



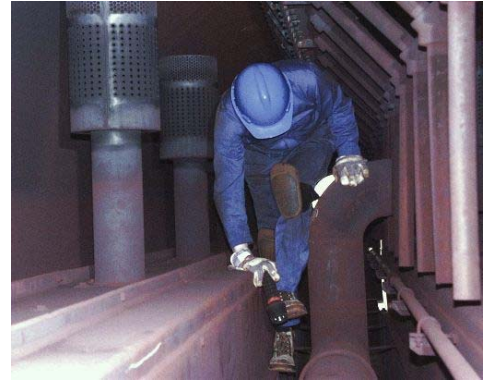
HRSG Inspections and Condition Assessments

Tetra Engineering offers inspections for HRSG units of all types and ratings. Our staff has inspected over 300 boilers from all major OEMs worldwide. Inspections can be done with the unit operating ("hot") or in outage ("cold").

Prior to arriving on site the inspection is carefully planned to assure that all objectives are met in the available time window. Depending on the scope this preparation can include additional analyses, such as an assessment to identify locations at highest risk for FAC.

The inspection report records the field observations in detail, includes all the inspection data and photographs, and provides recommendations for improvements.

Cold or hot inspection results from the basis for an optional condition assessment. This involves analysis of key factors that affect boiler life, such as corrosion fatigue and creep-rupture life, condensate accumulation, water- and gas-side deposition rates and attemperator spray action.



We do not offer HRSG repair services or supply hardware; therefore our recommendations are unbiased and objective.

Cold Inspection

- Walkdown and detailed examination of gas-path, drum internals, external structures and BOP accessories (condenser, deaerator etc.)
- Review key aspects of the plant operating history (running hours & starts, major incidents & failures, water chemistry logs etc.)
- Track progression of known degradation/damage and look for new damage
- Identify causes for damage and failures
- Recommend cost-effective actions to reduce failures and wear rates
- Provide advice on repairs and O&M strategies that balance economics, performance and unit life
- Optional NDE (UT, MT, PT, borescope) surveys using an analytically prioritised inspection plan
- Optional chemical analysis of drum and tube deposits and metallurgical analysis of boiler components

Hot Inspection

- Identify gas leaks at penetrations and expansion joints, steam leaks on valves
- Thermographic survey to determine temperatures at casing hotspots and leak locations
- Observe operation and obtain representative operating data from DCS
- Review operating practice and procedures

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