



# VTC SURFACE TECHNOLOGIES (P) LTD

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## HTER COATINGS FOR BOILER TUBE

Hot corrosion and erosion is a serious problem in power generation equipments, gas turbines, internal combustion engines, fluidized bed combustion, boilers, industrial waste incinerators and paper and pulp industries. No alloy is immune to hot corrosion attack indefinitely although there are some alloy compositions that require a long initiation time at which the hot corrosion process moves from the initiation stage to the propagation stage. Super alloys have been developed for high-temperature applications. However, these alloys are not always able to meet both the high temperature *erosion* and high-temperature *corrosion* resistance simultaneously, so the need of the hour is to protect from both corrosion as well as erosion. The high temperature protecting system must meet several criteria, provide adequate environment resistance, be chemically and mechanically compatible with the substrate, be practically applicable, should not influence the process parameters like heat conductivity, reliable and economically viable. Following figure depicts the typical cross section of an eroded boiler tube.



*Fig 1: Erosion of the tubes from the fire side leading to premature failures etc.*

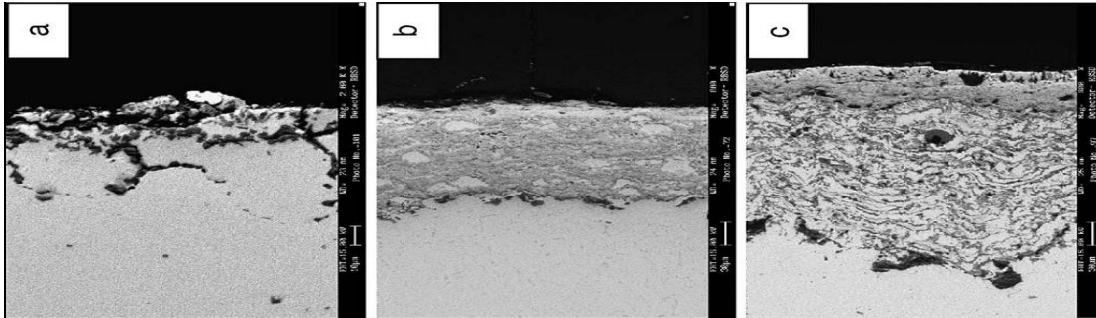
The thinning of the walls can be because of the following two reasons:

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|---|--|
| <p><b>1. Erosion</b></p> <ul style="list-style-type: none"><li>a. Soot Blower Area</li><li>b. Ash Velocity</li><li>c. Sliding Ash</li></ul> | <p><b>2. Corrosion</b></p> <ul style="list-style-type: none"><li>a. Gaseous sulfur</li><li>b. Reduction Atmosphere</li><li>c. High temperature</li></ul> |
|---|--|

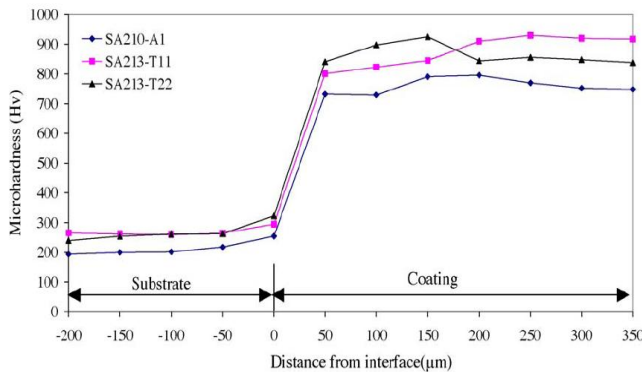
The above problems can be addressed by applying a suitable coating to the problematic areas. VTC Surface Technologies P Ltd offers a novel *HTER* coating to overcome these problems.

Advantages of HTER coatings are listed below:

1. *Low Porosity.* Less area for erodent particle, to impact and abrade.
2. *Small Grain Size.* Small grains tend to be stronger, similar to Nano Technology principle.
3. *Improved Corrosion Resistance Property.* The following figures depicts section B which is an HTER coating whereas in A and C being bare material and super alloy degradation observed in A & C



4. *Absence of Cracks.* HTER coatings are Ductile and Resilient, but are also thermally stable at elevated temperature; therefore no cracks or spalling occurs in the coating.
5. *Uniform Coating Structure.* Homogenous distribution of hard constituents & ductile behavior.
6. *Improved Hardness:* Harder the material better is its erosion resistance capacity.



7. *Smooth Surface.* Low profile coating, no edges to grab.
8. *Heat Conductivity.* Heat conductivity of HTER coatings is better than T16 or T22 alloys.
9. *Easy To Apply And Ready To Use.*

**Application Process:**

Using state of art coating facility and skilled man power , the entire work shall be executed on site in minimum time to reduce outages. The work execution will be under strict supervision and quality shall be monitored regularly. At important areas test coupons shall be made for future reference.

*For more information please contact us or visit us at [www.vtcsurftech.com](http://www.vtcsurftech.com).*