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## Projects

### **ActRes: Agency for resilience – Making people and energy systems fit for climate change and crises**

Hellwig, R. T. (PI), dos Santos, L. F. (Project Participant), Berger, C. (Project Participant), Horvath, A.-S. (Project Participant), Horsbøl, A. (Project Participant), Vasquez, J. C. (Project Participant), Raftopoulos, M. (Project Participant), Yuan, M. (Project Participant), Rüdiger, M. (Project Participant), Sahoo, S. (Project Participant) & Guan, Y. (Project Participant)

01/09/2023 → 31/12/2025

### **Dynamic Performance and Power Quality of Large-Scale Grid-Connected Wind Power Plants**

Ullah, M. (PI), Guerrero, J. M. (Supervisor), Vasquez, J. C. (Supervisor) & Guan, Y. (Supervisor)

01/03/2023 → 28/02/2026

### **LastWind: Large-Scale Integration of Wind Power Generation in Ethiopia - LastWind**

Guan, Y. (PI), Guerrero, J. M. (Project Participant), Vasquez, J. C. (Project Participant), Javidsharifi, M. (Project Participant), Yu, Y. (CoPI), Kang, W. (Project Participant) & Pugliese, A. A. (Project Coordinator)

Danida Fellowship Centre

01/08/2023 → 31/07/2026

### **TECH-IN: Microgrid Technologies for Remote Indonesian Islands**

Vasquez, J. C. (PI), Guan, Y. (Project Participant), Vasquez, J. C. (Supervisor), Guerrero, J. M. (Project Participant) & Pugliese, A. A. (Project Coordinator)

Danida Fellowship Centre

01/05/2021 → 30/11/2024

### **TECH-IN: Microgrid Technologies for Remote Indonesian Islands**

Vasquez, J. C. (PI), Guan, Y. (Project Participant), Javidsharifi, M. (Project Participant) & Pugliese, A. A. (Project Coordinator)

01/05/2021 → 30/11/2024

### **MeTER\_Demo: Microgrid Technology Research and Demonstration**

Guerrero, J. M. (Project Manager), Wu, D. (Project Participant), Guan, Y. (Project Participant), Vasquez, J. C. (Project Participant) & Savaghebi, M. (Project Participant)

01/04/2014 → 31/03/2017

### **VICINITY: Open virtual neighbourhood network to connect IoT infrastructures and smart objects**

Guan, Y. (Project Participant), Vasquez, J. C. (Project Participant), Guerrero, J. M. (Project Coordinator) & Miltersen, A. H. (Project Coordinator)

European Commission

01/01/2016 → 31/12/2019

### **REMCE: Renewable Energy based Minigrid Clusters in Ethiopia**

Chaudhary, S. (PI), Golestan, S. (Project Participant), Guan, Y. (Project Participant), Wu, Y. (Project Participant), Vasquez, J. C. (Supervisor), Guerrero, J. M. (Supervisor) & Pugliese, A. A. (Project Coordinator)

Danida Fellowship Centre  
01/05/2021 → 31/12/2024

**REConnect: Renewable Energy Converters Connected in Parallel**

Guerrero, J. M. (PI), Vasquez, J. C. (CoI), Guan, Y. (Project Applicant) & Guldbæk, B. K. (Project Coordinator)  
ReConvert BV  
01/08/2020 → 15/12/2020

**REConnect: Renewable Energy Converters Connected to Grid**

Guan, Y. (PI), Guerrero, J. M. (Project Coordinator), Vasquez, J. C. (Project Manager), Zwam, A. V. (Project Coordinator), Meersman, B. (Project Participant) & Oostveen, B. (Project Participant)  
01/08/2020 → 31/12/2020

**Resilient Planning and Operational Management Systems for Islanded Microgrids in Disaster-Vulnerable Communities (TECH-IN: Microgrid Technologies for Remote and Island Communities under Natural Disasters)**

Ali, M. (PI), Guerrero, J. M. (Supervisor), Vasquez, J. C. (Supervisor) & Guan, Y. (Supervisor)  
01/01/2022 → 31/12/2025

