

Parameter optimization of the injection molding process for a LED lighting
lens using soft computing
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Abstract

This study proposes a parameter optimization system for a multi-LED lighting lens, which uses design of experiment (DOE) for screening the process parameters, computer-aided engineering (CAE) for mold flow analysis, analysis of variance (ANOVA) for determining the significant parameters, and response surface methodology (RSM) for finding the initial parameter settings in terms of multi-objective quality characteristics. In addition, two regression models, obtained from RSM, are employed as the quality predictors which are combined with the particle swarm optimization (PSO) to generate the optimal molding parameter settings. The numerical results show that the proposed approach, RSM with PSO, is beneficial to obtain the better process parameter settings in the injection molding process

Keyword : Lens design, CAE, ANOVA, RSM, PSO