

CONCURRENT TOLERANCE DESIGN WITH ALTERNATIVE MANUFACTURING PROCESSES

Singh, P. K.; Jain, S. C. & Jain, P. K.
Dept. of Mechanical Engineering, S L I E T Longowal, Longowal, India
E-mail: pks67dme@iitr.ernet.in

Abstract

Traditional practice to tolerance design has been based on a sequential approach to design and manufacturing considerations. An integrated approach involving simultaneous selection of design and manufacturing tolerances was introduced in the last decade. Choice of manufacturing processes (or machines) from amongst the alternatives, frequently encountered in different stages of realization of individual dimensions, is an important issue in product development. Optimal tolerance design problem formulated with these two issues is the focus of this study. The resulting optimization problem involving a non-linear and combinatorial search space cannot be effectively solved for global solution using conventional optimization techniques. Genetic algorithm, a non-traditional optimization technique has been proposed in this research. The approach has been demonstrated with the help of a simple case study. 12 refs.

Key Words: *Tolerance Design, Assembly Manufacturing Cost, Design Tolerances, Manufacturing Tolerances, Process Selection, Genetic Algorithms*

PSEUDO-FUZZY DISCRETE-EVENT SIMULATION FOR PRODUCTION CONTROL

Dassisti, M.; Galantucci, L. M. & Trotta, A.
Dipartimento di Ingegneria Meccanica e Gestionale, Politecnico di Bari, Viale Japigia, Bari, Italy
E-mail: dassisti@poliba.it

Abstract

Fuzziness and/or vagueness are common aspects of almost every real production system. They are seldom represented in discrete event simulation. Only recently a new emerging field is attracting the interests of the scientific community: fuzzy simulator. Despite this new approach is very attractive and promising, fuzzy simulators still are not so well-established neither they present enough significant stability for practical purposes. In this paper, a pseudo-fuzzy simulation approach for production control is discussed to address the subjective forms of uncertainty, into discrete-event simulation. Conclusions presented on the sensitivity analysis give a rationale of the use of the pseudo-fuzzy approach for decision support strategies in production control under several uncertainty conditions. 15 refs.

Key Words: *Pseudo-Fuzzy Simulation, Uncorrelated Approach, Production Control*

VIRTUAL LABORATORIES FOR THE COLLABORATIVE DESIGN SYSTEM TO IMPROVE PRODUCT DEVELOPMENT

Dragoi, G. & Cotet, C. E.
University Politehnica of Bucharest, PREMINV, Bucharest, Romania
E-mail: gdragoi@mix.mmi.pub.ro

Abstract

In the new digital economy, the industrial society is penetrating evolving and existing markets of a consuming society with a variety of products intended to improve mobile communications. Many of these products are unique; some are derivatives of existing products, while others are integration of a number of different products. In this paper we define a hardware and software structure named "Platform for Training in Management and Engineering for Industrial Virtual Enterprises"-PREMINV, needed to train students, the future engineers, who must be able to work in the virtual enterprise (VE) imposed by the globalization of the manufacturing and competition. We propose in this paper a structure for a collaborative design system to improve product development. The key is the collaborative engineering, a tool for the virtual enterprise based on an open information model. Partners in the virtual enterprise need to exchange legacy data and migrate with other systems outside their own secure corporate boundary. 14 refs.

Key Words: *Virtual Laboratories, Collaborative Design Systems, Virtual Enterprise*