

Warpage analysis between straight and conformal cooling channels on thin shallow shell

Abstract

Warpage is a type mold defect due to non-uniform temperature variation which causes differential shrinkage rate on the moulded parts. An accurate warpage prediction is so important in helping mould designers to achieve successful mold design with minimum warpage defects. This work is performed with a purpose to determine and compare the best parameters can be selected in manufacturing of thin shallow shell using two different types of cooling channels which are straight cooling channels and conformal cooling channels. The results were obtained using Taguchi Method and Analysis of Variance (ANOVA) and run through simulation software. Both parameters are then compared with each other in recommending to the mold designers which is the best to be applied at mold design stage. It has been found from this work that two factors that significantly cause warpage on both cooling channels are packing pressure and filling time.

Keywords; Analysis of Variance (ANOVA), Conformal Cooling Channel, Injection Molding, Taguchi, Thin Shallow Shell

