

**CURTISS -
WRIGHT**

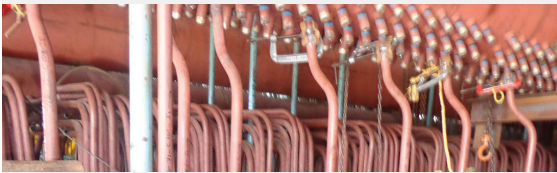
Advantages of Super Heater Coil ID Shot Peening

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CWST Offers Super Heater Coils ID Shot Peening for complete length of the Coils.

Background

Super critical thermal power plants operate at very high temperatures and pressures to achieve greater efficiency. One of the critical components in these plants is the Boiler Tube coils, which consists of numerous tubes which carry the steam flow. These tubes are subject to extreme conditions, leading to issues like oxidation, corrosion, and stress-induced failures.



Solution

To enhance the lifespan and reliability of these boiler tubes, an internal diameter (ID) peening process is deployed. The primary objective of the ID peening process is to improve the durability and operational life of boiler tubes by inducing residual compressive stresses on the inner surfaces. This process mitigates stress corrosion cracking, fatigue, and other failure mechanisms



Shot Peening Overview

ID peening is a mechanical process where the inner surface of the boiler tubes is bombarded with small spherical media (peening media) at high velocity. This process imparts compressive residual stresses, which counteract the tensile stresses that are responsible for crack initiation and propagation.

Equipment and Materials

Custom designed machines are utilised to deliver peening media into the small-diameter boiler tubes. Typically, steel, ceramic, or glass beads are used, chosen based on the tube material and desired surface finish. Ensures precise control over peening parameters such as media velocity, coverage, intensity and exposure. We offer this application both as in-situ /on-site at boiler locations using completely automated & mobile set up. Virgin tubes are Shot peened for new builds as well. We process straight, bent & reducing diameter tubes as well.



Benefits

Increased Fatigue Resistance

Residual compressive stresses reduce the likelihood of crack initiation and propagation.

Enhanced Corrosion Resistance

The Peened surface will have improved resistance to stress corrosion cracking.

Extended Service Life

Overall improvement in tube durability leads to longer operational life and reduced maintenance costs.

Applications

Thermal / Nuclear Power plants, Chemical processing industries and MRO in Power Generation Industry.



Conclusions

The Tube ID peening process is part of critical maintenance procedure for enhancing the performance and longevity of boiler tubes in super critical thermal power plants. By effectively inducing beneficial residual stresses, this process mitigates common failure modes, ensuring more reliable and efficient plant operation. Successfully completed several in-situ /on-site super critical boiler projects in India meeting the intended results.

For inquiries in India, please contact: Manjunath at manjunath.mv@cwst.com / phone: +91 98803 51368
or Subrahmanya Prasad at subrahmanya.prasad@cwst.com / phone: +91 99725 00032
For rest of world inquiries, please contact: Jochen Fuhr at jfuhr@curtisswright.com / phone: +49 173 5204998