Personal Information

Mohamed Abdelrahem (Senior Member, IEEE)

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Marital status: Married, three children (9 years, 4 years, and 6 Months)

Date of birth: 11.08.1985

Nationality: Egyptian

Education

04/2014 – 08/2019	**Doctorate** at Technical University of Munich (TUM), Munich, Germany. Dissertation title: Predictive Control and Finite-Set Observers for Variable-Speed Wind Generators Grade: Distinction "summa cum laude".
01/2008 – 03/2011	**Master of Science** at Assiut University, Assiut, Egypt. Thesis title: Harmonic Mitigation and Maximum Power Point Tracking for Variable Speed Grid Connected Wind Turbine Grade: Very good.
02/2007 – 06/2007	**Bachelor's thesis** at Assiut University, Assiut, Egypt. Thesis title: Improvement of Operation Conditions of the Egyptian Power System Grade: Distinction.
09/2002 – 06/2007	**Bachelor's degree** in Electrical Engineering, Assiut University, Assiut, Egypt. Cumulative grade: Distinction.
09/1999 – 06/2002	**High School** (general qualification for University entrance), Assiut, Egypt.

Employment and Professional Experiences

11/2020 – present	**Assistant Professor** at Electrical Engineering Department, Assiut University, Assiut, Egypt.
09/2019 – present	**Head of research group "Renewable Energy Systems"** at the Chair of High-Power Converter Systems (HLU), Technical University of Munich (TUM), Munich, Germany.
04/2014 – 08/2019	**Research Associate** at Institute for Electrical Drive Systems and Power Electronics (EAL), TUM, Germany.
05/2011 – 03/2014	**Research Associate** at Electrical Engineering Department, Assiut University, Assiut, Egypt.
11/2007 – 04/2011	**Research Assistant** at Electrical Engineering Department, Assiut University, Assiut, Egypt.

Awards and Scholarships

2020

Walter Gademann Prize

Walter Gademann prize from Faculty of Electrical and Computer Engineering, TUM, Munich, Germany, in recognition of my excellent PhD dissertation entitled "Predictive Control and Finite-Set Observers for Variable-Speed Wind Generators".

PEDSTC 2020 Best Paper Award

Best paper award from 11th Power Electronics, Drive Systems, and Technologies Conference (PEDSTC 2020), Tehran, Iran, for the paper entitled "Simple and Robust Finite-Control-Set Model Predictive Control for DFIGs in Wind Turbine Systems" (with Christoph Hackl, Ralph Kennel, and Jose Rodriguez).

2019	**PRECEDE 2019 Best Paper Award**

Best paper award from 5th IEEE International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2019), Quanzhou, China, for the paper entitled "Multiple-Vector Direct Model Predictive Control for Grid-Connected Power Converters with Reduced Calculation Burden" (with Faris Hamadto, Anath Garikapati, Ralph Kennel, and Jose Rodriguez).

2016	**PESS 2016 Best Paper Award**

Best paper award from Power end Energy Student Summit (PESS 2016), Aachen, Germany, for the paper "Voltage Sensorless Direct Model Predictive Control of 3L-NPC Back-to-Back Power Converter PMSG Wind Turbine Systems with Fast Dynamics" (with Zhenbin Zhang, Christoph Hackl and Ralph Kennel)

2015	**TUM Graduate School Publication Fund**

A publication fund from TUM graduate school for presenting two papers in IEEE 5th International Conference on Clean Electrical Power (ICCEP 2015), Taormina, Italy.

2014 – 2017	**DAAD Scholarship**

German Egyptian Research Long-term Scholarship (GERLS) from German Academic Exchange Service (DAAD) for getting the PhD degree from Germany.

2009	**Egyptian Engineers Syndicate Award**

Scientific Excellence Award in Electrical Engineering from the Egyptian Engineers Syndicate, Assiut, Egypt.

2008	**CEMEX-Egypt Award**

Scientific Excellence Award in Electrical Engineering from CEMEX company, Assiut, Egypt.

Faculty of Engineering Award

Scientific Excellence Award in Electrical Engineering from Faculty of Engineering, Assiut University, Assiut, Egypt.

List of Publications, Talks, and Posters (my name is marked in Bold)

I- Journal Articles

1- I. Harbi, M. Ahmed, J. Rodriguez, R. Kennel and **M. Abdelrahem**, "A Nine-Level T-Type Converter for Grid-Connected Distributed Generation", IEEE Journal of Emerging and Selected Topics in Power Electronics, early access, 2022, doi: 10.1109/JESTPE.2022.3170731.

2- M. Ahmed, I. Harbi, C. Hackl, R. Kennel, J. Rodriguez, **M. Abdelrahem**, "Maximum power point tracking-based model predictive control with reduced sensor count for PV applications", IET Renewable Power Generation, early access, 2022, doi: 10.1049/rpg2.12535.

3- M. Ahmed, I. Harbi, R. Kennel, **M. Abdelrahem**, " Direct Power Control Based on Dead-Beat Function and Extended Kalman Filter for PV Systems", Journal of Modern Power Systems and Clean Energy, early access, 2022, doi: 10.35833/MPCE.2021.000793.

4- M. Abu-Ali, F. Berkel, M. Manderla, S. Reimann, R. Kennel and **M. Abdelrahem**, "Deep Learning-Based Long-Horizon MPC: Robust, High Performing and Computationally Efficient Control for PMSM Drives", IEEE Transactions on Power Electronics, vol. 37, no. 10, pp. 12486-12501, 2022.

5- I. Hammoud, S. Hentzelt, K. Xu. T. Oehlschlaegel, **M. Abdelrahem**, C. Hackl and R. Kennel, "On Continuous Set Model Predictive Control of Permanent Magnet Synchronous Machines", IEEE Transactions on Power Electronics, vol. 37, no. 9, pp. 10360-10371, 2022.

6- I. Harbi, M. Ahmed, C. M. Hackl, R. Kennel and **M. Abdelrahem**, "A Nine-level Split-capacitor Active-Neutral-Point-Clamped Inverter and Its Optimal Modulation Technique", IEEE Transactions on Power Electronics, vol. 37, no. 7, pp. 8045-8064, 2022.

7- U. Mustafa, M. S. B. Arif, R. Kennel, **M. Abdelrahem**, " Asymmetrical eleven-level inverter topology with reduced power semiconductor switches, total standing voltage and cost factor", IET Power Electronics, vol. 15, no. 5, pp. 395-411, 2022.

8- J. Rodriguez, …, **M. Abdelrahem**, et al., "Latest Advances of Model Predictive Control in Electrical Drives. Part II: Applications and Benchmarking with Classical Control Methods" IEEE Transactions on Power Electronics, vol. 37, no. 5, pp. 5047-5061, 2022.

9- J. Rodriguez, …, **M. Abdelrahem**, et al., "Latest Advances of Model Predictive Control in Electrical Drives. Part I: Basic Concepts and Advanced Strategies" IEEE Transactions on Power Electronics, vol. 37, no. 4, pp. 3927-3942, 2022.

