

1. Record Nr.	UNINA9910508473103321
Autore	Gong Chao
Titolo	Crash Safety of High-Voltage Powertrain Based Electric Vehicles : Electric Shock Risk Prevention
Pubbl/distr/stampa	Cham : , : Springer International Publishing AG , , 2021 ©2022
ISBN	3-030-88979-3
Descrizione fisica	1 online resource (155 pages)
Collana	Springer Theses Ser.
Soggetti	Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Declaration -- Supervisor's Foreword -- Abstract -- List of Publications -- Acknowledgements -- Contents -- Abbreviations -- Nomenclature -- List of Figures -- List of Tables -- List of Accompanying Materials -- 1 Introduction -- 1.1 Motivation -- 1.2 Dissertation Outline -- 2 Review of EV Safety in Crash Conditions -- 2.1 Injury Hazards to Occupants During Crash -- 2.1.1 Physical Hazards -- 2.1.2 Electric Shock Hazards -- 2.1.3 Corrosion, Intoxication and Burn Hazards -- 2.2 Regulatory Activities Concerning Crash -- 2.2.1 Regulations Concerning Physical Hazards -- 2.2.2 Regulations Concerning Electrical Hazards -- 2.2.3 Discussion and Future Challenges About Regulations -- 2.3 Technologies for Reducing Injury Hazards to Occupants After EV Crashes -- 2.3.1 Technologies for Reducing Physical Hazards -- 2.3.2 Technologies for Reducing Electric Shock Hazards -- 2.3.3 Technologies for Reducing RESS-Related Hazards -- 2.4 Valuable Topic Requiring Further Study -- 2.5 Summary -- 3 New Winding-Based Discharge Strategy for EV Powertrains with Extreme Parameters -- 3.1 Introduction -- 3.2 EFM and Mechanism of Winding-Based Discharge Methods -- 3.2.1 Energy Flow Model -- 3.2.2 Mechanism of Winding-Based Discharge Methods -- 3.3 Winding-Based Discharge Strategies for Systems with Extreme Parameters -- 3.3.1 Analysis of Traditional LDA-CI and Classic NDNQ Methods -- 3.3.2 Proposed Winding-Based Discharge Method -- 3.4 Experimental Results -- 3.5 Summary -- 4

Hybrid DC-Bus Capacitor Discharge Strategy for EV Powertrains with Highly Extreme Parameters -- 4.1 Introduction -- 4.2 Mechanism and Defects of Bleeder-Based Discharge Method -- 4.2.1 Mechanism and BR for Standstill Cases -- 4.2.2 Mechanism and BR for Running Case -- 4.2.3 Evaluation of Size and Weight Sacrifice -- 4.3 Proposed Hybrid Discharge Technique.
4.3.1 Design of BR for Proposed Discharge Method -- 4.3.2 Discharge Modes and Control Algorithms -- 4.4 Experimental Verifications -- 4.5 Summary -- 5 Fault-Tolerant Winding-Based DC-Bus Capacitor Discharge Strategy -- 5.1 Introduction -- 5.2 Design of HSPO Based on SM Theory -- 5.2.1 Machine Modelling -- 5.2.2 Traditional SOSM Observer -- 5.2.3 Proposed Enhanced SOSM Observer -- 5.3 Design of Adaptive SW-LSPO -- 5.3.1 Traditional SW HF Injection Method -- 5.3.2 Impact of Bus Voltage on Sine-Wave HF Injection Method -- 5.3.3 Proposed Adaptive SW-LSPO -- 5.4 Fault-Tolerant Full-Speed Range Discharge -- 5.5 Simulation and Experimental Verifications -- 5.5.1 Simulation Results -- 5.5.2 Experimental Results -- 5.6 Summary -- 6 Winding-Based Discharge Technique Selection Rules Based on Parametric Analysis -- 6.1 Introduction -- 6.2 Selection Principles for NDZQ Method -- 6.2.1 Instant Discharge Occasions -- 6.2.2 Long-Cycle Discharge Occasions -- 6.2.3 Implementation Procedures of Selection Rules for NDZQ Methods -- 6.3 Selection Principles for Piecewise NDNQ Method -- 6.3.1 Criteria for Piecewise NDNQ Method Selection -- 6.3.2 Implementation Procedures -- 6.3.3 Overall Discharge Technique Selection Rules -- 6.4 Case Studies and Results -- 6.4.1 Verifications of Winding-Based Discharge Method Selection Rules -- 6.4.2 Judgement for Discharge Methods in Previous Chapters -- 6.5 Summary -- 7 Conclusions and Future Work -- 7.1 Conclusions -- 7.2 Future Work -- Appendix -- 1.Vector Control for AC Motors -- 2.Awards and Trainings During PhD Period -- 3.Collaborations During PhD Period -- 4.Part of Control Codes in TMS320F28335 Platform (Void Main ()) -- References.
