Emerging Technologies in Fire Detection

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2011

Early Warning Detection

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Early Warning Smoke Detection

Our History

- 90,000 lives saved
- Fire Service drove the market, the code and acceptance

Today

- Too many residential deaths in homes with Smoke Alarms
- Controversy on detection method (Ion vs. Photo)
- Doing the same in residential for past 40 years

Early Warning Detection

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The Next Steps……..

- In our hands
- NFPA 72-2013
    - Location requirements
    - Smoke Alarms immune to cooking nuisance
- UL 217 and 268
    - Preparing for major performance changes
        - Smoldering and flaming foam tests
- What will be the next step in Smoke Alarm and Detection Technologies
-

Spot Smoke Detection – Ionization

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Principle of Detection – Changes in Conductivity

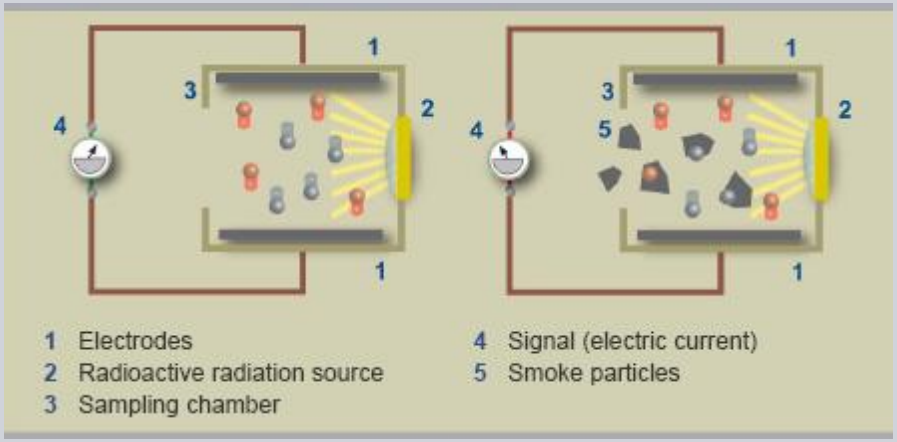
^{241} Am – (Americium 241) source of alpha particles

Half-life of ^{241} Am is 432.2 years

Alpha particles are emitted to create current flow

Emitter and collector electrodes measure changes

Smoke particles absorb alpha particles and reduce current flow to create an alarm



