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Present

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Computational Intelligence for Green Production Systems

Abstract

There is a worldwide shift towards safe and clean production systems. Such move requires effective process modeling and simulation environment that will enable the identification and evaluation of different production scenarios in view of internal and external requirements and constraints, with respect to safety and environmental impacts. Due to the complexity of the target production chains, computational intelligence techniques are investigated that are employed to design intelligent systems for process design and operation. Robust modeling methodology and static and dynamic simulation approaches are proposed on the basis of knowledge engineering concepts. Intelligent network structure analyzer is proposed to generate and evaluate different production scenarios for optimum supply chains. The proposed modeling & simulation environment is illustrated using a case study of renewable energy production chains.

Biography

Hossam A. Gabbar is an Associate Professor in the Division of Industrial Innovation Sciences, in the Graduate School of Natural Science and Technology, Okayama University, Japan. Before joining Okayama University, he worked at Tokyo Institute of Technology and Japan Chemical Innovative Institute (JCII) where he participated in national projects for plastic production chain with recycling, biomass production chain, and automated batch control. He obtained his Ph.D. degree from the Department of Systems Engineering, Okayama University Japan, and his undergraduate study was in the Department of Computer Science and Automatic Control, Alexandria University, Egypt. He is a senior member of IEEE, and SMC chapter chair (Chugoku area - Hiroshima). He is technical committee member of System of Systems, Soft Computing work groups in IEEE – SMC. He is the author of more than 80 publications including patent, books, and book chapters. His research focus cover: intelligent systems for process safety, automated operation synthesis, automated fault diagnosis, and intelligent modeling & simulation for green production systems.

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