

## Depleted Zinc Oxide (DZO) Technology

Affects characteristics of oxide layers and reduce corrosion and accumulation of radioactive material

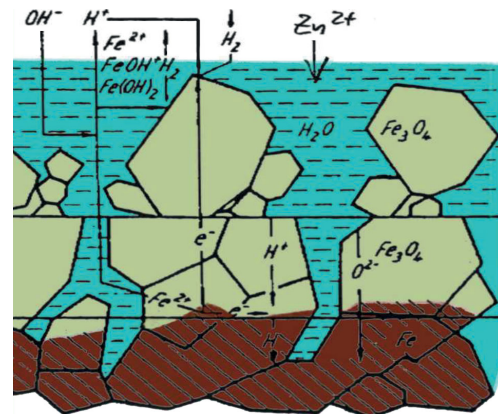
Very effective technology to reduce degradation of coolant system materials and lowering shutdown dose rates

### Challenge

The accumulation of corrosive and radioactive material causes stress corrosion cracking and radiation fields. In this way, radiation doses increase as the years of nuclear power plant operation increases, and subsequently result in a significant increase of radiation exposure of workers'. Corrosion and materials problems jeopardize the safe, reliable and cost effective operation of nuclear plants and lead to the most costly issues experienced by operators of nuclear plants.

### Solution

Our experience in introducing the injection of depleted zinc compounds as an effective method to counteract accumulation of corrosive and radioactive materials enables operators of nuclear power plants to reduce corrosion and radiation fields. Zinc injection affects the concentration and characteristics of oxide layers and therefore reduces corrosion and accumulation of radioactive materials.



Effect of depleted zinc oxide technology on oxide layer

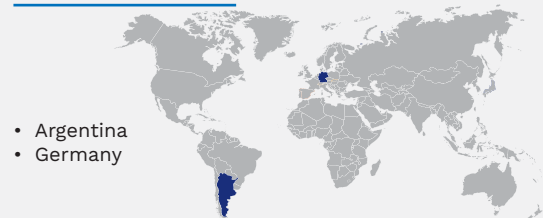
### Scope of services

- Feasibility Study
  - Compatibility (fuel, RCP, seals)
  - Effects on chemistry and systems
- Concept Design
  - Dosing procedure
  - Zinc injection device
  - Zinc analysis methods
  - Monitoring of methods
  - Fuel In-plant surveillance
- Project Implementation Plan
- Establishing and implementing a project plan
- Implementation of a quality plan

### Customer benefits

- Reduces pickup of  $^{58}\text{Co}$  and  $^{60}\text{Co}$
  - Reduction of dose rates by
    - 15% during the first fuel cycle
    - Up to 40% after a few cycles
- by means of displacing cobalt isotopes from existing oxide layers
- Formation of thinner and more stable oxide layers
  - Enhancing the anticorrosion properties of materials
  - Mitigation of stress corrosion cracking
  - Experienced team

### References



- Argentina
- Germany

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