

---

**Dr Fei Teng**

Room 1113, Electrical and Electronic Engineering Building, Imperial College London, UK

Contact: +44 (0)20 7594 6178, Email: [f.teng@imperial.ac.uk](mailto:f.teng@imperial.ac.uk)

**PROFESSIONAL EXPERIENCE**

Lecturer, Imperial College London	09/2017 – to date
Associated Researcher, MINES ParisTech	03/2019 – to date
Assistant Professor in Smart Grid, MINES ParisTech	03/2017 – 08/2017
Research Associate, Imperial College London	03/2015 – 02/2017

**EDUCATION**

PhD in Electrical Engineering, Imperial College London,	2011-2015
MSc in Control Systems, Imperial College London,	2009-2010
B.E in Electrical Engineering, Beihang University (BUAA),	2005-2009

**TEACHING**

5. Selected Topics in Power Systems (MSc)
4. Electrical Energy Systems (3rd year)
3. Smart Grid Technologies (MSc)
2. Topics in Control Systems (MSc)
1. Electronic Lab (1st Year) (18-19 only)

**RESEARCH FUNDING**

11. "Technology Transformation to Support Flexible and Resilient Local Energy Systems", EPSRC (EP/T021780/1), £809k, 2020-2023, Co-I
10. "Energy for Development - Low Carbon Energy and Industry for Economic Growth in Mongolia", £123k (Direct Cost Only), Research England GCRF, 2020, Co-I
9. "AI applications in future energy markets: market implications and regulatory requirements", ESRC LISS DTP Studentship (ES/P000703/1) with additional financial contribution from Bargina Partners, 2020-2023, PI
8. "Consumer-centric privacy protection scheme for energy consumption data", EPSRC (through Supergen Energy Networks, SENFC1-032), £50k, 2020, PI
7. "False data injection attack against machine-learning based energy forecasting algorithms", European Partners Fund, £5k, 2019-2021, PI
6. "Short-term System Inertia Forecast", National Grid ESO (NIA\_NGSO0020), £300k, 2019-2020, PI
5. "Optimisation of integrated highly-electric urban energy systems", PhD Studentship, EDF Energy, 2019-2024, Co-I

- 
4. "Socio-Techno-Economic Pathways for sustainable Urban energy Development (STEP-UP)", ESRC (ES/T000112/1), £300k, 2019-2022, Co-I
  3. "Agent-based simulation approach to the provision of ancillary service by demand response and distributed storage and generation assets in the future low carbon system", ESRC LISS DTP Studentship (ES/P000703/1), 2018-2021, PI
  2. "Holistic Cyber-physical System Modelling for Cyber-security Analysis in Electricity Systems", EPSRC CDT Studentship (EP/L015471/1), 2018-2021, PI
  1. "V2Street", Innovate UK (104224), £1M, 2018-2020, Co-I

### **ACADEMIC ACTIVITIES**

- IEEE Member
- Member of EERA JP ESI.
- Committee member of CES and CSEE UK Branch.
- Associate Editor for
  - Control Engineering Practice, since 2019
  - IEEE Open Access Journal of Power and Energy, since 2020
  - IET Energy Conversion and Economics, since 2020
- Guest Editors for
  - "Challenges in Future Grid-Interactive Power Converters: Control Strategies, Optimal Operation, and Corrective Actions" in IET Renewable Power Generation
  - "Reducing Energy Demand in the Industrial and Manufacturing Sectors" in Energies.
  - "Advanced Approaches and Applications for Electric Vehicle Charging Demand Management" in IEEE Transactions on Industry Applications
  - "Privacy and Security in Smart Grids" in IET Smart Grids
- Conference Panel Chair:
  - "Socio-Techno-Economic Pathways for Sustainable Urban Energy Development" in IEEE Sustainable Power & Energy Conference (iSPEC), 2019
- Reviewer for *IEEE Trans. Sustain. Energy*, *IEEE Trans. Power Syst.*, *IEEE Trans. Smart Grid*, *IEEE Trans. Autom. Sci. Eng.*, *IEEE Trans. Industry Informatics*, *IEEE Trans. Industry Applications*, *Applied Energy*, *Energy*, *ICE-Energy*, *J Mod Power Syst Cle*, *Energy Policy*, *Renewable & Sustainable Energy Review* and *Nature*.

