



HRSG CASING, INSULATION, LINER UPGRADE

For Robust Design and Improved Reliability

Improve reliability, reduce O&M costs and prevent consequential reduction in plant safety and performance.

The HRSG casing must safely contain the GT exhaust gas flow whilst withstanding internal pressure and ensuring safe external surface temperatures. The internal insulation system comprises thermal insulation material, attachment/retaining studs and sliding liner plates attached to the external casing to form an insulated gas pressure containment.

It is common for the liner plate system to suffer damage during plant operation as a result of continued exposure to high exhaust gas temperature and flow disturbance. Furthermore, flexible plant operation exposes the liner system to high temperature transients increasing the risk of failure.

Extensive damage can result from failures of the liner and insulation system including mechanical damage to finned tubes downstream and fouling of finned tubes with loose insulation material. Insulation loss also leads to casing hot spots, protective coating heat damage and corrosion.

Improved Reliability

Plant owners are typically faced with ongoing maintenance costs associated with routine repair to liners systems and insulation. Furthermore, unreliable liner systems increase the risk of damage caused when plates become detached and impact downstream finned tubes.

GE Vernova has developed liner/insulation system upgrade solutions intended to replace (in whole or part) existing liner/insulation systems, so improving reliability.

GE Vernova upgrade solutions are based on current GE Vernova best practice for new HRSGs but also consider the requirement for an effective retrofit solution. The solutions also build on GE Vernova's own experience in overcoming casing liner system failures caused by challenging exhaust gas flow profiles.

Liner system upgrades can be completed during scheduled GT hot Gas Path Inspection (C Inspection).

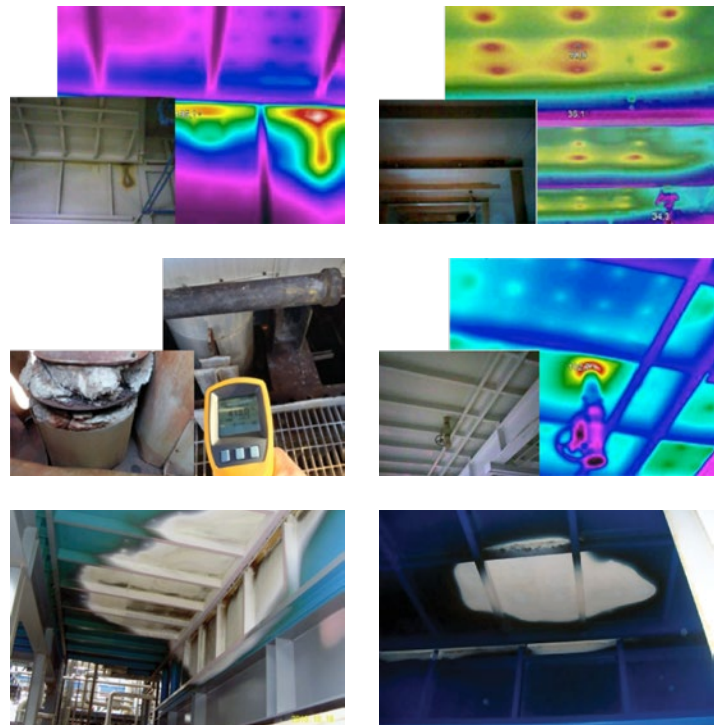


Figure 1: Casing burn by hot gas leakage from damaged liner plate



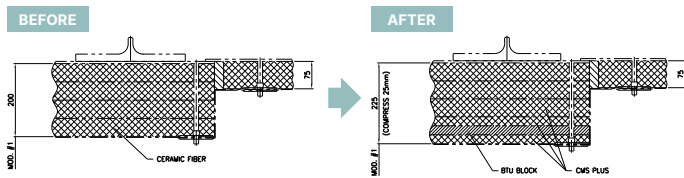
Figure 2: Damage liner plate and stud bolt from GT strong flow and pulsation

The Upgrade Design Solution

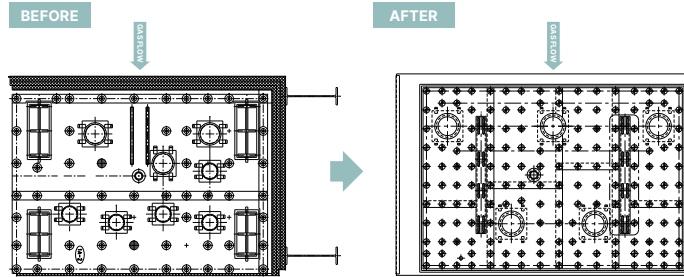
This replacement solution can be applied in whole or part depending on the extent of damage.

The upgrade consists of the following;

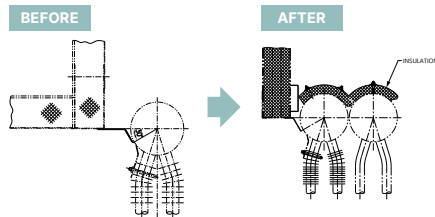
1. Insulation Modification



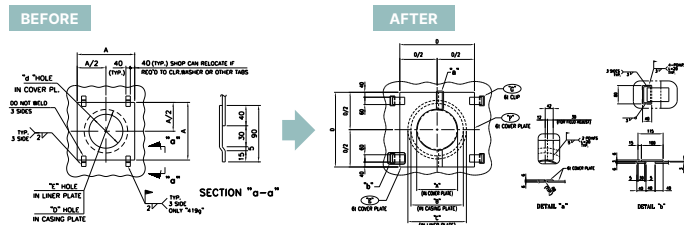
2. Liner Plate Modification



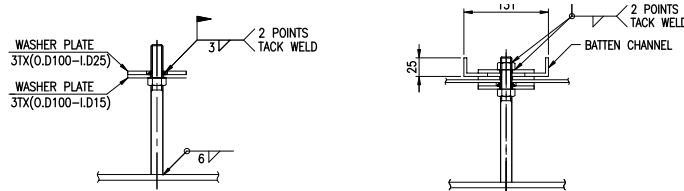
3. Gas Bypass Baffle Modification



4. Cover Plate & Bent Clip Modification



5. Reinforcement of Inlet Duct Bottom



GE Vernova can evaluate existing liner/insulation system damage and offer a combination of these upgrade solutions to address known problems. GE Vernova can also advise on temporary repair methods which can be applied during short outages to limit further damage until a more permanent upgrade can be installed.



Figure 3: Heat resistance paint



Figure 4: Re-fill insulation

To learn more about this offering, contact your GE Vernova representative or visit governova.com/gas-power

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