



## CURRICULUM VITAE

### Hady Habib Fayek

Associate Professor

Head of Energy and  
Renewable Energy  
Engineering Dept.

Chair of IEEE Industrial  
Electronics Society Egypt  
Chapter

Fulbright Alumni Member

Guest Editor

Keynote Speaker

Energy Consultant

Leader of SARA Initiative

### Personal Data

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**Name:** Hady Habib Fayek Habib

**Address:** 98 Swiss Buildings, Tenth District, Nasr City, Cairo, Egypt

**Position:** Associate Professor and Lead Researcher in Electrical Power and Energy

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**Military status:** Exempted

**Marital status:** Married

### EDUCATION

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2015 - 2018

PhD, Helwan University including joint research with Texas A&M University, Major: Smart grid and Renewable Energy.  
Title: "Voltage and Reactive Power Control of Smart Grid"  
Advisors: Prof. Omar Hanafy (Helwan University, Egypt) & Prof. Abd ElGhany Mohamed (Helwan University, Egypt)  
Helpers: Prof. Katherine Davis (Texas A&M University, USA)  
Fund: Partially Fulbright (JFDP Program)

2012 - 2014

Helwan University, MSc.  
Major: Power system control and Wind Energy  
Title: "Robust Controllers Design for Hybrid System Load

Hady Habib Fayek C.V. - 2  
Frequency Control”  
Advisor: Prof. Abdel Ghany Mohamed.

2007 - 2011 Helwan University, Faculty of Engineering, B.A.  
Major: Electrical power and machines Dept.

1994 – 2006 Saint Fatima Language School  
Primary, Preparatory and Secondary

## ACADEMIC EMPLOYMENT

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September 2024 - ... Head of Energy and Renewable Energy Engineering Department,  
Egyptian Chinese University.

January 2024 – August 2024 Associate Professor, Heliopolis University

September 2023-..... Visting professor, Arab Academy for Science and  
Technology and Maritime Transport (AASTMT) –Sheraton  
Branch, Cairo (Egypt).

April 2022 - ..... Leader, SARA Initiative to connect Academia with Industry  
January 2019 – 2023 Lecturer, Heliopolis University

October 2017 - Assistant Lecturer, Heliopolis University.  
December 2018

July 2017- Fulbright Scholar, Texas A&M University  
October 2017 Fulbright Joint project entitled: “Junior Faculty Development  
Program, Renewable Energy Cohort.”

June 2017 - Assistant Lecturer, Renewable Energy Program, Heliopolis  
Fall 2014 University  
Research Member, TriNex EU Funded Tempus Project  
Research Member, Solar water heaters ADAII Austrian project

Fall, 2012 - Graduate Teaching Assistant, Faculty of Engineering, Heliopolis  
Summer, 2014 University.  
Research Member, JIM2L Mechatronics EU Tempus Project.  
Research Member, Comparison between three different  
photovoltaic modules, DEG German project

## RESEARCH PROJECTS

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2020-2023

**Member**, Integration of sustainable development goals in universities for better climate change management, Funded by European Union (Erasmus).

**Quality Control Manager**, Sustainable Resource Management Programme to solve Desert(ed) Challenges (SUREMAP), funded by Erasmus +

**IEEE Founder**, Chapter initialization in Egypt, funded by IEEE Industrial Electronics Society.

**Principal Investigator**, Sustainable smart cities, funded by SCALA, IEEE Industrial Electronics Society.

**CO-Principal Investigator**, Affordable Resources for Egypt's Industrial Growth, funded by European Union

## Field PROJECTS

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2020-...

- Project manager of Hydrogen production and usage in SEKEM.
- Project manager of IoT based sustainable smart agriculture in SEKEM.
- Consultant in SEKEM solar pumping projects using PV in desert (3 MW projects)
- STS-Med demo plant consultant, CSP system for sustainable electricity and cooling needs.
- Project manager for PV Hydro-pumped storage system for irrigation at night in Baharia Oasis (SEKEM ElWahat).
- Project manager for manufacturing of a 1 kW wind turbine and 1 kW PV inverters with costs very competitive to the market in SEKEM.
- Project manager for turning **Heliopolis University** to 100% PV power community through grid integration by installing 128 kW.
- Responsible for operating a pivot in **SEKEM ElWahat** with 100% PV and energy storage.
- Responsible for operating **Water factory in ISIS** by fully automated Reverse Osmosis (RO) water desalination unit.

2012-2016

- Responsible for installing 4.5 kW PV system in the roof of Faculty of Engineering, Heliopolis University.
- Responsible for comparing between different types of PV modules performance in Egypt.
- Responsible for operation of KUKA robots, Festo machines and PLCs in Heliopolis University.

