

Undervessel Sump Cleaning

Background

DEI specializes in the delivery of cleaning and decontamination systems that integrate ultrasonic and/or hydraulic cleaning, vacuuming, and filtration. DEI regularly delivers custom, remotely deployable cleaning solutions for nuclear fuel, heat exchangers, piping, tanks, vessels, and similar components.

Description

In an example project, DEI developed a bespoke robotic cleaning system for LaSalle Station (a US BWR), and used this system to provide on-site services to clean the undervessel sump. The purpose of this project was to reduce dose rates in order to minimize exposure to workers during maintenance planned under the reactor vessel.

The equipment used by DEI during this service included its DARVA™ robotic vacuuming system and an AMFM-S300 regenerable filtration skid (positioned outside the dry well). The service was credited with a 40% dose savings during undervessel work activities. After the cleaning, the AMFM-S300 filter skid was effectively backwashed to an AMFM-B500 to reduce filter dose rates and facilitate safe storage.



DARVA™ operation in BWR undervessel sump



Undervessel sump cleaning control station

Results Achieved

- 40% reduction in radiological exposure during undervessel work activities at LaSalle Station
- >98% effectiveness in backwashing of AMFM-S300 filter skid after cleaning service (allowing AMFM-S300 filters to be safely stored)
- 1st place winner at 2019 Exelon Innovation Expo



AMFM-S300 filter system used during cleaning

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