

Steam Generator Ultrasonic Cleaning (UEC)

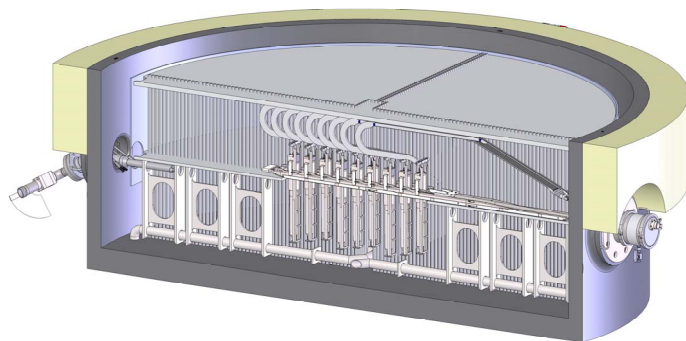
Background

During normal operation of a PWR, impurities accumulate in the secondary side of the steam generators. These deposits accelerate tubing corrosion, result in degraded heat transfer efficiency, and contribute to clogging, disruption of normal thermal hydraulic flow patterns and vibration-related wear.

Description

Several options exist for managing secondary side fouling in PWR steam generators including “hard” chemical cleaning and steam generator replacement. While these approaches are effective, they are also costly and time-consuming.

Steam generator ultrasonic energy cleaning (UEC) provides a cost-effective means for disrupting and removing secondary-side deposits from PWR steam generators. The process involves insertion of ultrasonic transducers through access ports in the steam generator, and disruption of deposits using ultrasonic energy in water or in an ASCA™ “soft” chemical cleaning solution. The process is effective in removing deposits within about 5 feet of the transducers and the disrupted deposits are collected using an integrated filtration system



Steam generator UEC installation



Insertion of ultrasonic transducers and delivery tooling into SG access port

Plant Experience and Benefits

- >20 applications in US and non-US PWR steam generators
- Effective removal of secondary side deposits located within 5 feet of ultrasonic transducers
- Cost-effective solution for managing low to moderate sludge piles on steam generator tubesheets
- No corrosion, environmental issues or secondary waste generated

Features

- Ultrasonic transducers and remote delivery and retrieval tooling are inserted through steam generator access ports
- Ultrasonic energy utilized to disrupt secondary side steam generator deposits
- Process can be applied in water or ASCA™ “soft” chemical cleaning solutions