EXOSENS
REVEAL THE INVISIBLE

A TECHNOLOGY LEADER IN NEUTRON MEASUREMENT

As the global energy landscape shifts toward safer, smaller, and more flexible nuclear power, Small Modular Reactors (SMRs) and Generation IV technologies are at the forefront of innovation. These advanced designs pose new challenges in size, efficiency, and operating environment that traditional instrumentation and control solutions aren't always designed to handle.

As a global leader in radiation detection, Exosens designs and manufactures one of the industry's most robust and reliable portfolios of proportional counters and fission chambers for in-core and ex-core neutron detection. These high-temperature detectors are built to withstand extreme reactor conditions, providing operators with the dependable data needed to maintain control, ensure safety, and optimize performance across the source, intermediate, and power ranges.

DETECTORS BUILT FOR HARSH ENVIRONMENTS

Exosens fission chambers are engineered for long-term, high-performance operation in the world's most demanding environments. Whether placed in-core—directly within the reactor—or used in ex-core systems exposed to intense gamma radiation, our detectors are rated for temperatures up to 600°C and provide wide-range neutron monitoring across up to 11 decades of flux.

In-Core Detectors

Exosens' in-core detectors are fully customizable to meet specific reactor designs and detection requirements, with proven capability to operate reliably at temperatures up to 600°C.

Ex-Core Detectors

Exosens offers a wide range of fission chambers designed for ex-core use in severe operating environments. Engineered for thermal neutron detection, these detectors provide reliable measurements across up to 11 decades of neutron flux, enabling comprehensive wide-range reactor monitoring. They are built to withstand intense gamma fields and continuous operation at temperatures reaching 600°C.

Exosens also manufactures Boron-10-lined proportional counters, produced using advanced Chemical Vapor Deposition (CVD). These detectors boast superior sensitivity, gamma rejection, and longevity.

TAILORED SOLUTIONS FOR NEXT - GEN REACTORS

Standard instrumentation and control solutions aren't always suitable for advanced reactor designs. Exosens bridges that gap with custom-built neutron detectors that support the evolving needs of SMRs, Generation IV systems, and advanced fuel cycles.

The Exosens Development and Adaptation team can perform any number of detector customizations based on the individual need of each SMR application, including:

- Integration of high-immunity mineral-insulated cables into detectors
- Protection for Loss-Of-Coolant-Accidents (LOCA) and post-LOCA operation
- Customized designs to meet with innovative core configurations

RELIABILITY BACKED BY DECADES OF EXPERIENCE

Since the 1940s, Exosens has supported nuclear programs across Europe and around the world, especially within the French nuclear industry. Our detectors are developed under strict quality systems, including:

- ISO 9001 and ISO 19443
- ASME NQA-1, RCC-E, and HAF604 compliance
- A dedicated nuclear manufacturing organization ensuring traceability, safety, and long-term performance

YOUR TRUSTED PARTNER FOR INNOVATIVE & CARBON-FREE SOLUTIONS

From commercial nuclear power plants and small modular reactors (SMRs) to fuel reprocessing and radioactive waste storage, Exosens' neutron and gamma detection systems form the foundation of safe reactor control and monitoring.

In a world where precision is power and safety is non-negotiable, Exosens delivers instrumentation you can trust—today and into the nuclear future.

Interested in advanced nuclear detection solutions?

Connect with our team by scanning the link!

www.exosens.com

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