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# Fire vs. Touchless door- sensors

The impact of smoke and water-based fire suppression system on touchless door-openers.

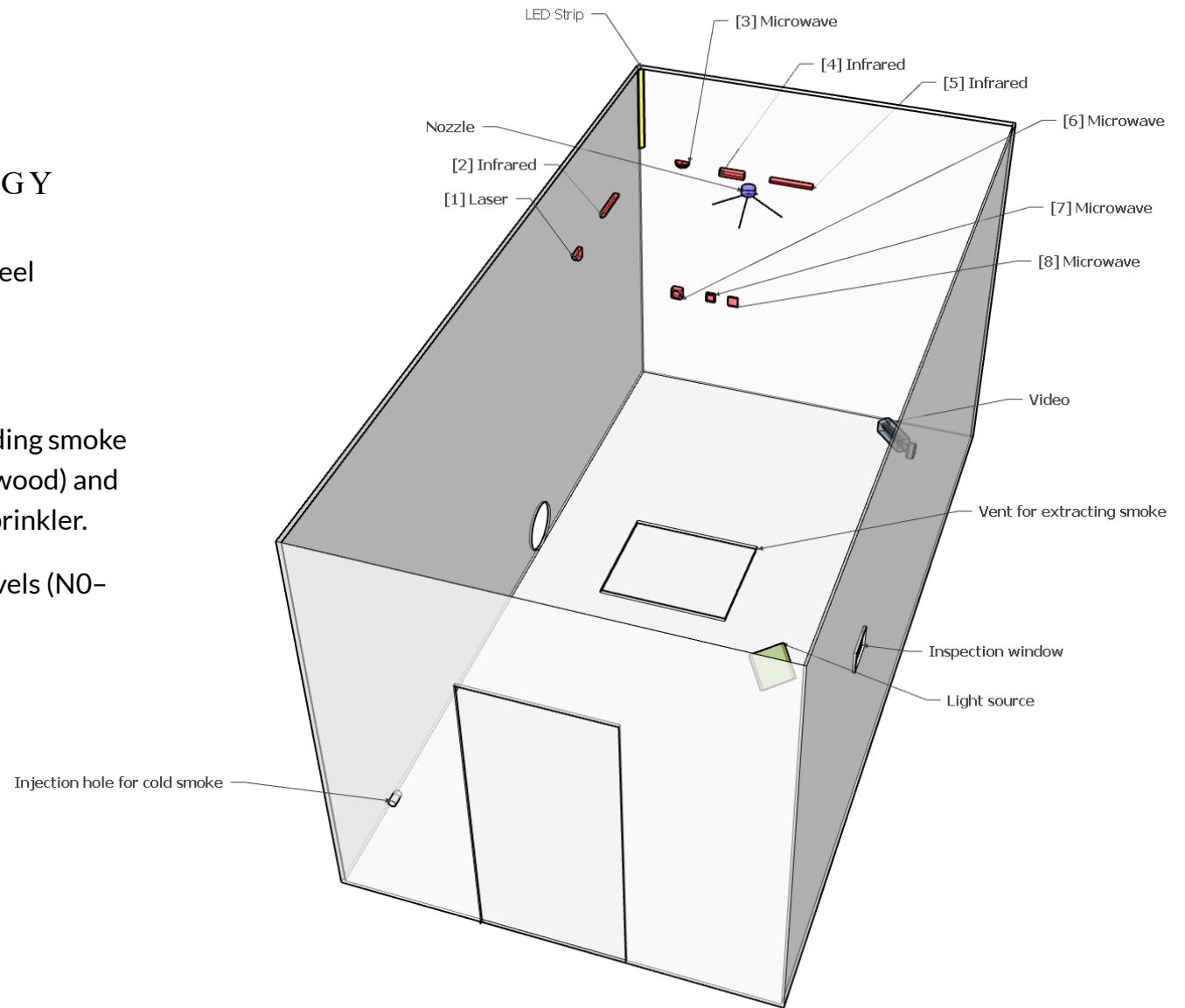
## INTRODUCTION

- Purpose of the study:
  - Investigate how smoke and water-based fire suppression systems affect touchless door sensors.
- Relevance:
  - Safety, reliability, and integration of automation in fire scenarios.



