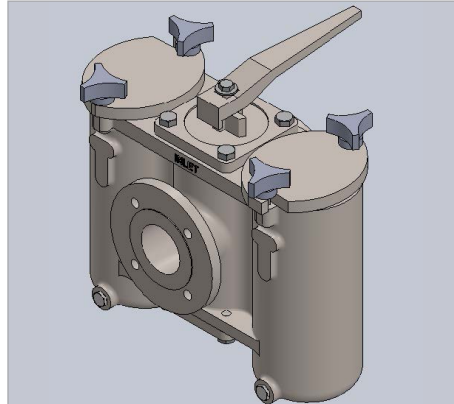
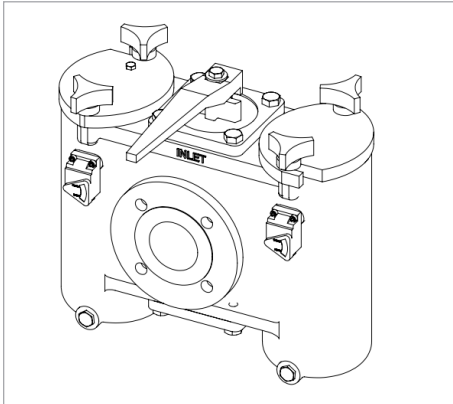


Successful 10 CFR 50.69 Implementation

for Duplex Basket Strainer Installation

**CURTISS -
WRIGHT**

Nuclear Power Products and Services



PLANT TYPE

Nuclear Power Plant (PWR)

LOCATION

United States

CHALLENGE

Specify, design, and build an augmented quality strainer for nuclear service water system that met design specifications and seismic requirements

SOLUTION

ASME Section VIII non-safety related duplex basket strainers with seismic report

Background

A nuclear power plant in the Southeastern region of the United States was experiencing waste and other foreign materials obstructing service cooling water lines for their Safety Injection Pumps. These obstructions lead to costly downtime for cleaning and maintenance. Poor filtration can also pollute the system and cause pump damage.

Additionally, based on a 50.69 reclassification of the system, the plant needed a creative yet cost-effective straining solution. 10 CFR 50.69 allows utilities to re-categorize their plant's structures, systems, and components according to their risk levels. This approach can potentially lower operating costs while still maintaining appropriate safety and quality requirements.

Solution

Curtiss-Wright proposed multiple safety-related options and worked with both the utility and designated architecture and engineering (A&E) firm to finalize the specification. After much dialogue and collaboration throughout the 10 CFR 50.69 process, it was decided that manufacturing duplex basket strainers to ASME Section VIII Division 1 was the best fit for the utility.

Division 1 provides requirements applicable to the design, fabrication, inspection, testing, and certification of pressure vessels operating at either internal or external pressures exceeding 15 psig. Division 1 also contains mandatory and non-mandatory appendices detailing supplementary design criteria, nondestructive examination, and inspection acceptance standards.

The duplex basket strainer design was chosen because it is used in continuous flow applications where the process cannot be shut down for cleaning. The duplex strainer is made up of two baskets housed together and traps debris in either basket. A valve handle between the baskets restricts the flow to one side, while the other side is being cleaned.

With a mesh size equivalent of 840 microns, it is an effective tool for eliminating foreign materials and preventing them from obstructing the plant's vital equipment and protected water systems. A clean system also means fewer disruptions, greater plant utilization, and greater operational efficiency.

Results

"We have now installed all four of the duplex strainers in the service cooling water lines for our Safety Injection Pumps. I'm happy to say that the installations went well overall, and we had no issues at all related to the strainers. We are already seeing the benefit of these strainers, capturing a significant amount of debris preventing it from reaching the flow orifices we are protecting.

This project presented a number of unique challenges, particularly utilizing the 50.69 alternate treatments for these components. Although difficult, it was an opportunity for us to develop practices and processes for utilizing 50.69 in new designs, which will be important for us going forward."

— Design engineer at the nuclear utility

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