

Automated Buffer Box Assembly Cell Concept for the Canadian Used Fuel Packing Plant

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Abstract : The Canadian Used Fuel Container (UFC) is a mid-size hemispherical headed copper coated steel container measuring 2.5 meters in length and 0.5 meters in diameter containing 48 used fuel bundles. The contained used fuel produces significant gamma radiation requiring automated assembly processes to complete the assembly. The design throughput of 2,500 UFCs per year places constraints on equipment and hot cell design for repeatability, speed of processing, robustness and recovery from upset conditions. After UFC assembly, the UFC is inserted into a Buffer Box (BB). The BB is made from adequately pre-shaped blocks (lower and upper block) and Highly Compacted Bentonite (HCB) material. The blocks are practically ‘sandwiching’ the UFC between them after assembly. This paper identifies one possible approach for the BB automatic assembly cell and processes. Automation of the BB assembly will have a significant positive impact on nuclear safety, quality, productivity, and reliability.

Keywords : used fuel packing plant, automatic assembly cell, used fuel container, buffer box, deep geological repository

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