



electronics



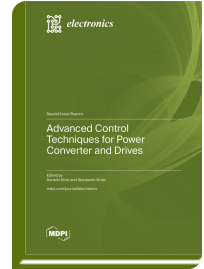
Special Issue Reprint

Advanced Control Techniques for Power Converter and Drives

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Edited by
Daniele Scirè
Gianpaolo Vitale

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This Reprint on Advanced Control Techniques for Power Converters and Drives brings together recent advances in controlling power electronic systems and electric drives, with a focus on strategies that improve efficiency, robustness, and real-time feasibility. The collected works cover a wide spectrum of topics, including model predictive and adaptive control, passivity-based approaches, robust PI-PD design, and EMI-aware modulation methods. Special attention is given to nonlinear device modeling, FPGA-based implementations, and the distributed coordination of converters in modern energy systems.

Each contribution is supported by simulations and experimental validations, demonstrating how advanced algorithms can be deployed in practical applications ranging from motor drives and renewable integration to distribution networks and aircraft power systems. This Reprint not only summarizes state-of-the-art developments but also highlights the main challenges that remain unresolved, such as incorporating nonlinear and thermal effects into controllers, certifying learning-enabled methods, and ensuring scalable stability in converter-dominated grids.

This Reprint serves as a reference for researchers, engineers, and practitioners interested in cutting-edge control solutions for power converters and electric drives, and in the pathways toward their future development and industrial adoption.



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