

1. Record Nr.	UNINA9910166634803321
Autore	Pyrhonen Juha
Titolo	Electrical machine drives control : an introduction // Juha Pyrhonen, Valeria Hrabovcova, R. Scott Semken
Pubbl/distr/stampa	Chichester, West Sussex, England : , : Wiley, , 2016 ©2016
ISBN	1-119-26040-X 1-119-26044-2 1-119-26047-7
Descrizione fisica	1 online resource (527 p.)
Disciplina	621.46
Soggetti	Electric driving Electric motors - Electronic control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Electrical Machine Drives Control: An Introduction; Contents; Preface; Abbreviations and Symbols; 1: Introduction to electrical machine drives control; 1.1 What is an electrical machine drive?; 1.2 Controlled variable speed drives; 1.2.1 DC variable speed drives; 1.2.2 AC variable speed drives; 1.3 Electrical machine drive implementation; 1.4 Controlled electrical drives and energy efficiency; 1.5 The electrical drive as an element of a controlled industrial process; References; 2: Aspects common to all controlled electrical machine drive types 2.1 Pulse width modulation converter electrical motor drive 2.2 Converter interface to power source; 2.3 Fundamental mechanics; 2.4 Basic mechanical load types; 2.5 Proportional-integral-derivative controller in electrical drives; 2.6 The speed, torque, or position control of an electrical drive; 2.7 Control time rates and embedded system principles; 2.8 Per-unit values; 3: The fundamentals of electric machines; 3.1 Energy conversion in electric machines; 3.2 Industrial machine windings; 3.3 Effective winding turns and spatial harmonics; 3.4 Induction machine rotors; 3.5 The damper winding 3.6 AC winding systems 3.7 DC machine windings; 3.8 The brushless DC machine; 3.9 The magnetic circuit of an electric machine; 3.10

Motor voltage, flux linkage, flux, field weakening, and voltage reserve;
3.11 Motors in power-electronic electrical drives; References; 4: The
fundamentals of space-vector theory; 4.1 Introduction to the space
vector for current linkage; 4.1.1 Mathematical representation of the
space vector; 4.1.2 Two-axis representation of the space vector; 4.1.3
Coordinate transformation of the space vector; 4.2 Space-vector
equivalent circuits and the voltage-vector equations
4.3 Space-vector model in the general reference frame
4.4 The two-axis model; 4.5 Application of space-vector theory; References; 5: Torque
and force production and power; 5.1 The Lorentz force; 5.2 The
general equation for torque; 5.3 Power; 5.4 Reluctance torque and co-
energy; 5.5 Reluctance torque and the cross-field principle in a rotating
field machine; 5.6 Maxwell's stress tensor in the definition of torque;
References; 6: Basic control principles for electric machines; 6.1 The
control of a DC machine; 6.2 AC machine control basics; 6.3 Vector
control of AC motors
6.4 Direct flux-linkage control and direct torque control
6.4.1 The basis of direct torque control; 6.4.2 DFLL implementation; 6.4.3
Shortcomings of direct flux-linkage control; 6.5 Improving DFLL to
achieve DTC; 6.5.1 Current model correction; 6.5.2 Stator flux-linkage
eccentricity correction; 6.6 Other control principles; References; 7: DC
and AC power electronic topologies - modulation for the control of
rotating-field motors; 7.1 The thyristor bridge as a power-electronic
drive component; 7.2 The cycloconverter; 7.3 The load commutated
inverter drive
7.4 Voltage source inverter power stages
