TURBINE CHEMISTRY MODELING

FOSSIL PLANT SUPPORT

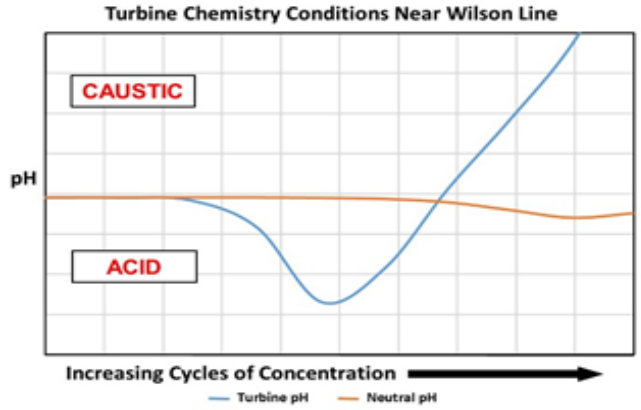
ChemStaff
Expert Consulting for the Global Power Industry

Value Delivered

- ✓ Proven methodology for predicting turbine chemistry conditions—before damage occurs
- ✓ Expert evaluation of the effects of new chemicals or chemistry changes on turbine integrity
- ✓ Real-time modeling & chemistry parameter trending
- ✓ Cost-effective initiatives to better manage turbine chemistry & mitigate corrosion
- ✓ Extended lifetime of costly equipment

Industry Challenge

Factors such as power uprates or cycling operation add significant stress on turbine components, potentially well beyond original design considerations, but chemistry plays a major part in turbine row L-1 corrosion. L-1 blades operate in the Wilson line, where due to its location, impurities deposit and concentrate, making the area more susceptible to stress corrosion cracking. Similarly, fossil boilers operating with caustic tendencies are prone to stress corrosion cracking in turbine locations where impurities concentrate (e.g., L-1 rows), while plants operating with acidic tendencies are susceptible to pitting corrosion, which can lead to stress corrosion cracking.



ChemStaff Solution

ChemStaff can meet this challenge with decades of practical industry experience and deep chemistry knowledge. The experts at ChemStaff effectively perform extensive modeling of local chemistry conditions in extraction steam, simulating L-1 turbine blade conditions and expertly conduct vapor-liquid equilibrium calculations to more concretely determine how the local solution chemistry will behave as impurities concentrate. ChemStaff's practiced professionals utilize plant-specific data and the steam cycle heat balance to effectively identify aggressive chemistry conditions and more accurately predict local chemistry conditions in the low-pressure turbine L-1 root and other areas near the Wilson line—before major component damage occurs.

We also deliver expert recommendations for cost-effective initiatives designed to achieve better management of turbine chemistry and mitigate corrosion, working to maximize the lifetime of costly equipment.