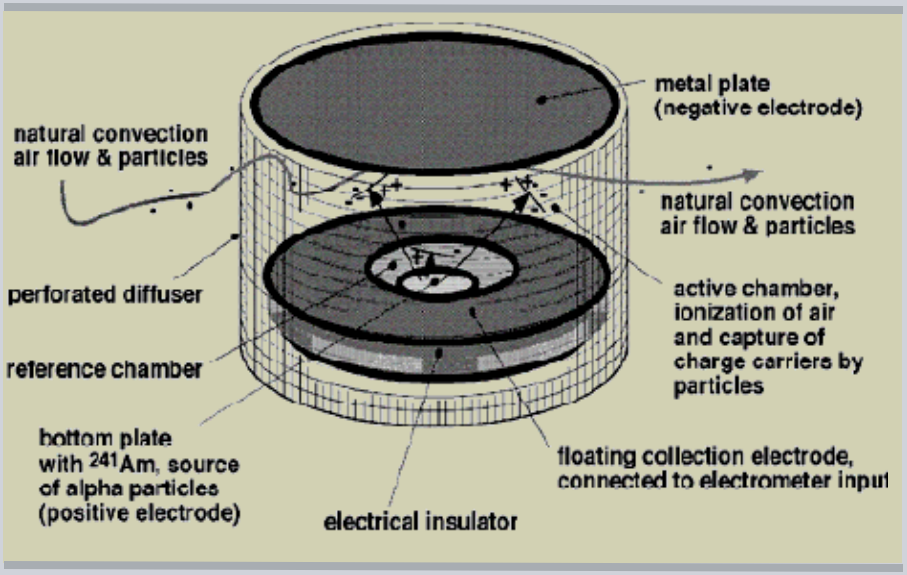
Application Notes

Detects fire in the incipient stage

Detects particles < 3 microns in size

More unstable at higher airflows

Requires proper safe disposal procedures



Spot Smoke Detection – Photoelectric

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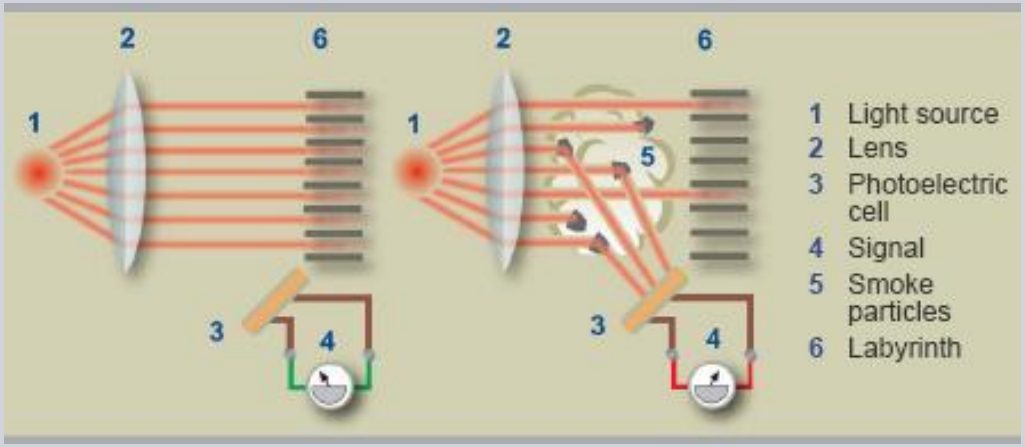
Principle of Detection – Light Scattering

