Steam Generator Inspection: Increase Safety, Reduce Radiological Exposure, Minimize Labor and Cost

One of the largest electric power holding companies in the United States provides electricity to 7.7 million retail customers in six states. The company has approximately 51,000 megawatts of electric generating capacity, including renewable energy assets and nuclear generation units.

Challenges

For many years, the group that manages steam generator maintenance eddy current inspections on radioactive systems within nuclear power plants had used an eddy current vacuum system that was very effective, but expensive to operate and maintain. (Eddy current inspection is a non-destructive testing method used to detect flaws and measure structure thickness.)

The vacuum system required experienced staff for proper set up and operation, additionally, operating the vacuum system created a large amount of radioactive waste and exposure. The group faced challenges in finding experienced personnel to operate the system during each maintenance outage, and cost was a huge consideration in making a change from a highly effective system.

Shorter maintenance outages that required crews to perform their work in shorter periods, fewer experienced people available to operate the previous vacuum system and cost challenges, all drove the need to explore other vacuum options. Members of the maintenance unit wanted a replacement vacuum that met the same criteria as the previous system, was easier to setup and operate, and was more cost effective with less radiological waste and personnel exposure.

Solution

"I first discovered Atrix while doing a Google search for DOP (Dispersed Oil Particulate) tested vacuums that could possibly work in our application needs," says a Project Management Professional and Steam Generator Job Sponsor. "CFM flow rate was also critical to replicate a very successfully-used vacuum system. Cost and setup time/maintenance/experience/size of units were key factors as well."

The Project Management Professional selected the Atrix Omega Supreme Plus HEPA Vacuum, SKU: VACOMEGASCT, due to cost, footprint-size of vacuums, ease of operation and the vacuum's SafeGuard 360 HEPA filter cartridge. He also quickly realized the Atrix vacuums are much safer to handle in tight work areas, compared to their previous vacuums.

Benefits

"Using Atrix vacuums saves us a minimum of $10,000 or more for each steam generator inspection just in vacuum systems material cost," he adds. "For each outage, Atrix vacuums

save us more than 200-man hours of install and demobilization cost and save us radiological exposures."

The company purchased an adequate number of vacuums including spare units for a recent steam generator inspection and had their existing system of vacuums on standby ready to be installed if the new vacuums caused any radiological or performance problems. The Atrix vacuums were closely monitored upon entry to ensure they were operating properly and there were no contamination or airborne concerns.

"We successfully went through the steam generation inspection activities with no radiological concerns. The Atrix vacuums tremendously reduced the setup and demobilization process of the former vacuum systems, saving us time, cost and personnel radiological exposure. They were also easier to set up which is necessary due to the challenge of finding experienced technicians who know the proper setup of the other system."

The company is rolling out the Atrix vacuums across their fleet of nuclear plants for other SG inspections that use an eddy current scrubber system. The Project Management Professional has been impressed that the Atrix vacuums provide the same performance results as a much more expensive vacuum system with no degradation in quality of contamination control.

"These Atrix vacuums are hooked up and run continuously during inspections that can last up to 80 hours continuously. The Atrix team provided the technical operating specs of the vacuums, HEPA filters, and ensured we had all the correct size connections and spare parts needed. We didn't experience any vacuum failures during our inspection, and we had spares available. Some vacuum filters reached a high radiological dose rate and were changed out to minimize personnel exposure."

For more information on Atrix products, visit www.atrix.com

Case Study Participant:

PMP, Steam Generation Job Sponsor

Interviewer:

Breanna Miller, Assistant Marketing Manager, JAN/SAN Sales

Application:

Steam generation inspection, removing highly radioactive particulates.

Manufacturer Name:

Atrix

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