

Prof. Roberto Cardenas Dobson

ELECTRICAL ENGINEERING DEPARTMENT UNIVERSITY OF CHILE · FULL
PROFESSOR U. CHILE · POWER ELECTRONICS AND CONTROL

University of Chile Avenida Tupper 2007, Postal code 8370451, Santiago, Chile

☎ (+56)(2) 29784195 (+56)(2) 29784196 | ✉ rcardenas@ing.uchile.cl rcd@ieeee.org | 🏠
sites.google.com/site/robertocardenasdobson/home



I am a full-professor at the University of Chile. I have also been a Full professor at the University of Santiago and also at The University of Magallanes Chile. Currently my research areas are Power Electronics, and distributed Control of Micro-grids. I have experience in drives and sensorless control of cage, doubly-fed induction machines and switched reluctance machines.

- **H index** (Scopus) = 48
- **H index** (Google Scholar) = 53
- **Citations** (Scopus) = 9.232
- **Citations** (Google Scholar) = 12.333
- Last updated 29th of November 2025.

Academic Positions

University of Chile

HEAD OF THE ELECTRICAL ENGINEERING PHD PROGRAMME

Santiago, Chile

July. 2023 - onwards

University of Chile

MEMBER OF THE POSTGRADUATE COMMITTEE ELECTRICAL ENGINEERING PHD PROGRAMME

Santiago, Chile

July. 2021 - onwards

University of Chile

HEAD OF DEPARTMENT

Santiago, Chile

July. 2018 - November 2020

- Head of the Electrical Engineering Department, Faculty of Physics and Mathematical Sciences, University of Chile.

University of Chile

FULL PROFESSOR

Santiago, Chile

2014 - PRESENT

- Professor in the field of Power Electronics and Microgrids.
- Lecturer of EL-4004 Fundamentals of Automatic Control (since 2011). First degree course.
- Lecturer of EL-7031 Power Electronics and Drives (since 2011). Postgraduate course.

University of Chile

ASSOCIATE PROFESSOR

Santiago, Chile

2011 - 2014

- Professor in the field of Power Electronics, Drives and Microgrids.

University of Santiago

FULL PROFESSOR

Santiago, Chile

2009 - Dec. 2010

- Professor in the field of Power Electronics and Drives

University of Magallanes

FULL PROFESSOR

Punta Arenas, Chile

2005 - Feb. 2009

- Researcher in the field of Power Electronics and Drives
- Lecturer in Electrical Drives
- Lecturer in digital systems and digital electronics

University of Magallanes

ASSOCIATE PROFESSOR

- Lecturer in Electrical Drives
- Lecturer in digital systems and digital electronics

Punta Arenas, Chile

1988 - 2009

University of Nottingham

VISITOR SCHOLAR

- Research in the field of control of Switched Reluctance Machines

Nottingham, United Kingdom

1992 - 1993

Editorial Work

Guest Editor Applied Energy

GUEST EDITOR APPLIED ENERGY (ELSEVIER), SPECIAL ISSUE "ARTIFICIAL INTELLIGENCE DRIVEN SOLUTIONS FOR DISTRIBUTION NETWORKS"

2025 - 2025

Guest Editor IEEE

GUEST EDITOR IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS, SPECIAL ISSUE "DIGITAL TWIN DRIVEN HIGH-RELIABILITY POWER ELECTRONIC SYSTEMS"

2023 - 2024

Guest Editor Energies

GUEST EDITOR ENERGIES, SPECIAL ISSUE "CONTROL STRATEGIES FOR POWER CONVERSION SYSTEMS", (PUBLISHED ON 2020)

2020

Associate Editor IEEE

ASSOCIATE EDITOR IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS

2013 - 2020

Guest Editor IEEE

GUEST EDITOR IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, SPECIAL SECTION "CONTROL AND GRID INTEGRATION OF MW-RANGE WIND AND SOLAR ENERGY CONVERSION SYSTEMS", (PUBLISHED ON 2017)

2016 - 2017

Guest Editor IEEE

GUEST EDITOR IEEE TRANSACTIONS ON ENERGY CONVERSION, SPECIAL SECTION "MODELING AND ADVANCED CONTROL OF WIND TURBINES/WIND FARMS", (PUBLISHED ON 2017)

2016 - 2017

Guest Editor IEEE

GUEST EDITOR IEEE JOURNAL OF EMERGING AND SELECTED TOPICS IN POWER ELECTRONICS, "SPECIAL ISSUE ON DISTRIBUTED GENERATION" (PUBLISHED ON JUNE 2017)

2015 - 2016

Guest Editor IEEE

GUEST EDITOR IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, SPECIAL SECTION "CONTROL AND GRID INTEGRATION OF WIND ENERGY", (PUBLISHED ON 2013)

2011 - 2012

Education

University of Nottingham

PH.D IN ELECTRICAL AND ELECTRONIC ENGINEERING

- Ph.D Thesis, *"Control of a Switched Reluctance Generator for Wind Energy Applications"*.

Nottingham, United Kingdom

1993 - 1996

University of Nottingham

MASTER OF SCIENCE IN ELECTRONIC ENGINEERING, WITH DISTINCTION.

- Msc. Thesis *"The Very Long Instruction Word Machine"*

Nottingham, United Kingdom

1991-1992

University of Magallanes

ELECTRICAL ENGINEER

- *With Emphasis in Power System Engineering*

Punta Arenas, Chile

1983 - 1988

Selected Prizes and Distinctions

In the 2% of the World's scientists by total productivity, considering the whole career (six consecutive years).

Stanford University USA

2020-2025

- Ranking published by the University of Stanford.

In the 2% of the World's scientists by total productivity during a single year (six consecutive years).

Stanford University USA.

2020-2025

- Ranking published by the University of Stanford.

Member of the top Electronics and Electrical Engineering Scientists in Chile.

Research.Com USA

2020-2025

- Ranking published by Research.Com

One of the Best Scientists at the University of Chile (H-index Ranking)

Research.Com USA

2020-2025

- Ranking published by Research.Com

Best Paper award IEEE Transactions on Industrial Electronics 2019.

Lisbon Portugal

October 2019

- The paper F. Donoso, A. Mora, R. Cárdenas, A. Angulo, D. Saez, M. Rivera, "Finite-Set Model Predictive Control Strategies for a 3L-NPC Inverter Operating with Fixed Switching Frequency", IEEE Trans, on Industrial Electronics, Vol 65., Nr. 5, pp. 3954-3965, was selected as one of the three best paper published in the IEEE Trans. on Industrial Electronics during 2018. (see <https://www.ieee-ies.org/pubs/transactions-on-industrial-electronics/best-paper-awards>)

Best Paper award IEEE Transactions on Industrial Electronics 2005.

Raleigh, USA

October 2005

- The paper R. Cardenas, R. Pena, G. Asher et al., "Control strategies for power smoothing using a flywheel driven by a sensorless vector-controlled induction machine operating in a wide speed range," IEEE Transactions on Industrial Electronics, vol. 51, no. 3, pp. 603-614, 2004, was selected as the best paper published in the IEEE Trans. on Industrial Electronics during 2004. (see <https://www.ieee-ies.org/pubs/transactions-on-industrial-electronics/best-paper-awards>)

Papers which are in the 1% of the most cited papers in our research area.

WoS Database

Published in 2016 and 2020

- Distributed Control Strategies for Microgrids: An Overview," in IEEE Access, vol. 8, pp. 193412-193448, 2020, doi: 10.1109/ACCESS.2020.3032378.
- C. Ahumada, R. Cárdenas, D. Sáez and J. M. Guerrero, "Secondary Control Strategies for Frequency Restoration in Islanded Microgrids With Consideration of Communication Delays," in IEEE Transactions on Smart Grid, vol. 7, no. 3, pp. 1430-1441, May 2016.

Papers which were, until recently, in the 1% of the most cited papers in our research area.

WoS Database

Published in 2011 and 2013

- M. Liserre, R. Cárdenas, M. Molinas and J. Rodriguez, "Overview of Multi-MW Wind Turbines and Wind Parks," in IEEE Transactions on Industrial Electronics, vol. 58, no. 4, pp. 1081-1095, April 2011, doi: 10.1109/TIE.2010.2103910.
- R. Cárdenas, R. Pena, S. Alepuz and G. Asher, "Overview of Control Systems for the Operation of DFIGs in Wind Energy Applications," in IEEE Transactions on Industrial Electronics, vol. 60, no. 7, pp. 2776-2798, July 2013, doi: 10.1109/TIE.2013.2243372.

2019 Best paper award ECCE Conference

Baltimore USA

October 2019

- The paper [Luca Tarisciotti, Alessandro Costabeber, Francesco Tardelli, Roberto Cardenas, "A multilevel chain-link topology for low voltage, variable frequency applications", 2019 IEEE Energy Conversion Congress and Exposition \(ECCE\)](#) , received the third prize conference paper award from the IAS Industrial Power Converter Committee.

Best paper of the session Multilevel Converters IV, IEEE-IECON 2013

Vienna, Austria

November 2013

- The paper [Current Control and Capacitor Balancing for 4-Leg NPC Converters Using Finite Set Model Predictive Control.](#), [Felix Rojas, Ralph Kennel, Roberto Cárdenas](#) . was selected as the best paper in the session Multilevel Converter, IECON 2013.

Best paper Award EVER 2014 Monaco

Monaco

March 2014

- The paper [Analysis of Synchronous and Stationary Reference Frame Control Strategies to Fulfill LVRT Requirements in Wind Energy Conversion System](#), [M.Diaz, R. Cardenas](#). was selected as the best paper in the Conference EVER 2014

Ramon Salas Edwards Prize 2010, Chilean Institute of Engineers

Santiago, Chile

CO-SUPERVISOR MSc. THESIS, CO-AUTHOR OF THE PAPER

2010

- The paper [Sensorless Control for a Switched Reluctance Wind Generator, Based on Current Slopes and Neural Networks](#), IEEE Transactions on Industrial Electronics, vol. 56, no. 3, pp. 817-825, 2009. was selected as the best scientific work by the Chilean Institute of Engineers and awarded the *Ramon Salas Edwards* Prize.

Best Chilean Ph.D. Thesis 2018, Engineering Field

Santiago, Chile

SUPERVISOR, BEST PH.D. THESIS

July 2019

- The Ph.D Thesis of Dr. Matias Diaz, [Control of the Modular Multilevel Matrix Converter for Wind Energy Conversion Systems](#). was selected as the best Chilean Ph.D. Thesis in the Engineering Field by the Chilean Academy of Science.

Best Chilean Ph.D. Thesis 2020, Engineering Field

Santiago, Chile

SUPERVISOR, BEST PH.D. THESIS

July 2021

- The Ph.D Thesis of Dr. Claudio Burgos, [Control strategies for improving power quality and PLL stability evaluation in Microgrids](#) . was selected as the best Chilean Ph.D. Thesis in the Engineering Field by the Chilean Academy of Science.

Active Research Projects

- Advanced Technologies project TA25I10090, Development of an ultra-fast modular charger for EVs with vehicle-to-everything and Simultaneous Charging functions, Directo alterno, 2026-2029.
- Anillo Project ATE230035, "Sea Harbour Operation with Renewable Energies (SHORE)", Director, 2024-2027.
- Fondecyt project 1230596, "Novel Modular Multilevel Converter Topologies and Control Strategies for Multi-Megawatt Wind Energy Applications", coinvestigator, 2023-2027.
- Fondecyt project 1220556, "Advanced Predictive Control Strategies for Reliability Enhancement of Microgrids based on Matrix Converters", coinvestigator 2022-2027.
- Fondef Project IT23i0117, 2 Investigación y desarrollo de un alimentador electrónico para máxima eficiencia en motores de inducción", Director alterno, 2023-2025
- Fondecyt Project 1221392, "Enhanced Control Flexibility of Modular Multilevel Converters Through Continuous Control Set Model Predictive Control", Principal Investigator, 2022-2025.
- PAIDI - Plan Andaluz de I+D+I - Spain, ProyExcel 00381, Smart Hybrid Transformers for Provision of Ancillary Services Investigator, (Dec. 2022 to Dec. 2025).

Ph.D. Students since 2017 (Main supervisor)

- [1] Matias Diaz, (finished 2017). He received a Dual Ph.D degree from the University of Nottingham-University of Chile with the thesis **"Control of the modular multilevel Matrix converter for wind energy conversion systems"**. (U.K. Supervisor Prof. Pat Wheeler). The thesis [is available here](#).

Matias is now an associate professor at the Electrical Engineering Department, University of Santiago (Chile). For his PhD thesis, he received the "Best Engineering Thesis" award from the Chilean Academy of Science.

- [2] Mauricio Espinoza (finished 2018). He received his PhD from the University of Chile with the thesis **Control systems for high-power medium-voltage modular multilevel converter-based drives**. The thesis [is available here](#).

Mauricio is now a professor at the University of Costa Rica (San Jose CR).

- [3] Andres Mora Castro (finished 2019). He received his Ph.D. from the University of Chile with the thesis **Optimal switching sequence model predictive control for power electronics**. The thesis [is available here](#).

Andres is currently an associate professor at the Electrical Engineering Department, Santa Maria Technical University (Valparaiso Chile).

- [4] Claudio Burgos Mellado (finished 2019). He received a Dual Ph.D degree from the University of Nottingham-University of Chile with the thesis **Control strategies for improving power quality and PLL stability evaluation in microgrids** (U.K. Supervisors Prof. Mark Sumner and Dr. Alessandro Costabeber). The thesis [is available here](#). For his Ph.D. thesis, he received the **"Best Engineering Thesis"** award from the Chilean Academy of Science

From 2019 to 2021, Claudio was a Research Fellow at the Power Electronics Machines and Control Group, University of Nottingham, United Kingdom. Claudio is now an associate professor at the Electrical Engineering Department, University of O'Higgins (Chile).

- [5] Enrique Espina Gonzalez (finished September 2021). He received a Dual Ph. D. degree from the University of Chile-University of Waterloo (Canada) (Canadian supervisor Prof. Mehrdad Kazerani and Dr. John Simpson-Porco). His Ph.D. thesis is **Distributed Secondary Control System of Hybrid AC/DC Microgrids**. [is available here](#).

Since 2021, Enrique has been an assistant professor at the Electrical Engineering Department at the University of Santiago de Chile.

- [6] Felipe Donoso Merlet (Finished December 2021). He received a Dual Ph.D. degree from the University of Nottingham-University of Chile with the thesis **Hybrid modular multilevel converter (MMC) applications under over-modulation** (U.K. Supervisors Prof. Jon Clare and Dr. Alan Watson). The thesis [is available here](#).

Felipe is currently a Power Electronic Engineer at Siemens UK.

- [7] Matias Urrutia (finished 2022). He received a Dual PhD degree (the University of Chile and the University of Nottingham) with the thesis **Control of the modular multilevel matrix converter based on continuous control set model predictive control**. The thesis [is available here](#).
Matias is currently a senior engineer at Sprint Electronic (Nottingham UK). His Ph.D supervisors at Nottingham University were Prof. Jon Clare and Dr. Alan Watson.
- [8] Yeiner Arias (finished 2023). He received his PhD from the University of Chile with the thesis **Continuous control set model predictive control applied to modular multilevel converters for drive and wind energy applications**. The thesis [is available here](#).
Yeiner is now an associate professor at the Instituto Tecnológico de Costa Rica, Cartago.
- [9] Felipe Herrera. He is currently a fourth-year PhD student at the University of Chile. His research field is Multilevel Converters. **His research thesis is related to the application of Continuous Model Predictive Control to the modular multilevel Hexverter.**
- [10] Matias Uriarte. He is currently a fourth-year PhD student at the University of Chile, pursuing a dual PhD degree with the Polytechnic University of Catalonia (cotutelle agreement) **His research thesis is related to the control and applications of the Modular Multilevel Converter for AC low-frequency applications.**
- [11] Patricio Pizarro. He is currently a second-year Ph.D. student at the University of Chile. His research thesis is related to the **Application of Reinforcement Learning Techniques to Hybrid Modular Multilevel Converters controlled using Continuous Control Set MPC.**
- [12] Benjamín Moreno. He is currently a first-year PhD. student at the University of Chile. His research thesis would be related to the **Control of Cascaded Dual and Triple Active Bridges using MPC.**

Journal Publications

Publications under Review (30/11/2025)

- [1] C. Castillo, A. Mora, A. Navas, C. Burgos, R. Cárdenas, "Distributed Model Predictive Capacitor Voltage Control of Cascaded H-Bridge Converters", submitted for publication to the IEEE Transactions on Power Electronics.
- [2] V. Rivera, C. Smart, C. Burgos, Y. Arias, M. Torres, M. Orchard, R. Cárdenas, D. Muñoz, "Decoupled State of Charge Control of Second Life Batteries Integrated by a Modular Multilevel Converter", Submitted for publication to the IEEE Transactions on Industrial Electronics.
- [3] F. Herrera, R. Cárdenas, "A Nested Linearization-Based Continuous Control Set Model Predictive Control for the Modular Multilevel Hexverter in Low-Frequency AC Transmission Systems", Submitted for publication to the IEEE Transactions on Power Delivery.
- [4] L. Jimenez, O. Cartagena, J. Ocaranza, A. Navas, R. Cardenas, C. Ahumada, D. Saez, "Coordination and Management of Multiple Energy-Water Microgrids based on a Fuzzy Predictive Control Strategy", Submitted for publication to the Journal of Cleaner Production.
- [5] T. Ravet, C. Rodriguez, D. Velasquez, M. Diaz, R. Cardenas, "Model-in-the-Loop Validation of a Series-Parallel Modular Multilevel Converter with Isolated Modules for Multi-Port Bidirectional EV Charging", submitted to publication to IEEE Access.

Accepted/Published

- [1] M. Uriarte, R. Cardenas-Dobson, Y. Arias-Esquivel, L. Tarisciotti, M. Díaz and O. Gomis-Bellmunt, "A Linearized Cascade-Free Continuous Control Set Model Predictive Control Algorithm for Modular Multilevel Matrix Converters," in IEEE Transactions on Power Electronics, vol. 41, no. 2, pp. 1954-1972, Feb. 2026, doi: 10.1109/TPEL.2025.3615848.
- [2] M. Uriarte, R. Cárdenas, Y. Arias, M. Diaz, Oriol Gomis-Bellmunt, "Continuous Control Set Model Predictive Control of Modular Multilevel Matrix Converters for Low-frequency AC Transmission," in Journal of Modern Power Systems and Clean Energy, vol. 13, no. 4, pp. 1468-1480, July 2025, doi: 10.35833/MPCE.2024.000654.
- [3] Y. Arias-Esquivel, R. Cárdenas-Dobson, M. Uriarte, M. Diaz, L. Tarisciotti, "An Advanced Zero-Error Continuous Control Set Model Predictive Controller for Low Voltage Ride Through of Grid-Connected Power Converters", IEEE Transactions on Industrial Electronics, pp. 1-12, doi: 10.1109/TIE.2025.3591703

- [4] Efrain Ibaceta; Matias Diaz; Saravanakumar Rajendran; Yeiner Arias-Esquivel; Roberto Cárdenas; Jose Rodriguez, "Experimental Assessment of a Decentralized Control Strategy for a Back-to-Back Modular Multilevel Converter Operating in Low-Frequency AC Transmission", *Processes* 2024, 12(1), 155; <https://doi.org/10.3390/pr12010155>
- [5] Felipe Herrera, Andrés Mora, Roberto Cárdenas, Matías Díaz, José Rodríguez, Marco Rivera, "An Optimal Switching Sequence Model Predictive Control Scheme for the 3L-NPC with Output LC filter", *Processes* 2024, 12(2), 348; <https://doi.org/10.3390/pr12020348>.
- [6] Y. Arias, R. Cárdenas, L. Tarisciotti, M. Díaz, "Continuous Control Set Model Predictive Control of a Hybrid-MMC for Wind Energy Applications", *IEEE Transactions on Industrial Electronics*, DOI 10.1109/TIE.2024.3370982
- [7] M. Aguero, J. Peralta, E. Quintana, V. Velar, A. Stepanov, H. Ashourian, J. Mahseredjian, R. Cárdenas, "Short-duration Energy Storage to Boost Transmission Capacity in the Chilean Grid", *Journal of Modern Power Systems and Clean Energy*, vol. 12, no. 2, pp. 466-474, March 2024, DOI 10.35833/MPCE.2023.000729
- [8] C. Burgos, J. Pereda, A. Mora, R. Cárdenas, T. Dragicevic, "Distributed Control for Modular Multilevel Cascaded Converters: Towards a Fully Modular Topology". in *IEEE Industrial Electronics Magazine*, vol. 18, no. 1, pp. 32-45, March 2024, doi: 10.1109/MIE.2023.3299080.
- [9] A. Mora, F. Leiva, R. Cárdenas, F. Rojas, J. Pereda, R. Aguilera, "Optimal Switching Sequence MPC for Four-Leg Two-Level Grid-Connected Converters", in *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 12, no. 2, pp. 1271-1281, April 2024, doi: 10.1109/JESTPE.2023.3265502.
- [10] C. Burgos, C. Gallardo, D. Muñoz, Y. Arias, A. Kumar, A. Navas, R. Cárdenas, T. Dragicevic, "Reinforcement Learning-based False Data Injection Attacks Detector for Modular Multilevel Converter", in *IEEE Transactions on Industrial Electronics*, vol. 71, no. 7, pp. 7927-7937, July 2024, doi: 10.1109/TIE.2023.3312433.
- [11] Y. Arias, R. Cárdenas, L. Tarisciotti, M. Diaz, A. Mora, "A Two-Step Continuous-Control-Set MPC for Modular Multilevel Converters Operating with Variable Output Voltage and Frequency", *IEEE Trans. on Power Electronics, Special Section on Multilevel Converters as Enablers for Grid Modernisation*, vol. 38, Nr. 10, pp. 12091-12103, October 2023, DOI 10.1109/TPEL.2023.3288490.
- [12] E. Espina, R. Cárdenas, J. Simpson, M. Kazerani, D. Sáez, "A Consensus-Based Distributed Secondary Control Optimization Strategy for Hybrid Microgrid", in *IEEE Transactions on Smart Grid*, vol. 14, no. 6, pp. 4242-4255, Nov. 2023, doi: 10.1109/TSG.2023.3263107
- [13] C. Burgos, D. Muñoz, Y. Arias, R. Cárdenas, T. Dragicevic, F. Donoso, A. Watson, "Reinforcement Learning-Based Method to Exploit Vulnerabilities of False Data Injection Attack Detectors in Modular Multilevel Converters", *IEEE Trans. on Power Electronics*, Vol. 38, no. 7, pp. 8907-8921, July 2023, doi: 10.1109/TPEL.2023.3263728.
- [14] Y. Arias, R. Cárdenas, M. Urrutia, L. Tarisciotti, M. Diaz, J. Clare, "Continuous Control Set Model Predictive Control of a Modular Multilevel Converter for Drive Applications", *IEEE Transactions on Industrial Electronics*, vol. 70, no. 9, pp. 8723-8733, Sept. 2023, doi: 10.1109/TIE.2022.3210515.
- [15] M. Espinoza, M. Diaz, E. Espina, A. Mora, A. Letelier, F. Donoso, R. Cárdenas, "Closed Loop Control of the Half-Bridge Based MMC Drive with Variable DC-Link Voltage", *Electronics* 2023, 12(13), 2791; <https://doi.org/10.3390/electronics12132791>, MDPI.
- [16] M. Urrutia, R. Cardenas-Dobson, J. Clare, M. Diaz, A. Watson, "Continuous Set Model Predictive Control for Energy Management of Modular Multilevel Matrix Converters", *IEEE Trans. on Power Electronics*, Vol 37, Nr. 5, May 2022, pp. 5731-5748, DOI 10.1109/TPEL.2021.3133695, 2022.
- [17] Alex Navas F., Claudio Burgos-Mellado, Juan S. Gomez, Felipe Donoso, Luca Tarisciotti, Doris Saez, Roberto Cardenas, Mark Sumner, "Distributed predictive secondary control for imbalance sharing in AC microgrids", *IEEE Trans. on Smart Grids*, Vol. 13, Nr. 1, January 2022, pp. 20-37, DOI: 10.1109/TSG.2021.3108677, 2022.
- [18] Claudio Burgos-Mellado, Felipe Donoso, Tomislav Dragicevic, Roberto Cárdenas-Dobson, Patrick Wheeler, Jon Clare, Alan Watson, "Cyber-attacks in modular multilevel converters", *IEEE Transactions on Power Electronics*, doi: 10.1109/TPEL.2022.3147466, 2022.
- [19] F. Rojas, R. Cardenas, C. Burgos, E. Espina, J. Pereda, C. Pineda, D. Arancibia, M. Diaz, "An Overview of Four-Leg Converters: Topologies, Modulations, Control and Application", *IEEE Access*, DOI 10.1109/ACCESS.2022.3180746, 2022.

- [20] Rajendran, S.; Diaz, M.; Cárdenas, R.; Espina, E.; Contreras, E.; Rodriguez, J. A Review of Generators and Power Converters for Multi-MW Wind Energy Conversion Systems. *Processes* 2022, 10, 2302. <https://doi.org/10.3390/pr10112302>, 2022.
- [21] F. Donoso, R. Cardenas, M. Espinoza, J. Clare, A. Mora, A. Watson, "Experimental Validation of a Nested Control System to Balance the Cell Capacitor Voltages in Hybrid MMCs," in *IEEE Access*, vol. 9, pp. 21965-21985, 2021, doi: 10.1109/ACCESS.2021.3054340, 2021.
- [22] A. Mora, R. Aguilera, R. Cárdenas, A. Angulo, P. Lezana, D. Lu, "Predictive Optimal Switching Sequence Direct Power Control for Grid-Tied 3L-NPC Converters", *IEEE Trans. On Industrial Electronics*, Vol. 68, Nr. 9, pp. 8561 - 8571, 10.1109/TIE.2020.3009602, 2021.
- [23] E. Espina, R. Cárdenas-Dobson, D. Sáez, M. Kazerani, J. Simpson-Porco, "A Consensus-Based Secondary Control Strategy for Hybrid AC/DC Microgrids With Experimental Validation," in *IEEE Transactions on Power Electronics*, vol. 36, no. 5, pp. 5971-5984, May 2021, doi: 10.1109/TPEL.2020.3031539, 2021.
- [24] M. Martinez-Gomez, A. Navas, M. Orchard, S. Bozhko, C. Burgos-Mellado, R. Cárdenas-Dobson, "Multi-Objective Finite-Time Control for the Interlinking Converter on Hybrid AC/DC Microgrids", In *IEEE Access*, Vol. 9, pp. 116183-116193, 2021. DOI 10.1109/ACCESS.2021.3105649, 2021.
- [25] M. Urrutia, R. Cardenas-Dobson, J. Clare, A. Watson, "Circulating Current Control for the Modular Multilevel Matrix Converter Based on Model Predictive Control", *IEEE Journal of Emerging and Selected Topics in Power Electronics*, Vol. 9, Nr. 5, pp. 6069-6085, Oct. 2021, DOI 10.1109/JESTPE.2021.3071964, 2021.
- [26] Enrique Espina, Roberto Cárdenas-Dobson, Mauricio Espinoza, Claudio Burgos, Doris Saez, "Cooperative Regulation of Imbalances in Three-Phase Four-Wire Microgrids Using Single-Phase Droop Control and Secondary Control Algorithms", *IEEE Trans. on Power Electronics*, Vol. 35, Nr. 2, pp. 1978-1992, 10.1109/TPEL.2019.2917653, February 2020.
- [27] Alberto Duran, Efrain Ibaceta, Matias Diaz , Felix Rojas, Roberto Cardenas, Hector Chavez, "Control of a Modular Multilevel Matrix Converter for Unified Power Flow Controller Applications", *Energies*, Special Section on Control Strategies for Power Conversion Systems, *Energies* 2020, 13(4), 953; doi 10.3390/en13040953. (available in <https://www.mdpi.com/1996-1073/13/4/953/pdf>), 2020.
- [28] C. Burgos-Mellado, J. LLanos, R. Cárdenas, D. Sáez, D. Olivares, M. Sumner, A. Costabeber, "Distributed Control Strategy Based on a Consensus Algorithm and on the Conservative Power Theory for Imbalances and Harmonics Sharing in 4-Wire Microgrids", *IEEE Trans. on Smart Grid*, vol. 11, no. 2, pp. 1604-1619, 10.1109/TSG.2019.2941117, March 2020.
- [29] J. Gomez, D. Saez, J. Simpson-Porco, R. Cárdenas, "Distributed Predictive Control for Frequency and Voltage Regulation in Microgrids", *IEEE Trans. on Smart Grids*, Vol. 11, no. 2, pp. 1319-1329, 10.1109/TSG.2019.2935977, March 2020.
- [30] Jose Aravena, Dante Carrasco, Matias Diaz *, Matias Uriarte, Felix Rojas, Roberto Cárdenas-Dobson, Juan Carlos Travieso-Torres, "Design and Implementation of a Low-Cost Real-Time Control Platform for Power Electronics Applications", *Energies* 13(6):1527, DOI: 10.3390/en13061527, (Available in <https://www.mdpi.com/1996-1073/13/6/1527/pdf>), Special Section on Control Strategies for Power Conversion System, 2020
- [31] Mohammed Shamshuddin, Felix Rojas , Roberto Cardenas, Javier Pereda, Matias Diaz, Ralph Kennel, "Solid State Transformers: Concepts, Classification and Control", *Energies* 2020, 13(9), 2319; <https://doi.org/10.3390/en13092319> , Special Section on Control Strategies for Power Conversion Systems, (available in <https://www.mdpi.com/1996-1073/13/9/2319/pdf>), 2020.
- [32] C. Diaz, V. Quinteros, A. Perez, C. Burgos, H. Rozas, M. Orchard, D. Saez, R. Cardenas, "Particle-filtering-based Prognostics for the State of Maximum Power Available in Lithium-Ion Batteries at Electromobility Applications, *IEEE Transactions on Vehicular Technology*, vol. 69, no. 7, pp. 7187-7200, July 2020, doi: 10.1109/TVT.2020.2993949, 2020
- [33] A. Mora, R. Cárdenas, M. Urrutia, M. Espinoza, M. Diaz, "A Vector Control Strategy to Eliminate Active Power Oscillations in 4-Leg Grid-Connected Converters Under Unbalanced Voltages", in *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 8, no. 2, pp. 1728-1738, June 2020, doi:10.1109/JESTPE.2019.2921536, 2020.
- [34] L. Tarisciotti, A. Costabeber, R. Cárdenas, "Modular Multilevel Converter based topology for High Speed, Low Voltage electric drives", *IEEE Transactions on Industry Applications*, vol. 56, no. 5, pp. 5202-5211, Sept.-Oct. 2020, doi:

10.1109/TIA.2020.3006462, 2020.

- [35] Matias Díaz , Roberto Cárdenas-Dobson, Efrain Ibaceta, Andrés Mora, Matias Urrutia, Mauricio Espinoza, Felix Rojas, Patrick Wheeler, "An Overview of Applications of the Modular Multilevel Matrix Converter". *Energies* 2020 13 (21), Special Section, Control Strategies for Power Conversion Systems, DOI 10.3390/en13215546, <https://www.mdpi.com/1996-1073/13/21/5546/pdf>, 2020.
- [36] E. Espina, J. Llanos, C. Burgos, R. Cardenas, M. Martinez, D. Saez, "Distributed Control Strategies for Microgrids: An Overview", *IEEE Access* 2020, <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=arnumber=9233319>, 2020.
- [37] Matias Díaz , Roberto Cárdenas-Dobson, Efrain Ibaceta, Andrés Mora, Matias Urrutia, Mauricio Espinoza, Felix Rojas, Patrick Wheeler, "An Overview of Modelling Techniques and Control Strategies for Modular Multilevel Matrix Converters". *Energies* 2020, 13(18), 4678; <https://doi.org/10.3390/en13184678>, Special Section, Control Strategies for Power Conversion Systems, 2020.
- [38] Claudio Burgos-Mellado, Jacqueline Llanos 2 , Enrique Espina, Doris Sáez, Roberto Cárdenas, Mark Sumner, Alan Watson, "Single-Phase Consensus-Based Control for Regulating Voltage and Sharing Unbalanced Currents in 3-Wire Isolated AC Microgrids", in *IEEE Access*, vol. 8, pp. 164882-164898, 2020, doi: 10.1109/ACCESS.2020.3022488, 2020.
- [39] M. Espinoza, R. Cárdenas, J. Clare, D. Soto, M. Diaz, E. Espina, C. Hack, "An Integrated Converter and Machine Control System for MMC-Based High Power Drives", *IEEE Transactions on Industrial Electronics*, Vol. 66, Nr. 3, pp. 2343-2354, March 2019, Special Section on Modular Multilevel Converters.
- [40] A. Mora, M. Urrutia, A. Angulo, R. Cárdenas, M. Espinoza, M. Díaz, P. Lezana, "Model-Predictive-Control-Based Capacitor Voltage Balancing Strategies for Modular Multilevel Converters", *IEEE Transactions on Industrial Electronics*, Vol. 66, Nr. 3, pp. 2432 - 2443, March 2019, Special Section on Modular Multilevel Converters.
- [41] M. Díaz, R. Cárdenas, M. Espinoza, C. Hack, J. Clare, P. Wheeler, F. Rojas, "Vector Control of a Modular Multilevel Matrix Converter Operating in the Full Output-Frequency Range", *IEEE Transactions on Industrial Electronics*, Vol. 66, Nr. 7, pp. 5102-5114, July 2019.
- [42] P. Santis, D. Sáez, R. Cárdenas, A. Nuñez, "Pareto-Based Modulated-Model-Predictive Control Strategy for Power Converter Applications", Vol. 171, June 2019, pp. 158-174, *Electric Power System Research*, Elsevier.
- [43] Claudio Burgos-Mellado, Alessandro Costabeber, Mark Sumner, Roberto Cardenas-Dobson, Doris Saez, "An Improved PLL Design Process to be Used in Weak Grids", *Energies*, 12, Nr. 1227, pp 2-28, doi: 10.3390/en12071227. (available in <https://www.mdpi.com/1996-1073/12/7/1227/pdf>).
- [44] F. Rojas, R. Cárdenas-Dobson, J. Clare, M. Diaz, J. Pereda, R. Kennel, "A Design Methodology of Multi-resonant Controllers for High Performance 400 Hz Ground Power Units", *IEEE Transactions on Industrial Electronics*, Vol. 66, Nr. 8, pp. 6549-6559, August 2019. Special Issue on Complex Power Electronics Systems Modelling and Analysis.
- [45] C. Burgos, R. Cárdenas, D. Sáez, A. Costabeber, M. Sumner, "A Control Algorithm Based on the Conservative Power Theory for Cooperative Sharing of Imbalances in Four-Wire Systems", *IEEE Trans. on Power Electronics*, Vol 34, Nr 6, pp. 5325-5339 June 2019.
- [46] M. Espinoza, M. Diaz, F. Donoso, A. Letelier, R. Cárdenas, "Control and operation of the MMC-based drive with reduced capacitor voltage fluctuations", *Journal of Engineering (JOE-EIT)*, Nr. 17, pp. 3618-3623, DOI 10.1049/joe.2018.8080, June 2019.
- [47] M. Diaz, M. Espinoza, F. Rojas, P. Wheeler, R. Cardenas, "Vector control strategies to enable equal frequency operation of the modular multilevel matrix converter", *Journal of Engineering (JOE-EIT)*, Nr. 17, pp. 4214-4219, DOI 10.1049/, June 2019.
- [48] A. Mora, R. Cardenas, R. Aguilera, A. Angulo, F. Donoso, J. Rodriguez, "Computationally Efficient Cascaded Optimal Switching Sequence MPC for Grid-Connected Three-Level NPC Converters", *IEEE Trans. on Power Electronics*, Vol. 34, Nr. 12, pp. 12464-12475, December 2019.
- [49] F. Donoso, A. Mora, R. Cárdenas, A. Angulo, D. Saez, M. Rivera, "Finite-Set Model Predictive Control Strategies for a 3L-NPC Inverter Operating with Fixed Switching Frequency", *IEEE Trans, on Industrial Electronics*, Vol 65., Nr. 5, pp. 3954-3965, May 2018. **BEST PAPER AWARD 2019, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS.**

- [50] R. Cárdenas, M. Perez, J. Clare, "Control and Grid Integration of MW-Range Wind and Solar Energy Conversion Systems", Guest Editorial Paper, IEEE Transaction on Industrial Electronics, Special Issue on Wind and Solar Energy Systems. November 2017.
- [51] J. Hu; Y. Hou; Z. Zhu; D. Xu; D. Xu; E. Muljadi; F. Liu; G. Iwanski; H. Geng; I. Erlich; J. Wen; L. Harnefors; L. Fan; M. S. El Moursi; P. C. Kjaer; R. J. Nelson; R. Cárdenas; S. Feng; S. Islam; W. Qiao; X. Yuan, "Modeling and Advanced Control of Wind Turbines/Wind Farms," Guest Editorial paper in IEEE Transactions on Energy Conversion, vol. 32, no. 3, pp. 1105-1107, Sept. 2017.
- [52] M. Espinoza, R. Cárdenas, M. Díaz, J. Clare, "An Enhanced dq-Based Vector Control System for Modular Multilevel Converters Feeding Variable Speed Drives", IEEE Trans. on Industrial Electronics, Vol. 64, no. 4, pp. 2620-2630, 2017.5yr. IF 7.829.
- [53] C. Burgos, C. Hernandez, R. Cárdenas, D. Saez, M. Sumner, A. Costabeber, H. Morales, "Experimental Evaluation of a CPT-Based 4-leg Active Power Compensator for Distributed Generation", IEEE Journal of Emerging and Selected Topics in Power Electronics, (Special Issue on Distributed Generation), Vol. 2, no. 2, pp. 747-759, 2017. 5yr. IF 5.23.
- [54] F. Rojas, R. Kennel, R. Cárdenas, R. Repening, J. Clare, M. Diaz, "A New Space-Vector-Modulation Algorithm for a Three-Level Four-Leg NPC Inverter", IEEE Trans. on Energy Conversion, Vol. 32, no. 1, pp. 23-25, 2017. 5yr. IF 4.662
- [55] A. Angulo-Cardenas, M. Carrasco, F. Mancilla-David, A. Street, R. Cárdenas, "Experimental Parameter Extraction in the Single-Diode Photovoltaic Model via a Reduced-Space Search", IEEE Trans. on Industrial Electronics, Vol. 64, no. 2, pp. 1468-1476, 2017.5yr. IF 7.829.
- [56] F. Rojas, R. Cárdenas, R. Kennel, J. Clare, M. Diaz, "A Simplified Space Vector Modulation Algorithm for Four-Leg NPC Converters", IEEE Trans. on Power Electronics, Vol. 32, Nr. 11, pp. 8371-8380, 2017. 5yr. IF 7.71
- [57] M. Díaz, R. Cárdenas, M. Espinoza, A. Mora, J. Clare, F. Rojas, P. Wheeler, "Control of Wind Energy Conversion Systems Based on the Modular Multilevel Matrix Converter", IEEE Trans, on Industrial Electronics, Vol. 64, Nr. 11, pp. 8799-8810, Nov. 2017.
- [58] J.Riedmann, R. Peña, R. Cárdenas, J. Clare, P. Wheeler, R. Blasco, "Control strategy of a dual-inverter system for an open-end winding induction machine based on indirect matrix converter", Journal of the European Power Electronics Association (EPE), Vol. 26, no. 3, pp. 104-112, 2016.
- [59] C. Burgos, M. Orchard, M. Kazerani, R. Cárdenas, D. Sáez, "Particle-Filtering-Based Estimation of Maximum Available Power State in Lithium-Ion Batteries", Applied Energy, Vol. 161, pp. 349-363, January 2016.5yr. IF 7.5
- [60] C. Ahumada, R. Cárdenas, D. Sáez, J. Guerrero, "Secondary Control Strategies for Frequency Restoration in Islanded Microgrids with Consideration of Communication Delays", IEEE Transactions on Smart Grids, Vol. 7, No. 3, pp. 1430-1441, May 2016.5yr. IF 8.315
- [61] A. Mora, A. Orellana, J. Juliet, R. Cárdenas, "Model Predictive Torque Control for Torque Ripple Compensation in Variable Speed PMSMs", IEEE Trans. on Industrial Electronics, Vol. 63, Nr. 7, pp 4584- 4592, June 2016.5 yr. IF 7.829.
- [62] R. Cárdenas, M. Díaz, J. Clare, P. Wheeler, F. Rojas, "A Resonant Control System for Low-Voltage Ride-Through in Wind Energy Conversion Systems", IET Power Electronics, Vol. 9, Nr. 6, pp. 1297-1305, 2016. 5yr. IF 3.575
- [63] R. Cardenas, M. Díaz, F. Rojas, J. Clare, "Fast Delayed Signal Cancellation Method for Component Sequences Separation", IEEE Trans. on Power Delivery., vol.30, no.4, pp.2055,2057, Aug. 2015. 5yr. IF 3.856
- [64] R. Cardenas, E. Espina, J. Clare, P. Wheeler, "Self-Tuning Resonant Control of a Seven-Leg Back-to-Back Converter for Interfacing Variable-Speed Generators to Four-Wire Loads," IEEE Transactions on Industrial Electronics, , vol.62, no.7, pp.4618-4629, July 2015.(Special issue on Power Converters, Control, and Energy Management for Distributed Generation). 5yr. IF 7.829.
- [65] C. Burgos, D. Saez M. Orchard, R. Cardenas, "Fuzzy Modelling for the State-of-Charge Estimation of Lead-Acid Batteries", Journal of Power Sources (ELS),Volume 274, 15 January 2015, pp. 355–366. 5yr. IF 6.117
- [66] G. Carrasco, C. Silva, R. Peña, R. Cardenas, "Control of a Four-Leg Converter for the Operation of a DFIG Feeding Stand-Alone Unbalanced Loads," IEEE Trans. on Industrial Electronics, vol.62, no.7, pp.4630-4640, July 2015 (Special issue on Power Converters, Control, and Energy Management for Distributed Generation.). 5yr. IF 7.829. 2014
- [67] M. Díaz, R. Cárdenas, "Dual Current Control Strategy To Fulfill LVRT Requirements in WECS", International Journal for Computation and Mathematics in Electrical and Electronic Engineering, Vol. 33, No. 4, 2014.

- [68] J. Riedemann-Aros, R. Peña-Guíñez, R. Cárdenas-Dobson, R. Blasco Giménez; J. Clare, "Indirect matrix converter modulation strategies for open-end winding induction machine", IEEE Latin America Transactions, Vol. 12, Nr. 3, May 2014, pp. 393-400.
- [69] M. Diaz, R. Cardenas, F. Rojas, J. Clare "3-Phase 4-Wire Matrix Converter Based Voltage Sag/Swell Generator to Test LVRT in Wind Energy Conversion Systems", IET Power Electronics, Vol. 7, Nr. 12, pp. 3116–3125, Dec. 2014. 5yr. IF 3.575
- [70] R. Cárdenas, R. Peña, P. Wheeler, J. Clare, A. Muñoz, A. Sureda, "Control of a Wind Generation System Based on a Brushless Doubly-Fed Induction Generator Fed by a Matrix Converter", Vol. 103, pp. 49-60, Electric Power System Research
- [71] R. Cárdenas, R. Peña, P. Wheeler, J. Clare, "A Repetitive Control System for Four-Leg Matrix Converters Feeding Non-Linear Loads", Vol. 104, pp. 18-27, Electric Power System Research, November 2013. 5yr. IF 2.924
- [72] Cardenas, R.; Molinas, M.; Bialasiewicz, J. T., "Introduction to the Special Section on Control and Grid Integration of Wind Energy Systems—Part I," Industrial Electronics, IEEE Transactions on , vol.60, no.6, pp.2358,2359, June 2013. 5yr. IF 7.829.
- [73] Cardenas, R.; Molinas, M.; Bialasiewicz, J.T., "Introduction to the Special Section on Control and Grid Integration of Wind Energy Systems - Part II," Industrial Electronics, IEEE Transactions on , vol.60, no.7, pp.2774,2775, July 2013. 5yr. IF 7.829.
- [74] Soto-Sanchez, D.E.; Pena, R.; Cardenas, R.; Clare, J.; Wheeler, P., "A Cascade Multilevel Frequency Changing Converter for High-Power Applications," Industrial Electronics, IEEE Transactions on , vol.60, no.6, pp.2118,2130, June 2013. 5yr. IF 7.829.
- [75] Cardenas, R.; Pena, R.; Alepuz, S.; Asher, G., "Overview of Control Systems for the Operation of DFIGs in Wind Energy Applications," Industrial Electronics, IEEE Transactions on , vol.60, no.7, pp.2776,2798, July 2013. 5yr. IF 7.829.
- [76] R. Cardenas, C. Juri, R. Pena et al., "Analysis and Experimental Validation of Control Systems for Four-Leg Matrix Converter Applications," IEEE Transactions on Industrial Electronics, vol. 59, no. 1, pp. 141-153, Jan, 2012. 5yr. IF 7.829.
- [77] R. Cardenas, C. Juri, R. Pena et al., "The Application of Resonant Controllers to Four-Leg Matrix Converters Feeding Unbalanced or Nonlinear Loads," IEEE Transactions on Power Electronics, vol. 27, no. 3, pp. 1120-1129, Mar, 2012. 5yr. IF 7.829.
- [78] R. Cardenas, R. Pena, P. Wheeler et al., "Control of a matrix converter for the operation of autonomous systems," Renewable Energy, vol. 43, pp. 343-353, Jul, 2012. 5yr. IF 4.825
- [79] M. Liserre, R. Cardenas, M. Molinas et al., "Overview of Multi-MW Wind Turbines and Wind Parks," IEEE Transactions on Industrial Electronics, vol. 58, no. 4, pp. 1081-1095, 2011.
- [80] R. Pena, R. Cardenas, E. Reyes et al., "Control of a Doubly Fed Induction Generator via an Indirect Matrix Converter With Changing DC Voltage," IEEE Transactions on Industrial Electronics, vol. 58, no. 10, pp. 4664-4674, OCT 2011, 2011.
- [81] R. Cardenas, R. Pena, J. Clare et al., "Analytical and Experimental Evaluation of a WECS Based on a Cage Induction Generator Fed by a Matrix Converter," IEEE Transactions on Energy Conversion, vol. 26, no. 1, pp. 204-215, 2011.
- [82] R. Cardenas, R. Pena, P. Wheeler et al., "Experimental Validation of a Space-Vector-Modulation Algorithm for Four-Leg Matrix Converters," IEEE Transactions on Industrial Electronics, vol. 58, no. 4, pp. 1282-1293, 2011.
- [83] R. Cardenas, R. Pena, J. Clare et al., "Control of the Reactive Power Supplied by a Matrix Converter," IEEE Transactions on Energy Conversion, vol. 24, no. 1, pp. 301-303, 2009.
- [84] R. Pena, R. Cardenas, E. Escobar et al., "Control strategy for a Doubly-Fed Induction Generator feeding an unbalanced grid or stand-alone load," Electric Power Systems Research, vol. 79, no. 2, pp. 355-364, 2009.
- [85] R. Cardenas, R. Pena, P. Wheeler et al., "Control of the Reactive Power Supplied by a WECS Based on an Induction Generator Fed by a Matrix Converter," IEEE Transactions on Industrial Electronics, vol. 56, no. 2, pp. 429-438, 2009.
- [86] E. Echenique, J. Dixon, R. Cardenas et al., "Sensorless Control for a Switched Reluctance Wind Generator, Based on Current Slopes and Neural Networks," IEEE Transactions on Industrial Electronics, vol. 56, no. 3, pp. 817-825, 2009.

