

EVALUATION OF FATIGUE PROPERTIES OF MEDIUM CARBON LOW ALLOY FORGED STEELS QUENCHED IN POLYMER

Chandan B R¹ and Ramesha C M²

¹G Made Gowda Institute of Technology, India

²Ramaiah Institute of Technology, India

Medium carbon low alloy forged steels (EN18, EN19, EN24 and EN25) have been investigated with respect to their fatigue properties for untreated (Forged) and polymer quenched samples. For heat treatment solutionizing temperature of 8550C with a soaking period of 60 min followed by step tempering of 575° and 220° was used. Thereafter quenching was carried out in polymer (polyethylene glycol 10% and 30%) separately. Fatigue tests were carried for untreated and polymer quenched samples; the polymer quenched samples being superior to untreated samples. Simulation of fatigue analysis carried out using ANSYS and corroborated the experimental results for the polymer quenched samples loaded to 30% of UTS; also the specimens quenched in poly ethylene glycol exhibited the best mechanical properties. The heat treated specimens had a structure of fine tempered martensite with small amount of ferrite.

chandanbrmech@gmail.com