An effective approach for process parameter optimization in injection molding of plastic housing components

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Abstract

Determining optimal process parameter settings is critical work that extraordinarily influences productivity, quality, and costs of production. Previously, numerous engineers conventionally used trial-and-error processes or Taguchi's parameter design method to determine optimal process parameter settings. However, the application of these methods has some shortcomings. This research applies Taguchi's parameter design method, regression analysis, and the Davidon-Fletcher-Powell method to propose a novel approach for determining the optimal process parameter settings of plastic injection molding under single quality characteristic considerations.
This novel approach can avoid shortcomings that originate from the application of trial-and-error processes or the conventional Taguchi parameter design method. The research results revealed that the proposed novel approach can effectively help engineers determine optimal process parameter settings and achieve competitive advantages of product quality and costs.

Keyword：DFP method; Injection molding; Regression analysis; Taguchi's parameter design method