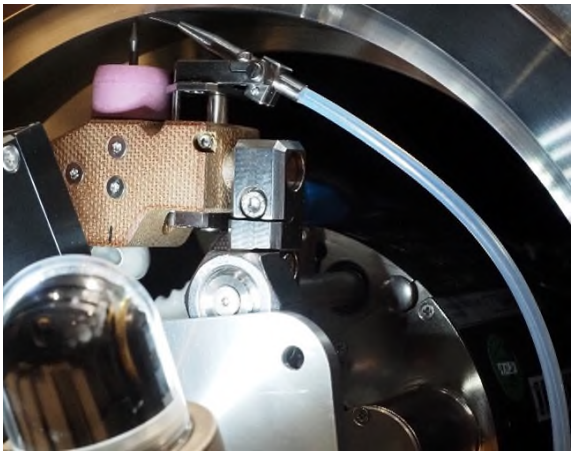
framatome

Remote controlled pipe repair

Minimally invasive repair solution of nozzle, safe-end & piping

Framatome's in-situ repair solutions are key to restore component integrity: they include precise defect characterization, tailored repair methodologies, robust supply chain and quality assurance.



In-pipe weldhead
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Challenge

Ensuring the integrity of RPV nozzles, pressurizer nozzles, safe-ends, and primary piping is a major challenge in the nuclear primary system. These components are particularly susceptible to SCC, thermal and mechanical fatigue, weld degradation, due to the combined effects of high pressure, temperature fluctuations, residual stresses, and dissimilar metal welds. Among these degradation mechanisms, SCC in nozzle and safe-end weld regions remains one of the most critical from both a safety and inspection perspective. Understanding the damage mechanisms is crucial for selecting the right intervention, ensuring long-term integrity, and supporting safe plant life extension.

Solution

Each damage type and component requires a tailored repair strategy, combining advanced inspection, precision machining, specialized welding, and a robust quality assurance. Depending on the location, the most suitable equipment is selected, and even hard-to-reach areas are accessible by remote controlled solutions. Framatome is the right partner who can deliver a holistic approach for repair solutions, combining engineering expertise with innovative repair methods to maximize safety, reliability, and operational efficiency.

Technical Information

- Qualification according KTA, ASME and EN
- Minimally invasive & customized repair strategy by access via existing access points, if possible
- Providing the complete value chain
- Repair from the inner diameter surface, starting from DN150
  - Milling or EDM
  - Welding
- Meeting ALARA by remote controlled operations

Customer benefits

- Framatome can manage the entire repair process
- State-of-the-art solutions for high-quality repairs, using the right repair strategy for each defect.
- Overall costs reduction
  - By eliminating interfaces through providing the whole value chain
  - Customized repair strategies with complete-solutions

Key figures

55 nozzles of different types repaired

30 years of experience in component repair

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