## QUALITY EXPERIENCE

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2019-2022

**Accreditation of Heliopolis University from NAQAA, my roles are**

Head of Students and Graduates Standard

Head of Scientific Research Standard

Head of Academic Staff Standard

Academic Advisor of Energy Engineering Program Students

Responsible for Bachelor Energy Program & Courses Specifications and Reports

Responsible for MSc. Energy Program & Courses Specifications and Reports

HONORS AND AWARDS

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- 2024 **Best Paper Award in 2024 IEEE International Conference on Machine Intelligence and Smart Innovation (ICMISI 2024)**
- 2023 **Best IEEE Industrial Electronics Chapter in the world**
- 2023 **Participated in putting 2030 Vision of IEEE IES**  
Participated in figuring the future of IEEE Industrial Electronics Society as Chair of one the most active IES Chapters (IES Egypt). The 2030 IES Vision workshop held in Orlando, Florida, USA, (4-6 April 2023).
- 2023 **IEEE Industrial Electronics Magazine mentioning IES Egypt story**  
IEEE Industrial electronics magazine is one of the biggest electrical and electronics journals mentioned the success story of IEEE Industrial Electronics Egypt chapter success story in March 2023, M. Jasinski et al., "Students and Young Professionals—After Covid Warming up From Cairo to Brussels and Nairobi [Students and Young Professionals News]," in IEEE Industrial Electronics Magazine, vol. 17, no. 1, pp. 103-108, March 2023, doi: 10.1109/MIE.2023.3235668 .
- 2022 **Third winning student project**  
Awarded by IEEE Industrial Electronics Society for mentoring the students to manufacture a 1 kW economical wind turbine for powering the desert by electricity.
- 2022 **Selected among best 10 projects**  
Awarded by IEEE Standard Association for mentoring the students to Sustainable smart application for irrigation using IoT and 100% Renewable Energy.
- 2020 **Second winning research paper**  
Awarded by IEEE Industrial Electronics Society, the research paper was presenting guidelines to turn Heliopolis University Campus to 100% Renewable Energy Campus (Now mission accomplished and already turned to be 100% Renewable Energy Campus)
- 2019 **Chair of IEEE Industrial Electronics Society Egypt Section Chapter**
- 2018 **Bfi Grant**  
Awarded TOT certificate in Photovoltaic power from BILDUNG FREUDE INKLUSIVE.
- 2017 **Fulbright Grant**  
Awarded Fulbright Junior Faculty Development program, Renewable Energy Cohort, the grant is to spend three months at Texas A&M University to exchange culture and conduct the following points.
- Training on new teaching methods
  - Training on improving the bylaws
  - Training on new and Renewable energy resources
  - Joint Research with Texas A&M University
- 2016 **Best Paper Award**  
Best Paper Award from Trinex Tempus project on creating a model integrate sustainable water, green energy and secured food together. The paper entitled as "Design & Control of an Agriculture Photovoltaic Reverse Osmosis Desalination System Case Study Heliopolis University" Hady H. Fayek, Heba

A. Mosalam and Rasha M.S. El-Kholy, Best Paper Award, TriNex Knowledge-Triangle Platform for the Water-Energy-Food WEF-Nexus 544397-TEMPUS-1-2013-1- IT-TEMPUS (<https://www.trinex.eu/trinex-best-paper-award-2/>).

2015

**Training and Travel Grant**

Training in Germany awarded by TriNex Knowledge-Triangle Platform for the Water-Energy-Food WEF-Nexus 544397-TEMPUS-1-2013-1-IT-TEMPUS, entitled as “WEF Nexus Networking Training”.

2015

**Training Grant**

Awarded by European Union Eurosunmed joint project entitled: “Eurosunmed 2nd international school,” the school mainly discussing renewables in the MENA region.

2015

**Bfi Grant**

Awarded TOT certificate in Solar water heaters from BILDUNG FREUDE INKLUSIVE.

2014

**TEMPUS Grant**

TOT JIM2L Tempus Mechatronics project (1), Silesian University, Silesia, Poland

2013

**TEMPUS Grant**

TOT JIM2L Tempus Mechatronics project (2), Bochum University, Bochum, Germany.

## PROFESSIONAL AFFILIATIONS AND SERVICES

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### Supervisor

- Mohamed Sonbol, “Reactive Power Planning in Power Systems with High Share of Renewables”, **Ph. D. Thesis**, Helwan University, Egypt, started April 2022.
- Hussein Magdy, “Planning Studies for Connecting a Wind Farm to the Egyptian Electricity Grid”, **MSc. Thesis**, Helwan University, Egypt, started May 2020. (**Finished**)
- Abu Bakr Hassan, “Optimal Wide Area Measurement System Configuration in the Nordic Power System”, **MSc. Thesis**, International Islamic University, Malaysia, started February 2021. (**Finished**)
- ElSayed Mohamed, “Frequency control of Egyptian Power system with High Share of Renewables”, **MSc. Thesis**, Arab Academy for Science and Transportation, Egypt, started August 2021. (**Finished**)
- A. Wageh, M. Domiaty, F. Yehia and M. Talawy, “Green Hydrogen Production and Storage”, **BSc. Thesis**, Heliopolis University, Egypt, 2024. (**Finished**)

### Co-supervisor

- Energy and Mechatronics programs students, “Converting conventional car to electric vehicle”, BSc. Thesis, Heliopolis University, 2018 (funded by ASRT).

### Organizer

- Chairman of “**IEEE Industrial Electronics Egypt and IEEE Heliopolis University Day**”, IEEE Industrial Electronics Society Egypt Chapter, Heliopolis University and IEEE Heliopolis University Branches, organized in Heliopolis University, 27 November 2023.
- Chairman of online conference titled “**2<sup>nd</sup> Marine Energy Technologies**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter, IEEE Romania Section and IEEE Heliopolis University Student branches.
- Chairman of online conference titled “**3<sup>rd</sup> version of Sustainable smARt Applications in Cities (SARA)**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter and IEEE Heliopolis University Student branches.
- Chairman of “**IEEE Industrial Electronics Egypt and IEEE Heliopolis University Day**”, IEEE Industrial Electronics Society Egypt Chapter, Heliopolis University and IEEE Heliopolis University Branches, organized in Heliopolis University, 7 November 2022.
- Chairman of online conference titled “**Marine Energy Technologies**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter, IEEE Romania Section and IEEE Heliopolis University Student branches.
- Chairman of online conference titled “**2<sup>nd</sup> version of Sustainable smARt Applications in Cities (SARA)**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter and IEEE Heliopolis University Student branches.
- Chairman of online conference titled “**Advances in Electrical Machines, Drives and Vehicles**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter and IEEE Heliopolis University Student branches, <https://iesegy.org/event/advances-in-electrical-machines-drives-and-vehicles/> .

- Chairman of online conference titled “**Engineering Applications During COVID 19**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter and IEEE Digital Reality, <https://iesegy.org/event/1251/> .
- Chairman of online conference titled “**Sustainable smart city**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, IEEE IES IAS PELS Austria Joint Chapter and Heliopolis University, <https://iesegy.org/event/sustainable-smart-city-online-conference/> .
- Chairman of webinar titled “**Smart cities Applications**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters, <https://iesegy.org/event/ies-egypt-1st-event/> .
- Chairman of webinar titled “**Energy Program in Heliopolis University**”, organized by Heliopolis University for preparatory year students.
- Chairman of webinar titled “**Contemporary Issues in Smart Grids**”, organized jointly by IEEE Industrial Electronics Egypt and Guadalajara, Mexico Chapters in addition to Heliopolis University, <https://iesegy.org/event/contemporary-issues-in-smart-grids/>.

### TALKS (Keynote Speaker)

- Hady H. Fayek, “**100% Offshore Renewable Energy Based Water, Hydrogen and Electricity Trade**”, The Place of Offshore Renewable Energy in the Transition for a Low Carbon Future, MDPI, July 2024, <https://sciforum.net/event/JMSE-15>
- Hady H. Fayek, “**De-centralized Hydrogen Production: Critical Perspectives from Industry**” IEEE Young Professionals, July 2024.
- Hady H. Fayek, “**Renewable Energy Role for Organic Agriculture**”, WEF 4 Climate Workshop, American University in Cairo (AUC), Cairo, Egypt, 10-12 September 2023.
- Hady H. Fayek, “**SYP Industrial Electronics Technologies Based Sustainable Smart Solutions**”, IEEE R8 North Africa Student and Young Professional Congress 2023, Egypt University of Informatics – EUI, New Administrative Capital, Egypt, 24-27 August 2023.
- Hady H. Fayek, “**Electronic Devices Based Sustainable Smart Grids**”, 16<sup>th</sup> Undergraduate Research Forum (UGRF), Nile University, Cairo, Egypt, 6 August 2023.
- Hady H. Fayek, “**100% Marine Renewable Energy Micro-grids for Coastal Areas**”, IEEE Student Branch MNIT Jaipur in association with IEEE Systems, Man and Cybernetics Society (SMC) Student Branch Chapter, IEEE Biometrics Council Student Branch Chapter and IEEE Systems Council Student Branch Chapter and Malaviya National Institute of Technology Jaipur, online, 3 July 2023.
- Hady H. Fayek, “**Toward 100% renewable energy: Benefits and Challenges**”, IEEE PES Florida International University (FIU) Student Branch Chapter, Miami Section and IEEE WIE AG, Miami Section, USA, June 5, 2023. (<https://wie.ieee.org/event/toward-100-renewable-energy-benefits-and-challenges/> )
- Hady H. Fayek, “**Modern optimization and control for 100% sustainable energy communities and countries**” IEEE PELS-IES Delhi Chapter, IEEE Delhi Section, IEEE PES-IAS Delhi Chapter, IEEE Education Society Delhi Chapter and Netaji Subhas University of Technology Delhi, India, June 26, 2023.
- Hady H. Fayek, “**Microgrids with 100% Marine Renewable Energy**”, in 5<sup>th</sup> Edition of **Renewable and Sustainable Energy Virtual**, 3-4 March 2023, <https://www.sciwideonline.com/v-renewable2023/>
- Hady H. Fayek, “**Marine Renewables for Coastal Microgrids**”, in **International Conference on Recent Advancements in Engineering and Technology (ICRAET’23)**, India, 31 March 2023.



- Hady H. Fayek, “**Research and Students Based Handmade Sustainable Smart Solutions.**”, in **Fulbright Alumni Festival in Egypt**, October 24, 2022, in Mariott Hotel, Cairo, Egypt.
- Hady H. Fayek, “**Students based sustainable smart solutions in Egypt.**”, in the **31<sup>st</sup> IEEE International Symposium on Industrial Electronics (ISIE)**, June 1-3, 2022, in Anchorage, Alaska, USA, <https://www.ieee-isie2022.org/studentandyp> .
- Hady H. Fayek, “**100% Marine Renewable Energy**”, in **Marine Renewable Energy Topic Workshop, MDPI**, 26 April 2022, <https://mretw.sciforum.net/> .
- Hady H. Fayek, “**Efficient operation of grids and microgrids with 100% renewables**”, in **IEEE Smart Cities Week**, March 22, 2022
- Hady H. Fayek, “**Communities operated by 100% PV**”, in **PV School in Malta**, March 8, 2022
- Hady H. Fayek, “**Secure and reliable operation of systems with 100% share of sustainable energy**”, in **Environment Engineering & Sustainable Technologies Conference**, November 15-16, 2021.
- Hady H. Fayek, “**The role of modern optimization and control in 100% renewable energy power grids and microgrids**”, in **Environmental Sciences and Renewable Energy 2021 conference**, October 2021.
- Hady H. Fayek, “**Advanced Technologies Based 100% Sustainable Energy Regions and Communities**”, in **GREEN TECHNOLOGY & SUSTAINABLE ENGINEERING One Week Teachers Training Program (TTP-2021)**, Organized by Bhilai Institute of Technology Raipur, India, June 2021
- Hady H. Fayek, “**Planning and operation of grids and microgrids with 100% Renewable Energies**”, Webinar, organized by **IEEE Industrial Electronics society**, 20 April 2021.
- Hady H. Fayek, “**Smart Grid (The Multi-disciplinary Power System)**”, Webinar, organized by **Electrical and Electronics Dept. in Bhilai Institute of Technology Raipur, India**, March 2021
- Hady H. Fayek, “**100% Renewable Energy**” Online research forum, organized by **IEEE Guadalajara section and UVM University, Guadalajara, Mexico**, Online, November 2020
- Hady H. Fayek, “**Towards 100% Renewable Energy Environment**” **Current Research in Agricultural and Resource Economics with focus on climate- and water smart agriculture in arid regions – A pragmatic review**, The German Academic Exchange Service (DAAD), Cairo, Egypt, 2019.
- Hady H. Fayek, “**2017 Fulbright Junior Faculty Development Program Engineering Cohort Re- Entry Presentation**” **2<sup>nd</sup> Junior Faculty Development Program Fulbright Conference**, Washington, USA, August 2017.
- Hady H. Fayek, “**Aggie Fulbrighters**” **2<sup>nd</sup> Junior Faculty Development Program Fulbright Conference**, Cairo, Egypt, October 2017.

## Guest Editor

- Special issue titled “**Advances in Electrical Machines, Drives and Vehicles** “ Machines Journal, MDPI, Switzerland, ( [https://www.mdpi.com/journal/machines/special\\_issues/AEMDV](https://www.mdpi.com/journal/machines/special_issues/AEMDV) ).
- Special issue titled “**Impacts and Engineering Applications during COVID-19** “ Applied system innovation Journal, MDPI, Switzerland, ( [https://www.mdpi.com/journal/asi/special\\_issues/impacts\\_eng\\_covid](https://www.mdpi.com/journal/asi/special_issues/impacts_eng_covid) ).
- Special Session titled “**Low Inertia Power Grids and Microgrids**” 47th Annual Conference of the IEEE Industrial Electronics Society, IECON 2021 ( <https://ieeicon.org/wp-content/uploads/sites/293/33-IECON-2021-SS-Proposal-template2305843009241817884.pdf> )
- Special issue titled “**Sustainable Smart Cities: Planning and Operation** “ Infrastructures Journal, MDPI, Switzerland, ( [https://www.mdpi.com/journal/infrastructures/special\\_issues/sustainable\\_smartcities](https://www.mdpi.com/journal/infrastructures/special_issues/sustainable_smartcities) ).
- Special Session titled “**Modelling, Simulation, Control and Protection of Smart Grid**” 30<sup>th</sup> IEEE International Symposium on Industrial Electronics, 20-23 June 2021, Kyoto, Japan, ( [https://www.isie2021.org/special\\_session.html#SS19](https://www.isie2021.org/special_session.html#SS19) )
- Special issue titled “ **Advances in Modern Electric Power and Energy Systems** “ Energy Engineering Journal, USA, ( [https://www.techscience.com/energy/special\\_detail/modern-electric-power](https://www.techscience.com/energy/special_detail/modern-electric-power) ).
- Special Session titled “**Advanced Technologies Based 100% Renewable Power Generation**” 29<sup>th</sup> IEEE International Symposium on Industrial Electronics, 17-19 June 2020, Delft, The Netherlands, (<http://isie2020.org/special-sessions.php#09>).

## Reviewer

MDPI journals (energies,...)  
IEEE Transactions on Power Systems  
IEEE Transactions on Industrial electronics  
IEEE Transactions on Industrial informatics  
Applied Energy Journal, ELSEVIER  
IET Electronics letters  
IET Power electronics  
IET Generation, Transmission and Distribution  
8th IEEE India International Conference on Power Electronics

## Professional Organization Member

IEEE (IES Society)  
Fulbright Alumni  
Innovation Center (Heliopolis University)  
Power Globe  
Egyptian Engineers Syndicate

## Committee Member

Head of Exams Committee, Heliopolis University (Fall 2019 – .....)  
IEEE IES Smart Grid Technical Committee  
Head of Research Unit, Faculty of Engineering, Heliopolis University (2018 - ...)  
Vice Head of Exams Committee, Heliopolis University (Fall 2017 -Spring 2019)  
WEF Nexus PhD School Committee (2017)  
Joint International Mechatronics Tools Committee, Tempus Project (2013-2015)

