

An investigation of geometrical defect of cold embossing part utilizing FEM and image processing technique

Abstract

Accuracy of the forging parts becomes critical as the process depends on many factors. Defect may harm the assembly and tends to affect the performance of the parts. Therefore, it must be understood and detected as soon as the manufacturing begins. The size and complexity of the part limit the defect to be assessed. This study intent to investigate the defect of the cold embossing pin located at the head of a propeller blade. This is to ensure accurate assembly of the blade. In this work, the effects of design and process parameters on the formation of defect are studied using 2-D finite element analysis. The defect can be measured based on the incomplete filling of the region using the captured images from the FE result. The results seem to show that there is less effect from the diameter of punch and internal cavity, but more obvious due to the distance to the edge. The FE results are in good agreement with the experimental results.

Keyword: FEM