

STEAM CYCLE CHEMISTRY SERVICES



- **Minimize Boiler Chemical Cleanings**
- **Reduce Equipment Failures**
- **Optimize Chemical Treatment Programs**

Water and steam chemistry have a tremendous effect on the availability and reliability of steam generating equipment. To minimize corrosion deposits, steam and water chemistry programs must work hand-in-hand with operation and equipment constraints.

M&M Engineering's can help you optimize your water and steam chemistry programs.

Specifically, M&M Engineering's Steam Cycle Chemistry Services can:

- Reduce the number of chemistry-related equipment failures
- Minimize the number of boiler chemical cleanings
- Optimize your chemical treatment program to provide the maximum protection for the least cost.

M&M Engineering has experience in water and steam chemistry in a variety of industrial processes from small boilers used for HVAC at industrial and commercial sites, to supercritical fossil-fired boilers and combined cycle plants. Combining M&M Engineering's expertise in the areas of

metallurgy and materials science and steam chemistry experience produces a better program for your site.

We provide a number of services to help you improve your water treatment and chemistry program.

Steam Cycle Chemistry Evaluation

Our Steam Cycle Chemical Evaluation is an extensive, objective and unbiased review of a facility's steam chemistry practices. This comprehensive assessment includes a detailed review of the following areas:

- Water pretreatment equipment
- Treatment chemicals and usage levels
- Chemical operating limits
- Sampling points and sample conditioning
- On-line instrumentation
- Analytical procedures and frequency of testing
- Lay-up and startup practices
- Condensate collection and reuse



In each of these areas, we will evaluate current plant procedures against industry “best practices”. Where there are discrepancies that could lead to equipment failures and other problems, we make recommendations to improve the situation.

Our concise report will present specific recommendations to improve water and steam chemistry and reduce the risk of chemistry-related maintenance. Since M&M Engineering does not sell chemicals, monitoring instruments, or process equipment, our evaluation is totally unbiased. Often our clients find that in implementing the recommendations of the audit, they save a considerable amount of money in water treatment chemicals by only using what is really needed for optimum chemistry.

Outage Inspections

Outages are particularly important times to examine the long-term effects of chemical treatment. M&M Engineering will inspect the feedwater system, boiler drums, and condensers. Our full-service laboratory will examine metallurgical samples, conduct tube deposit loading analysis, and

provide a detailed analysis of deposits and corrosion products found in the system.

Following the inspection, we prepare an outage report that contains inspection results and photographs documenting the condition of key equipment, along with an evaluation of the performance of the chemical treatment. The report will list specific recommendations for improving steam cycle chemistry and reducing corrosion and deposits. This inspection can be combined with other services, including piping surveys and inspections for flow-accelerated corrosion.

Troubleshooting and Incident Recovery

When contamination occurs, what is the best way forward—continued operation at reduced capacity or to shut the plant down? M&M Engineering’s experience can help you identify and evaluate the risks to your critical equipment and make the best long-term decision for your site. After the decision is made, we can work with you to return the chemistry program to normal. We can support and work with your plant to prepare a root

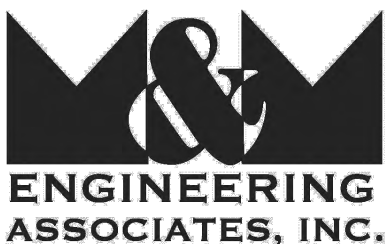
cause analysis, and make recommendations to prevent similar incidents in the future.

Training

We prepare and present professional training materials on steam cycle chemistry for laboratory, operations, and supervisory personnel. Each course is tailored to the needs and equipment of the individual facility. Our training courses receive outstanding reviews because they produce results. When workers understand why chemistry is important and what to do when out-of-limit conditions occur, chemistry-related failures decrease.

Chemical Cleaning Support

Time between chemical cleanings and changes in personnel may leave you concerned about staffing your chemical cleaning with an experienced plant representative around the clock. We have helped many clients in all aspects of the cleaning process; from evaluating the need to clean, to bidding the job, to managing the actual cleaning process. M&M Engineering can assist you in any aspect of the cleaning or turn-key the entire project.



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