### **INVITED TALKS**

18. "Efficient and Resilient Operation of the Future Low Carbon Energy Systems", Chinese Association of Automation, Online Seminar, May 2020
17. "Optimization for the Operation of Future Energy Systems", Leeds University, UK, Feb 2020

- 
16. "Operation of the future low carbon energy systems", Technical University of Denmark, Denmark, July 2019
  15. "Optimal Operation of Future Low Carbon Energy System", Cardiff University, UK, May 2019
  14. "Baseline Estimation to Understand Responsiveness of Demand Side", Power Swarm Workshop, London, April 2019
  13. "Operation of the future low carbon power systems", Zhengzhou University, Zhengzhou, China, March 2019
  12. "Role of system flexibility in the future low carbon energy systems", UK Energy Research Centre, Sep 2018
  11. "Operation of the future low carbon power systems", HangDian University, Hangzhou, China, Aug 2018.
  10. "Optimal scheduling in future power systems", Edinburgh University, UK, March 2018
  9. "Power System Operation and Economics", MSc guest lecture in Edinburgh University, UK, March 2018
  8. "Ancillary service requirement and optimization in the future low carbon system", Birmingham University, UK, Jan 2018
  7. "Operation and planning of the future low carbon energy systems", Beihang University, China, Nov 2017
  6. "Benefits of dynamic line rating in the system operation", MINES ParisTech, France, Oct 2016
  5. "System scheduling in the future low inertia power system", Researcher Links UK-China workshop on "Shaping low carbon energy future", Belfast, UK, Aug 2016
  4. "Value of energy storage with multiple service provision", Panel Session in IET ACDC conference, Beijing, China, May 2016
  3. "System flexibility in the future low carbon energy systems", PEIYANG Forum for Young Scholars, Tianjin, China, April 2016
  2. "Grid Economics, Planning and Business Models for Smart Electric Mobility", "Smart EV" Workshop, Southampton, UK, April 2016
  1. "Operation of future low carbon electricity system with high penetration of wind: Challenges and Solutions", East Lake Forum for Young Scholars, Wuhan, China, December 2015

#### **LIST OF PUBLICATIONS**

##### ***Journal Articles***

35. M. Higgins, Keith Mayes and **F. Teng (\*)** "Enhanced Cyber-Physical Security Using Attack-resistant Cyber Nodes and Event-triggered Moving Target Defence", *IET Cyber-Physical Systems: Theory & Applications*, **under review**
- 34 JX. Yang, S. Zhang, Y. Xiang, JC. Liu, JY Liu, XY Han and **F. Teng** "A LSTM Auto-encoder based Representative Scenario Generation Method for Hybrid Hydro-PV Power System", IET GTD, **under second-round review**

- 
33. M. Higgins, **F. Teng (\*)** and T. Parisini "Stealthy MTD Against Unsupervised Learning-based Blind FDI Attacks in Power Systems", *IEEE Trans. on Inf Foren & Secy*, **under second-round review**
32. Y Xiang, Y Wang, SW Xia and **F. Teng (\*)** "Charging Load Pattern Extraction for Residential Electric Vehicles: A Training-free Non-intrusive Method", *IEEE Trans. Ind Inform*, **under second-round review**
31. PD. Ge, BL. Chen and **F. Teng (\*)** "Event-triggered distributed MPC for voltage control of an islanded microgrid", *International journal of robust and nonlinear control*, **under second-round review**
30. PD. Ge, Y Zhu, TC Green and **F. Teng (\*)**, "Resilient Secondary Voltage Control of Microgrids: An ESKBF-Based Distributed Fast Terminal Sliding Mode Control Approach", *IEEE Trans. Power Syst*, **under third-round review**
29. JR Guo, L. Badesa, **F. Teng**, B. Chaudhuri, R. Hui, and G Strbac, "Value of Point-of-load Voltage Control for Enhanced Frequency Response in Future GB Power System", *IEEE Trans. Smart Grids*, accepted
28. **F. Teng**, ZH. Ding, ZC, Hu and P. Sarikprueck "Technical Review on Advanced Approaches for Electric Vehicle Charging Demand Management", *IEEE Trans. on Ind Appl*, accepted
27. L. Badesa, **F. Teng (\*)** and G. Strbac "Optimal Portfolio of Distinct Frequency-Response Services in Low-Inertia Systems", *IEEE Trans. Power Syst*, accepted
26. ZY. Zhang, E. Du, **F. Teng**, N. Zhang and CQ. Kang, "Modeling Frequency Dynamics in Unit Commitment with a High Share of Renewable Energy", *IEEE Trans. Power Syst*, accepted
25. ZD. Chu, U. Markovic, G. Hug and **F. Teng (\*)**, "Towards Optimal System Scheduling with Synthetic Inertia Provision from Wind Turbines", *IEEE Trans. Power Syst*, accepted
24. JQ. Luo, SQ. Bu and **F. Teng**, "An Optimal Modal Coordination Strategy based on Modal Superposition Theory to Mitigate Low Frequency Oscillation in FCWG Penetrated Power Systems", *International Journal of Electrical Power and Energy Systems*, Vol 120, 2020
23. L. Badesa, **F. Teng (\*)** and G. Strbac "Pricing inertia and Frequency Response with diverse dynamics in an MISOCP formulation", *Applied Energy*, Vol 260, 2020
22. R. Azizipanah-Abarghooee, M. Malekpour, **F. Teng**, G. Strbac and V. Terzija "Fast Frequency Response from Smart Induction Motor Variable Frequency Drive Systems", *IEEE Trans. Power Syst*, Vol 35, Issue 2, 2020.
21. S. Camal, **F. Teng**, A. Michiorri, G. Kariniotakis and L. Badesa "Scenario generation of aggregated Wind, Photovoltaics and small Hydro production for power systems applications", *Applied Energy*, Vol 242, 2019
20. Luis Badesa, **F. Teng (\*)** and G. Strbac "Simultaneous Scheduling of Multiple Frequency Services in Stochastic Unit Commitment", *IEEE Trans. Power Syst*, Vol 34, Issue 5, 2019
19. M. Sun, Y. Wang, **F. Teng (\*)**, YJ. Ye, G. Strbac, CQ. Kang, "Clustering-Based Residential Baseline Estimation: A Probabilistic Perspectives", *IEEE Trans. Smart Grid*, Vol 10, Issue 6, 2019