## PUBLICATIONS

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### PEER-REVIEWED PAPERS

1. A. Shenouda, Mona A. Hagra, Eugen Rusu, Sayed Ismael, **Hady H. Fayek**, and Ahmed Balah, "Selecting Appropriate Water–Energy Solutions for Desalination Projects in Coastal Areas" Journal of Marine Science and Engineering 12, no. 11: 1901, 2024. (<https://doi.org/10.3390/jmse12111901> )
2. U. Krishnamoorthy, Priya Lakshmi pathy, Manohar Ramya, and **Hady H. Fayek**. "Navigating the future of healthcare with innovations and challenges in implantable battery technology for biomedical devices." Discover Applied Sciences 6, no. 11 (2024): 584.
3. Krishnamoorthy, U., Sathesh Kumar, Barua, **Hady H. Fayek**, "Investigation of active cell balancing performance for series connected lithium-ion cells in electric vehicle applications.", IET Power Electronics 1–12, 2023. (<https://doi.org/10.1049/pel2.12575> ).
4. Sakthimohan, M, J Deny, K Umapathi, and **Hady H. Fayek**, "Enhanced FPGA Linear Phase FIR Filter with Amalgam Multiplier." International Journal of Electronics, May 2024, 1–26. (doi:10.1080/00207217.2024.2349972).
5. **Hady H. Fayek**, F. H. Fayek and E. Rusu, "Operation of a 100% Off-Shore Renewable Energy Micro-Grid for Water, Hydrogen and Electricity," 2024 International Conference on Machine Intelligence and Smart Innovation (ICMISI), Alexandria, Egypt, 2024, pp. 289-294, doi: 10.1109/ICMISI61517.2024.10580544.
6. Kumar C., Lakshmanan M., Jaisiva S., Prabaakaran K., Barua S., **Hady H. Fayek**, "Reactive power control in renewable rich power grids: A literature review." IET Renewable Power Generation 00, 1– 25, 2023. (<https://doi.org/10.1049/rpg2.12674> )

7. **Hady H. Fayek** and E. Rusu, "Novel Combined Load Frequency Control and Automatic Voltage Regulation of a 100% Sustainable Energy Interconnected Microgrids," *Sustainability*, vol. 14, no. 15, p. 9428, Aug. 2022, (<https://doi.org/10.3390/su14159428>).
8. U. Krishnamoorthy, U. Pitchaikani, E. Rusu, and **Hady H. Fayek**, "Performance Analysis of Harmonic-Reduced Modified PUC Multi-Level Inverter Based on an MPC Algorithm," *Inventions*, vol. 8, no. 4, p. 90, Jul. 2023, (<http://dx.doi.org/10.3390/inventions8040090> )
9. **Hady H. Fayek**, F. H. Fayek, and E. Rusu, "Pharmacophore-Modeling-Based Optimal Placement and Sizing of Large-Scale Energy Storage Stations in a Power System including Wind Farms," *Applied Sciences*, vol. 13, no. 10, p. 6175, May 2023, (<https://doi.org/10.3390/app13106175> ).
10. Palanivelu, S.J.,Radhakrishnan, S.K., Chandrasekaran, K., Barua, **Hady H. Fayek**, "Energy efficient IPC based dual compression for endurance enhancement of NVRAMs main memory in embedded devices." *IET Communications*, 1–11 (2023), (<https://doi.org/10.1049/cmu2.12625> ).
11. O. H. Abdalla and **Hady H. Fayek**, "WAMS-Based Fuzzy Logic PID Secondary Voltage Control of the Egyptian Grid," *Sustainability*, vol. 15, no. 4, p. 3338, Feb. 2023. (<http://dx.doi.org/10.3390/su15043338> ) .
12. R. Sripriya, C. Kumar, F. J. Xavier, J. S. Kumar, P. Kotsampopoulos, and **Hady H. Fayek**, "Reliability Improvement of a Hybrid Electric Vehicle Integrated Distribution System," *Energies*, vol. 16, no. 10, p. 3984, May 2023. (<https://doi.org/10.3390/en16103984> )
13. T. D. Raj, C. Kumar, P. Kotsampopoulos, and **Hady H. Fayek**, "Load Frequency Control in Two-Area Multi-Source Power System Using Bald Eagle-Sparrow Search Optimization Tuned PID Controller," *Energies*, vol. 16, no. 4, p. 2014, Feb. 2023. (<http://dx.doi.org/10.3390/en16042014> )
14. R. K. Arunachalam, K. Chandrasekaran, E. Rusu, N. Ravichandran, and **Hady H. Fayek**, "Economic Feasibility of a Hybrid Microgrid System for a Distributed Substation," *Sustainability*, vol. 15, no. 4, p. 3133, Feb. 2023, (<http://dx.doi.org/10.3390/su15043133> )
15. S. Kavitha, C. Kumar, **Hady H. Fayek**, and E. Rusu, "Design and Implementation of CNFET SRAM Cells by Using Multi-Threshold Technique," *Electronics*, vol. 12, no. 7, p. 1611, Mar. 2023, ( <http://dx.doi.org/10.3390/electronics12071611> ).
16. **Hady H. Fayek**, and Omar H. Abdalla. "Operation of the Egyptian Power Grid with Maximum Penetration Level of Renewable Energies Using Corona Virus Optimization Algorithm" *Smart Cities*, vol. 5, no. 1: 34-53, Jan. 2022. (<https://doi.org/10.3390/smartcities5010003> ).
17. Mohamed A. M. Hassan, Omar H. Abdalla, **Hady H. Fayek**, Aisha H. A. Hashim, and Siti Fauziah Toha, "Optimal WAMS Configuration in Nordic Power System", *International Journal of Computer Science and Network Security*, Vol. 23 No. 3 pp. 130-138, March 2023. ( [http://paper.ijcsns.org/07\\_book/202303/20230313.pdf](http://paper.ijcsns.org/07_book/202303/20230313.pdf) ).
18. O. H. Abdalla, H. M. Kamel and **Hady H. Fayek**, "Aggregation of a Wind Farm Model for Grid Connection Planning Studies," 2022 23rd International Middle East Power Systems Conference (MEPCON), Cairo, Egypt, 2022, pp. 1-7, (<https://ieeexplore.ieee.org/document/10021766> ).
19. D. Magdalin Mary, C. Kumar, Felix Joseph Xavier, Sara A. Rashad, **Hady H. Fayek**, Naganthini Ravichandran, Sourav Barua, "Fuzzy PI Control of Trapezoidal Back EMF Brushless DC Motor Drive Based on the Position Control Optimization Technique", *Mathematical Problems in Engineering*, vol. 2022,

