Blanke, Mogens; **Kinnaert, Michel**; **Lunze, Jan**; **Staroswiecki, Marcel**
Diagnosis and fault-tolerant control. 3rd edition. (English) ｜Zbl 1349.93002｜
Berlin: Springer (ISBN 978-3-662-47942-1/hbk; 978-3-662-47943-8/ebook). xx, 695 p. (2016).

Publisher's description: Fault-tolerant control aims at a gradual shutdown response in automated systems when faults occur. It satisfies the industrial demand for enhanced availability and safety, in contrast to traditional reactions to faults, which bring about sudden shutdowns and loss of availability.

The book presents effective model-based analysis and design methods for fault diagnosis and fault-tolerant control. Architectural and structural models are used to analyse the propagation of the fault through the process, to test the fault detectability and to find the redundancies in the process that can be used to ensure fault tolerance. It also introduces design methods suitable for diagnostic systems and fault-tolerant controllers for continuous processes that are described by analytical models of discrete-event systems represented by automata.

The book is suitable for engineering students, engineers in industry and researchers who wish to get an overview of the variety of approaches to process diagnosis and fault-tolerant control.

The third edition resulted from a major re-structuring and re-writing of the former edition, which has been used for a decade by numerous research groups. New material includes distributed diagnosis of continuous and discrete-event systems, methods for reconfigurability analysis, and extensions of the structural methods towards fault-tolerant control. The bibliographical notes at the end of all chapters have been up-dated. The chapters end with exercises to be used in lectures.

See the review of the first edition in [Zbl 1023.93001]. For the second edition see [Zbl 1126.93004].

MSC:

93-02	Research exposition (monographs, survey articles) pertaining to systems and control theory	Cited in **18** Documents
93B35	Sensitivity (robustness)	
93B51	Design techniques (robust design, computer-aided design, etc.)	
90B25	Reliability, availability, maintenance, inspection in operations research	

Full Text: DOI