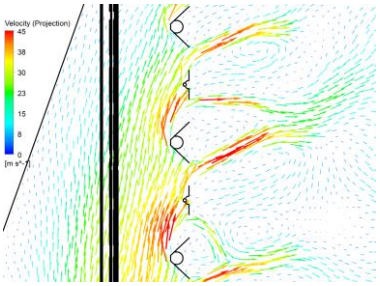
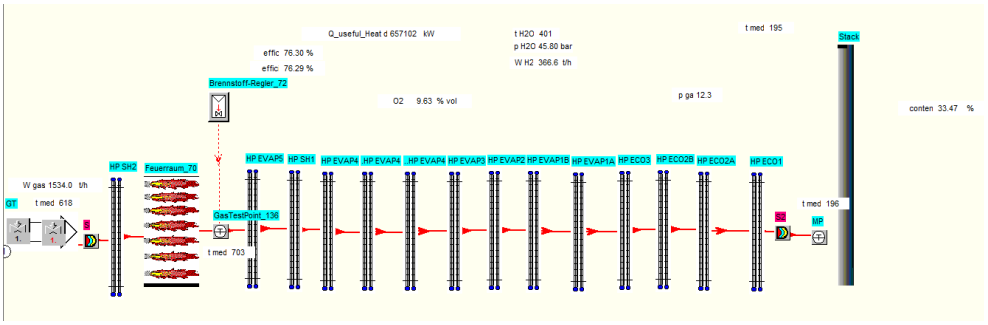
Impact of GT Upgrade on HRSG Life & Performance



A competitive power market is pushing many combined cycle plant operators to invest in technology that increases plant efficiency and reliability. An upgrade of an existing Gas Turbine (GT) is one avenue for achieving this goal. Upgrades that increase GT output, improve efficiency, availability, reduce start-up times and lower emissions are on offer from the major GT vendors. These upgrades typically lead to changes in the exhaust gas temperature and mass flow, hence the effects on the HRSG performance and component life need to be carefully evaluated.

Tetra Engineering offers an engineering evaluation package that considers the full impact that GT upgrades will have on your HRSG and steam plant:

- **Thermal Process Simulations:** Simulations are performed using advanced boiler software in order to evaluate changes in steam cycle process conditions. Results are used as input to subsequent mechanical design validations and component life assessments.
- **Effects on HRSG Component Life:** Changes in fluid pressure and temperature can lead to reduced creep life of hot-end components (SH/RH) and increased risk of thermal fatigue failures in thick-walled components such as steam drums.
- **GT Exhaust Gas Flow Simulations:** Computational Fluid Dynamics (CFD) can be used to evaluate the impact of changes in GT exhaust gas conditions on downstream pressure parts.
- **Design Code Check**: A review of original design is conducted to verify continuing design code compliance after changes in process conditions
- **Effects on Duct Burner Performance:** Changes in the GT exhaust characteristics can lead to operating parameters that are outside the original Duct Burner design envelope. The impact of these changes is assessed using results from thermal process and CFD simulations.
- **Controls, Valves & Pumps:** Changed in process conditions may require modifications to existing steam cycle piping, valve, drain and



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Remember the HRSG!

GT upgrades will affect the HRSG and steam cycle, therefore assessing post-upgrade thermal performance and the effects on component life is essential to assuring that the full impact of changed GT characteristics on a CCGT plant are considered.

Tetra Engineering

have delivered field and analytical services to combined-cycle plants and conventional boilers for more than 25 years, including performing over 600 HRSG inspections at client sites around the world.

Contact Us

For more information please call our offices or visit our website, www.tetra-eng.com .

About Tetra Engineering