- [87] R. Cardenas, R. Pena, G. Tobar et al., "Stability Analysis of a Wind Energy Conversion System Based on a Doubly Fed Induction Generator Fed by a Matrix Converter," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 10, pp. 4194-4206, 2009.
- [88] R. Pena, R. Cardenas, E. Reyes et al., "A Topology for Multiple Generation System With Doubly Fed Induction Machines and Indirect Matrix Converter," *IEEE Transactions on Industrial Electronics*, vol. 56, no. 10, pp. 4181-4193, 2009.
- [89] R. Cardenas, R. Pena, J. Clare et al., "MRAS observers for sensorless control of doubly-fed induction generators," *IEEE Transactions on Power Electronics*, vol. 23, no. 3, pp. 1075-1084, 2008.
- [90] R. Pena, R. Cardenas, J. Proboste et al., "Sensorless control of doubly-fed induction generators using a rotor-current-based MRAS observer," *IEEE Transactions on Industrial Electronics*, vol. 55, no. 1, pp. 330-339, 2008.
- [91] R. Pena, R. Cardenas, J. Proboste et al., "Wind-diesel generation using doubly fed induction machines," *IEEE Transactions on Energy Conversion*, vol. 23, no. 1, pp. 202-214, 2008.
- [92] R. Cardenas, R. Pena, P. Wheeler et al., "Reactive power capability of WECS based on matrix converter," *Electronics Letters*, vol. 44, no. 11, pp. 674-627 2008.
- [93] R. Pena, R. Cardenas, E. Escobar et al., "Control system for unbalanced operation of stand-alone doubly fed induction generators," *IEEE Transactions on Energy Conversion*, vol. 22, no. 2, pp. 544-545, JUN 2007.
- [94] R. Cardenas, R. Pena, M. Perez et al., "Vector control of front-end converters for variable-speed wind-diesel systems," *IEEE Transactions on Industrial Electronics*, vol. 53, no. 4, pp. 1127-1136, 2006.
- [95] R. Cardenas, R. Pena, M. Perez et al., "Power smoothing using a flywheel driven by a switched reluctance machine," *IEEE Transactions on Industrial Electronics*, vol. 53, no. 4, pp. 1086-1093, 2006.
- [96] R. Cardenas, R. Pena, M. Perez et al., "Power smoothing using a switched reluctance machine driving a flywheel," *IEEE Transactions on Energy Conversion*, vol. 21, no. 1, pp. 294-295, MAR 2006.
- [97] R. Cardenas, R. Pena, M. Perez et al., "Control of a switched reluctance generator for variable-speed wind energy applications," *IEEE Transactions on Energy Conversion*, vol. 20, no. 4, pp. 781-791, 2005.
- [98] R. Cardenas, R. Pena, J. Proboste et al., "MRAS observer for sensorless control of standalone doubly fed induction generators," *IEEE Transactions on Energy Conversion*, vol. 20, no. 4, pp. 710-718, 2005.
- [99] R. Cardenas, and R. Pena, "Sensorless vector control of induction machines for variable-speed wind energy applications," *IEEE Transactions on Energy Conversion*, vol. 19, no. 1, pp. 196-205, MAR 2004.
- [100] R. Cardenas, R. Pena, G. Asher et al., "Control strategies for power smoothing using a flywheel driven by a sensorless vector-controlled induction machine operating in a wide speed range," *IEEE Transactions on Industrial Electronics*, vol. 51, no. 3, pp. 603-614, 2004. **BEST PAPER AWARD 2005, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS.**
- [101] R. Cardenas, R. Pena, G. Asher et al., "MRAS observer for doubly fed induction machines," *IEEE Transactions on Energy Conversion*, vol. 19, no. 2, pp. 467-468, 2004.
- [102] R. Cardenas, R. Pena, J. Proboste et al., "Rotor current based MRAS observer for doubly-fed induction machines," *Electronics Letters*, vol. 40, no. 12, pp. 769-770, 2004.
- [103] R. Cardenas, R. Pena, G. Asher et al., "Power smoothing in wind generation systems using a sensorless vector controlled induction machine driving a flywheel," *IEEE Transactions on Energy Conversion*, vol. 19, no. 1, pp. 206-216, 2004.
- [104] R. Cardenas, R. Pena, G. Asher et al., "Sensorless control strategy for power smoothing in wind-diesel applications," *Electronics Letters*, vol. 38, no. 22, pp. 1402-1403, OCT 24 2002.
- [105] R. Cardenas, R. Pena, G. Asher et al., "Control strategies for enhanced power smoothing in wind energy systems using a flywheel driven by a vector-controlled induction machine," *IEEE Transactions on Industrial Electronics*, vol. 48, no. 3, pp. 625-635, JUN, 2001.
- [106] R. Cardenas, R. Pena, and J. Clare, "Control strategy for power smoothing using vector controlled induction machine and flywheel," *Electronics Letters*, vol. 36, no. 8, pp. 765-766, APR 13 2000.
- [107] R. Cárdenas, G.M. Asher, W.F. Ray , "Experimental Evaluation of a Switched Reluctance Generator for Wind Energy Applications", *Wind Engineering*, Vol 20, Nr. 3, pp 115-136, 1996. Elsevier (Scopus)

- [108] R. Cárdenas, G.M. Asher, "Power Limitation in Variable Speed Wind Turbines Using Pitch Control and a Mechanical Torque Observer", *Wind Engineering*, Vol 20, Nr 6, pp 363-387, 1997. Elsevier (Scopus)
- [109] R. Cárdenas, G. Asher. "Torque Observer for the Control of Variable Speed Wind Turbines Operating Below Rated Wind Speed", *Wind Engineering*, Vol. 20, Nr. 3, pp 258-285. Elsevier (Scopus)