Infrared LED light source

Mirror used to pass beam through chamber

Smoke particles scatter the light beam

Photo sensor detects loss of light to create an alarm

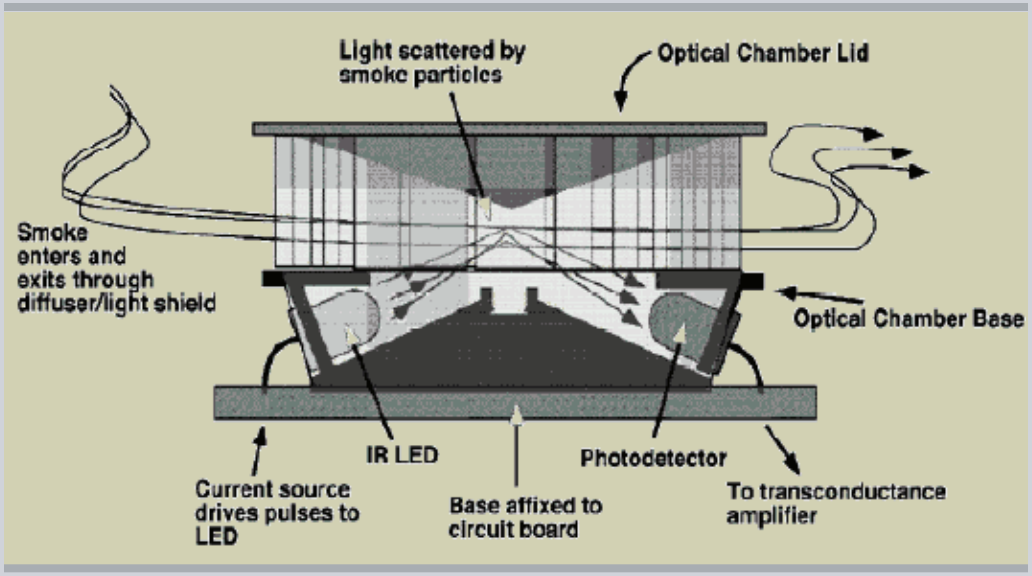


Application Notes

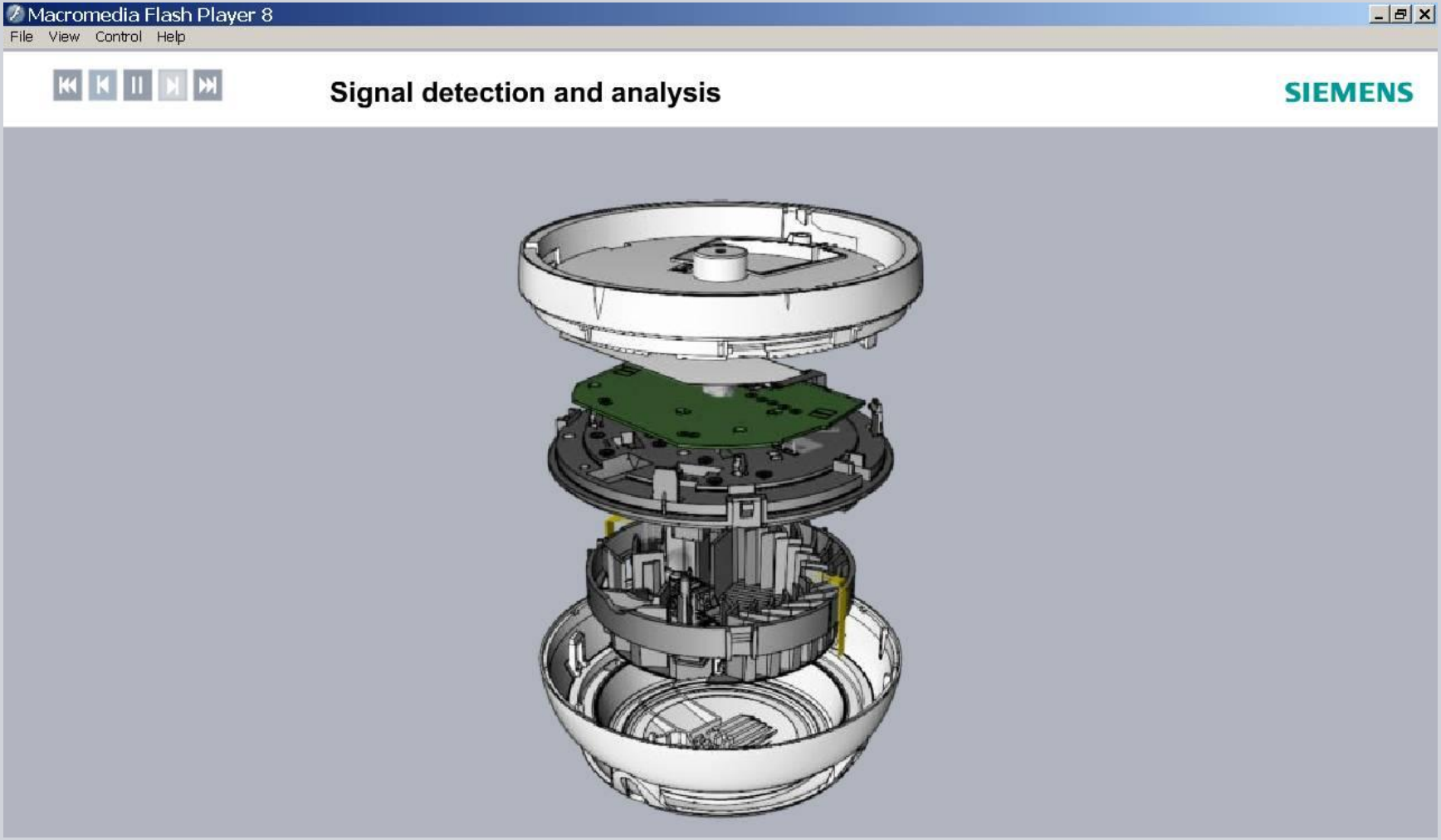
Detects fire in the smoldering stage

Detects particles >= 3 microns in size