## TEST SETUP & METHODOLOGY

- Corridor dimensions:  $3 \times 3 \times 6$  m steel corridor
- Sensor types: IR, microwave, laser
- Test conditions: 16 scenarios including smoke (cold, diesel, FM-mattress, plastic, wood) and water mist (low/high pressure) + sprinkler.
- Sensor placement and detection levels (N0–N4 + distance for gesture sensors)







## KEY FINDINGS – SMOKE EXPOSURE

- Cold smoke
- FM – Mattress
- Plastic pallet
- Diesel
- Wood

RI.  
SE

## KEY FINDINGS – SMOKE EXPOSURE

- Cold smoke
  - Did not trigger microwave
- FM – Mattress
- Plastic pallet
- Diesel
- Wood

The logo for RISE, with 'RI' stacked above 'SE' in a bold, white, sans-serif font. The background of the slide features a large, semi-transparent image of a fire with thick, billowing white smoke rising from a dark base, partially obscured by the text and logo.

RI.  
SE

## KEY FINDINGS – SMOKE EXPOSURE

- Cold smoke
- FM – Mattress
  - Did not trigger microwave, laser and one IR sensor.
- Plastic pallet
- Diesel
- Wood





## KEY FINDINGS – SMOKE EXPOSURE

- Cold smoke
- FM – Mattress
  - Did not trigger microwave, laser and one IR sensor.
- Plastic pallet
  - Similar findings as for Mattress
- Diesel
- Wood





## KEY FINDINGS – SMOKE EXPOSURE

- Cold smoke
- FM – Mattress
- Plastic pallet
- Diesel
  - Did not trigger Microwave and one IR sensor
- Wood



RI.  
SE

## KEY FINDINGS – SMOKE EXPOSURE

- Cold smoke
- FM – Mattress
- Plastic pallet
- Diesel
- Wood
  - Did not trigger microwave “Buttons” and one IR Sensor





## KEY FINDINGS – WATER MIST & SPRINKLER

- Sprinkler
- Low Pressure Watermist
- High Pressure Watermist





## KEY FINDINGS – WATER MIST & SPRINKLER

- Sprinkler
  - Triggered all but one “Microwave button”
- Low Pressure Watermist
- High Pressure Watermist



## KEY FINDINGS – WATER MIST & SPRINKLER

- Sprinkler
- Low Pressure Watermist
  - Did not trigger two “Microwave” buttons
- High Pressure Watermist





## KEY FINDINGS – WATER MIST & SPRINKLER

- Sprinkler
- Low Pressure Watermist
- High Pressure Watermist
  - Did not trigger any “Microwave” sensors





## CLOSING & Q &A

Sensor	Sensor #	Low pressure watermis	High pressure watermist	Sprinkler
Laser	1	Water	Water	Water
Infrared	2	Water	Water	Water
Microwave	3	Water	N0	Water
Infrared	4	Water	Water	Water
Infrared	5	Water	Water	Water
Microwave button	6	10 cm	15 cm	5 cm
Microwave button	7	10 cm	15 cm	Water
Microwave button	8	Water	6 cm	Water

No Smoke	Cold Smoke	Diesel	FM-mattress	Plastic Pallet	Wood
N2	Smoke	Smoke	N1	N1	Smoke
N2	Smoke	Smoke	Smoke	Smoke	Smoke
N0	N0	N0	N0	N0	Smoke
N2	Smoke	N4	N1	N1	N1
N2	Smoke	Smoke	Smoke	Smoke	Smoke
26 cm	24 cm	13 cm	9 cm	14 cm	10 cm
18 cm	14 cm	15 cm	7 cm	15 cm	11 cm
16 cm	19 cm	8 cm	4 cm	7 cm	8 cm