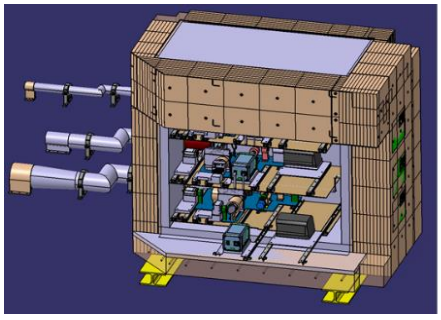
FUSION FOR ENERGY

TECHNOLOGY OFFER

Multi-layered Shielded Cabinet for Electronics in harsh environments

Bertin Technologies and F4E have developed a shielded cabinet to protect ITER's measurement instruments and equipments from nuclear radiation (gamma and neutrons) and from high magnetic field. Its modular design, easy adaptation to specific needs and constraints, offers a variety of applications for extreme environments such as aerospace, energy, or nuclear plant.



Shielded cabinet for the visible/IR viewing system hosting back-end optical equipment and cameras

The technology

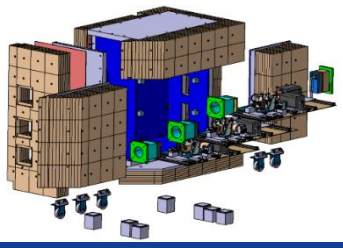
Developed for the equatorial visible and infrared wide-angle viewing system of ITER, the cabinet design is based on a combination of several shielding material layers and is particularly adapted to complex environment where integration, installation and access for maintenance are challenging. Bertin Technologies and F4E are currently finalizing the design of a shielded cabinet hosting back-end opto-mechanical components, motors and visible and infrared cameras that will be installed in ITER.

High reliability thought in a cost-efficiency way

- The cabinet design is made to sustain seismic loads, EM loads and thermal loads. Expected attenuation factors with the designed cabinet are about 10 for gamma radiation, 500 for neutron radiation and 10 for static magnetic field.
- Interfaces with external services (electrical, water, etc.) as well as access to internal components are dealt with specific attention not to degrade shielding efficiency while maintaining high flexibility in integration and maintenance capabilities.
- The material selection has been thought to propose the best trade-off between shielding efficiency and manufacturing cost.
- Thanks to a modular design, the cabinet can be easily tailored to specific system needs in terms of integration constraints or shielding efficiency.

Multi-layered structure for multipurpose applications

The cabinet design combines several shielding material layers arranged in a specific order to provide efficient shielding against both fast and thermal neutrons, ionizing gamma radiation, and strong magnetic field.
The elaborated approach is particularly interesting for demanding applications such as scientific and nuclear installations where versatile design is often requested.



Collaboration opportunities

This technology package is available for further adaptation and fine tuning to meet specific requirements, from expertise to manufacturing.

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