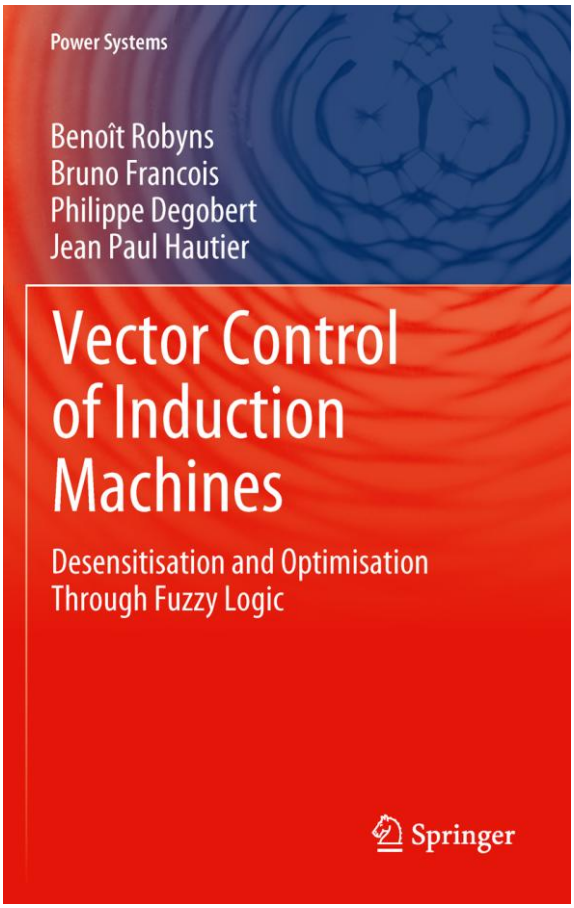

Vector Control of Induction Machines Desensitisation and Optimisation Through Fuzzy Logic

Series: Power Systems
Robyns, B., **Francois**, B., **Degobert**, P., **Hautier**, J.P.
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Introduces the reader to electromechanical conversion

Develops a theoretical method to analyze parameter sensitivity of vector control strategies

Includes various applications that deal with a flywheel energy storage system

After a brief introduction to the main law of physics and fundamental concepts inherent in electromechanical conversion, *Vector Control of Induction Machines* introduces the standard mathematical models for induction machines – whichever rotor technology is used – as well as several squirrel-cage induction machine vector-control strategies. The use of causal ordering graphs allows systematization of the design stage, as well as standardization of the structure of control devices.

Vector Control of Induction Machines suggests a unique approach aimed at reducing parameter sensitivity for vector controls based on a theoretical analysis of this sensitivity. This analysis naturally leads to the introduction of control strategies that are based on the combination of different controls with different robustness properties, through the use of fuzzy logic supervisors. Numerous applications and experiments confirm the validity of this simple solution, which is both reproducible and applicable to other complex systems.

Vector Control of Induction Machines is written for researchers and postgraduate students in electrical engineering and motor drive design.

Keywords : Efficient Power Operation - Fuzzy Logic Control - Induction Machine - Parameter Sensitivity - Vector Control

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Comments : Readers will not only enjoy a new study on vector control but they will also be introduced to useful concepts and tools that are often disregarded: the control through model inversion; the necessary variable estimation; the entanglement of the control and the estimation of nonlinear systems; the sensitivity theory; robustness and desensitization and finally, the good use of fuzzy logic as an optimization method for nonlinear systems.

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