

## The Merlion Awards 2011

1. Product name:

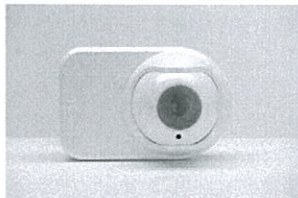
2. Company name: Xtralis Pty Ltd

3. Booth number: C29

4. Description of the product potential use and principles of operations (max 500 words)

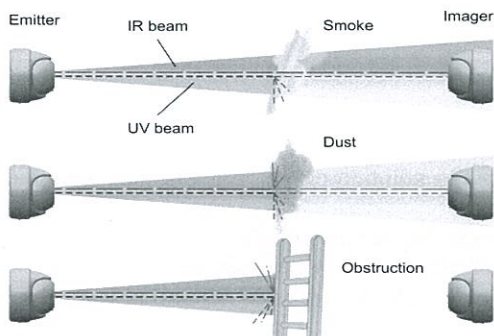
Large, open spaces – airports, train stations, stadiums and shopping malls – pose unique challenges to reliable fire detection due to their environmental nature and limitations. The limitations of traditional smoke detection technologies include:

- Susceptible to nuisance alarms from dust and dirt, birds and insects, foreign objects, fog and steam, reflections
- High installation and maintenance costs
- Difficult to align
- Susceptible to building movement
- Affected by ambient lighting
- Inconsistent response to various smoke types



Open-area Smoke Imaging Detection (OSID) by Xtralis is a new technology designed to overcome these common fire detection challenges with its unique, patented dual-wavelength multi-beam technology. In its simplest configuration, a system consists of one Emitter and one Imager placed on opposite walls, roughly aligned with one another.

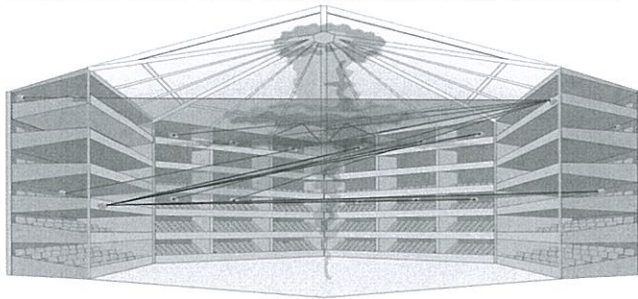
OSID offers many advantages over traditional beam and spot detectors, the primary one being the use of **dual light frequencies**. Ultraviolet (UV) and infrared (IR) wavelengths, which are outside the range visible to humans, assist in the identification of real smoke compared to larger objects such as insects and dust, thus **reducing false alarms**. By using two wavelengths of light to detect particles, the system is able to distinguish between particle sizes. The shorter UV wavelength interacts strongly with both small and large particles while the longer IR wavelength is affected only by larger particles. Dual wavelength path loss measurements therefore enable the detector to provide repeatable smoke obscuration measurements, while rejecting the presence of dust particles or solid intruding objects.



Furthermore, OSID is equipped with a CMOS imaging chip with many pixels rather than a single photodiode, providing the OSID detector with a wide viewing angle to locate and track Emitters. This concept ensures easy alignment at installation, as well as excellent **tolerance to building movement and vibration**, without the use of moving parts. Optical filtering, high-speed image acquisition and intelligent software algorithms also enable the OSID system to provide new levels of stability and sensitivity with greater immunity to high level lighting variability.

Alignment of the Emitter is simple, achieved by using a low-cost laser alignment tool to rotate the eye-ball 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**, which is a major benefit in large open space applications where access for installation is often limited or restricted.

The imaging chip also allows for the deployment of up to seven Emitters per Imager. These Emitters can be placed on different floors, providing detection at multiple levels of the facility, giving the fire engineer flexibility in providing extra protection at lower levels. Only the Imager has to be wired versus every receiver as is the case with traditional beam detectors.



The benefits of OSID are:

- Simple, quick installation
- Low false-alarm rate
- Long range up to 150m
- High resistance to dust and dirt
- High tolerance to vibration and structural movement
- High resistance to intruding objects

5. How does the product meet the judging criteria (max 250 words), based on:

### **Product innovation**

The fundamental innovations in OSID are the use of:

1. two frequencies (IR and UV), and
2. a CMOS array in the Imager.

### **Design**

The design has a number of secondary innovations that make the solution particularly practical including:

1. the option of battery powered Emitters to minimise the wiring requirements,
2. an aesthetic eye-ball arrangement allowing for fast alignment over a wide angle,
3. a neat laser alignment tool which simultaneously aligns and locks the eye-ball and powers the Emitter,

4. low power consumption so the Imager can be loop powered.

**Benefits to consumers**

The dual-wavelength technology in OSID allows it to characterize the particles or objects that enter the beam path because there is a difference in the attenuation of the two frequencies by dust, steam, fog and foreign objects compared to smoke. Thus OSID can discriminate between these nuisances and smoke, providing very reliable smoke detection performance.

**User-friendliness of product**

A CMOS array replaces the single photo cell in traditional receivers. This array, combined with appropriate optics, provides for a large field of view which allows Emitters to be located automatically during commissioning. Moreover, any subsequent misalignment due to building vibration or movement can be tolerated and tracked without false alarm.

**Significant of Unique feature**

Up to seven Emitters can be placed within the field of view of a single Imager at different heights. Reflections off glass, mirrors, light fittings etc. do not confuse OSID because the beam from each Emitter is coded such that the Imager can identify and ignore any such reflections. This provides the fire engineer with enormous flexibility in protecting large open spaces against fire.

