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#5-300 Inspection challenges of spent fuel storage casks

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Currently, there is a need to develop equipment capable of performing the inspection of dry spent fuel storage casks at Nuclear Power Plants as part of their Life Management Plan. The individual modules are composed of a concrete cover that integrates and protects the multipurpose steel capsule that houses the fuel inside. Due to the structural characteristics of the modular tanks and in accordance with ALARA principles, this inspection is a clear case to be carried out with the help of appropriate robotic equipment.

The purpose of this work is to present the R&D project to define and test a prototype of equipment capable of performing an inspection that does not require the capsule to be removed from the storage container, substantially simplifying the inspection process, and increasing the radiological safety of the performance. This inspection will require the use of robotic equipment that may be simple in operation, but very demanding in terms of physical limitations for insertion into current storage systems. This project proposes to test prototypes capable of demonstrating feasible solutions in terms of access to the measurement volume, control of entry and exit without risk of obstruction or loss, and absolute positioning. In addition, sensors capable of analyzing the state of the weld lines of the capsule will be incorporated. The solutions provided can serve as a basis for the development of future inspection equipment suitable for the needs of the PGVs of national and international facilities.

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