10- M. Ahmed, I. Harbi, R. Kennel, J. Rodriguez and **M. Abdelrahem**, "Model-Based Maximum Power Point Tracking Algorithm With Constant Power Generation Capability and Fast DC-Link Dynamics for Two-Stage PV Systems", IEEE Access, vol. 10, pp. 48551-48568, 2022.

11- Z. Belboul, B. Toual, A. Kouzou, L. Mokrani, A. Bensalem, R. Kennel and **M. Abdelrahem**, "Multi-objective Optimization of a Hybrid PV/Wind/Battery/Diesel Generator System Integrated in Microgrid: A Case Study in Djelfa, Algeria", Energies, vol. 15, no. 10, 3579, 2022.

12- M. Sellali, A. Ravey, A. Betka, A. Kouzou, M. Benbouzid, A. Djerdir, R. Kennel, **M. Abdelrahem**, "Multi-Objective Optimization-Based Health-Conscious Predictive Energy Management Strategy for Fuel Cell Hybrid Electric Vehicles", Energies, vol. 15, no. 4, 1318, 2022.

13- Y. Bensalem, A. Kouzou, R. Abbassi, H. Jerbi, R. Kennel, **M. Abdelrahem**, "Sliding-Mode-Based Current and Speed Sensors Fault Diagnosis for Five-Phase PMSM", Energies, vol. 15, no. 1, 71, 2022.

14- A. Fezzani, I. Hadj-Mahammed, A. Kouzou, L. Zaghba, S. Drid, M. Khennane, R. Kennel, **M. Abdelrahem**, "Energy Efficiency of Multi-Technology PV Modules under Real Outdoor Conditions-An Experimental Assessment in Ghardaïa, Algeria", Sustainability, vol. 14, no. 3, 1771, 2022.

15- M. Ahmed, I. Harbi, R. Kennel, J. Rodriguez, **M. Abdelrahem**, "Maximum Power Point Tracking-Based Model Predictive Control for Photovoltaic Systems: Investigation and New Perspective", Sensors, vol. 22, no. 8, 3069, 2022.

16- K. Tamersit, J. Madan, A. Kouzou, R. Pandey, R. Kennel and **M. Abdelrahem**, "Role of Junctionless Mode in Improving the Photosensitivity of Sub-10 nm Carbon Nanotube/Nanoribbon Field-Effect Phototransistors: Quantum Simulation, Performance Assessment, and Comparison", Nanomaterials, vol. 12, no. 10, 1639, 2022.

17- K. Tamersit, A. Kouzou, H. Bourouba, R. Kennel, **M. Abdelrahem** "Synergy of Electrostatic and Chemical Doping to Improve the Performance of Junctionless Carbon Nanotube Tunneling Field-Effect Transistors: Ultrascaling, Energy-Efficiency, and High Switching Performance", Nanomaterials, vol. 12, no. 3, 462, 2022.

18- M. S. B. Arif, U. Mustafa, S. B. M. Ayob, J. Rodriguez, A. Nadeem and **M. Abdelrahem**, "Asymmetrical 17-Level Inverter Topology With Reduced Total Standing Voltage and Device Count", IEEE Access, vol. 9, pp. 69710-69723, 2021.

19- **M. Abdelrahem**, C. Hackl, R. Kennel, J. Rodriguez, "Computationally-Efficient Finite Position Set-Phase Locked Loop for Sensorless Control of PMSGs in Wind Turbine Applications", IEEE Transactions on Power Electronics, vol. 36, no. 3, pp. 3007-3016, 2021.

20- A. Sarajian, C. Garcia. Q. Guan, P. Wheeler, D. Khaburi, R. Kennel, J. Rodriguez, **M. Abdelrahem**, "Over-modulation Methods for Modulated Model Predictive Control and Space Vector Modulation", IEEE Transactions on Power Electronics, vol. 36, no. 4, pp. 4549-4559, 2021.

21- Y. Li, Z. Zhang, C. Hu, **M. Abdelrahem**, R. Kennel and J. Rodriguez, "A Full State-Variable Direct Predictive Control for Islanded Microgrids with Parallel Converters", IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 9, no. 4, pp. 4615-4628, 2021.

22- M. Ahmed, I. Harbi, R. Kennel, **M. Abdelrahem**, " Predictive Fixed Switching Maximum Power Point Tracking Algorithm with Dual Adaptive Step-Size for PV Systems", Electronics, vol. 10, no. 24, 3109, 2021.

23- M. Gaafar, M. Orabi, A. Ibrahim, R. Kennel, **M. Abdelrahem**, "Common-Ground Photovoltaic Inverters for Leakage Current Mitigation: Comparative Review", Applied Sciences, vol. 11, no. 23, 11266, 2021.

24- B. Fekkak, M. Merzouk, A. Kouzou, R. Kennel, **M. Abdelrahem**, A. Zakane, M. Mohamed-Seghir, "Comparative Study of Experimentally Measured and Calculated Solar Radiations for Two Sites in Algeria", Energies, vol. 14, no. 21, 7441, 2021.

25- M. Sellah, A. Kouzou, M. Mohamed-Seghir, M. Rezaoui, R. Kennel, **M. Abdelrahem**, "Improved DTC-SVM Based on Input-Output Feedback Linearization Technique Applied on DOEWIM Powered by Two Dual Indirect Matrix Converters" Energies, vol. 14, no. 18, 5625, 2021.

26- **M. Abdelrahem**, C. Hackl, R. Kennel, J. Rodriguez, " Low Sensitivity Predictive Control for Doubly-Fed Induction Generators Based Wind Turbine Applications", Sustainability, vol. 13, no. 16, 9150, 2021.

27- M. Ahmed, I. Harbi, R. Kennel, **M. Abdelrahem**, " Dual-Mode Power Operation for Grid-Connected PV Systems with Adaptive DC-link Controller", Arabian Journal for Science and Engineering, early-access, doi: 10.1007/s13369-021-05916-w, 2021.

28- **M. Abdelrahem**, C. Hackl, R. Kennel, "Robust Predictive Control Scheme for Permanent-Magnet Synchronous Generators Based Modern Wind Turbines", Electronics, vol. 10, 1596, 2021.

29- M. Ahmed, **M. Abdelrahem**, A. Farhan, I. Harbi, R. Kennel, "DC-link sensorless control strategy for grid-connected PV systems", Electrical Engineering, vol. 103, pp. 2345–2355, 2021.

30- I. F. Bouguenna, A. Tahour, R. Kennel, **M. Abdelrahem,** "Multiple-Vector Model Predictive Control with Fuzzy Logic for PMSM Electric Drive Systems", Energies, vol. 14, 1727, 2021.

31- X. Gao, **M. Abdelrahem**, C. Hackl, Z. Zhang, and R. Kennel, "Direct Predictive Speed Control with a Sliding Manifold Term for PMSM Drives", IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 8, no. 2, pp. 1258-1267, 2020.

32- M. Ahmed, **M. Abdelrahem**, I. Harbi, R. Kennel, "An Adaptive Model-Based MPPT Technique with Drift-Avoidance for Grid-Connected PV Systems", Energies, vol. 13, 6656, 2020.

