

Advanced Scale Conditioning Agents



Background

The accumulation of deposits in the secondary side of steam generators (SGs) increases the potential for accelerated tube degradation and flow oscillations. As these deposits harden and form crevices, they can cause conditions that lead to tube corrosion. To improve upon traditional mechanical deposit removal techniques and avoid the potential drawbacks of traditional SG chemical cleaning, advanced scale conditioning agent (ASCA) technology was developed in 2000. ASCAs are dilute cleaning solutions that promote the dissolution of a portion of the overall deposit inventory along with entrained mineral species from the deposit matrix in the secondary side of recirculating SGs.

Description

Due to the wide variability in the structure and morphology of SG deposits, plant specific qualification testing is needed to determine the best combination of ASCA formulation and method of treatment prior to application. Three types of ASCA are available for use on specific deposit management projects. They include:

Full bundle maintenance cleaning

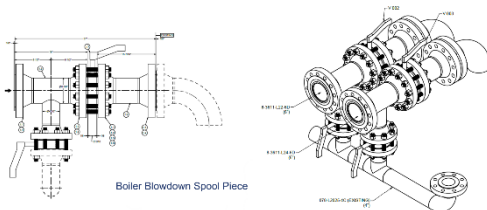
Full bundle maintenance cleaning ASCA applications have been used to reduce secondary side deposits from SGs and improve SG performance.

Copper removal ASCA

Copper removal applications have achieved more than 90 percent removal of copper from SG secondary side deposit inventory.

Top of tubesheet (TTS) treatment

TTS treatments are used to remove aggressive deposits on the tubesheet to mitigate corrosion concerns and the deposits are often further treated utilizing mechanical cleaning methods.



Application Benefits

Providing maximum cleaning benefits while minimizing outage schedule

Applying ASCA technology helps extend operation, maintain cleanliness and enhance performance of steam generators.

- Low corrosion
- Combined Iron-copper (Fe-Cu) removal
- Minimal process equipment
- Accommodates short outage window
- Improvements in heat transfer efficiency
- Reduction of tube support plate blockage
- Dissolution and softening of consolidated TTS sludge

Experience

The ASCA process is qualified for use in a wide range of SG designs, including Westinghouse, CANDU, CE, B&W, MHI and Framatome. ASCA technology has been independently tested or evaluated by nine international laboratories and organizations. More than 30 ASCA applications have been completed to date including applications in the United States, France, Korea and Japan.

The Westinghouse application is the only qualified ASCA process for use in a CANDU® plant by CANDU Owners Group (COG).

www.westinghousenuclear.com/canada/CANDU

Westinghouse Electric Company

161 Bay Street., Suite 2700
Toronto, ON M5J 2S1

www.westinghousenuclear.com/canada

September 2023

2023 Westinghouse
Electric Company LLC.
All Rights Reserved