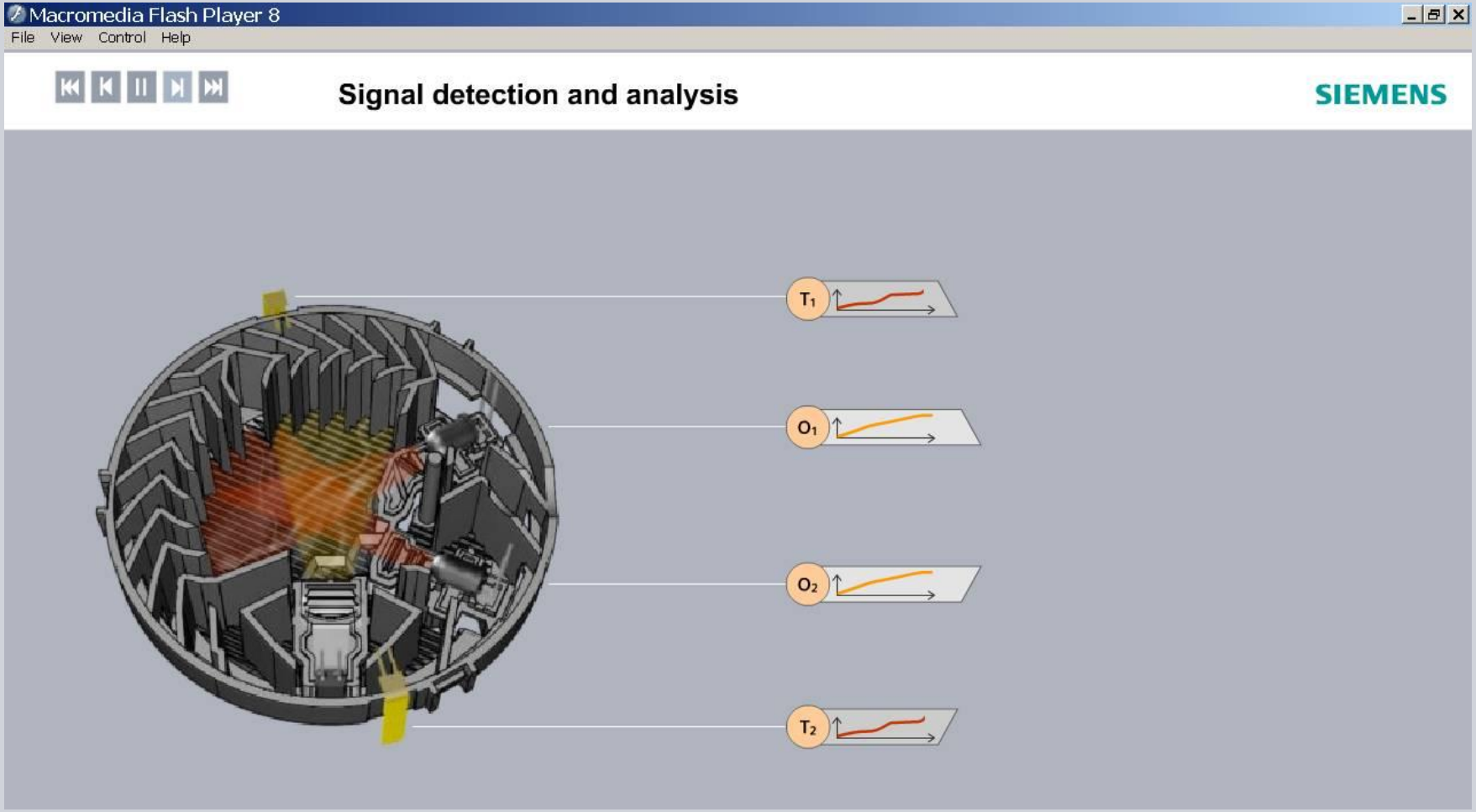
More resistant to deceptive phenomenon



Revolutionary detection technology inside



Revolutionary detection technology inside



New Detector Summary

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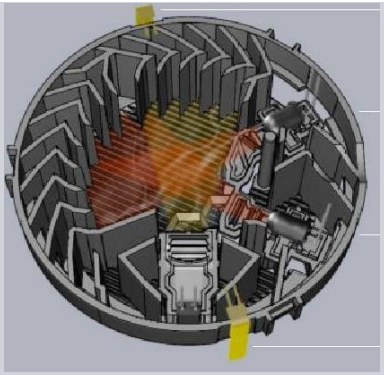
Forward backward light scattering