33- **M. Abdelrahem**, C. Hackl, J. Rodriguez, R. Kennel, "Model Reference Adaptive System with Finite-Set for encoder-less control of PMSGs in Micro-grid Systems", Energies, vol. 13, 4844, 2020.

34- **M. Abdelrahem**, J. Rodriguez, R. Kennel, "Improved Direct Model Predictive Control for Grid-Connected Power Converters", Energies, vol. 13, 2597, 2020.

35- O. Abdel-Rahim, N. Alamir, **M. Abdelrahem**, M. Orabi, R. Kennel, M. Ismeil, "A Phase-Shift-Modulated LLC-Resonant Micro-Inverter Based on Fixed Frequency Predictive-MPPT", Energies, vol. 13, 1460, 2020.

36- A. Farhan, **M. Abdelrahem**, A. Saleh, A. Shaltout, R. Kennel, " Simplified Sensorless Current Predictive Control of Synchronous Reluctance Motor Using Online Parameter Estimation", Energies, vol. 13, 492, 2020.

37- I. Hammoud, K. Morsy, **M. Abdelrahem**, R. kennel, "Efficient model predictive power control with online inductance estimation for photovoltaic inverters", Electrical Engineering, vol. 102, pp. 549-562, 2020.

38- M. Ahmed, **M. Abdelrahem**, R. Kennel, "Highly Efficient and Robust Grid Connected Photovoltaic System Based Model Predictive Control with Kalman Filtering Capability", Sustainability, vol. 12, 4542, 2020.

39- I. Harbi, **M. Abdelrahem**, M. Ahmed, R. Kennel, "Reduced Complexity Model Predictive Control with Online Parameters Assessment for Grid-Connected Single-Phase Multilevel Inverter", Sustainability, vol. 12, 7997, 2020.

40- **M. Abdelrahem**, C. Hackl, R. Kennel, "Limited-Position Set Model-Reference Adaptive Observer for Control of DFIGs without Mechanical Sensors", Machines, vol. 8, 72, 2020.

41- A. Farhan, **M. Abdelrahem**, C. Hackl, R. Kennel, A. Shaltout, A. Saleh, "Advanced Strategy of Speed Predictive Control for Nonlinear Synchronous Reluctance Motors", Machines, vol. 8, 44, 2020.

42- **M. Abdelrahem**, C. Hackl, R. Kennel and J. Rodriguez, "Efficient Direct-Model Predictive Control with Discrete-Time Integral Action for PMSGs", IEEE Transactions on Energy Conversion, vol. 34, no. 2, pp. 1063–1072, 2019.

43- **M. Abdelrahem**, C. Hackl, R. Kennel, "Finite Position Set-Phase Locked Loop for Sensorless Control of Direct-Driven Permanent-Magnet Synchronous Generators", IEEE Transactions on Power Electronics, vol. 33, no. 4, pp. 3097–3105, 2018.

44- **M. Abdelrahem**, C. Hackl, Z. Zhang, R. Kennel, "Robust Predictive Control for Direct- Driven Surface-Mounted Permanent-Magnet Synchronous Generators Without Mechanical Sensors", IEEE Transactions on Energy Conversion, vol. 33, no. 1, pp. 179–189, 2018.

45- B. Kahia, A. Bouafia, A. Chaoui, Z. Zhang, **M. Abdelrahem**, R. Kennel, "A direct power control strategy for three level neutral-point-clamped rectifier under unbalanced grid voltage", Electric Power Systems Research, vol. 161, pp. 103–113, 2018.

46- **M. Abdelrahem**, C. Hackl, and R. Kennel, "Implementation and experimental investigation of a sensorless field-oriented control scheme for permanent-magnet synchronous generators", Electrical Engineering, vol. 100, no. 2, pp. 849–856, 2018.

47- **M. Abdelrahem**, C. Hackl, R. Kennel, "Finite set model predictive control with on-line parameter estimation for active frond-end converters", Electrical Engineering, vol. 100, no. 3, pp. 1497–1507, 2018.

48- **M. Abdelrahem**, C. Hackl, R. Kennel, "Simplified Model Predictive Current Control without Mechanical Sensors

for Variable-Speed Wind Energy Conversion Systems", Electrical Engineering, vol. 99, no. 1, pp. 367–377, 2017.

49- **M. Abdelrahem**, R. Kennel, "Efficient Direct Model Predictive Control for Doubly-Fed Induction Generators", Electric Power Components and Systems, vol. 45, no. 5, pp 574–587, 2017.

50- M. Abdel-Salam, K. Sayed, A. Ahmed, M. Amery, **M. Swify**, "Design, implementation and operation of a stand-alone residential photovoltaic system", International Journal of Power and Energy Conversion, vol. 8, no. 1, pp. 47–67, 2017.

51- **M. Abdelrahem**, R. Kennel, "Fault-Ride through Strategy for Permanent-Magnet Synchronous Generators in Variable-Speed Wind Turbines", Energies, vol. 9, 1066, 2016.

52- **M. Abdelrahem**, C. Hackl, R. Kennel, "Encoderless Model Predictive Control of Doubly-Fed Induction Generators in Variable-Speed Wind Turbine Systems", Journal of Physics: Conference Series, vol. 753, pp. 1-10, 2016.

53- M. Abdel-Salam, A. Ahmed, **Mohamed Abdel-Sater**, "Harmonic Mitigation, Maximum Power Point Tracking and Dynamic Performance of Variable Speed Grid Connected Wind Turbine", Electric Power Component and Systems, vol. 39, no. 2, pp. 176–190, 2011.

II- Conference papers

1- **M. Abdelrahem**, M. S. B. Arif, I. Harbi, M. Ahmed, R. Kennel, " Model Predictive Control for 17-Levels Inverter in PV systems", International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2022), Nuremberg, Germany, pp. 1-7, 2022.

2- **M. Abdelrahem**, M. Ahmed, I. Harbi, R. Kennel and J. Rodríguez, "Robust Multiple-Vector Predictive Control for Power Converters with Grid-Voltage Estimation", IEEE International Conference on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2021), Jinan, China, pp. 69-74, 2021.

3- I. Harbi, **M. Abdelrahem**, M. Ahmed, R. Kennel and J. Rodríguez, "Finite Set Model Predictive Control for Split-Capacitor Active-Neutral-Point-Clamped Inverter with Different Voltage Levels Operating Modes", IEEE International Conference on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2021), Jinan, China, pp. 167-172, 2021.

4- I. Harbi, **M. Abdelrahem**, M. Aref, M. Ahmed and R. Kennel, "Computationally Efficient FCS-MPC for Single-Phase Five-Level ANPC Inverter," 22nd International Middle East Power Systems Conference (MEPCON 2021), Assiut, Egypt, pp. 643-647, 2021.

5- B. Fekkak, A. Loukriz, R. Kennel, H. Azoug, A. Kouzou, **M. Abdelrahem**, M. Mohamed-Seghir, H. Belmili, M. Menaa, "Processor-in-the Loop Test and Experimental Validations for developed Nine level PV Inverter using High Performance ARM-STM32F407", IEEE Southern Power Electronics Conference (SPEC 2021), Kigali, Rwanda, pp. 1-6, 2021.

6- I. Harbi, **M. Abdelrahem**, M. Ahmed and R. Kennel, "Weighting Factorless Reduced-Complexity FCS-MPC for Modified Packed U-cell Inverter Topology", International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2021), Nuremberg, Germany, pp. 1-7, 2021.

7- M. Ahmed, **M. Abdelrahem**, I. Harbi and R. Kennel, "Sensorless Predictive Direct Power Control with On-Line Inductance Estimation for Grid-Connected PV Applications", International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2021), Nuremberg, Germany, pp. 1-6, 2021.

8- M. Ahmed, **M. Abdelrahem**, I. Harbi and R. Kennel, "Predictive Model-based Maximum Power Point Tracking Technique for PV Applications with Reduced Sensor Count", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2021), Nuremberg, Germany, pp. 1-6, 2021.

9- K. Cui, H. Eldeeb, **M. Abdelrahem** and R. Kennel, "Improved DC-link Voltage Utilization for Dual Three-phase Drives with Full Anti-windup and Harmonic Compensation", 22nd IEEE International Conference on Industrial Technology (ICIT 2021), Valencia, Spain, pp. 1-6, 2021.

10- I. Harbi, **M. Abdelrahem**, M. Ahmed and R. Kennel, "Model Predictive Control with Switching Frequency Minimization for Modified Packed U-cell Inverter", 5th IEEE Workshop on the Electronic Grid (eGRID 2020), Aachen, Germany, pp. 1-5, 2020.

11- M. Ahmed, **M. Abdelrahem**, I. Harbi and R. Kennel, "Evaluation of Predictive Direct Current and Direct Power Control for Grid-connected PV Systems", 5th IEEE Workshop on the Electronic Grid (eGRID 2020), Aachen,

Germany, pp. 1-6, 2020.

12- M. Ahmed, **M. Abdelrahem**, C. M. Hackl and R. Kennel, "Direct Switching Maximum Power Point Tracking Technique for PV Applications", IEEE Power and Energy Student Summit (PESS 2020), Darmstadt, Germany, pp. 1-5, 2020.

13- H. Rouhabadi, **M. Abdelrahem** and R. Kennel, "New Proposition for Multiple Vector Direct Model Predictive Control of Permanent Magnet Synchronous Generators in Variable-speed Wind Turbines", IEEE Power and Energy Student Summit (PESS 2020), Darmstadt, Germany, pp. 1-6, 2020.

14- **M. Abdelrahem**, R. Kennel, C. Hackl and J. Rodríguez, "Predictive Torque Control without Weighting Factors for Doubly-Fed Induction Generators in Wind Turbine Applications", IEEE 21st Workshop on Control and Modeling for Power Electronics (COMPEL 2020), Aalborg, Denmark, pp. 1-6, 2020.

15- A. I. Soliman, M. Vedadi, B. Kahia, **M. Abdelrahem** and R. Kennel, "Flexible Test Bench Arrangement and Particular Implementation of Three Level IGBT Based VSI for Self-sensing Model Predictive Control of Induction Motor", IEEE 21st Workshop on Control and Modeling for Power Electronics (COMPEL 2020), Aalborg, Denmark, pp. 1-6, 2020.

16- **M. Abdelrahem**, R. Kennel, C. Hackl and J. Rodríguez, "Finite-Set Predictive Control with Disturbance Rejection Capability for PMSGs in Wind Turbine Applications," 46th Annual Conference of the IEEE Industrial Electronics Society (IECON 2020), Singapore, pp. 3218-3223, 2020.

17- I. Harbi, **M. Abdelrahem**, R. Kennel and C. M. Hackl, "Simplified Model Predictive Current Control for Single-Phase Multilevel Inverter", 46th Annual Conference of the IEEE Industrial Electronics Society (IECON 2020), Singapore, pp. 3079-3084, 2020.

18- **M. Abdelrahem**, C. Hackl, J. Rodríguez and R. Kennel, "Improved Direct-Model Predictive Control with a Simple Disturbance Observer for DFIGs", 22nd European Conference on Power Electronics and Applications (EPE'20 ECCE Europe), Lyon, France, pp. 1-9, 2020.

19- **M. Abdelrahem**, M. A. Ismeil, A. Ali, M. A. Gaafar and R. Kennel, "Weight Optimisation for Model Predictive Control based on Particle Swarm Optimisation", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2020), Nuremberg, Germany, pp. 1-7, 2020.

20- **M. Abdelrahem**, U. Degmez, R. Kennel and J. Rodriguez, "Direct Model Predictive Control for Grid-Connected Four-Leg Quasi-Z-Source Converter under Unbalanced Conditions", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2020), Nuremberg, Germany, pp. 1-8, 2020.

21- A. Farhan, **M. Abdelrahem**, A. Shaltout, R. Kennel and A. Saleh, "Encoderless Current Predictive Control of Synchronous Reluctance Motor by Extended Kalman Filter based State Estimation", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2020), Nuremberg, Germany, pp. 1-8, 2020.

22- M. Ahmed, **M. Abdelrahem**, R. Kennel and C. M. Hackl, "A Robust Maximum Power Point Tracking Based Model Predictive Control and Extended Kalman Filter for PV Systems", IEEE International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM 2020), Sorrento, Italy, pp. 514-519, 2020.

23- M. Ahmed, **M. Abdelrahem**, R. Kennel and C. M. Hackl, "Maximum Power Point Tracking Based Model Predictive Control and Extended Kalman Filter Using Single Voltage Sensor for PV Systems", IEEE 29th International Symposium on Industrial Electronics (ISIE 2020), Delft, Netherlands, pp. 1039-1044, 2020.

24- A. Farhan, **M. Abdelrahem**, A. Saleh, A. Shaltout and R. Kennel, "Robust Sensorless Direct Speed Predictive Control of Synchronous Reluctance Motor", IEEE 29th International Symposium on Industrial Electronics (ISIE 2020), Delft, Netherlands, pp. 1541-1546, 2020.

25- **M. Abdelrahem**, R. Kennel, C. M. Hackl and J. Rodríguez, "Simple and Robust Finite-Control-Set Model Predictive Control for DFIGs in Wind Turbine Systems", IEEE 11th Power Electronics, Drive Systems, and Technologies Conference (PEDSTC 2020), Tehran, Iran, pp. 1-6, 2020.

26- M. Ahmed, **M. Abdelrahem**, R. Kennel and C. M. Hackl, "An Enhanced Maximum Power Point Tracking Based Finite-Control-Set Model Predictive Control for PV Systems", IEEE 11th Power Electronics, Drive Systems, and Technologies Conference (PEDSTC 2020), Tehran, Iran, pp. 1-6, 2020.

27- A. Farhan, A. Saleh, **M. Abdelrahem**, R. Kennel and A. Shaltout, "High-Precision Sensorless Predictive Control of

Salient-Pole Permanent Magnet Synchronous Motor based-on Extended Kalman Filter", IEEE 21st International Middle East Power Systems Conference (MEPCON 2019), Cairo, Egypt, pp. 226-231, 2019.

28- A. Farhan, M. Abdelrahem, A. Saleh, A. Shaltout and R. Kennel, "High-Performance Position Sensorless control of Reluctance Synchronous Motor using High-Frequency Injection", IEEE 13th International Conference on Power Electronics and Drive Systems (PEDS 2019), Toulouse, France, pp. 1-6, 2019.

29- **M. Abdelrahem**, C. Hackl, A. Farhan and R. Kennel, "Finite-Set MRAS Observer for Encoderless Control of PMSGs in Wind Turbine Applications", IEEE Conference on Power Electronics and Renewable Energy (CPERE 2019), Aswan City, Egypt, pp. 431-436, 2019.

30- P. Das, **M. Abdelrahem**, A. Farhan, M. A. Ismeil and R. Kennel, "Predictive Direct Torque Control of Permanent Magnet Synchronous Generators (PMSGs) without Weighting Factors", IEEE Conference on Power Electronics and Renewable Energy (CPERE 2019), Aswan City, Egypt, pp. 296-301, 2019.

31- A. I. Soliman, A. Farhan, **M. Abdelrahem** and R. Kennel, "Enhanced Sensorless Model Predictive Control of Induction Motor Based on Extended Kalman Filter", IEEE Conference on Power Electronics and Renewable Energy (CPERE 2019), Aswan City, Egypt, pp. 309-313, 2019.

32- **M. Abdelrahem**, C. Hackl, R. Kennel and J. Rodriguez, "Sensorless Predictive Speed Control of Permanent-Magnet Synchronous Generators in Wind Turbine Applications", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2019), Nuremberg, Germany, pp. 1-8, 2019.

33- **M. Abdelrahem**, M. A. Ismeil, M. Orabi and R. Kennel, "Three phase Semi-Z-Source Inverter for PV Applications", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2019), Nuremberg, Germany, pp. 1-6, 2019.

34- M. Begh, E. Liegmann, A. Mahajan, A. Palanisamy, Y. Siwakoti, P. Karamanakos, **M. Abdelrahem** and R. Kennel "Design of State-Feedback Controller for a Single-Phase Grid- Connected Siwakoti-H Inverter with LCL filter", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2019), Nuremberg, Germany, pp. 1-8, 2019.

35- **M. Abdelrahem**, F. Hamadto, A. Garikapati, and R. Kennel, "Multiple-Vector Direct Model Predictive Control for Grid-Connected Power Converters with Reduced Calculation Burden", IEEE 5th International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2019), Quanzhou, China, pp. 1-6, 2019.

36- **M. Abdelrahem**, R. Kennel, C. Hackl, M. Dal and J. Rodríguez, "Efficient Finite-Position-Set MRAS Observer for Encoder-less Control of DFIGs," IEEE 5th International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2019), Quanzhou, China, pp. 1-6, 2019.

37- I. Hammoud, K. Morsy, **M. Abdelrahem** and R. Kennel, "Computationally Efficient Model Predictive Direct Power Control with Online Finite Set Model Inductance Estimation Technique for Grid-Connected Photovoltaic Inverters", IEEE 5th International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2019), Quanzhou, China, pp. 1-6, 2019.

38- H. Eldeeb, **M. Abdelrahem**, C. Hackl and A. S. Abdel-Khalik, "Enhanced Electromechanical Modeling of Asymmetrical Dual Three-Phase IPMSM Drives", IEEE 27th International Symposium on Industrial Electronics (ISIE 2018), Cairns, QLD, pp. 126-132, 2018.

39- **M. Abdelrahem**, H. Eldeeb, C. Hackl, R. Kennel and J. Rodriguez, "Computationally Efficient Predictive Direct Torque Control Strategy for PMSGs without Weighting Factors", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2018), Nuremberg, Germany, pp. 1-8, 2018.

40- **M. Abdelrahem**, P. Catterfeld, C. Hackl and R. Kennel, "A Sliding-Mode-Observer for Encoderless Direct Model Predictive Control of PMSGs", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2018), Nuremberg, Germany, pp. 1-8, 2018.

41- **M. Abdelrahem**, C. Hackl, B. Kahia, and R. Kennel, "Predictive Direct Torque Control Strategy for Surface-Mounted Permanent-Magnet Synchronous Generators", IEEE Conference on sustainable energy supply and energy storage systems (NEIS 2017), Hamburg, Germany, pp. 1-6, 2017.

42- H. Eldeeb, C. Hackl, **M. Abdelrahem** and A. S. Abdel-Khalik, "A unified SVPWM realization for minimizing circulating currents of dual three phase machines", IEEE 12th International Conference on Power Electronics and

Drive Systems (PEDS 2017), Honolulu, HI, pp. 925-931, 2017.

43- B. Kahia, A. Bouafia, **M. Abdelrahem**, Z. Zhang, A. Chaoui, A. Krama and R. Kennel, "A predictive direct power control strategy for three-level npc rectifier", IEEE 5th International Conference on Electrical Engineering - Boumerdes (ICEE-B 2017), Boumerdes, Algeria, pp. 1-5, 2017.

44- B. Kahia, A. Bouafia, **M. Abdelrahem**, Z. Zhang, A. Chaoui, A. Krama and R. Kennel, "Multi level hysteresis direct power control strategy for three-level npc rectifier", IEEE 5th International Conference on Electrical Engineering - Boumerdes (ICEE-B 2017), Boumerdes, Algeria, pp. 1-6, 2017.

45- **M. Abdelrahem**, A. E. Hafni, R. Kennel and C. M. Hackl, "Predictive phase locked loop for sensorless control of PMSG based variable-speed wind turbines", IEEE International Symposium on Sensorless Control for Electrical Drives (SLED 2017), Catania, Italy, pp. 151- 156, 2017.

46- A. E. Hafni, **M. Abdelrahem** and R. Kennel, "Position estimation for linear electromagnetic actuators", IEEE International Symposium on Sensorless Control for Electrical Drives (SLED 2017), Catania, Italy, pp. 219-224, 2017.

47- **M. Abdelrahem**, Z. Zhang, R. Kennel, H. Eldeeb and C. Hackl, "Simple and robust direct-model predictive current control technique for PMSGs in variable-speed wind turbines", IEEE International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2017), Pilsen, Czech Republic, pp. 1-6, 2017.

48- F. Grimm, Z. Zhang, **M. Abdelrahem** and R. Kennel, "Computationally efficient predictive control of three-level NPC converters with DC-link voltage balancing: A priori state selection approach", IEEE International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2017), Pilsen, Czech Republic, pp. 72-77, 2017.

49- **M. Abdelrahem**, C. Hackl, R. Kennel, "A Robust Encoderless Predictive Current Control Using Novel MRAS Observer for Surface-Mounted Permanent-Magnet Synchronous Generators", International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2017), Nuremberg, Germany, pp. 113-120, 2017.

50- **M. Abdelrahem** and R. Kennel, "Direct-Model Predictive Control for Fault Ride-Through Capability Enhancement of DFIG", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2017), Nuremberg, Germany, pp. 1-8, 2017.

51- **M. Abdelrahem**, C. Hackl and R. Kennel, "Implementation of Extended Kalman Filter for PMSG Considering the Dynamics of the Mechanical System", International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2017), Nuremberg, Germany, pp. 1-8, 2017.

