

Method for performance evaluation and improvement of the development of mechatronic systems

Abstract of the dissertation by Maria Balazova

Most modern products created in the field of mechanical engineering, and related areas such as automobile technology, already rely on the close symbiotic interaction between mechanics, electronics, control engineering and software technology that is known as mechatronics. Mechatronics allows the development of fundamentally new solutions, which in turn can considerably improve the cost/benefit ratio of familiar products and also stimulate new and as yet unknown products. The key phase for the market success in the product life cycle is the product development. Here, the performance attributes like functions, quality, costs and reliability of the product are determined. However, the praxis shows that, especially in small and medium-sized enterprises, the product development is being rather unsystematic and chaotic, what leads to the waste of costs, time and human potential.

The aim of this work is to present a method, which helps to analyse and to evaluate the product development and to make suggestions which reasonable, measurable steps the product development should take in order to achieve its individual "Best Practice". First of all the actual situation of the product development is analysed. The next step is to determine the performance improvement levers, which come from the areas of action, Man, Organisation and Technique. Further the ideal profile of the product development is determined.

The main attraction of this method is the identification of advantageous combinations of key levers – so called profiles – by using consistency analysis. Then the issue is to arrange these combinations in such a way on time axis, that a rational and evolutionary approach results which leads the development from the actual situation to the target profile representing the "Best Practice".