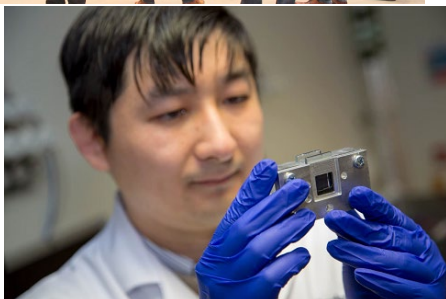


## About RDC2MT

RDC2MT is a four-year project (2017 to 2020) to undertake collaborative research on DC microgrids, from fuel cell electrochemistry at molecular scale to microgrids optimization at system level. The project is supported by European Commission Horizon 2020 Marie Skłodowska-Curie actions Research and Innovation Staff Exchange (RISE) program.



DC power system is more reliable, efficient, and simple. It has natural interface to renewable energy and energy storage.

### Contact us:

Project Coordinator: Dr Zhengyu Lin  
Email: [info@rdc2mt.org](mailto:info@rdc2mt.org)  
Website: [www.rdc2mt.org](http://www.rdc2mt.org)  
[twitter.com/RDC2MT](https://twitter.com/RDC2MT)

February 2019

# Research, Demonstration and Commercialisation of DC Microgrid Technologies

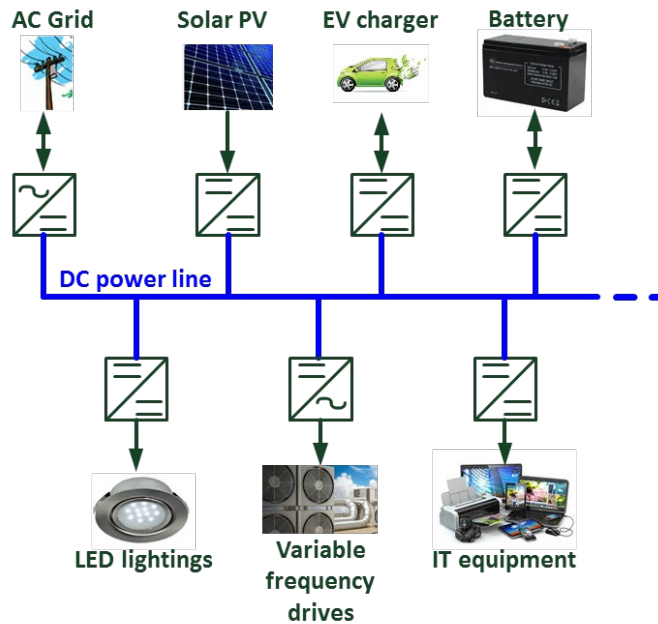
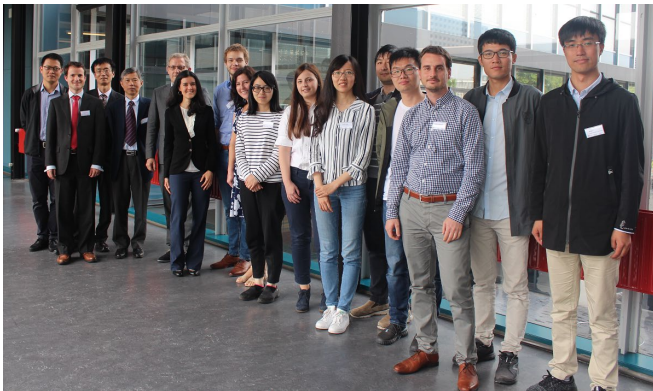


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 734796.

## Project Consortium

RDC2MT consortium consists of 11 international leading research groups in the Europe, Asia and North America, and host world leading researchers in DC microgrids:

- Centre for Renewable Energy Systems Technology (CREST), Loughborough University
- Power Electronics, Machine and Power System group, Aston University, U.K.
- Energy-carbon interface group, Heriot-Watt University, U.K.
- DC Systems, Energy Conversion & Storage group, TU Delft, Netherlands
- Direct Current BV, Netherlands
- Swiss Center for Electronics and Microtechnology (CSEM), Switzerland
- The laboratory of SEEEDS, Zhejiang University, China
- The Institute of Solar Energy, Xiamen University, China
- Greenlab, Hefei University of Technology, China
- Renewable energy and electric drive Group, Shanghai University, China
- Department of Electrical and Computer Engineering, University of Waterloo, Canada



## Key Achievements to Date

RDC2MT project is active since the 1st February 2017. In the first two years of the project, 20 researchers have been seconded to project partners, and undertook collaborative research in DC microgrid. RDC2MT project provides important links for knowledge transfer and sharing between project partners.

Key innovation achievements of the project to date include:

- Power/communication integration strategy
- The feasibility of a hybrid off-grid DC system with combined heat and power generation
- The feasibility of using VRB for DC green house
- Modelling and stability of DC distribution systems
- Virtual negative cable resistance controller for DC microgrid

Details can be found in open access publications.

## Publications

1. R. Wang, J. Wu, Z. Qian, Z. Lin, and X. He, 'A graph theory based energy routing algorithm in Energy Local Area Network (e-LAN)', IEEE Transactions on Industrial Informatics, 13 (6), 2017, 3275-3285
2. Y. Zhu, J. Wu, R. Wang, Z. Lin, and X. He, 'Embedding Power Line Communication in Photovoltaic Optimizer by Modulating Data in Power Control Loop', IEEE Transactions on Industrial Electronics, 66 (5), 3948-3958
3. M. Alshareef, Z. Lin, M. Ma, and W. Cao, "Accelerated Particle Swarm Optimization for Photovoltaic Maximum Power Point Tracking under Partial Shading Conditions", Energies 2019, 12(4), 623
4. F. Li, Z. Lin, Z. Qian, J. Wu, and W. Jiang, "A Dual-Window DC Bus Interacting Method for DC Microgrids Hierarchical Control Scheme", IEEE Transactions on Sustainable Energy, early access
5. F. Li, Z. Lin, Z. Qian and J. Wu, "Active DC Bus Signaling Control Method for Coordinating Multiple Energy Storage Devices in DC Microgrid", ICDCM 2017
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7. F. Li, Z. Lin, W. Cao, A. Chen and J. Wu, "A Low-pass Filter Method to Suppress the Voltage Variations Caused by Introducing Droop Control in DC Microgrids", ECCE 2018
8. M. Alshareef, and Z. Lin, "A Constant Grid Interface Current Controller for DC Microgrid", ICRERA 2018