**To Enhance the Fault Ride Through Capability of Doubly Fed Induction Generator using Direct Matrix Converter for Wind Turbines**

Asim, A. (PI), Vasquez, J. C. (Supervisor), Guan, Y. (Supervisor) & Guerrero, J. M. (Supervisor)  
01/10/2023 → 30/09/2026

## Activities

**Mission Innovation - Green Energy Community Webinar**

Guan, Y. (Lecturer)  
12 Jan 2021

**Chair of a Special Session: Advanced Power Converter Topologies of IEEE ECCE ASIA 2020**

Guan, Y. (Other) & Feng, W. (Other)  
1 Dec 2020

**Sweden Electric Power and Power Electronics Conference - Microgrids and Internet of Things**

Guan, Y. (Lecturer)  
3 Oct 2019

**Workshop: IoT-driven eEnergy systems (INET) - Advances and Applications**

Anvari-Moghaddam, A. (Lecturer), Guan, Y. (Lecturer), Quintero, J. C. V. (Lecturer) & Guerrero, J. M. (Lecturer)  
30 Jul 2018

**Special Issue "IoT and Energy Internet" (Event)**

Guerrero, J. M. (Editor), Vasquez, J. C. (Editor) & Guan, Y. (Editor)  
26 Jul 2018 → 9 Sept 2019

**Tutorial: The Internet of Energy - The Building Block for the Future Smart Grids**

Savaghebi, M. (Lecturer), Quintero, J. C. V. (Lecturer), Guan, Y. (Lecturer) & Guerrero, J. M. (Lecturer)  
29 Oct 2017

**Special Section on "Energy Internet" (Event)**

Guerrero, J. M. (Editor), Guan, Y. (Editor), Vasquez, J. C. (Editor) & Sun, K. (Editor)  
28 Aug 2017 → 31 Dec 2018

## Awards

### **LastWind: Large-Scale Integration of Wind Power Generation in Ethiopia - LastWind**

Guan, Y. (PI), Guerrero, J. M. (Project Participant), Vasquez, J. C. (Project Participant), Javidsharifi, M. (Project Participant), Yu, Y. (CoPI), Kang, W. (Project Participant) & Pugliese, A. A. (Project Coordinator)  
Danida Fellowship Centre: DKK5,370,376.00  
01/08/2023 → 31/07/2026

## Research outputs

### **Hierarchical Operation Management System for Mobile Ad-hoc Microgrids in Emergency Events**

Guan, Y., Kang, W., Vasquez, J. C., Wijaya, F. D., Arumdati, N., Perdana, A. P., Ma, Z. G. & Guerrero, J. M., 2 Jul 2024, *2024 IEEE 10th International Power Electronics and Motion Control Conference (IPEMC2024-ECCE Asia)*. IEEE (Institute of Electrical and Electronics Engineers), p. 2752-2755 4 p. (International Power Electronics and Motion Control Conference (PEMC)).

### **Quasi-SoC Balancing Control for Networked Ad-hoc Microgrids Against Natural Disasters**

Guan, Y., Kang, W., Vasquez, J. C., Wijaya, F. D., Arumdati, N., Priyo Perdana, A. & Guerrero, J. M., 11 Jun 2023, *PEDG 2023 - 2023 IEEE 14th International Symposium on Power Electronics for Distributed Generation Systems*. IEEE (Institute of Electrical and Electronics Engineers), p. 1015-1020 6 p. 10215137. (IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG)).

### **An Overview of the Operation Architectures and Energy Management System for Multiple Microgrid Clusters**

Guan, Y., Wei, B., Guerrero, J. M., Vasquez, J. C. & Gui, Y., 2022, In: *iEnergy*. 1, 3, p. 306 - 314

### **An IoT Platform-based Multi-objective Energy Management System for Residential Microgrids**

Guan, Y., Feng, W., Wu, Y., Vasquez, J. C. & Guerrero, J. M., 29 Nov 2020, *2020 IEEE 9th International Power Electronics and Motion Control Conference, IPEMC 2020 ECCE Asia*. IEEE (Institute of Electrical and Electronics Engineers), p. 3107-3112 6 p. 9368001

### **VICINITY platform-based load scheduling method by considering smart parking and smart appliance**

Guan, Y., Feng, W., Palacios-Garcia, E. J., Vasquez, J. C. & Guerrero, J. M., May 2019, *Proceedings of 2019 15th International Conference on Distributed Computing in Sensor Systems (DCOSS)*. IEEE Press, p. 248-254 7 p. 8804844. (International Conference on Distributed Computing in Sensor Systems (DCOSS)).

