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MODEL FOR SIMULATION OF LIFE CYCLE COSTS AT THE STAGE OF PRODUCT DEVELOPMENT

Todic, V.; Cosic, I.; Maksimovic, R.; Tasic, N. & Radakovic, N.
University of Novi Sad, Faculty of Technical Sciences, Trg Dositeja Obradovića 6, 21000 Novi, Sad, Serbia
E-Mail: vladimir.todic@uns.ac.rs, ilijac@uns.ac.rs, rado@uns.ac.rs, nemanja.tasic@uns.ac.rs, nikolar@uns.ac.rs

Abstract
Managing the costs of a product life cycle, which is performed at the stage of its development, has a dominant influence on achieving and maintaining the competitiveness of the product in the market and the target profit as the primary production goal. Development is of crucial importance in the product life cycle, because evaluating individual solutions for the new product's conceptual and preliminary design based on the simulation of costs of all stages of its life cycle represents the way of ensuring the design requirements for excellence. This paper presents in detail the setting and development of a hybrid model of product life cycle cost management, based on fuzzy neural networks.
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Key Words: Product, Product Life Cycle, Cost Simulation, Cost Management

1. INTRODUCTION

Life cycle cost management begins at the stage of product development. It is the stage of selection and choice of ideas and evaluation of individual solutions in the process of conceptual and preliminary design [1], i.e. product design development in accordance with the functional and other requirements of the new product on one hand, and comprehensive analysis of competitive products on the market on the other [2].

Development hugely affects the costs of individual stages of product life cycle, particularly the production costs [3], because errors arising at the stage of conceptual and preliminary design can increase production costs by as much as 60 %. Therefore, all aspects of costs of production, use and recycling, including the aspects of the total cost of the product should be taken into account as early as the stage of development.

In the modern environment, developing a new product emerges as a result of the work of a competent design team, usually organized on the concept of simultaneous engineering. It involves reaching a solution which is suitable for all stages of the life cycle, from development to recycling. Supporting such a design is based on the use of DFX tools intended for excellence in design [4].

Instruments of strategic cost management related to the cost of the product include cost management in all stages of its life cycle by comparing the costs of the observed product with the costs of the most important competitors. Comparing the product's cost (Cost Benchmarking) with the costs of the most important competitors as the instrument of strategic and operational management enables identifying strengths and weaknesses of the own enterprise in comparison with competition, which determines directions and development strategies of addressing the identified weaknesses.

2. LITERATURE REVIEW

There are many traditional and modern methods which can be used to assess the life cycle costs of a new or improved product in the part of the development stage that refers to the