

PEM Fuel Cells with Bio-Ethanol Processor Systems: A Multidisciplinary Study of Modelling, Simulation, Fault Diagnosis and Advanced Control (Green Energy and Technology)

From Springer



**PEM Fuel Cells with Bio-Ethanol Processor Systems: A Multidisciplinary Study of Modelling, Simulation, Fault Diagnosis and Advanced Control** (**Green Energy and Technology**) From Springer

Focusing on the entire system, not just the individual fuel cell, this book helps students, engineers, and researchers to develop effective control structures for fuel cells in complex systems. Offers tools for accurate, practical and useful solutions.

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# **Editorial Review**

#### From the Back Cover

An apparently appropriate control scheme for PEM fuel cells may actually lead to an inoperable plant when it is connected to other unit operations in a process with recycle streams and energy integration. *PEM Fuel Cells with Bio-Ethanol Processor Systems* presents a control system design that provides basic regulation of the hydrogen production process with PEM fuel cells. It then goes on to construct a fault diagnosis system to improve plant safety above this control structure.

*PEM Fuel Cells with Bio-Ethanol Processor Systems* is divided into two parts: the first covers fuel cells and the second discusses plants for hydrogen production from bio-ethanol to feed PEM fuel cells. Both parts give detailed analyses of modeling, simulation, advanced control, and fault diagnosis. They give an extensive, indepth discussion of the problems that can occur in fuel cell systems and propose a way to control these systems through advanced control algorithms. A significant part of the book is also given over to computer-aided engineering software tools that can be used to evaluate the dynamic performance of the overall plant.

*PEM Fuel Cells with Bio-Ethanol Processor Systems* is intended for use by researchers and advanced students on chemical, electrical-electronic and mechanical engineering courses in which dynamics and control are incorporated with the traditional steady-state coverage of flowsheet synthesis, engineering economics and optimization.

#### About the Author

**Marta S. Basualdo** is a researcher for CIFASIS-(CONICET-UNR-UPCAM), Rosario, Argentina. She is also a professor for the Chemical and Electric Engineering Departments of FRRo-UTN and she leads the Computer Aided Process Engineering Group (CAPEG).

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**Rachid Outbib** works in the Laboratoire des Sciences de l'Information et des Systèmes at the Domaine Universitaire de Saint Jérôme, Marseille, France.

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