Taylor & Francis
Online

Engineering Optimization ›
Volume 40, 2008 - Issue 6

1,155 Views | 188 CrossRef citations to date | 0 Altmetric

Original Articles

The use of a grey-based Taguchi method for optimizing multi-response simulation problems

Yiyo Kuo, Taho Yang & Guan-Wei Huang

Pages 517-528 | Received 24 Jan 2007, Published online: 20 May 2008

Cite this article https://doi.org/10.1080/03052150701857645

Sample our Mathematics & Statistics Journals
>> Sign in here to start your access to the latest two volumes for 14 days

Full Article | Figures & data | References | Citations | Metrics
Reprints & Permissions | Read this article | Share

Abstract

Simulation modelling is a widely accepted tool in system design and analysis, particularly when the system or environment has stochastic and nonlinear behaviour. However, it does not provide a method for optimization. In general, problems contain more than one response, which are often in conflict with each other. This article proposes a grey-based Taguchi method to solve the multi-response simulation problem. The grey-based Taguchi method is based on the optimizing procedure of the Taguchi method, and adopts grey relational analysis (GRA) to transfer multi-response problems into single-response problems. A practical case study from an integrated-circuit packaging company illustrates that differences in performance of the proposed grey-based Taguchi method and other methods found in the literature were not significant.

The grey-based Taguchi method thus provides a new option when solving a multi-response simulation-optimization problem.

Keywords:

grey relational analysis | integrated circuit packaging | multiple attribute decision making | simulation optimization | Taguchi method

Acknowledgements

The authors thank the anonymous company for providing the case study. This work was supported in part by the National Science Council of Taiwan, Republic of China, under grants NSC-94-2213-E-432-002 and NSC-94-2213-E-006-019.

Related research

People also read | Recommended articles | Cited by 188

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources by email

Sign me up

Copyright © 2026 Informa UK Limited Privacy policy

Cookies Terms & conditions Accessibility

Taylor and Francis Group

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG