1. Record Nr. UNINA9910254174203321

Autore	Schirru Michele
Titolo	Development of an Ultrasonic Sensing Technique to Measure Lubricant Viscosity in Engine Journal Bearing In-Situ / / by Michele Schirru
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	9783319534084
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XVI, 167 p. 155 illus., 80 illus. in color.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	620.11274
Soggetti	Acoustical engineering Tribology Corrosion and anti-corrosives Coatings Automotive engineering Materials science Materials—Surfaces Thin films Engineering Acoustics Tribology, Corrosion and Coatings Automotive Engineering Characterization and Evaluation of Materials Surfaces and Interfaces, Thin Films
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Background on Viscosity and Lubrication -- Background on Ultrasound -- Literature review -- A Novel Ultrasonic Model for Non-Newtonian Fluids -- Viscosity Measurement at an Aluminium-Oil Boundary -- The Matching Layer Method -- Viscosity Measurement in a Journal Bearing -- Conclusions.
Sommario/riassunto	This thesis presents a novel ultrasonic instrument for non-invasive and in-situ characterization of journal bearing lubricant viscosity. In particular, the application to journal bearings is described by non-

	invasively measuring the viscosity and localized power losses throughout operation. This ultrasonic viscometer is based on the reflection of polarized shear waves from a thin resonating coating layer to increase the measurement sensitivity, in comparison to conventional ultrasonic methods. This instrument allows for a full engine oil viscoelastic characterization in-situ. The book investigates the effects of temperature, pressure and shear rate, and describes in detail the ultrasonic setup and method. Further, it demonstrates that the same technique can be applied similarly to monitor the lubrication of other engine components. As such, it offers a unique instrument that can drive the research of oil formulations to improve engine performance and fulfill the requirements of international fuel economy regulations. .

2.

Record Nr.	UNINA9910299905303321
Autore	Farshadnia Mohammad
Titolo	Advanced Theory of Fractional-Slot Concentrated-Wound Permanent Magnet Synchronous Machines / / by Mohammad Farshadnia
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2018
ISBN	981-10-8708-3
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (266 pages)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	621.46
Soggetti	Power electronics Magnetism Magnetic materials Machinery Power Electronics, Electrical Machines and Networks Magnetism, Magnetic Materials Machinery and Machine Elements
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction and Literature Review -- Analytical Modelling of Stator Magnetic Characteristics in Fractional-Slot Concentrated-Wound

Permanent Magnet Machines -- Design of Optimal Winding Layouts for Multiphase Fractional-Slot Concentrated-Wound Permanent Magnet Machines -- Analytical Modelling of Rotor Magnetic Characteristics in an Interior Permanent Magnet Rotor -- Calculation of Airgap Function and Inductance in Fractional-Slot Concentrated-Wound Interior Permanent Magnet Machines -- Detailed Analytical Modelling of Electromagnetic Torque in Fractional-Slot Concentrated-Wound Interior Permanent Magnet Machines under Healthy and Open-Phase Fault Conditions -- An Extended dq Model for Fractional-Slot Concentrated-Wound Interior Permanent Magnet Machines Considering Non-Ideal Machine Parameters -- Conclusions and Future Works.

Sommario/riassunto

This book focuses on the analytical modeling of fractional-slot concentrated-wound (FSCW) interior permanent magnet (IPM) machines and establishes a basis for their magnetic and electrical analysis. Aiming at the precise modeling of FSCW IPM machines' magnetic and electrical characteristics, it presents a comprehensive mathematical treatment of the stator magneto-motive force (MMF), the IPM rotor non-homogeneous magnetic saturation, and its airgap flux density. The FSCW stator spatial MMF harmonics are analytically formulated, providing a basis on which a novel heuristic algorithm is then proposed for the design of optimal winding layouts for multiphase FSCW stators with different slot/pole combinations. In turn, the proposed mathematical models for the FSCW stator and the IPM rotor are combined to derive detailed mathematical expressions of its operational inductances, electromagnetic torque, torque ripple and their respective subcomponents, as a function of the machine geometry and design parameters. Lastly, the proposed theories and analytical models are validated using finite element analysis and experimental tests on a prototype FSCW IPM machine.