### **A Deviation Elimination Control Based on Autonomous Current-Sharing Controller for the Parallel-Connected Inverters in AC Microgrids**

Guan, Y., Feng, W., Wei, B., Liu, W., Li, M., Quintero, J. C. V. & Guerrero, J. M., 22 Oct 2018, *Proceedings of the 2018 International Power Electronics Conference (IPEC-Niigata 2018 -ECCE Asia)*. IEEE (Institute of Electrical and Electronics Engineers), p. 3678-3683 6 p. 8507423

### **A Dynamic Consensus Algorithm to Adjust Virtual Impedance Loops for Discharge Rate Balancing of AC Microgrid Energy Storage Units**

Guan, Y., Meng, L., Li, C., Quintero, J. C. V. & Guerrero, J. M., 1 Sept 2018, In: *IEEE Transactions on Smart Grid*. 9, 5, p. 4847-4860 14 p., 7862235.

### **A Novel Grid-connected Harmonic Current Suppression Control for Autonomous Current Sharing Controller-based AC Microgrids**

Guan, Y., Feng, W., Lu, J., Guerrero, J. M. & Vasquez, J. C., Sept 2018, *Proceedings of the 2018 IEEE Energy Conversion Congress and Exposition (ECCE)*. IEEE Press, p. 5899-5904 6 p. 8557795. (IEEE Energy Conversion Congress and Exposition).

### **A novel harmonic current sharing control strategy for parallel-connected inverters**

Guan, Y., Guerrero, J. M., Savaghebi, M., Quintero, J. C. V. & Wei, F., Oct 2017, *Proceedings of 2017 IEEE Energy Conversion Congress and Exposition (ECCE)*. IEEE Press, p. 1602-1607 6 p.

### **An enhanced hierarchical control strategy for the Internet of Things-based home scale microgrid**

Guan, Y., Quintero, J. C. V. & Guerrero, J. M., Jun 2017, *Proceedings of 2017 IEEE 26th International Symposium on Industrial Electronics (ISIE)*. IEEE Press, p. 51-56 6 p.

**An Open Virtual Neighbourhood Network to Connect IoT Infrastructures and Smart Objects – VICINITY: IoT enables interoperability as a service**

Guan, Y., Quintero, J. C. V., Guerrero, J. M., Samovich, N., Vanya, S., Oravec, V., Garcia-Castro, R., Serena, F., Poveda-Villalon, M., Rodijicic, C., Heinz, C., Grimm, C., Tryferidis, A., Tzouvaras, D., Dickerson, K., Paralic, M., Skokan, M. & Sabol, T., Jun 2017, *Proceedings of 2017 Global Internet of Things Summit (GloTS)*. IEEE Press, 6 p.

**Discharge rate balancing control strategy based on dynamic consensus algorithm for energy storage units in AC microgrids**

Guan, Y., Meng, L., Li, C., Vasquez, J. C. & Guerrero, J. M., Mar 2017, *Proceedings of the 2017 IEEE Applied Power Electronics Conference and Exposition (APEC)*. IEEE Press, p. 2788-2794 7 p. 7931093. (IEEE Applied Power Electronics Conference and Exposition (APEC)).

**Coordinated Secondary Control for Balanced Discharge Rate of Energy Storage System in Islanded AC Microgrids**

Guan, Y., Quintero, J. C. V. & Guerrero, J. M., Nov 2016, In: *IEEE Transactions on Industry Applications*. 52, 6, p. 5019 - 5028 10 p.

