



Structural Integrity Associates, Inc.[®]

Water Chemistry & Corrosion Mitigation

Cooling water and service water systems are integral to the safe and reliable operation of all nuclear and fossil power plants. The water chemistry of these systems is the primary factor controlling corrosion, scale, suspended solids fouling, and microbiological fouling; the mechanisms that can seriously degrade plant performance and equipment condition. As well as having a direct, negative impact on the overall plant efficiency, fouling and corrosion will also impair the integrity of plant components and lead to costly repairs or even complete replacement. For all cooling water and service water systems, the water chemistry controls the presence and activity of surface biofilm, which is the main cause of microbiologically influenced corrosion. For facilities with cooling towers, the presence of biofilm is also a key link in the Legionnaires' disease chain of causation.

Structural Integrity Associates has world-leading expertise in the evaluation, management, control, and optimization of all aspects of chemistry in nuclear and fossil plant cooling water and service water systems. Our whole-of-chemistry audit and assessment programs comprehensively examine not only the fundamentals of system reaction chemistry, but the interactions between system stresses and water treatment methodologies. Our multi-disciplined focus uniquely captures all the performance, efficiency, reliability, asset integrity, and life-management information that plant owners require if they are to accurately and proactively monitor the impact that system chemistry has on essential plant operations.

Structural Integrity's capabilities for cooling and service water system chemistry include:

- Detailed technical assessment of plant chemistry performance, and the effectiveness of the chemistry in maintaining highly reliable, efficient, and clean cooling and service water systems
- Evaluation of water treatment programs, including water treatment service provider programs
- Water treatment optimization, including biofilm monitoring and control
- Process performance modeling
- Management of fouling and degradation mechanisms
- Corrosion mitigation: repair and replacement recommendations, including detailed designs as required
- Assessment, prevention and control of microbiologically influenced corrosion (MIC)
- Condenser and heat exchanger inspections
- Scale and deposit analysis, failure analysis, and detailed metallurgical assessments
- Legionnaires' disease risk assessment and control management programs
- Operational support
- Technical training

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