

MODELLING OF ELECTRICAL DRIVE SYSTEMS IN THE PROCESS OF DESIGNING OF MECHATRONIC DEVICES

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Computer support of design activities within precision devices speeds up achieving proper technical solutions, makes documentation to be developed more easily and reduces risk of making errors. Computer simulation of operation of devices being designed plays a significant role in this process. Besides performance characteristics of the device determined this way it also seems to be important to predict analytically other kinds of product characteristics i.e. reliability and availability. A concept of modelling of electrical drive systems for precision devices, verified along the years there is presented in the paper. It seems to be convenient from the point of view of designer. A proposal to utilise simulation results for better prediction of the device reliability is added.

Key words: *mechatronic devices, electrical drive systems, modelling and simulation, performance characteristics, reliability*

1. Introduction

Electrical drive systems are the most frequently used kind of drives in mechatronic devices. Due to various and high requirements set for such systems it is necessary to make design process still more and more effective and efficient. Computer simulation of operation of the device under design is one of the most important tool used to support design. In general evaluation of a new design is carried upon economic factors. In the approach presented by the famous quality guru J.M. Juran [4] the so called cost effectiveness of a product is based upon relation between total costs of product involving its development, production, service etc. and its effectiveness measured by three categories of characteristics (Fig.1): availability, reliability and capability.

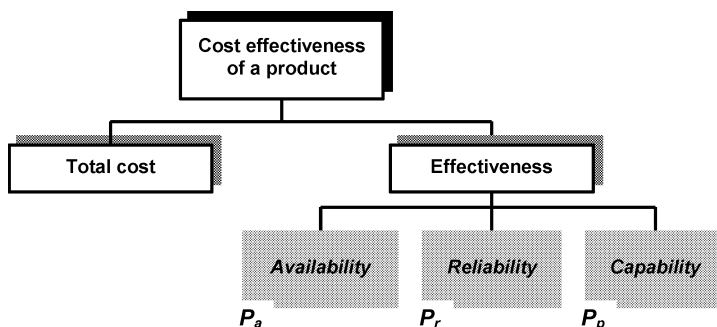


Fig.1: Concept of cost effectiveness [4]

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