- ✓ *improved detection, nuisance alarm rejection*

2. **Meets NFPA 76 as a VEWFD – Telco / Data center market**
3. **CO life safety meets NFPA 720 & UL 2075 & UL 2034**
4. **Ionization detector replacement – Green – ROHS compliant**
5. **Patented** ▪ ASAtechnology™ **(Advanced Signal Analysis)**
6. **Co- exist with H-Series detectors for backward compatibility**

High Level Feature / Benefits Provided

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FDOOT:

1st detector in Americas dual optics Forward Backward light scattering

- *Improved detection to all fire types (smoldering and flaming)*
- *Improved Immunity to deceptive phenomenon (nuisance alarms)*
  Includes a "No false alarm guarantee"

✓ **Replaces need for Ionization detectors**

- **Green** technology (plus RoHS compliant)
- *From Siemens who pioneered ionization smoke detection*

✓ **Meets NFPA 76 Telco Standard with VEWFD (0.2%/ft) pre-alarm**

✓ **Expands FirePrint technology concept – application profiles**

- ▪ ASAtechnology™ ***A**dvanced **S**ignal **A**nalysis*
- *Expanded Detector profiles (parameter sets) from 11 to 22 – more applications*

High Level Benefits Provided (Differentiators)

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FDOOTC: *all the same features from previous slide plus……..*

adds CO sensor

- Selectable as a Multi-Criteria (cooperative smoke detector)
  - ✓ ***Providing even greater nuisance alarm avoidance***
- As a smoke detector and an INDEPENDENT CO Life Safety (Meeting UL & NFPA standards) system standards
  - ✓ *Meets NFPA 720*
  - ✓ *Meets UL 2075 & UL2034*
  - ✓ *Eliminates the requirement for 2 separate detectors*
- Listed UL (CO compliant) system (Panel & Detector)
- Includes a Duct Housing version with CO sensor

FDOOT & FDOOTC Parameter (Profiles) set

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22- FDOOT selectable Profiles :

OOT_Appl_1: **Telecommunication**
OOT_Appl_2: **Incipient**
OOT_Appl_3: **Ion equivalent**
OOT_Appl_4: **Data Center**
OOT_Appl_5: **Computer Room**
OOT_Appl_6: **Precious Storage**
OOT_Appl_7: **Power Generation**
OOT_Appl_8: **Hospital**
OOT_Appl_9: **Health Care**
OOT_Appl_10: **Dormitory**
OOT_Appl_11: **Utility Room**
OOT_Appl_12: **Lobby**
OOT_Appl_13: **Office**
OOT_Appl_14: **Hotel**
OOT_Appl_15: **School**
OOT_Appl_16: **Warehouse**
OOT_Appl_17: **Manufacturing**
OOT_Appl_18: **Parking Garage**
OOT_Appl_19: **Open Environment**
OOT_Appl_20: **EMI noise**
OOT_Appl_21: **Hostile**
OOT_Appl_22:**Duct**

9- FDOOT selectable Temp Profiles

T_Appl_1: Fixed_135
T_Appl_2: Fixed_145
T_Appl_3: Fixed_155
T_Appl_4: Fixed_165
T_Appl_5: Fixed_175
T_Appl_6: RoR + Fixed_135
T_Appl_7: RoR + Fixed_175
T_Appl_8: reserved
T_Appl_9: reserved

FDOOTC (CO) Profiles
OOT_Appl_23: Data Center w CO
OOT_Appl_24: Hotel w CO
OOT_Appl_25: Hostile w CO
OOT Appl 26: Duct w CO
CO_Appl_0: UL2075
CO_Appl_1: UL2034
CO_Appl_2: Reserved
CO_Appl_3: Static 40
CO_Appl_4: Static 50
CO_Appl_5: Static 60
CO_Appl_6: balanced US1

Fire Test Lab

	Danger level	
OP320 scattered light smoke detector		
FDOOT241 ASA neural fire detector (harsh)		
FDO241 ASA wide-spectrum smoke detector (harsh)		
FDOOT241 ASA neural fire detector (clean)	Advice	
FDO241 ASA wide-spectrum smoke detector (clean)	Advice	
F910 ionization smoke detector	Alarm	X