



HAZDET

Hazard Detection Solutions
Fire and Gas Detection Consultants

What are Fire and Gas Detection coverage assessments or Detection Mapping studies?

The term 'Fire and Gas Detection Mapping' covers a range of procedures that assess the efficiency of Fire and Gas detection layouts against specific 'idealised' targets. In essence the practice of Fire and Gas Detection Mapping ensures adequate densities of detectors are distributed throughout hazardous zones.

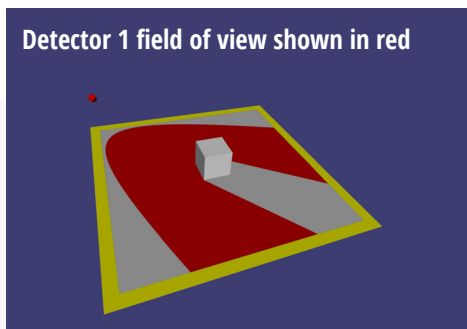
The process starts with a consideration of the risk and the assessment of a suitable 'detection target' for the zone (fire size or the size of the gas cloud). This is linked to the type of facility and may also be determined by your companies 'Fire and Gas Philosophy' or other hazard assessment studies.

Mapping then uses a 3D model of the facility and simulates the detection of fire or gas accumulation events.

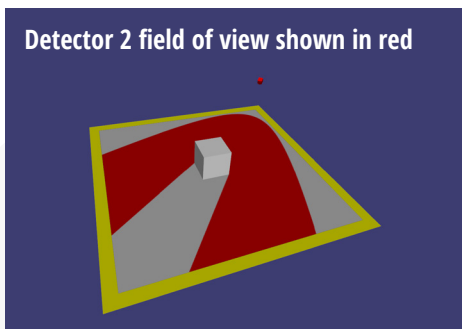
Consider optical Flame detection Mapping of a simple shape such as a cube

Optical Flame detection Mapping of a cube

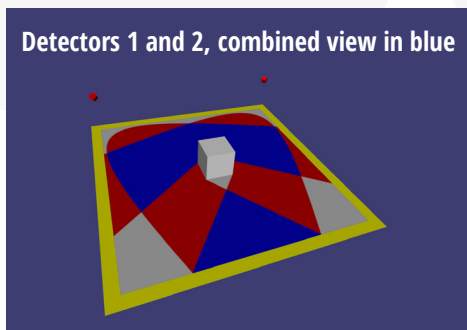
Detector 1 field of view shown in red



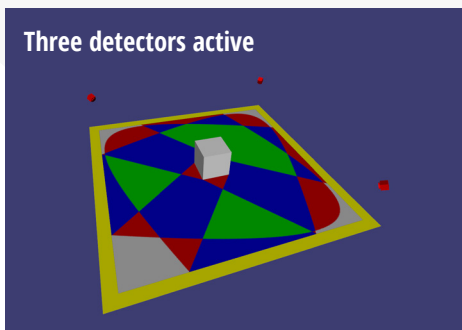
Detector 2 field of view shown in red



Detectors 1 and 2, combined view in blue



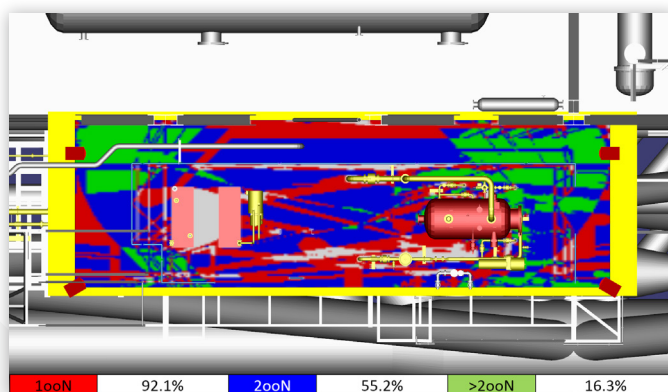
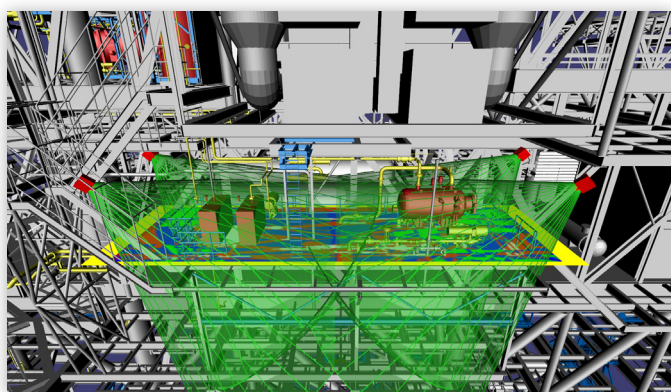
Three detectors active



