

HYDRAZINE REPLACEMENT

Chemical strategies & alternatives towards a hydrazine free operation of nuclear power plants

Framatome's hydrazine replacement strategies ensure the effective mitigation of corrosion and the best health, safety and environmental protection with respect to NPP water chemistry operation.

Challenge

Hydrazine is one of the most important conditioning agents in water chemistry treatment of nuclear power plants, serving as an effective oxygen scavenger and reducing agent. Meanwhile, hydrazine is classified as a highly toxic and mutagenic substance that results in more and more restrictive regulations regarding its use. For instance, the European Chemicals Agency (ECHA) has classified hydrazine as a substance of very high concern (SVHC). Furthermore, the number of suppliers is continuously decreasing, resulting in increased supply shortages.

Solution

Framatome provides alternatives to replace hydrazine for all systems of a nuclear power plant. The property of methanol as an oxygen scavenger in radiation fields inside nuclear steam generators in combination with ethanolamine as an effective reducing agent provides an effective solution for corrosion mitigation during power operation of pressurized light and heavy water reactors.

Customer benefits

- Best health, safety and environmental protection by applied water chemistry for the operator personal
- Lower redox and corrosion potential than hydrazine → improved corrosion protection
- Same efficient oxygen scavenging capabilities compared to Hydrazine
- Tested and confirmed compatibility with many materials and water chemistry regimes
- Compatible with film forming amines coated surfaces
- Cheap substances and secured supply chain
- Applicable in all closed cooling systems

Your performance is our everyday commitment



Framatome supports customers to optimize their water chemistry

Technical information

Framatome's Chemistry expert team assists customers during the implementation of replacing hydrazine, which considers plant-specific design and operation conditions. Our key areas of support for customers include:

- Plant specific qualification and implementation studies including risk assessment including updates of the plant Chemistry specification.
- Development and implementation support for the adjusted Chemistry monitoring program
- Dosing strategy including recommendation for optimum injection points
- Computer assisted evaluation of chemistry components distribution with COMSY
- Simultaneous access to multiple users

Key figures

100 % hydrazine replacement

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