

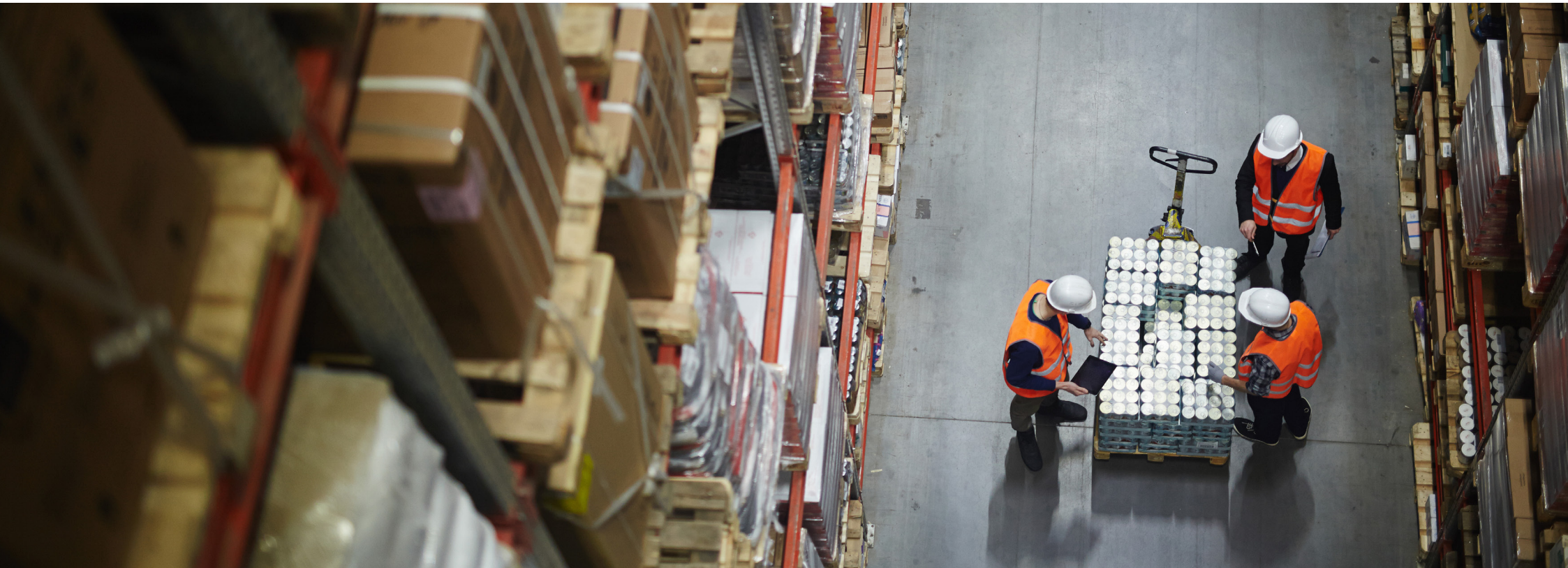
A STEP-BY-STEP GUIDE TO ADVANCED DETECTION DESIGN



INTRODUCTION

Advanced detection systems are a building's first line of defense against fires. Designing these systems effectively is critical to detecting smoke, gas, and other fire threats early on, protecting people, property, and business continuity.

This e-guide examines the fundamental steps to achieving effective detection design tailored to the building's needs and requirements. The guide analyzes different advanced detection technologies and how to deliver a bespoke solution that meets local codes and performance-based requirements. The final section presents the benefits of subscription-based design services.



WHY ADVANCED DETECTION DESIGN MATTERS

Every building is unique. As a result, there is no “off-the-shelf” advanced detection solution for every application.

As a minimum, detection systems must meet local fire safety codes. However, an advanced design will provide higher protection, particularly for special applications. This approach follows performance-based guidelines and risk assessments to identify critical areas to address within a building. Using specialized software tools such as fire simulations and modeling can help to evaluate and optimize the fire detection system performance. The aim is to achieve optimum fire protection but avoid overdesigned systems, which add unnecessary costs to a project.

Advanced design also takes into account the installation, commissioning, and maintenance of a system. Selecting equipment that can be quickly installed and commissioned is essential to minimize operational disruption. Detectors should also be easy to access for maintenance and have remote diagnosis capability, enabling repairs with minimal operational impact. Let's examine the steps to achieving optimal advanced detection design.