Areas 'seen' by all three shown in green
Areas 'seen' by two detectors shown in blue
Areas 'seen' by one detector shown in red

Flame Detection Mapping

The images below show a 'real world' example with a 3D view on the left and the coverage 'Map' on the right. The coverage values for each detector voting category (**1ooN** **2ooN** **>2ooN**) are used to assess adequate or inadequate coverage for the facility or Fire Zone.



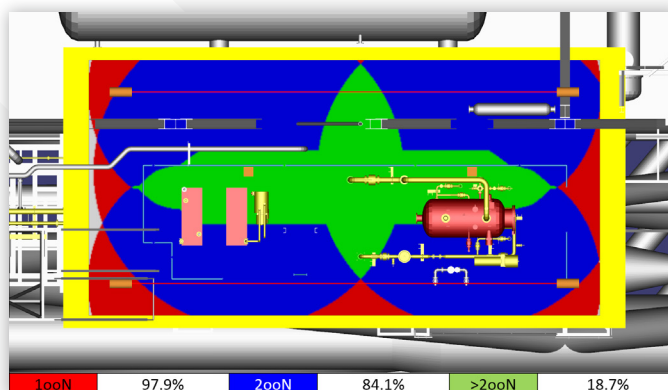
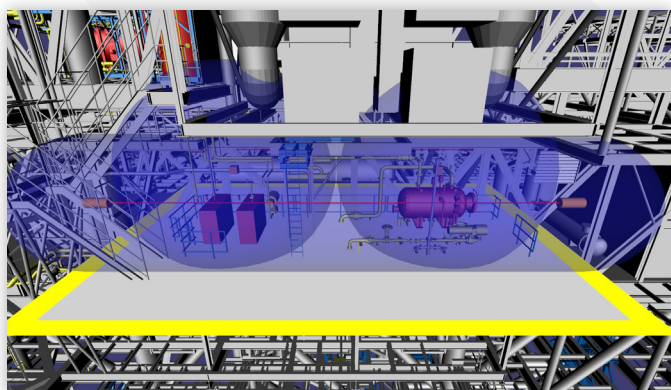
Gas Detection Mapping

Gas Detection Mapping also starts with a 3D model of the facility. Within the 3D calculation, potentially thousands of gas accumulation spheres are released and the simulated detectors interrogated to determine where the accumulations would be detected (or un-detected).

In some philosophies, 'single gas concentration' spheres are used to assess detector spacing; in other philosophies the alarm setting of the detectors is taken into account using 'concentric spheres of varying gas concentration'.

In both philosophies the size of the spheres relates to the facilities tolerance to blast over pressures for combustible gases. For toxic gases, consideration is given to the toxic loading of the product.

Point gas detectors are simulated as point concentration determinations. The coverage afforded by beam detectors; also known as 'Line of Sight' (LOS) detectors, is simulated by integrated path calculations.



What we do

We provide independent advice on all aspects of Fire and Gas Detection in the Oil, Gas and Petro-chemical industries:

- Should I use point-gas detectors, beam detectors or acoustic gas-leak detectors?
- Can I use my existing toxic gas detectors to measure the combustible gas hazard?
- What about vapour from volatile liquid spills?
- What about liquid gas spills?
- Will optical flame detectors work on my site?

Which detectors are best for you? How many do you need? Where should you mount them? There is no shortage of hazard related information, but it can be confusing.

We can help you make sense of detection and detectors:

- Assistance with developing and Company and Site Fire and Gas Detection Philosophies.
- Training in detector technology and hazardous scenario detection.
- Fire and Gas Detector coverage assessments (Mapping),