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4.3. Practice; 5: Voltage Balance in Series Multilevel Converters; 5.1. Basic principles; 5.2. Linear circuits; 5.2.1. Internal balancers; 5.2.2. External balance boosters; 5.2.3. Pros and cons of internal/external balance boosters; 5.3. Nonlinear variants; 5.3.1. Internal balance boosters; 5.3.2. External balance boosters; 5.4. Loss-based design; 5.4.1. Introduction; 5.4.2. Internal balance boosters; 5.4.3. External balance boosters; 5.5. Vectorized models of balance boosters; 6: Filter Design; 6.1. Requirements; 6.1.1. Steady state: current ripple, voltage ripple and standards; 6.1.2. Transients; 6.1.3. Extra design constraints; 6.2. Design process; 7: Design of Magnetic Components for Multilevel Choppers; 7.1. Requirements and problem formulation; 7.2. Area product; 7.2.1. Low frequency - low ripple formulation for filtering inductors; 7.2.2. General formulation for filtering inductors; 7.2.3. Application to inductors for interleaved converters; 7.2.4. Extension to InterCell Transformers; 7.3. Optimal area product of magnetic components for interleaved converters; 7.3.1. Optimal area product for inductors; 7.3.2. Optimal area product for InterCell Transformers; 7.4. Weight-optimal dimensions for a given area product; 7.4.1. For inductors; 7.4.2. For InterCell Transformers; 7.4.2.1. Flux and section of horizontal legs; 7.4.2.2. Determination of optimal dimensions; 7.5. Volume-optimal dimensions for a given area product; 7.6. Number of turns and air gap; 7.7. Accounting for current overload; 7.8. Optimal phase sequence for InterCell Transformers

Sommario/riassunto

In recent years, multilevel topologies have been introduced to allow static converters of electrical energy to address medium voltage (series connection) or high current (parallel connection). The new degrees of freedom provided by these topologies are a potential source of improvement, but they also make the design process more complex. The author of this book shows how the concepts of vectorization and design masks can be used to help the designer in comparing different designs and making the right choices. The book addresses series and parallel multicell conversion directly and the conce
