

### The Theory and Design of Cycloconverters (Monographs in Modern Electrical Technology)

By William McMurray



#### The Theory and Design of Cycloconverters (Monographs in Modern Electrical Technology) By William McMurray

This is the first definitive treatment of an analytically complex type of electric power converter (cycloconverter) operating between ac sources and loads, where the output frequency can be independently controlled from the input frequency.

Currently, there is much interest in applying cycloconverters to the special control of ac motors and to aircraft electrical systems; however, progress has been limited by lack of good technical information. This book provides an immeasurable service in that the author's theory is sufficiently detailed to allow accurate performance evaluation, design calculations, and cost projections. Moreover, he has culled an extensive, coherent bibliography from the scattered literature in the field.

A cycloconverter of the naturally commutated type is essentially a pair of phasecontrolled rectifiers connected in inverse parallel. Modulation of these converters to provide ac power at a lower frequency than the source frequency greatly complicates the analysis of their behavior. McMurray treats various effects of the modulation in theoretical detail and shows how the resulting equations can be used for accurate performance and design calculations. His analysis of the cycloconverter is based on the classical equations of a phase-controlled rectifier operating with continuous load current. The general algebraic form of the equations, which are applicable to many different circuit configurations, is retained throughout the book. It also presents in tabular and graphical form the results of numerical integration of corresponding rectifier equations, required in calculating many cycloconverter performance factors.

This is the fourth monograph in the series Modern Electrical Technology, edited by Alexander Kusko.

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