52- **M. Abdelrahem**, M. H. Mobarak, and R. Kennel, "Model Predictive Control for Low-Voltage Ride through Capability Enhancement of DFIGs in Variable-Speed Wind Turbine Systems", IEEE 9th International Conference on Electrical and Computer Engineering (ICECE 2016), Dhaka, Bangladesh, pp. 70-73, 2016.

53- **M. Abdelrahem**, M. H. Mobarak, and R. Kennel, "Realization of low-voltage ride through requirements for PMSGs in wind turbines systems using generator-rotor inertia", IEEE 9th International Conference on Electrical and Computer Engineering (ICECE 2016), Dhaka, Bangladesh, pp. 54-57, 2016.

54- M. H. Mobarak, **M. Abdelrahem**, N. Stati and R. Kennel, "Model predictive control for low-voltage ride-through capability improvement of variable-speed wind energy conversion systems", IEEE International Symposium on Industrial Electronics (INDEL 2016), Banja Luka, Bosnia and Herzegovina, pp. 1-6, 2016.

55- N. Stati, **M. Abdelrahem**, M. H. Mobarak and R. Kennel, "Finite control set-model predictive control with on-line parameter estimation for variable-speed wind energy conversion systems", IEEE International Symposium on Industrial Electronics (INDEL 2016), Banja Luka, Bosnia and Herzegovina, pp. 1-6, 2016.

56- K. A. Islam, **M. Abdelrahem** and R. Kennel, "Efficient finite control set-model predictive control for grid-connected photovoltaic inverters", IEEE International Symposium on Industrial Electronics (INDEL 2016), Banja Luka, Bosnia and Herzegovina, pp. 1-6, 2016.

57- T. Lahlou, **M. Abdelrahem**, S. Valdes and H. Herzog, "Filter design for grid-connected multilevel CHB inverter for battery energy storage systems", IEEE International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM 2016), Anacapri, Italy, pp. 831-836, 2016.

58- T. Lahlou, D. Wittmann, **M. Abdelrahem** and H. Herzog, "Stabilization of the DC-link voltage in a two stage cascaded H-Bridge multilevel converter for battery energy storage systems", IEEE International Energy Conference

(ENERGYCON 2016), Leuven, Belgium, pp. 1-6, 2016.

59- **M. Abdelrahem**, C. Hackl, and R. Kennel, "Model Predictive Control of Permanent Magnet Synchronous Generators in Variable-Speed Wind Turbine Systems", Power and Energy Student Summit (PESS 2016), Aachen, Germany, 2016.

60- **M. Abdelrahem**, C. Hackl, Z. Zhang, and R. Kennel, "Sensorless Control of Permanent Magnet Synchronous Generators in Variable-Speed Wind Turbine Systems", Power and Energy Student Summit (PESS 2016), Aachen, Germany, pp. 1-8, 2016.

61- Z. Zhang, C. Hackl, **M. Abdelrahem**, and R. Kennel, "Voltage Sensorless Direct Model Predictive Control of 3L-NPC Back-to-Back Power Converter PMSG Wind Turbine Systems with Fast Dynamics", Power and Energy Student Summit (PESS 2016), Aachen, Germany, 2016.

62- **M. Abdelrahem**, C. Hackl, and R. Kennel, "Sensorless Control of Doubly-Fed Induction Generators in Variable-SpeedWind Turbine Systems", IEEE 5th International Conference on Clean Electrical Power (ICCEP 2015), Taormina, Italy, pp. 406-413, 2015.

63- **M. Abdelrahem**, C. Hackl, and R. Kennel, "Application of extended Kalman filter to parameter estimation of doubly-fed induction generators in variable-speed wind turbine systems", IEEE 5th International Conference on Clean Electrical Power (ICCEP 2015), Taormina, pp. 226-233, 2015.

64- M. Abdel-Salam, A. Ahmed, M. Amery, **Mohamed Swify**, A. El-kousy and K. Sayed, "On the Design and Operation of a Standalone Residential PV System in Egypt", IEEE International Conference on Clean Electrical Power (ICCEP 2013), Alghero, Italy, pp. 659-664, 2013.

65- M. Abdel-Salam, A. Ahmed, R. Kamel, H. Ziedan, K. Sayed, M. Amery and **M. Swify**, "Aggregation of Microgrids for Irrigation in Toshka Area", IEEE International Conference on Clean Electrical Power (ICCEP 2013), Alghero, Italy, pp. 659-664, 2013.

66- M. Abdel-Salam, A. Ahmed, R. Kamel, H. Ziedan, K. Sayed, M. Amery and **M. Swify** "Steady-state Modeling and Control of a Microgrid Supplying Irrigation Load in Toshka Area", 38th IEEE Industrial Electronics Society conference (IECON 2012), Montreal, Canada, October 24-28, pp. 5673-5678, 2012.

67- M. Abdel-Salam, A. Ahmed, R. Kamel, H. Ziedan, K. Sayed, M. Amery and **M. Swify**, "Analysis of Protection System for a Microgrid Supplying Irrigation Load in Toshka Area", 38th IEEE Industrial Electronics Society conference (IECON 2012), Montreal, Canada, October 24-28, pp.5586-5590, 2012.

68- M. Abdel-Salam, A. Ahmed, M. Amery, **Mohamed Swify**, A. El-kousy and K. Sayed, "Design and Implementation of Stand-alone Residential PV System", IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT 2011), Amman, Jordan, pp. 50-55, Dec. 6-8, 2011.

69- M. Abdel-Salam, A. Ahmed, H. Ziedan, K. Sayed, M. Amery and **M. Swify** "A Solar-Wind Hybrid Power System for Irrigation in Toshka Area", IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT), Amman, Jordan, pp. 38-43, Dec. 6-8, 2011.

70- M. Abdel-Salam, A. Ahmed, and **M. Abdel-Sater**, "Maximum power point tracking for variable speed grid connected small wind turbine", IEEE International Energy Conference, Manama, Bahrain, pp. 600 – 605, 2010.

71- M. Abdel-Salam, A. Ahmed and **M. Abdel-Sater**, "Ramptime Current -Controlled APF for Harmonic Mitigation, Power Factor Correction and Load Balancing", 14th International Middle East Power System Conference (MEPCON'10), Cairo University, Cairo, Egypt, pp. 144-150, 2010.

72- A. Ahmed, K. Fathy and **M. Abdel-Sater**, "DC-DC PWM Converter with High Frequency Link for Small Scale Fuel Cell", International Conference of Energy Engineering, Aswan, Egypt, pp. 65-70, 2010.

III- Talks

1- Robust Multiple-Vector Predictive Control for Power Converters with Grid-Voltage Estimation, IEEE International Conference on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2021), Jinan, China, 21.11.2021.

2- Predictive Torque Control without Weighting Factors for Doubly-Fed Induction Generators in Wind Turbine Applications, IEEE 21st Workshop on Control and Modeling for Power Electronics (COMPEL 2020), Aalborg, Denmark, 11.11.2020.

