

Development of a Rapid Prototyping System Using Response Surface Methodology

This case study presents an investigation of the relationships between eight process operating variables (factors) and five part performance measures (responses) in a rapid prototyping system. The use of fractional factorial, single-factor foldover, and central composite designs is demonstrated. Polynomial regression models are constructed for each response, followed by a desirability function model. Canonical and ridge analyses are used to identify a group of factor settings that simultaneously produce improved performance for all responses.