20. Ashique, Ratil H., Zainal Salam, Md. H. Maruf, ASM Shihavuddin, Md. T. Islam, Md. F. Rahman, Panos Kotsampopoulos, and **Hady H. Fayek**, "A Comparative Analysis of Soft Switching Techniques in Reducing the Energy Loss and Improving the Soft Switching Range in Power Converters" *Electronics* 11, no. 7: 1062, March 2022. (<https://doi.org/10.3390/electronics11071062> )
21. D. Raveendhra, P. Rajana, B. L. Narasimharaju, Y. S. Babu, E. Rusu, and **Hady H. Fayek**, "Analysis and Operation of a High DC-AC Gain 3- $\phi$  Capacitor Clamped Boost Inverter," *Energies*, vol. 15, no. 8, p. 2955, Apr. 2022, (<https://doi.org/10.3390/en15082955> )
22. Mishra, Akanksha, Nagesh K.G. Venkata, Sravana K. Bali, Venkateswara R. Bathina, Uma M. Ramisetty, Srikanth Gollapudi, **Hady H. Fayek**, and Eugen Rusu. 2022. "Strategic Placement of Solar Power Plant and Interline Power Flow Controllers for Prevention of Blackouts" *Inventions* 7, no. 1: 30. (<https://doi.org/10.3390/inventions7010030> )
23. D. Raveendhra, P. Rajana, K. S. R. Kumar, P. Jugge, R. Devarapalli, E. Rusu, and **Hady H. Fayek**, "A High-Gain Multiphase Interleaved Differential Capacitor Clamped Boost Converter," *Electronics*, vol. 11, no. 2, p. 264, Jan. 2022. (<https://doi.org/10.3390/electronics11020264> )
24. M. T. Islam, **Hady H. Fayek**, M. F. Rahman, M. M. Rahman, M. H. Maruf and R. Parvin, "Design and Modelling of Grid Connected Multilevel Inverter for Microgrid Applications," 2021 3rd International Conference on Sustainable Technologies for Industry 4.0 (STI), 2021, pp. 1-6, doi: 10.1109/STI53101.2021.9732542.
25. M. Harun-Ur-Roshid, M. F. Rahman, M. T. Islam, M. H. Maruf, S. Barua and **Hady H. Fayek**, "Performance Analysis of Trapezoidal Triangular Carrier Based Modulation Techniques in Multilevel Inverter for Grid Integrated Solar Photovoltaic System," 2021 3rd International Conference on Electrical & Electronic Engineering (ICEEE), 2021, pp. 5-8, doi: 10.1109/ICEEE54059.2021.9718863.
26. K. Chandrasekaran, J. J. Sahayam, S. J. S. D. Thanasingh, S. Ramalingam, **Hady H. Fayek**, N. Ravichandran, and E. Rusu, "Performance of Multifunctional Smart PV-Based Domestic Distributed Generator in Dual-Mode Operation," *Machines*, vol. 9, no. 12, p. 356, Dec. 2021. (<https://www.mdpi.com/2075-1702/9/12/356> ).
27. M. T. Islam, **Hady H. Fayek**, E. Rusu, and M. F. Rahman, "A Novel Hexagonal-Shaped Multilevel Inverter with Reduced Switches for Grid-Integrated Photovoltaic System," *Sustainability*, vol. 13, no. 21, p. 12018, Oct. 2021. (<https://www.mdpi.com/2071-1050/13/21/12018#abstractc> ).
28. T. Islam, **Hady H. Fayek**, E. Rusu, and F. Rahman, "Triac Based Novel Single Phase Step-Down Cycloconverter with Reduced THDs for Variable Speed Applications," *Applied Sciences*, vol. 11, no. 18, p. 8688, Sep. 2021. (<https://doi.org/10.3390/app11188688> ).
29. N. Ravichandran, **Hady H. Fayek**, and E. Rusu, "Emerging Floating Photovoltaic System—Case Studies High Dam and Aswan Reservoir in Egypt," *Processes*, vol. 9, no. 6, p. 1005, Jun. 2021. (<https://doi.org/10.3390/pr9061005> )
30. **Hady H. Fayek** and P. Kotsampopoulos, "Central Tunicate Swarm NFOPID-Based Load Frequency Control of the Egyptian Power System Considering New Uncontrolled Wind and Photovoltaic Farms," *Energies*, vol. 14, no. 12, p. 3604, Jun. 2021. (<https://doi.org/10.3390/en14123604> )
31. **Hady H. Fayek**, K. R. Davis, A. M. A. Ghany and O. H. Abdalla, " WAMS Based Secondary and Tertiary Voltage Control Application in the Egyptian Grid," Accepted for publication in *IEEE Transactions on Power system*.

