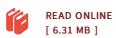# Model-based Process Supervision

By Arun Kumar Samantaray

Springer-Verlag Gmbh Mrz 2008, 2008. Buch. Book Condition: Neu. 235x155x31 mm. Neuware - This book provides control engineers and workers in industrial and academic research establishments interested in process engineering with a means to build up a practical and functional supervisory control environment and to use sophisticated models to get the best use out of their process data. Several applications to academic and small-scale-industrial processes are discussed and the development of a supervision platform for an industrial plant is presented. Model-based fault detection and isolation requires a mathematical model of the system behaviour. Modelling is important and can be difficult because of the complexity of the monitored system and its control architecture. The authors use bond-graph modelling, a unified multi-energy domain modelling method, to build dynamic models of process engineering systems by composing hierarchically arranged sub-models of various commonly encountered process engineering devices. The structural and causal properties of bond-graph models are exploited for supervisory systems design. The structural properties of a system, necessary for process control, are elegantly derived from bond-graph models by following the simple algorithms presented here. Additionally, structural analysis of the model augmented with available instrumentation indicates directly whether it is possible to detect and/or isolate...

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