STEP 1: SELECT YOUR ADVANCED DETECTION TECHNOLOGY

The Xtralis Design Center offers expertise based on over 30 years of experience delivering optimized project designs. Engineers gather information on each site before helping you select the most appropriate system, including the type and model of detectors. Here's an overview of the primary advanced detection technologies from Xtralis:

- Aspirating smoke detection (ASD) works by continuously drawing air into a distributed pipe network via a high-efficiency aspirator. Smoke in the sample causes a scattering of laser light in the detection chamber.
- The aspirating gas detection system connects to aspirating smoke detectors to offer both smoke and gas protection. It is capable of remote sampling up to 100m, which means that the detector does not need to be physically present in the detection area.
- Open-area beam smoke detection solutions provide smoke detection in open spaces where fire detection is challenging. The CMOS imager is equivalent to hundreds of thousands of photoreceivers and offers excellent resistance to false alarms.
- Wireless smoke detection uses a powerful mesh technology with multiple communication paths to maximize system robustness. This approach offers high levels of communication reliability and installation flexibility.
- Lithium-ion (Li-ion) battery electrolyte vapor detection (Li-ion Tamer) provides early warning of a Li-ion battery failure by detecting the release of electrolyte solvent vapors that occur early on in the process.





STEP 2: **DESIGN THE SOLUTION**

Designing a life safety solution begins with a clear understanding of a building's needs. For example:

- Is there a requirement for very-early-warning fire detection?
- Are there specific risks like Li-ion batteries?
- Is there potential for nuisance alarms to be mitigated?
- Are there special building requirements, such as restrictions on drilling in heritage sites?
- What is the building layout? Are there large voids or separate buildings covered by one system?

Xtralis can provide an initial design based on this assessment or evaluate project and design documents supplied by a customer.

More detailed and comprehensive design packages are also available. This approach includes a design package for all systems, including engineering layouts using computer-aided design (CAD), ASPIRE calculations for piping network design, and a final project bill of materials (BOM).



STEP 3: **KEEP ON TOP OF COMPLIANCE**

Compliance is a critical issue in life safety with differing regulations between countries, buildings, and applications. As a global organization with substantial experience, our team is uniquely qualified to deliver solutions according to all the applicable regional codes and standards. These include the US National Fire Protection Association (NFPA) standards NFPA 72 and NFPA 76, the UK Fire Industry Association (FIA) standards BS 5839 and BS 6266, and their Code of Practice (COP). We offer advice on regulation and code compliance and support our customers through the regulatory authority's approval process.

The Xtralis design team also consults with authorities having jurisdiction (AHJ), insurers, consultants, architects, and engineers to propose new solutions that improve current industry standards. Our experts sit on panels that assess existing fire codes worldwide, ensuring a continuous improvement in life safety technology and a timely response to new fire risks associated with modern materials and practices.

STEP 4: GO SUBSCRIPTION-BASED

Xtralis offers a design subscription service for integrators and distributors, which provides maximum flexibility. Using the subscription service delivers the best value for money, reducing the total cost of ownership for an advanced detection solution. Various levels of service are available:

- Full design services use engineering drawings of the project to design compliant ASD detection with detector layouts and placement. We perform [ASPIRE](#) calculations and provide pipe layouts and application-based advice. A full BOM is provided.
- Design reviews involve an assessment of a design and ASPIRE files, if available, with feedback provided.
- Project consultancy includes application advice and guidance on detector type with an initial BOM based on the application and code requirements.





STEP 5: **TRAIN YOUR PEOPLE**

Xtralis has trained tens of thousands of fire professionals to an expert-level proficiency in advanced detection technology. The learning content includes the design, commissioning, management, and testing of any of our detection solutions. Xtralis has a flexible approach to training that offers both virtual and physical options. Online on-demand expert training services are also available.

Standard training modules are delivered through [Xtralis University](#), an online Learning Management System (LMS), which issues certifications for training completed. Additionally, Xtralis can tailor training to a particular customer or application. Instructor-led sessions can also be accessed on the platform.

CONCLUSION

Advanced detection systems give people time to respond in an emergency before lives, critical infrastructure, or business continuity are compromised. However, each building and application is unique, meaning that there is no one-size-fits-all approach to fire detection. Advanced detection design is critical for understanding the specific risks of each project and developing a performance-based solution.

Xtralis is a leading global supplier of very early warning and reliable detection of smoke, fire, and gas threats. Along with the technology itself, we provide consulting, design, and training for the application of these technologies based on decades of experience in this industry. We take a step-by-step approach to design based on a thorough understanding of each customer's needs. Services range from commenting on designs provided by customers to performing detailed analysis and design along with a BOM.

Reach out to Xtralis Advanced Detection Global Services here to enquire about how we can help you with your advanced detection design.



ABOUT XTRALIS



Xtralis is a leading global provider of powerful solutions for very early & reliable detection of smoke, fire, and gas threats. Our technologies prevent disasters by giving users time to respond before life, critical infrastructure or business continuity is compromised.

We protect highly valuable and irreplaceable assets and infrastructure belonging to the world's top governments and businesses.

To learn more, please visit us at www.xtralis.com