

1. Record Nr.	UNINA9910647229803321
Titolo	Robust Design Optimization of Electrical Machines and Devices / / by Tamas Orosz, David Panek, Anton Rassolkin (editors)
Pubbl/distr/stampa	[Place of publication not identified] : , : MDPI - Multidisciplinary Digital Publishing Institute, , 2023
ISBN	3-0365-6377-6
Descrizione fisica	1 online resource (228 pages)
Disciplina	519.3
Soggetti	Mathematical optimization Robust optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Robust Design Optimization of Electrical Machines and Devices 1 -- Robust and Multi-Objective Pareto Design of a Solenoid 5 -- A Multi-Objective Design Optimization for a Permanent Magnet Synchronous Machine with Hairpin Winding Intended for Transport Applications 21 -- Analytical Study and Comparison of Electromagnetic Characteristics of 8-Pole 9-Slot and 8-Pole 12-Slot Permanent Magnet Synchronous Machines Considering Rotor Eccentricity 35 -- On the Optimal Selection of Flux Barrier Reconfiguration for a Five-Phase Permanent Magnet Assisted Synchronous Reluctance Machine for Low-Torque Ripple Application 45 -- Power Quality Monitoring Strategy Based on an Optimized Multi-Domain Feature Selection for the Detection and Classification of Disturbances in Wind Generators 61 -- The Structural and Dielectric Properties of $\text{Bi}_{3x}\text{Nd}_{x}\text{Ti}_{1.5}\text{W}_{0.5}\text{O}_9$ ($x = 0.25, 0.5, 0.75, 1.0$) 87 -- Assessment of Thermophysical Performance of Ester-Based Nanofluids for Enhanced Insulation Cooling in Transformers 99 -- Comparison of Mechanical and Low-Frequency Dielectric Properties of Thermally and Thermo-Mechanically Aged Low Voltage CSPE/XLPE Nuclear Power Plant Cables 113 -- Optimization of a 3D-Printed Permanent Magnet Coupling Using Genetic Algorithm and Taguchi Method 129 -- A Computationally Efficient Model Predictive Current Control of Synchronous Reluctance Motors Based on Hysteresis Comparators 145 -- A Modified Dynamic Model of Single-Sided Linear

Sommario/riassunto

This reprint contains fourteen chosen articles on robust design optimization of electrical machines and devices. Optimization is essential for the research and design of electromechanical devices, especially electrical machines. Finding optimal solutions may lead to cheaper and more efficient production of electrical machines. However, optimizing such a complex system as an electrical machine is a computationally expensive optimization problem, where many physical domains should be considered together. However, a good, practical design should be insensitive to parameter changes and the manufacturing tolerances. The collected papers show how modern artificial intelligence (AI) tools can be used for the robust design optimization of electric machines and electrical devices. The articles which are published in this Special Issue present the latest results of current research fields. Hopefully, the presented models and various application fields will provide useful information for researchers and professionals interested in these techniques themselves or who have other problems from different fields.