

# Cycle Chemistry Assessment



- Conduct a thorough on-site review of the cycle chemistry program
- Benchmark cycle chemistry performance
- Identify best practices and develop a prioritized action plan based on identified opportunities for improvement
- Reduce the risk of corrosion and deposition related failure mechanisms

## Key Research Question

The Cycle Chemistry Assessment Process was developed as an objective method for organizations to use to evaluate the effectiveness of the chemistry program. The process provides methods for determining risk for chemistry related damage and failures, matching treatment to unit metallurgy and operating conditions, conformance with instrumentation and controls guidelines, and chemical safety practices.

Utilization of the cycle chemistry assessment tool ensures a consistent and thorough approach that can be applied fleet-wide on a plant by plant basis to identify good practices and opportunities for improvement. Mitigating corrosion and deposition requires proper selection and application of the best available chemical treatment program suited to the individual unit design features (i.e. operating practices, pressures, temperatures, metallurgy, cooling water source, high purity water supply, and staffing). Long term success is dependent upon how effectively a plant controls cycle chemistry.

## Objective

This project will use the cycle chemistry assessment tool to conduct an on-site review of a plant's current operating practices. The assessment report will give plant management new insight into the cycle chemistry best practices and opportunities for improvement at each

participating plant. Subsequent execution of the follow-up action plan will result in lower risk of chemistry-related failures and ultimately result in lower risk-adjusted cost of operations and maintenance.

Participants will gain the following:

- Benchmarking comparison to a worldwide industry standard
- Factors effecting unit specific optimization and control of cycle chemistry
- Specific risk factors effecting risk of cycle-chemistry induced damage and failures
- Best practices and opportunities for improvement based on the findings from the site assessment
- Assistance with the development of an action plan
- Plant chemical safety procedures and practices

## Approach

A cycle chemistry assessment involves four main components:

- Pre-assessment information collection
- Plant visit, usually one or two days depending on size and complexity, to conduct system walk-downs, equipment inspections (if available), and discussions with plant staff and plant management

- Close-out meeting, highlighting best practices and opportunities for improvement
- Final Report that includes assessment results and applicable EPRI material that can assist with optimization of the chemistry program

### Research Value

Proper cycle chemistry control and optimization leads to a reduced risk of catastrophic chemistry related failures, improved reliability, and lower total cost of operations and maintenance. Best practices and lessons learned will be incorporated into the program to develop more effective cycle chemistry guidelines. More reliable and efficient generation will benefit the public in terms of lower power prices and enhanced grid stability.

### Deliverables

Cycle chemistry assessment report including benchmarking, assessment results, best practices, opportunities for improvement, assistance with an action plan, and supporting reference information from EPRI guidance documents.

### Price of Project

The cost of this supplemental project is dependent upon plant location, size, and complexity. This project qualifies for Tailored Collaboration (TC) and Self-Directed Funding (SDF).

### Project Schedule

The schedule will be developed with the participant and will be based on availability of plant personnel.

### Who Should Join

This project is valuable to organizations who want to improve their cycle chemistry control and optimization based on the EPRI comprehensive cycle chemistry guidelines, and to reduce the risk of chemistry-related failures across the fleet.

### Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 ([askepri@epri.com](mailto:askepri@epri.com)).

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