

### Oil Dispersant Warehouse

#### Fireray smoke detectors protect valuable chemicals from fire and water.

The sensitivity of beam smoke detectors over long distances makes them a perfect choice for protecting warehouses. A warehouse full of sensitive emergency-response products is not only safeguarded against fire but also potential damage from the indiscriminate use of water sprinklers.

##### KEY FACTS

Chemicals for dispersing oil spills are susceptible to damage from both fire and water, and so a specific fire protection strategy is required.

The system installed in the warehouse is designed to give rapid, early-stage smoke detection, allowing manual fire control instead of the automatic use of sprinklers.

The Fireray 5000's sensitivity over long beam lengths combined with its automatic alignment process made it the ideal choice for this application.



### Overview

Beam smoke detectors provide wide-area detection and are used when it is impractical, inappropriate or not cost-effective to use traditional point-type detectors. They are ideally suited to large interiors with high ceilings, such as warehouses. For these reasons, Forward Controls Ltd turned to FFE's Fireray 5000 reflective beam smoke detectors when they were commissioned to protect a warehouse of important chemical products in Southampton, UK, managed by Oil Spill Response Ltd (OSRL).

OSRL is an industry-funded cooperative which exists to respond to oil spills wherever in the world they may occur. A key element in the response to a spill is the spraying of oil dispersants to break up the slick into small droplets that are more quickly degraded and, as a result, have a reduced environmental impact. OSRL's warehouse in Southampton holds a huge quantity of these products, ready to be shipped out at a moment's notice.

In this case, the importance of rapid and accurate smoke detection was even greater than normal because the warehouse could not be fitted with a sprinkler system. Oil dispersants are designed to mix with both water and oil, and will be degraded if they come into contact with water during storage. OSRL therefore wanted a system that would provide an alarm signal as quickly as possible after a fire starts, to give time for firefighters to tackle the fire at its precise location, rather than activating a sprinkler system which could damage the products within a large portion of the warehouse.

Optical beam detectors work by measuring the slightest reduction in the intensity of the infrared beam caused by smoke particles passing through the beam and scattering its light. This effect operates at any point along the beam's length, which can be up to 100 metres in the case of the Fireray 5000.

## Solution

When installing an optical beam detector to protect large buildings, the alignment of the beam is a crucial step which can greatly affect the time and cost of installation. Alignment can be challenging, especially for reflective beams which tend to diverge as they return from the reflector to the detector. FFE has patented a thorough and foolproof method for targeting and aligning the infrared beam in their reflective beam detectors (Fireray 5000 and Fireray One). This relies on the use of motorised beams,

where moveable mounts in the detector precisely direct the projection of the beam under computer control. FFE is one of only two companies licensed to use motorised beams in smoke detectors.

The alignment method begins with manually targeting an integrated laser on to the reflector mounted at the far end of the protected space. This is then followed by a three-stage automatic alignment routine:



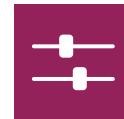
### Search

**The beam is moved systematically in a rectangular pattern until the reflected signal indicates that it is striking some part of the reflector.**



### Centre

**Further small beam adjustments are made to confirm that the beam is in the centre of the reflector.**



### Adjust

**The beam is adjusted in the x and y directions to fully cover the reflector, while transmitter power and detector gain are optimised.**

Thanks to this routine, the beams are aligned quickly and reliably, which is essential to ensure that smoke is detected accurately and rapidly.

Another benefit of the Fireray 5000's motorised beams is that any movement in the building, such as from expansion in hot weather or settling of the foundations, can be compensated for, with perfect alignment maintained continuously.

“

**According to Tony Powell of Forward Control, the company opted for FFE's Fireray detectors as they contain trusted technology which offered the best solution for the large storage warehouse. Tony added that OSRL is extremely satisfied with the performance of the detectors.**