

HRSG CONDITION ASSESSMENT



- Gas Side and Water Side Inspections
- Visual Inspections, NDE, and Metallurgical Analysis
- Rope Access for Inspections
- Water/Steam Chemistry Review and Troubleshooting
- Failure Investigations

Acuren Inspection provides an experienced set of eyes to examine the health of the gas side and water side of your Heat Recovery Steam Generator (HRSG). We provide an independent assessment of the HRSG condition to assure reliability for future operation whether you are an owner, operator, or insurer.

- We examine the gas side of duct burners, ductwork, tube banks, headers, the ammonia injection grid, and the support structure for signs of deterioration from corrosion, cracking, and wear.
- We examine the water side headers, steam drums, and risers for corrosion, cracking, FAC, or other damage mechanisms.
- Our highly skilled nondestructive (NDE) technicians will provide a examination and full condition assessment of your HRSG using the most advanced equipment and methods., including the use of <u>Rope Access</u>* (remote access technology) instead of scaffolding.
- When problems or failures occur, we provide on-site or in-laboratory metallurgical testing and engineering to get the unit back on line fast.







We Take a Closer Look

Gas path inspections from the floor are incomplete and using scaffolding or sky climbers to access upper components is costly both time-wise and financially. Utilizing rope access, we can inspect all of the gas path components up close, in person, for a fraction of the typical inspection cost. Don't assume that the lower burners look the same as the upper burners. During the outage, our engineers, water chemists, and technicians provide recommendations for immediate repair, as well as focused testing and inspection strategies. Following our inspection, a detailed report of our findings will be provided electronically, in hard copy, or both. We can also recommend water treatment programs that will prevent waterside corrosion issues and provide recommendations for future repair, replacement, and inspection.

Water Chemistry is Critical

While HRSGs typically lack the heat flux of a standard fossil-fired unit, they are by no means problem-free when it comes to chemistry-related corrosion. In fact, experience has shown that these units seem to have more tube failures than their fossil-fired counterparts. Common causes include flow accelerated corrosion (FAC), under-deposit corrosion (hydrogen damage, gouging, and pitting), and corrosion fatigue. The complex flow patterns, quick starts and stops, and extended lay-up periods all combine to make proper chemical treatment of HRSGs different than the equivalent pressure fossil-fired boiler.



Don't Patch It — Fix It

When failures do occur, it is tempting to plug the tube and move on, but understanding the failure mechanism (the "why") is critical to understanding the potential for additional failures. A true root cause analysis of the failure is essential to solve the problem completely.

Acuren Inspection has over 30 years of experience in failure analysis for all types of power and industrial boilers, as well as steam and gas turbines. We are experts in the analysis of steam and combustion turbine blade failures. We also understand the process, materials, and operational conditions in combined cycle plants and can work with you to find a way to eliminate failures in the future.

Training

Personnel at many combined cycle plants wear many hats. They operate, maintain, troubleshoot , and treat their units. To do it right, they need to know more than just what to do. They need to know the "why to do it." Acuren can provide on-site training tuned to your personnel and plant for a number of areas including water and steam chemistry, nondestructive testing, materials and corrosion issues, and damage repair options.

In December 2017 our 300MW combined cycle unit at Stanton Energy Center started its Fall outage. Acuren's scope was to inspect burners, SCR lances, HP Superheat #4, and the Economizer # 4. This traditionally has been done from scaffold which requires time and sometimes very limited access. With the expertise of Remote Access Technology (RAT)* they were able to perform the inspection in a timely manner with minimal support. When comparing the inspection via traditional scaffold there was both a significant time and money savings realized. It would have required approximately two days to erect scaffold for the inspection in which RAT performed, as well as at least a day to demo. Estimated cost for the scaffolding would have been approximately double of what RAT was to perform the same work.

Acuren/RAT was able to handle dimensional checks, looking for abnormal wear or corrosion, etc. We were able to confirm that the burners, SCR lances, and HP Superheat #4, and Economizer # 4 were all in acceptable condition. Using RAT is a highly effective supplement to a traditional boiler inspector. In short, we will continue to look for other cost savings opportunities with Acuren/RAT in the future.

Wade Gillingham of Orlando Utilities



For more information, please visit our website at <u>www.acuren.com</u> or contact us at <u>info@acuren.com</u>.