**Creep behaviour of Super 304H Steel for Advanced Ultra Supercritical (AUSC) Boiler Applications**

Somnath Nandi\*, G. Jaipal Reddy, AHV Pavan, Dhirendra Kumar, M Swamy, Kulvir Singh

Metallurgy Department, Corporate R&D Division, BHEL, Hyderabad 500 093, India

\**Email:* [*somnandi@bhel.in*](mailto:somnandi@bhel.in) Phone: 040-23770692

**Abstract**

In the new era of 21st century, entire world especially India is facing a huge challenge of providing electricity to meet the needs of growing population in the strict environmental norms. Today, the foremost goal of coal based thermal power plant is to reduce the CO2 emissions with improved thermal efficiency. To reduce CO2 emissions, research and development on Advanced Ultra Super Critical (AUSC) power generation is in progress to enhance the efficiency of a coal fired power generation. Efficiency improvement is also a means for reducing the emission of carbon dioxide (CO2) as well as a means to reduce fuel consumption. To meet the requirement of AUSC thermal plants, new materials are introduced in steam generator which can withstand high pressure and temperatures. Super 304H steel is one of the candidate material to be used in AUSC steam generator. Super 304H Steel is one of the new steel chosen for AUSC steam generator applications. Creep is one of the major properties to be assessed for the material to be used in AUSC power plants. Creep rupture tests along with other mechanical tests were conducted on Super 304H steel at elevated temperatures to generate the data for design applications. In this paper, creep behaviour of Super 304H steel is presented at various stress and temperatures and microstructures are correlated along with other mechanical properties.

*Keywords: Super 304H steel, Creep, Microstructural behaviour, CO2 emission, AUSC Power Plant*