32. **Hady H. Fayek**, O. H. Abdalla, " Optimal Settings of BTB-VSC in Interconnected Power System Using TFWO," Accepted for publication in IEEE 30th International Symposium on Industrial Electronics (ISIE), June 21-23, 2021, in Kyoto, Japan. (<https://ieeexplore.ieee.org/document/9576491/> )
33. **Hady H. Fayek**, Sara A. Rashad, Abanoub Shenouda, " 100% Solar Energy Platform in an Egyptian Institution," Accepted for publication in IEEE 30th International Symposium on Industrial Electronics (ISIE), June 21-23, 2021, in Kyoto, Japan. (<https://ieeexplore.ieee.org/document/9576447> )
34. **Hady H. Fayek**, "5G Poor and Rich Novel Control Scheme Based Load Frequency Regulation of a Two-Area System with 100% Renewables in Africa," *Fractal and Fractional*, vol. 5, no. 1, p. 2, Dec. 2020. (<https://doi.org/10.3390/fractalfract5010002>)
35. **Hady H. Fayek** and B. Mohammadi-Ivatloo, "Tidal Supplementary Control Schemes-Based Load Frequency Regulation of a Fully Sustainable Marine Microgrid," *Inventions*, vol. 5, no. 4, p. 53, Nov. 2020. (<https://doi.org/10.3390/inventions5040053>)
36. Omar H. Abdalla; **Hady H. Fayek**; A. M. Abdel Ghany. "Secondary and Tertiary Voltage Control of a Multi-Region Power System." *Electricity* 1, no. 1: 37-59, MDPI, September 2020, journal paper. (<https://doi.org/10.3390/electricity1010003>)
37. O. H. Abdalla, **Hady H. Fayek**, and A. M. Abdel Ghany, "Secondary Voltage Control Application in a Smart Grid with 100% Renewables," *Inventions*, vol. 5, no. 3, p. 37, Aug. 2020. (<https://doi.org/10.3390/inventions5030037>)
38. **Hady H. Fayek** and O. H. Abdalla, "Maximization of Renewable Power Generation for Optimal Operation of the Egyptian Grid," 2020 IEEE 29th International Symposium on Industrial Electronics (ISIE), Delft, Netherlands, 2020, pp. 1033-1038, doi: 10.1109/ISIE45063.2020.9152450. (<https://ieeexplore.ieee.org/document/9152450> ).
39. O. H. Abdalla, **Hady H. Fayek** and A. M. Abdel Ghany, "Secondary Voltage Control of a Multi-region Power System," 2019 21<sup>st</sup> International Middle East Power Systems Conference (MEPCON), Cairo, Egypt, 2019, pp. 1223-1229, (<https://ieeexplore.ieee.org/document/9008061>).
40. **Hady H. Fayek** and A. Shenouda, "Design and Frequency Control of Small Scale Photovoltaic Hydro Pumped Storage System," 2019 IEEE 2nd International Conference on Renewable Energy and Power Engineering (REPE), Toronto, ON, Canada, 2019, pp. 32-37, doi:10.1109/REPE48501.2019.9025145. (<https://ieeexplore.ieee.org/document/9025145>)
41. **Hady H. Fayek**, "Load Frequency Control of a Power System with 100% Renewables," 2019 54<sup>th</sup> International Universities Power Engineering Conference (UPEC), Bucharest, Romania, 2019, pp. 1-6, (<https://ieeexplore.ieee.org/document/8893587>).
42. **Hady H. Fayek**, K. R. Davis, A. M. A. Ghany and O. H. Abdalla, "Configuration of WAMS and Pilot Bus Selection for Secondary Voltage Control in the Egyptian Grid," 2018 North American Power Symposium (NAPS), Fargo, ND, USA, 2018, pp. 1-6 (<https://ieeexplore.ieee.org/document/8600629> ).
43. Omar H. Abdalla, **Hady H. Fayek** and A. M. Abdel Ghany. "Steady-State and Transient Performances of the Egyptian Grid with Benban Photovoltaic Park" Proc. of The Cigre Egypt 2019 Conference, The Future of Electricity Grids - Challenges and Opportunities, Paper No. 205, 6-8 March 2019, Cairo, Egypt. (2019).
44. Omar H. Abdalla, A. M. Abdel Ghany, and **Hady H. Fayek**, "Development of a digital model of the Egyptian power grid for steady-state and transient studies," 11th International Conference on Electrical Engineering (ICEENG-11), Paper No 83-EPS. Cairo, Egypt, 3-5 April 2018. ([http://iceeng.journals.ekb.eg/article\\_30157.html](http://iceeng.journals.ekb.eg/article_30157.html)).

