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Autore	Fuchs Ewald F
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Altri autori (Persone)	Masoum Mohammad A. S
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and Analysis of Induction Machines

3.1 COMPLETE SINUSOIDAL EQUIVALENT CIRCUIT OF A THREE-PHASE INDUCTION MACHINE; 3.2 MAGNETIC FIELDS OF THREE-PHASE MACHINES FOR THE CALCULATION OF INDUCTIVE MACHINE PARAMETERS; 3.3 STEADY-STATE STABILITY OF A THREE-PHASE INDUCTION MACHINE; 3.4 SPATIAL (SPACE) HARMONICS OF A THREE-PHASE INDUCTION MACHINE; 3.5 TIME HARMONICS OF A THREE-PHASE INDUCTION MACHINE; 3.6 FUNDAMENTAL AND HARMONIC TORQUES OF AN INDUCTION MACHINE; 3.7 MEASUREMENT RESULTS FOR THREE- AND SINGLE-PHASE INDUCTION MACHINES; 3.8 INTER- AND SUBHARMONIC TORQUES OF THREE-PHASE INDUCTION MACHINES; 3.9 INTERACTION OF SPACE AND TIME HARMONICS OF THREE-PHASE INDUCTION MACHINES; 3.10 CONCLUSIONS CONCERNING INDUCTION MACHINE HARMONICS; 3.11 VOLTAGE-STRESS WINDING FAILURES OF AC MOTORS FED BY VARIABLE-FREQUENCY, VOLTAGE- AND CURRENT-SOURCE PWM INVERTERS; 3.12 NONLINEAR HARMONIC MODELS OF THREE-PHASE INDUCTION MACHINES; 3.13 STATIC AND DYNAMIC ROTOR ECCENTRICITY OF THREE-PHASE INDUCTION MACHINES; 3.14 OPERATION OF THREE-PHASE MACHINES WITHIN A SINGLE-PHASE POWER SYSTEM; 3.15 CLASSIFICATION OF THREE-PHASE INDUCTION MACHINES; 3.16 SUMMARY; 3.17 PROBLEMS; 3.18 REFERENCES; 3.19 ADDITIONAL BIBLIOGRAPHY; CHAPTER 4: Modeling and Analysis of Synchronous Machines; 4.1 SINUSOIDAL STATE-SPACE MODELING OF A SYNCHRONOUS MACHINE IN THE TIME DOMAIN; 4.2 STEADY-STATE, TRANSIENT, AND SUBTRANSIENT OPERATION; 4.3 HARMONIC MODELING OF A SYNCHRONOUS MACHINE; 4.4 SUMMARY; 4.5 PROBLEMS; 4.6 REFERENCES; 4.7 ADDITIONAL BIBLIOGRAPHY; CHAPTER 5: Interaction of Harmonics with Capacitors; 5.1 APPLICATION OF CAPACITORS TO POWER-FACTOR CORRECTION; 5.2 APPLICATION OF CAPACITORS TO REACTIVE POWER COMPENSATION; 5.3 APPLICATION OF CAPACITORS TO HARMONIC FILTERING; 5.4 POWER QUALITY PROBLEMS ASSOCIATED WITH CAPACITORS

Sommario/riassunto

This book helps readers understand the causes and effects of power quality problems and provides techniques to mitigate these problems. Power Quality is a measure of deviations in supply systems and their components, and affects all connected electrical and electronic equipment, including computers, TV monitors, and lighting. In this book analytical and measuring techniques are applied to power quality problems as they occur in central power stations and distributed generation such as alternative power systems. Provides theoretical and practical insight into power quality problems.