3- Finite-Set Predictive Control with Disturbance Rejection Capability for PMSGs in Wind Turbine Applications, 46th

Annual Conference of the IEEE Industrial Electronics Society (IECON 2020), Singapore, 19.10.2020.

4- Improved Direct-Model Predictive Control with a Simple Disturbance Observer for DFIGs, 22nd European Conference on Power Electronics and Applications (EPE'20 ECCE Europe), Lyon, France, 10.09.2020.

5- Predictive control and observers for variable-speed wind generators, Virtual International Seminar, 28.08.2020.

6- Weight Optimisation for Model Predictive Control based on Particle Swarm Optimisatio, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2020), Nuremberg, Germany, 08.07.2020.

7- Direct Model Predictive Control for Grid-Connected Four-Leg Quasi-Z-Source Converter under Unbalanced Conditions, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2020), Nuremberg, Germany, 07.07.2020.

8- Robust Predictive Control of DFIGs in Wind Turbine Applications, Fourth German-Turkish workshop, EAL, TUM, Munich, Germany, 10.02.2020.

9- Simple and Robust Finite-Control-Set Model Predictive Control for DFIGs in Wind Turbine Systems, IEEE 11th Power Electronics, Drive Systems, and Technologies Conference (PEDSTC 2020), Tehran, Iran, 05.02.2020.

10- Feasibility study of WPT for motor drive, IEEE Seminar on Wireless Power Transfer (WPT) Systems, Warsaw, Poland, 29.10.2019.

11- Finite-Set MRAS Observer for Encoderless Control of PMSGs in Wind Turbine Application, IEEE Conference on Power Electronics and Renewable Energy (CPERE 2019), Aswan, Egypt, 25.10.2019.

12- Predictive Direct Torque Control of Permanent Magnet Synchronous Generators (PMSGs) without Weighting Factor, IEEE Conference on Power Electronics and Renewable Energy (CPERE 2019), Aswan, Egypt, 25.10.2019.

13- Efficient Finite-Position-Set MRAS Observer for Encoder-less Control of DFIGs, IEEE 5th International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2019), Quanzhou, China, 02.06.2019.

14- Multiple-Vector Direct Model Predictive Control for Grid-Connected Power Converters with Reduced Calculation Burden, IEEE 5th International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2019), Quanzhou, China, 01.06.2019.

15- Robust deadbeat predictive control for PMSGs without mechanical sensors, Nanjing University of Aeronautics and Astronautics, 30.05.2019.

16- Sensorless Predictive Speed Control of Permanent-Magnet Synchronous Generators in Wind Turbine Applications, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2019), Nuremberg, Germany, 07.05.2019.

17- Experimental implementation of FCS-MPC for DFIGs, Third German-Turkish Workshop, EAL, TUM, Munich, Germany, 19.11.2018.

18- Estimation of DFIGs parameters, Second German-Turkish Workshop, EAL, TUM, Munich, Germany, 23.07.2018.

19- Computationally Efficient Predictive Direct Torque Control Strategy for PMSGs without Weighting Factors, International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2018), Nuremberg, Germany, 05.06.2018.

20- Predictive phase locked loop for sensorless control of PMSG based variable-speed wind turbines, IEEE International Symposium on Sensorless Control for Electrical Drives (SLED 2017), Catania, 19.09.2017.

21- Simple and robust direct-model predictive current control technique for PMSGs in variable-speed wind turbines, IEEE International Symposium on Predictive Control of Electrical Drives and Power Electronics (PRECEDE 2017), Pilsen, 05.09.2017.

22- A Robust Encoderless Predictive Current Control Using Novel MRAS Observer for Surface-Mounted Permanent-Magnet Synchronous Generator, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2017), Nuremberg, Germany, 16.05.2017.

23- FCS-MPC for DFIG and LVRT capability improvement, First German-Turkish Workshop, EAL, TUM, Munich, Germany, 20.09.2017.

24- Simple and robust FCS-MPC for electrical machines and power electronics, Symposium of Predictive Control, EAL,

TUM, Munich, Germany, 19.09.2017.

25- Robust deadbeat predictive control for PMSGs without mechanical sensors, Symposium of Predictive Control, EAL, TUM, Munich, Germany, 19.09.2017.

26- Towards finite position set observers for encoderless control of electrical machines, Symposium of Predictive Control, EAL, TUM, Munich, Germany, 18.09.2017.

27- Model Predictive Control of Permanent Magnet Synchronous Generators in Variable-Speed Wind Turbine Systems, Power and Energy Student Summit (PESS 2016), Aachen, Germany, 20.01.2016.

28- Sensorless Control of Permanent Magnet Synchronous Generators in Variable-Speed Wind Turbine Systems, Power and Energy Student Summit (PESS 2016), Aachen, Germany, 19.01.2016.

29- Sensorless Control of Doubly-Fed Induction Generators in Variable-Speed Wind Turbine Systems, IEEE 5th International Conference on Clean Electrical Power (ICCEP 2015), Taormina, Italy, 18.06.2015.

30- Application of extended Kalman filter to parameter estimation of doubly-fed induction generators in variable-speed wind turbine systems, IEEE 5th International Conference on Clean Electrical Power (ICCEP 2015), Taormina, 16.06.2015.

31- Mathematical modeling of DFIG for variable-speed wind turbines, Project meeting, EAL, TUM, 11.06.2014.

32- Maximum power point tracking for variable speed grid connected small wind turbine, IEEE International Energy and Exhibition Conference, 18.12.2010.

33- Ramptime Current -Controlled APF for Harmonic Mitigation, Power Factor Correction and Load Balancing, 14th International Middle East Power System Conference (MEPCON'10), Cairo University, Cairo, Egypt, 21.12.2010.

IV- Posters

1- Model Predictive Control for 17-Levels Inverter in PV systems, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2022), Nuremberg, Germany, 11.05.2022.

2- Three phase Semi-Z-Source Inverter for PV Applications, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2019), Nuremberg, Germany, 07.05.2019.

3- Design of State-Feedback Controller for a Single-Phase Grid-Connected Siwakoti-H Inverter with LCL filter, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2019), Nuremberg, Germany, 08.05.2019.

4- A Sliding-Mode-Observer for Encoderless Direct Model Predictive Control of PMSGs, International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2018), Nuremberg, Germany, 06.06.2018.

5- Predictive Direct Torque Control Strategy for Surface-Mounted Permanent-Magnet Synchronous Generators, IEEE Conference on sustainable energy supply and energy storage systems (NEIS 2017), Hamburg, Germany, 21.09.2017.

6- Implementation of Extended Kalman Filter for PMSG Considering the Dynamics of the Mechanical System, International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM 2017), Nuremberg, Germany, 16.05.2017.

Theses

1- Predictive Control and Finite-Set Observers for Variable-Speed Wind Generators, PhD dissertation, Institute for Electrical Drive Systems and Power Electronics, Technical University of Munich (TUM), Germany, 2020.

2- Harmonic Mitigation and Maximum Power Point Tracking for Variable Speed Grid Connected Wind Turbine, Master thesis, Department of Electrical Engineering, Assiut University, Egypt, 2011.

3- Improvement of Operation Conditions of the Egyptian Power System, Bachelor thesis, Department of Electrical Engineering, Assiut University, Egypt, 2007.

