Quantitative evaluation of geometric and dimensional error of cold forged AUV propeller blade

ABSTRACT

Accuracy is the key issue in the precision forging. Geometric error is one of the major errors found in cold forging part. The error becomes more critical as the complexity of part increase. In this study, geometric and dimensional error of an Autonomous Underwater Vehicle (AUV) propeller blade is quantified by comparing the profiles obtained from optical method. The profile of the forged blade is consider as the final part, while the profile obtained from the punch is consider as the targeted profile. Two geometric parameters were evaluated in this study i.e. the twist angle and the blade thickness. The CMM was used to validate the methodology. The result shows that the thickness error depends on deformation ratio, while the twist angle accuracy rely on amount of twist and thickness of the blade.