

## AN INVESTIGATION OF LEAKAGE OF BOILER TUBE DURING HYDROTEST BEFORE INSTALLING IN SERVICE

Sachin Pawar\*, Hrishikesh Jugade, Braj Bihari Prasad, Goutam Mukhopadhyay and Anup Kumar

Tata Steel, Jamshedpur 831001, India

\* Corresponding author

### ABSTRACT

Function of a boiler tube is to carry the water which will be converted to steam at later stage. Once installed, boiler is expected to run for years and for that to happen, quality of boiler tube needs to be ensured by stringent checks before installation. Hydrotest is one such test to check the leakages in boiler tube coil. This study covers the successful investigation of chronic issue of boiler tube leakages during hydrotest. In a span of one year, six complaints of boiler tube leakage were referred in six different months which raised the alarm to investigate the case and find a permanent solution. Two samples from leakage locations were selected for investigation. Macroscopic observation indicated presence of through thickness crack in both the boiler tube samples. Microscopic observation of one sample revealed presence of entrapped sub-surface scale along with decarburization and grain growth on outer surface of tube, inner surface of tube and inside the crack as well. Fractography of another sample indicated presence of Alumina-Silica inclusions on fracture surface indicating improper squeezing out of weld slag. Study concludes the poor edge preparation leaving behind the scale at edges and insufficient squeezing out of weld slag led to the poor weld joint which caused leakages in boiler tube during hydrotest before installation in the service.

**Keywords:** Boiler tube, Welding, Hot rolled sheet, Fractography etc.