45. Omar H. Abdalla, A. M. Abdel Ghany, and **Hady H. Fayek**, “Voltage Control by Reactive Power Support from Wind and Photovoltaic Plants in a Smart Grid”, Proceedings of the 13th GCC Cigre International Conference, GCC Power, Muscat, Sultanate of Oman, Paper PPS 201, pp. 789-798, 16-18 October 2017.
46. O. H. Abdalla, A. M. Abdel Ghany, and **Hady H. Fayek**, “Coordinated PID Secondary Voltage Control of a Power System Based on Genetic Algorithm”, 2016 Eighteenth International Middle East Power System Conference (MEPCON), Helwan University, Cairo, Egypt, 27-29 December 2016 (<https://ieeexplore.ieee.org/document/7836893>).
47. **Hady H. Fayek**, Heba A. Mosalam and Rasha M.S. El-Kholy, “Design & Control of an Agriculture Photovoltaic Reverse Osmosis Desalination System Case Study Heliopolis University” Best Paper Award, TriNex Knowledge-Triangle Platform for the Water-Energy- Food WEF-Nexus 544397-TEMPUS-1-2013-1-IT-TEMPUS (<https://www.trinex.eu/trinex-best-paper-award-2/>).
48. **Hady H. Fayek**, Heliopolis University Students “Design & Simulation of a New Renewable Energy Plant for the New Egyptian Capital” 1<sup>st</sup> IUGRC International Undergraduate Research Conference, Military Technical College, Cairo, Egypt, 2016.
49. **Hady H. Fayek**, Helmy M. Zoghby and A. M. Abdel Ghany, “Load Frequency Control of a Hybrid Power System Using Fractional Order  $PI^{\lambda}D^{\mu}$  Controller” 2014 Eighteenth International Middle East Power System Conference (MEPCON), paper no.14-258, Ain shams University, Cairo, Egypt, 27-29 December 2014.
50. **Hady H. Fayek**, Helmy M. Zoghby and A. M. Abdel Ghany, “Design of Robust PID Controllers Using  $H_{\infty}$  Technique to Control Frequency of Wind- Diesel-Hydro Hybrid system” 9th International Conference on Electrical Engineering (ICEENG-9), Egypt, 3-5 April 2014, Paper no. EE098 ([http://iceeng.journals.ekb.eg/article\\_30370.html](http://iceeng.journals.ekb.eg/article_30370.html)).

#### POSTERS

Hady H. Fayek, “Heliopolis University Solar Energy Projects” The German Academic Exchange Service (DAAD), Cairo, Egypt, 2017.

Hady H. Fayek, “Comparative Study for Performance of different kinds of PV cells at different working and environmental conditions” Euro sun med international school, Sharm Sheikh, Egypt, 2015.

#### TEACHING EXPERIENCE

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##### **MSc Degree**

Spring 2024 **Lecturer** in Sustainable Energy Resources and Managment, Heliopolis University

Fall 2023 **Lecturer** in Entrepreneurship and Agri-business, Heliopolis University

##### **Bachelor Degree**

Spring 2024 **Lecturer** in Modern Control, Arab Academy for Science and Technology and Maritime Transport (AASTMT) –Sheraton Branch, Cairo (Egypt).



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Fall 2023 **Lecturer** in Communication & IT, Electrical Engineering, Graduation Project and Engineering Systems, Heliopolis University

Fall 2023 **Lecturer** in Automatic Control, Arab Academy for Science and Technology and Maritime Transport (AASTMT) –Sheraton Branch, Cairo (Egypt).

Spring 2023 **Lecturer** in Electrical Power Systems, Electric Engineering and Sensors and Measurements, Heliopolis University

December 2022 **Instructor** in Design of 100% Renewable Energy Systems, Udemy (online teaching).

Fall 2022 **Lecturer** in Engineering systems, Renewable Energy Applications, BSc Project 1 and Electrical Engineering, Heliopolis University

Spring 2022 **Lecturer** in Automation Technology, PV Technology and Wind Energy Technology, Heliopolis University (hybrid teaching)

Fall 2021 **Lecturer** in Electrical Engineering, Sensors and Measurements, Modelling & Simulation and Engineering systems, Heliopolis University (hybrid teaching).

Spring 2021 **Lecturer** in Electric Engineering, Modeling & Simulation, Engineering Systems, Electrical Engineering, PV Technology and Wind Energy Technology, Heliopolis University (online teaching)

Fall 2020 **Lecturer** in Electrical Engineering, Renewable Energy Applications and Engineering systems, Heliopolis University (online teaching)

Spring 2020 **Lecturer** in PV Technology, Renewable Energy Applications, Engineering systems and Modeling & Simulation, Heliopolis University (online teaching).

Fall 2019 **Lecturer** in Electrical Power Systems, Electric Engineering, Control Systems II and Engineering Systems, Heliopolis University.

Spring 2019 **Lecturer** in Wind Energy Technology, Control systems II, Modeling & Simulation and Computer Programming, Heliopolis University.

Fall 2012 – Fall 2018 **Assistant Lecturer** in Electrical power system, Renewable energy applications, Wind energy technology, Photovoltaic technology, Control systems 1, Control systems 2, Digital control, Automation technology, Modeling and simulation, Solar thermal energy, Engineering systems, Electrical circuits 1 , Electrical circuits 2, Computer programming, Mathematics 1, Mathematics 2, Mathematics 3, Actuators and drives, Electromechanical energy, Basics of mechatronics, Applied mechatronics and Engineering systems, Heliopolis University.



## TEACHING AND RESEARCH INTERESTS

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**Lectures:** Electrical power system analysis, Electrical power system control, Smart grid and microgrids, Renewable energy applications, Photovoltaic systems, Wind energy generation systems, Automatic control, Advanced control, Digital control, Automation, Modeling and simulation, Solar thermal technologies, Engineering systems, Optimization and forecasting, Communication & IT and Electrical circuits.

**Research Scope:** 100% renewable energy communities, energy storage facilities, smart grid technologies, power system modeling and control, wind energy technologies, electric cars, photovoltaic power generation, solar thermal technologies, advanced control, power system stability, water energy food nexus, frequency and voltage control.

## REFREES and REFERENCES

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