Research projects and cooperation with industry

2021– 2024   Research project in cooperation with Industry entitled "Cable-less Electrical Drive for Construction and Mechanical Engineering"; Total budget: 1,618,000.00 €; Rule: Co-principal investigator; Funding organization: VDI/VDE Innovation + Technik GmbH; Project duration: 3 years.

2017– 2020   Research project in cooperation with Turkey entitled "Robust Sensorless Control Strategy for Grid Connected and Standalone Doubly Fed Induction Generator Based Wind Energy Conversion Systems"; Total budget: 200,000.00 €; Rule: Co-principal investigator; Funding organization: DLR; Project duration: 3 years.

2017– 2019   Research project in cooperation with Egypt entitled "PV Micro Inverter Design based quasi Z- Source Inverter"; Total budget: 20,000.00 €; Rule: Co-principal investigator; Funding organization: DAAD; Project duration: 2 years.

2017– 2018   Research project in cooperation with Industry entitled "Wireless Transfer of Power and Data: Feasibility study"; Total budget: 40,000.00€; Rule: Principle investigator; Funding organization: MACCON; Project duration: 6 months.

2014– 2017   Research project entitled "Novel Sensorless Control, Grid Fault Ride-Through Strategies for Variable-Speed Wind Turbines and Design of Hybrid Wind-Photovoltaic Power System"; Total budget: 75,000.00 €; Rule: Principal investigator; Funding organization: DAAD; Project duration: 3 years.

2010– 2013   Research project in cooperation with USA entitled " A hybrid Solar-Wind Generation Based Micro-Grid for the Irrigation System of A Major Land Reclamation Project in Egypt-Case Study of the Toshka Project"; Total budget: 200,000.00 $; Rule: Member of the research team; Funding organization: STDF; Project duration: 3 years.

2010– 2012   Research project entitled "A Stand-alone residential PV system"; Total budget: 400,000.00 EGP; Rule: Member of the research team; Funding organization: STDF; Project duration: 2 years.

Supervision of Theses and Teaching

I- PhD theses

I am helping in the supervision of the following PhD theses at EAL, TUM.

1- Mostafa Ahmed, Predictive Maximum Power Point Tracking Algorithms for Photovoltaic Arrays, 2019 – present.
2- Ibrahim Harbi, Model Predictive Control of Multi-Level Inverters, 2019 – present.
3- Ahmed Farhan, Encoderless Control of Synchronous Reluctance Drives, 2019 – 2020.

II- Master theses including industrial cooperation (all under my supervision)

1- Haitham Elsayed, Three-Vector Based Model Predictive Control of a Permanent Magnet Synchronous Machine, 2022.

2- Aditya Shantaram Sawant, Efficiency Evaluation of Three-Level Traction Inverter Using Combination of Silicon and Silicon Carbide Semiconductors, in cooperation with Infineon, 2022.

3- Mohammad Abu-Ali, Advanced Model Predictive Current Control Concepts for Permanent Magnet Synchronous Motors, in cooperation with BOSCH, 2021.

4- Jinting Zhao, Damping of acoustically significant harmonic in the phase currents of an electrical machine using artificial intelligence techniques, in cooperation with IAV Company, 2021.

5- Ahmed Oun, Thermal simulation on the Inverter's IGBT module for an electric drivetrain, in cooperation with BMW, 2020.

6- Kai Cui, Improved DC-link voltage utilization for dual three-phase drives with full anti-windup and distortion-free operation, in cooperation with IAV Company, 2020.

7- Leila Emadi, Neutral-Point Voltage Control for Multilevel Inverters, in cooperation with CPM Company, 2020.

8- Hossein Rouhabadi, Multiple Vector Direct Model Predictive Control of Permanent Magnet Synchronous Generators in Variable-speed Wind Turbine Systems, 2020.

9- Ümit Degmez, Direct Model Predictive Control of Grid Connected Four-leg Quasi-Z-Source Inverter, 2019.

10- Hadi El Khatib, Flux Observer-Based Deadbeat-Direct Torque and Flux Control for Interior Permanent Magnet Synchronous Machines in Automotive Traction Applications, in cooperation with AUDI, 2019.

11- Aman Kumar, PV Array MPPT through Finite Control Set Model Predictive Control for DC-DC Converters, 2019.

12- Prodyut Das, Predictive direct torque control of Permanent Magnet Synchronous Generators (PMSGs) without weighting factors, 2019.

13- Eren Arslan, Concept Development: Vehicle-to-Home (V2H) Island Mode Operation, in cooperation with BMW, 2018.

14- Philipp Catterfeld, A Sliding-Mode-Observer for Encoderless Direct Model Predicitve Control of PMSGs, 2018.

15- Kazi Ahad Islam, Development of a Maximum Power Point Tracking Strategy of a Photovoltaic Array Using Model Predictive Control, 2017.

16- Muhammad Hosnee Mobarak, Low Voltage Ride-Through Strategy for Permanent Magnet Synchronous Generators in Variable Speed Wind Energy Conversion Systems, 2016.

17- Nico Stati, Sensorless Control with On-line Parameter Estimation for Permanent Magnet Synchronous Generators in Variable Speed Wind Energy Conversion Systems, 2016.

18- Imen Bouzouita, Sensorless Control of Grid Connected Permanent Magnet Synchronous Generators for Variable Speed Wind Turbines, 2015.

19- Mourad Sassi, Development of Maximum Power Point Tracking Strategy for Variable Speed Wind Energy Conversion System, 2015.

III- Teaching of Courses

1- Power Electronics, 2017 – Present.
2- Practical Course of Power Electronics, 2017 – Present.
3- Seminar Intelligent Methods in Mechatronics, 2015 – 2021.
4- Project Course Drive Systems and Power Electronics, 2015 – 2021.
5- Research Internship, 2015 – 2019.
6- Electrical Drive systems, 2015 – 2018.
7- Electrical Machines, 2011 – 2013.
8- Wind and Photovoltaic Energy Systems, 2011 – 2013.
9- Electrical Fields, 2009 – 2013.
10- Electric Circuits, 2007 – 2011.

Reviewer and Editor Activities

I am acting as a reviewer for the following Journals:

1- IEEE Transactions on Industrial Electronics (TIE).
2- IEEE Transactions on Power Electronics (TPEL).
3- IEEE Transactions on Energy Conversion (TEC).
4- IEEE Access.
5- IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE).
6- IEEE Transactions on Transportation Electrification (TTE).
7- IEEE Transactions on Power Delivery (PWRD).
8- IET Electric Power Applications.
9- IET Power Electronics.
10- Energy.
11- International Transactions on Electrical Energy Systems.
12- Energies (MDPI).

13- Electronics (MDPI).

14- Machines (MDPI).

15- Electrical Engineering.

16- Electric Power Components and Systems.

I am acting as a guest Editor in the following Journal:

➢ Energies (MDPI, ISSN: 1996-1073, Q1, IF: 3004).

➢ Sustainability (MDPI, ISSN 2071-1050, Q2, IF: 3.251).

Munich, 22.06.2022

M. Abdelrahem