Reliable Smoke Detection for Lobbies, Atria and Multi-storey Open Spaces

Lobbies and atria in hotels, corporate headquarters, malls and similar venues present particular challenges for smoke detection. These architecturally impressive areas are often open with multi-level constructions dominated by large, glass windows and roofs. The aesthetics and construction of such areas do not allow for easy spot or point detector placement and certainly do not favor wiring.

Similar challenges exist for multi-storey open constructions such as theatres, concert halls and other entertainment venues. These facilities seat thousands of spectators, so reliable detection and timely evacuation is critical.

Fire Detection Challenges

- Difficult access for detector installation, maintenance, testing and replacement
- Exposure to direct sunlight
- Multiple reflective surfaces causing false alarms
- Expensive wiring
- Building movement and flex
- Multi-level detection
- Aesthetics
- Safe and timely evacuation

Aspirating smoke detectors (ASDs) provide the fastest and most reliable detection but may not be cost-effective if very early warning is not the priority.

Beam detectors, a common alternative for spot detectors, have been an adequate and cost-effective solution for detecting smoke in atria, although they don't necessarily fit the aesthetic requirements. Also, they typically come with large, industrial-looking reflectors and often require a control unit at ground level that is prone to vandalism. Wiring in areas that are difficult to access makes deploying beam detectors costly and aesthetically displeasing.

The sun, as its trajectory changes with the seasons, is a major contributor to false alarms. Receivers often require special protection caps to avoid reflected sunlight. Reflective surfaces cause problems with reflective beams, even the motorized detectors with auto-aligning capabilities.

OSID
by ◆ xtralis™

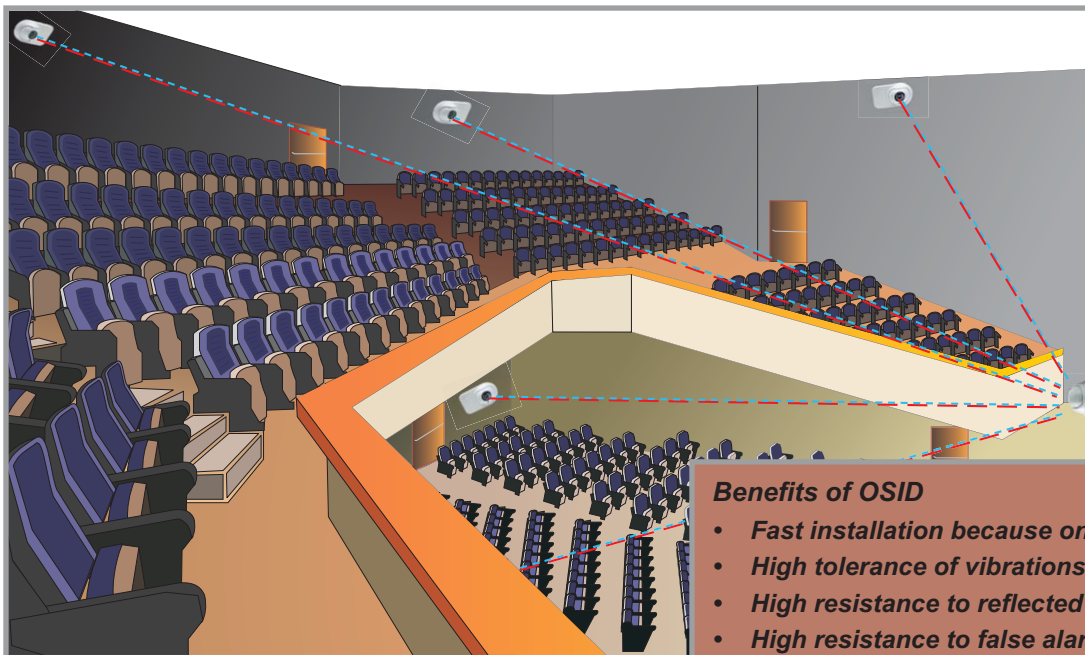# Open-area Smoke Imaging Detection (OSID) by Xtralis

OSID by Xtralis overcomes the weaknesses of beam detectors due to its its aesthetics and multi-emitter capability. A system can consist of up to seven Emitters and one Imager placed on opposite walls, roughly aligned with one another.

Emitters are battery-powered or wired and placed at different heights, adjusting easily to modern design of atria and lobbies. The installation requires a minimum of wiring, only along the walls while leaving the ceilings untouched. The labor component of the installation is equally low. Three Emitters will cover an area of up to 600 m^2 (6,000 sq. ft.); five Emitters will go up to 2,000 m^2 (20,000 sq. ft.), all using just a single 80-degree Imager placed in a corner of the room. One-on-one Imager-emitter configuration using a 7-degree Imager can protect corridors of up to 150 m (492 ft).

In addition, OSID offers many advantages over traditional beam and spot smoke detectors, the primary one being the use of dual light frequencies. Ultraviolet (UV) and infrared (IR) wavelengths, which are outside the range visible to humans, assist in the identification of real smoke compared to larger objects such as insects and dust, thus reducing false alarms. Furthermore, OSID is equipped with a CMOS imaging chip with many pixels rather than a single photo-diode. This concept allows the Imager to provide simple alignment as well as excellent tolerance to building movement and vibration, without the use of moving parts.

OSID's optical filtering, high-speed image acquisition and intelligent software algorithms enable the Imager to process the image and provide new levels in stability and sensitivity while providing greater immunity to high-level lighting variability, allowing OSID to provide extra stability in sunlit areas like atria.

Alignment of the Emitter is simple and is achieved by using a low-cost laser alignment tool to rotate the optical spheres until the laser beam from the alignment tool is within proximity to the Imager. No further alignment is required, resulting in extremely fast installation and set-up. Only the Imager has to be wired.

Benefits of OSID

- *Fast installation because only the Imager is wired*
- *High tolerance of vibrations and structural movement*
- *High resistance to reflected sun light*
- *High resistance to false alarms*
- *High resistance to intruding objects, banners*
- *3-D coverage*

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