

Abstract in English

Dependability oriented analyses and general concepts in the design of mechatronic systems

Mechatronic systems combine the advantages of mechanical engineering, computer science and electronics, especially with regard to the innovative performance of advanced functions. This leads to intelligent and frequently complex systems whose remarkable functionality is, however, quite often accompanied by the risk of poor reliability or even safety. These aspects are frequently subsumed under the heading of dependability.

Two approaches are presented to cope with this challenge: On the one hand dependability could be increased indirectly by systematic and integrative applications of dependability oriented analyses in the design process. A dependability oriented design process is described that bases on the VDI guideline 2206 "Design Methodology for Mechatronic systems". On the other hand knowledge already exists about different dependability oriented solutions for mechatronic systems. This knowledge can be used for increasing dependability of new systems directly. The method "General concepts for dependability" is presented. It includes definition, hierarchy and a collection of general solutions for dependability. A database is explained for their application in the design process.

The book gives a contribution to research fields of dependability and mechatronics, especially to their systematic combination.