Control of fuel cell power systems



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As the authors so rightly say in their Preface, control engineers have different requirements from modelling, experimental studies and simulation work for designing a good control system and this monograph presents a control-orien­ tated approach to these topics in the fuel cell power system field.

Control of fuel cell power systems: principles, modelling, analysis and feedback design, Jay T. Pukrushpan, Anna G. Stefanopoulou and Huei Peng, Springer, London, U.K., xvii + 161pp - Guzzella - 2005 - International Journal of Robust and Nonlinear Control - Wiley Online Library. Book Review. Free Access.

A review and analysis of a fuel cell system modelling and controller design for electric fuel cell vehicle applications and the basic principal of PEM fuel cell dynamics is presented. Expand 19

System-level dynamic models of fuel cell power plants built from physics­ based component models are extremely useful in understanding the system­ level interactions, implications for system performance, and model-aided con­ troller design. The system-level dynamic models also help in evaluating alter­

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In Control of Fuel Cell Power Systems the application of fuel cells in automotive powertrains is emphasized because of the significance of the contribution to global CO2 emissions made by ground vehicle propulsion and because of the challenge presented by the accompanying control problems. The authors" comprehensive control-oriented approach provides:

o An overview of the underlying physical principles and the main control objectives and difficulties associated with the implementation of fuel cell systems.

o Formulation, in-depth analysis and detailed control design for two critical control problems, namely, the control of the cathode oxygen supply for a high-pressure direct hydrogen fuel cell system and control of the anode hydrogen supply from a natural gas fuel processor system.

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