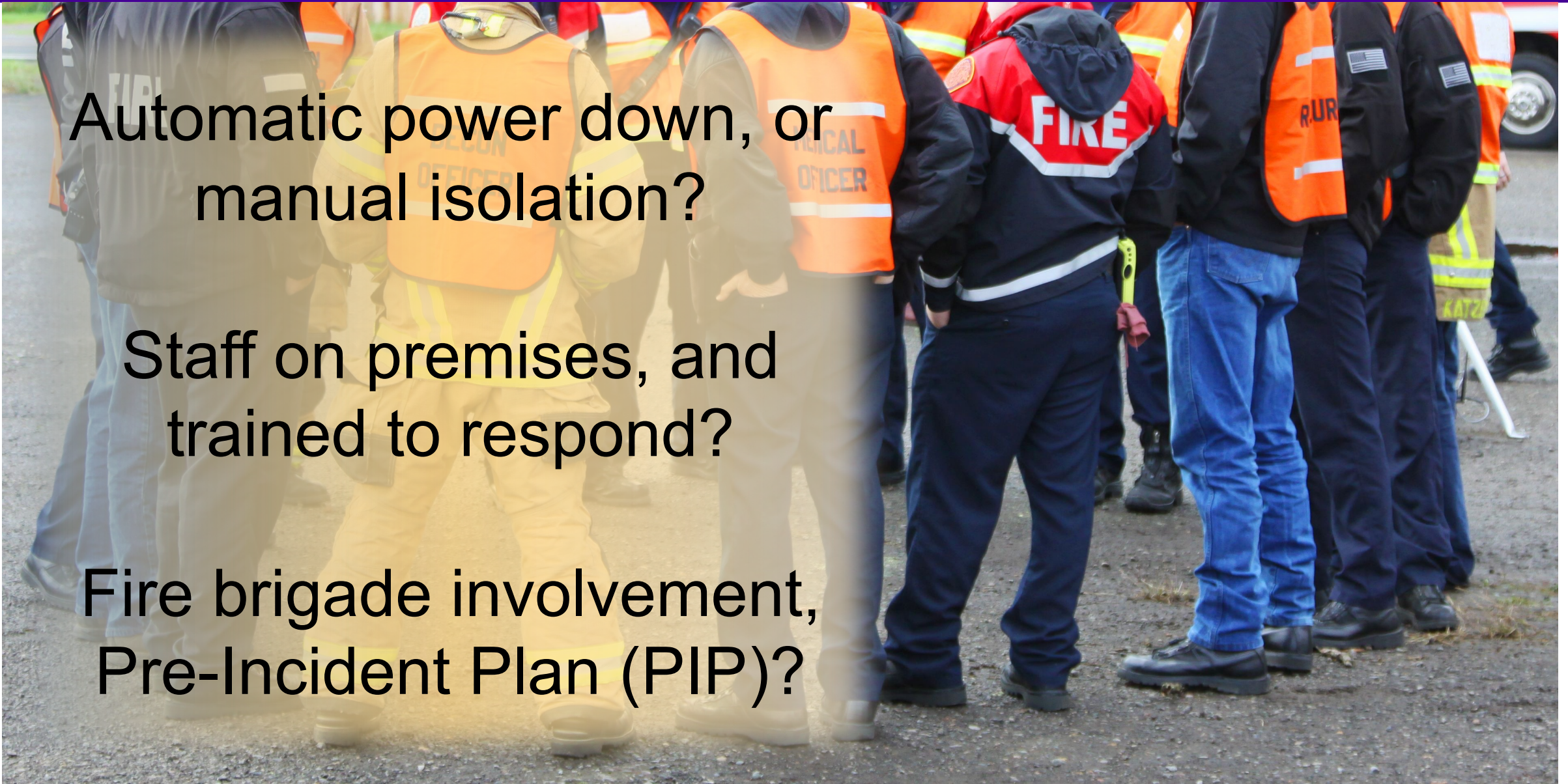
The other half

Is this the plan when the agent runs out?

Automatic power down, or
manual isolation?

Staff on premises, and
trained to respond?

Fire brigade involvement,
Pre-Incident Plan (PIP)?

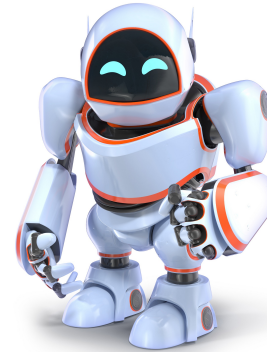




Millions of reasons



Sprinklers



Robust design



Emergency response

What will you do differently now?

Thank you. Questions?

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