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| Autore                  | Hughes Austin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Titolo                  | Electric motors and drives [[electronic resource] ] : fundamentals, types and applications / / Austin Hughes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Soggetti                | Electric motors<br>Electric driving                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Nota di contenuto       | Cover; CONTENTS; Preface; Chapter 1. ELECTRIC MOTORS; Introduction; Producing Rotation; Magnetic Circuits; Torque Production; Specific Loadings and Specific Output; Energy Conversion - Motional EMF; Equivalent Circuit; General Properties of Electric Motors; Review Questions; Chapter 2. POWER ELECTRONIC CONVERTERS FOR MOTOR DRIVES; Introduction; Voltage Control - D.C. Output from D.C. Supply; D.C. from A.C. - Controlled Rectification; A.C. from D.C. SP - SP Inversion; Inverter Switching Devices; Converter Waveforms and Acoustic Noise; Cooling of Power Switching Devices; Review Questions Chapter 3. CONVENTIONAL D.C. MOTORS Introduction; Torque Production; Motional E.M.F; D.C. motor - Steady-State Characteristics; Transient Behaviour - Current Surges; Shunt, Series and Compound Motors; Four-Quadrant Operation and Regenerative Braking; Toy Motors; Review Questions; Chapter 4. D.C. MOTOR DRIVES; Introduction; Thyristor D.C. Drives - General; Control Arrangements for D.C. Drives; Chopper-Fed D.C. Motor Drives; D.C. Servo Drives; Digitally Controlled Drives; Review Questions; Chapter 5. INDUCTION MOTORS - ROTATING FIELD, SLIP AND TORQUE; Introduction; The Rotating Magnetic Field<br>Torque Production Influence of Rotor Current on Flux; Stator Current-Speed Characteristics; Review Questions; Chapter 6. OPERATING |

CHARACTERISTICS OF INDUCTION MOTORS; Methods of Starting Cage Motors; Run-up and Stable Operating Regions; Torque-Speed Curves - Influence of Rotor Parameters; Influence of Supply Voltage on Torque-Speed Curve; Generating and Braking; Speed Control; Power Factor Control and Energy Optimisation; Single-Phase Induction Motors; Size Range; Review Questions; Chapter 7. INDUCTION MOTOR EQUIVALENT CIRCUIT; Introduction; Similarity Between Induction Motor and Transformer  
The Ideal Transformer The Real Transformer; Development of the Induction Motor Equivalent Circuit; Properties of Induction Motors; Performance Prediction - Example; Approximate Equivalent Circuits; Measurement of Parameters; Equivalent Circuit Under Variable-Frequency Conditions; Review Questions; Chapter 8. INVERTER-FED INDUCTION MOTOR DRIVES; Introduction; Torque-Speed Characteristics - Constant V/f Operation; Control Arrangements for Inverter-Fed Drives; Vector (Field-Oriented) Control; Cycloconverter Drives; Review Questions; Chapter 9. STEPPING MOTORS; Introduction  
Principle of Motor Operation Motor Characteristics; Steady-State Characteristics - Ideal (Constant-Current) Drive; Drive Circuits and Pull-Out Torque-Speed Curves; Transient Performance; Review Questions; Chapter 10. SYNCHRONOUS, BRUSHLESS D.C. AND SWITCHED RELUCTANCE DRIVES; Introduction; Synchronous Motors; Controlled-Speed Synchronous Motor Drives; Brushless D.C. Motors; Switched Reluctance Motor Drives; Review Questions; Chapter 11. MOTOR/DRIVE SELECTION; Introduction; Power Range for Motors and Drives; Load Requirements - Torque-Speed Characteristics; General Application Considerations  
Review Questions

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## Sommario/riassunto

Electric Motors and Drives is intended for non-specialist users of electric motors and drives, filling the gap between theory-based academic textbooks and the more prosaic 'handbooks', which provide useful detail but little opportunity for the development of real insight and understanding. The book explores all of the widely-used modern types of motor and drive, including conventional and brushless D.C., induction motors and servo drives, providing readers with the knowledge to select the right technology for a given job. Austin Hughes' approach, using a minimum of maths, has

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