

Correlation between fatigue strength of forged crankshaft and endurance strength of raw material

Santosh Kumar^{1*}, Atul Patil¹, Rajesh Mane², Dr. Rajkumar Singh¹, Madan Takale²

¹ Kalyani Centre for Technology & Innovation, Bharat Forge Limited, Pune

² R&D CDFD Engineering, Bharat Forge Limited, Pune

*Corresponding author e-mail: santosh.kumar@bharatforge.com

Abstract

Crankshaft is one of the most critically loaded components which experiences cyclic loads in the form of bending and torsion during its service life. This leads to failure in crankshaft due to fatigue which is caused by cyclic stresses and their variation of magnitude over time. Hence, it is of prime importance to evaluate fatigue performance of forged crankshaft.

Evaluation of the fatigue strength of forged crankshaft is a time consuming and costly affair. In the present work, an attempt was made to correlate Endurance strength (obtained from rotating bending fatigue (RBF) test) with bending & torsional fatigue strength of crankshaft. Several set of RBF tests were conducted on specimen prepared from both longitudinal and transverse directions. From the results, it was found that a linear relation exists between endurance strength obtained in longitudinal and transverse direction with crankshaft bending and torsional fatigue strength respectively.