**A New Way of Controlling Parallel-Connected Inverters by Using Synchronous-Reference-Frame Virtual Impedance Loop: —Part I: Control Principle**

Guan, Y., Guerrero, J. M., Zhao, X., Quintero, J. C. V. & Guo, X., Jun 2016, In: *IEEE Transactions on Power Electronics*. 31, 6, p. 4576 - 4593 18 p.

**Comparison of a Synchronous Reference Frame Virtual Impedance-Based Autonomous Current Sharing Control with Conventional Droop Control for Parallel-Connected Inverters**

Guan, Y., Guerrero, J. M., Zhao, X. & Quintero, J. C. V., May 2016, *2016 8th International Power Electronics and Motion Control Conference - ECCE Asia (IPEMC 2016-ECCE Asia)*. IEEE Press, p. 3419 - 3426 8 p. 7512844

**Novel Control Strategies for Parallel-Connected Inverters in AC Microgrids**

Guan, Y., 2016, Aalborg Universitetsforlag.

**Frequency Stability of Hierarchically Controlled Hybrid Photovoltaic-Battery-Hydropower Microgrids**

Guan, Y., Quintero, J. C. V., Guerrero, J. M., Wang, Y. & Feng, W., Nov 2015, In: *IEEE Transactions on Industry Applications*. 51, 6, p. 4729-4742 13 p.

**Small-Signal Modeling, Analysis and Testing of Parallel Three-Phase-Inverters with A Novel Autonomous Current Sharing Controller**

Guan, Y., Quintero, J. C. V., Guerrero, J. M. & Coelho, E. A. A., Mar 2015, *Proceedings of the 30th Annual IEEE Applied Power Electronics Conference and Exposition, APEC 2015*. IEEE Press, p. 571 - 578 8 p. (IEEE Applied Power Electronics Conference and Exposition. Conference Proceedings).

**Coordinated Secondary Control for Balanced Discharge Rate of Energy Storage System in Islanded Microgrids**

Guan, Y., Guerrero, J. M. & Quintero, J. C. V., 2015, *Proceedings of the 2015 9th International Conference on Power Electronics and ECCE Asia (ICPE-ECCE Asia)*. IEEE Press, p. 475 - 481 7 p.

**Hierarchical Controlled Grid-Connected Microgrid based on a Novel Autonomous Current Sharing Controller**

Guan, Y., Quintero, J. C. V. & Guerrero, J. M., 2015, *Proceedings of the 2015 IEEE Energy Conversion Congress and Exposition (ECCE)*. IEEE Press, p. 2333 - 2340 8 p.

**Frequency Stability of Hierarchically Controlled Hybrid Photovoltaic-Battery-Hydropower Microgrids**

Guan, Y., Vasquez, J. C., Guerrero, J. M., Wu, D., Feng, W. & Wang, Y., Sept 2014, *Proceedings of the 2014 IEEE Energy Conversion Congress and Exposition (ECCE)*. IEEE Press, p. 1573-1580 8 p.

**A Simple Autonomous Current-Sharing Control Strategy for Fast Dynamic Response of Parallel Inverters in Islanded Microgrids**

Guan, Y., Vasquez, J. C. & Guerrero, J. M., May 2014, *Proceedings of the 2014 IEEE International Energy Conference (ENERGYCON)*. IEEE Press, p. 182-188 7 p. (IEEE International Energy Conference. ENERGYCON proceedings).

Control strategy for three-phase inverters dominated microgrid in autonomous operation

Guan, Y., Wu, W. & Guo, X., 25 Nov 2011, In: Zhongguo Dianji Gongcheng Xuebao/Proceedings of the Chinese Society of Electrical Engineering. 31, 33, p. 52-60 9 p.

Control strategy for autonomous operation of three-phase inverters dominated microgrid under different line impedance

Guan, Y., Wang, Y., Yang, Z., Cao, R. & Xu, H., 2011, *2011 International Conference on Electrical Machines and Systems, ICEMS 2011*. 6073435. (2011 International Conference on Electrical Machines and Systems, ICEMS 2011).