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Jürgen Gausemeier
Franz Rammig
Wilhelm Schäfer (Editors)

Self-optimizing Mechatronic Systems: Design the Future

- Technologies for Tomorrow's Mechanical Engineering Products
- Dependability and Software Engineering
 - Design Methods and Tools

7th International Heinz Nixdorf Symposium
Self-optimizing Mechatronic Systems

February 20 - 21, 2008
Heinz Nixdorf MuseumsForum
Paderborn, Germany



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Universität Paderborn

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Mechatronics and Self-optimization

The integration of mechanical engineering and information technology results in extensive potentials. This is expressed by the term “mechatronics”. This term refers to the symbiotic cooperation of mechanics, electronics, control engineering and software technology, in order to improve the behavior of a technical system.

Future mechatronical systems encompass subsystems with inherent partial intelligence due to integrated micro processors. The behavior of the complete system will be characterized by communication and cooperation of intelligent subsystems.

This establishes fascinating possibilities for the design of mechatronical products of tomorrow. The term Self-optimization characterizes this perspective:

Self-optimization of a technical system is the endogenous adaption of objectives as reaction to changing influences and the resulting autonomous adjustment of parameters or structure and consequently of the system's behavior. Self-optimization enables systems to act with inherent “intelligence”, to react independently and flexibly to changing operation conditions.

This book to the 7th International Heinz Nixdorf Symposium contains 31 papers of renown experts. The contributions cover a broad range of subject areas of the categories:

- Advanced methods and tools for the design of self-optimizing systems
- Reliability aspects in the development and in operation mode
- Advanced optimization strategies and computational Intelligence
- Software architectures for self-optimizing systems
- Prevention of product piracy

History of the Heinz Nixdorf Symposium

1st Heinz Nixdorf Symposium, 1992: Parallel Architectures and Their Efficient Use

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3rd Heinz Nixdorf Symposium, 1999: Mechatronics and Advanced Motion Control

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