

Full Mechanical In-Situ Segmentation of Steam Generators

Dismantling of steam generators inside the containment, with potential to free-release large parts of the component's body

Framatome's on-site dismantling service provides a robust and efficient alternative for steam generator dismantling projects, eliminating the need for major building enhancements, significantly reducing radioactive waste, and thus ensuring greater flexibility along the critical path.

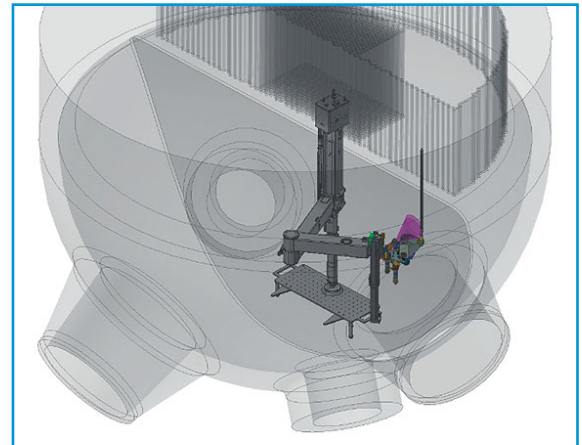
Challenge

The removal of the steam generators is an important milestone in the dismantling schedule of a nuclear power plant, where stringent safety requirements need to be met. Large sections of the steam generators are neither activated nor contaminated, yet cross-contamination poses a big challenge with respect to the storage capacities and may lead to a risk of cost overruns. In some plants, extraction of the steam generators from the containment further requires severe enhancement of building structures, leading to additional costs for one-time building modifications.

Solution

Framatome developed a dismantling concept with the target to disassemble the steam generators in-situ, e.g. in their standing position. It's based on cutting technique carried by a RANGER robot that avoids cross-contamination from the primary to the secondary side. This leads to a significant reduction of radioactive waste produced, as the entire secondary side structures can be free-released.

Additionally, the dismantling activities require a limited amount of space and can therefore be performed in parallel with other dismantling activities, leading to a relief of the critical dismantling path.



RANGER equipped with the cutting nozzle, for cross-contamination-free segmentation of the steam generator pipes.

Technical information

Framatome's tool for inspection of steam generator tubes (RANGER) can be modularly equipped with a special cutting tool. This cutting tool is inserted in each steam generator pipe and separates them without cross-contaminating the secondary side, thanks to its special design.

The individual pipes are pulled from the top and cut into pieces, suited for packaging.

Customer benefits

- Generate savings through:
 - Significant reduction of waste containers
 - Selling precious materials from secondary side with activities below the free-release criteria
 - Shortening of dismantling schedule possible due to parallel alignment of activities
- All dismantling activities performed inside controlled area, with no additional space required outside of the containment

Key figures

- Up to **45%** reduction of waste material (based on mass of component)
- **0%** cross contamination
- Significant reduction of personnel collective dose rate

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