

## A MECHATRONIC APPROACH OF QUALITY INSPECTION AND QUALITY ASSURANCE

Valentin PAU<sup>1</sup>, Despina DUMINICĂ<sup>2</sup>

**Abstract.** *FMECA (Failure Modes, Effects and Criticality Analysis) represents a prevention analysis method, intended to emphasize, to quantify and to classify potential risks that appear in the utilization of a product. Value Analysis is a competitive, organized and creative method that has in view customer satisfaction by taking into account the functions of the new product, as well as economical and multidisciplinary aspects involved in its manufacturing. FMECA and Value Analysis involve a great amount of design, maintenance and cost data. The paper presents a database management system (DBMS), developed by the authors in order to process available data and to obtain relevant information.*

**Keywords:** database management, functional, effects and criticality analysis

### 1. Introduction

Mechatronic systems are characterized by a high degree of integration and very good performances, as a result of cooperation among specialists in the fields of mechanics, electronics, automation systems and IT. The market economy context imposes the association between the achievement of these objectives and reasonable manufacturing costs, so it becomes peremptorily necessary that quality inspection include *statistic methods*, in order to estimate potential modifications of the inspected features.

Is no more a secret that, in contemporary society, the supply of new products is greater than needs. In the same time, due to the dissemination of computer aided design (CAD) methods and information technologies, industry is in continuous progress, fact that leads to a 12-18 months period for a new product to be repaid. In such conditions, it is obvious that product success depends on the moment of its appearance, as soon as possible after the appearance of the need. In such conditions of harsh competition, delaying the launch of the product can diminish even to zero the potential benefit.

The success of a new product is connected with its capacity of answering to needs expressed by customers. Each customer has specific needs and requirements, depending on his education level, his social position and his financial power,

---

<sup>1</sup>Prof., PhD, Eng., affiliation: University "Titu Maiorescu" of Bucharest, Romania, full member of the Academy of Romanian Sciences (v\_pau@utm.ro).

<sup>2</sup>Senior lect. PhD, Eng., University "Politehnica" of Bucharest, Romania, (despina\_duminica@yahoo.com).