- 
18. M. Sun, **F. Teng (\*)**, X. Zhang, G. Strbac and D. Pudjianto “Data-Driven Representative Day Selection for Investment Decisions: A Cost-Oriented Approach”, *IEEE Trans. Power Systems*, Vol 34, Issue 4, 2019
  17. X. Zhang, G. Strbac, N. Shah, **F. Teng** and D. Pudjianto, “Whole-System Assessment of the Benefits of Integrated Electricity and Heat System”, *IEEE Trans. Smart Grid*, Vol 10, Issue 1, 2019
  16. T. Greve, **F. Teng**, M. Pollitt and G. Strbac. “A system operator’s utility function for the frequency response market”, *Applied Energy*, Vol 231, 2018
  15. V. Trovato, **F. Teng (\*)** and G. Strbac, “Role and Benefits of Flexible Thermostatically Controlled Loads in Future Low-Carbon Systems” *IEEE Trans. Smart Grid.*, Vol 9, Issue 5, 2018
  14. SX. Wang, K. Wang, **F. Teng**, G. Strbac and L. Wu, “An affine arithmetic-based multi-objective optimization method for ESSs operating in active distribution network with uncertainties”, *Applied Energy*, Vol 223, 2018
  13. X. Zhang, G. Strbac, **F. Teng (\*)** and P. Djapic, “Economic Assessment of Alternative Heat Decarbonisation Strategies through Coordinated Operation with Electricity System – UK Case Study”, *Applied Energy*, Vol 222, 2018
  12. **F. Teng**, D. Pudjianto, M. Aunedi and G. Strbac, “Future Value of Large-Scale Pumped Storage Plant Technologies in Europe”, *Energies, Special Issue in Hydropower 2017*, 2018
  11. M. Sun, **F. Teng (\*)**, I. Konstantinos and G. Strbac “An Objective-based Scenario Selection Approach for Transmission Network Expansion Planning with Multivariate Stochasticity in Load and Renewable Energy Source”, *Energy*, Vol 145, 2018
  10. **F. Teng**, R. Dupin, A. Michiorri, G. Kariniotakis, YF. Chen and G. Strbac, “Understanding the Benefits of Dynamic Line Rating under Multiple Sources of Uncertainty”, *IEEE Trans. Power Syst.*, Vol 33, Issue 3, 2018.
  9. G. Strbac, M. Aunedi, I. Konstantinos, R. Moreira, **F. Teng**, R. Moreno, D. Pudjianto, A. Laguna and P. Papadopoulos. “Opportunities for Energy Storage: Modelling Various System and Business Benefits Scenarios”, *IEEE Power and Energy Magazine*, Vol 15, Issue 5, 2017
  8. **F. Teng**, Y. Mu, H. Jia, J. Wu, P. Zeng and G. Strbac, “Challenges on Primary Frequency Control and Potential Solution from EVs in the Future GB Electricity System” *Applied Energy*, Vol 194, 2017
  7. **F. Teng** and G. Strbac, “Full Stochastic Scheduling for Low-carbon Electricity Systems” *IEEE Trans. Autom. Sci. Eng.*, Vol 14, Issue 2, 2016
  6. **F. Teng** and G. Strbac, “Business Cases for Energy Storage with Multiple Service Provision”, *J Mod Power Syst Cle*, Vol 4 2016
  5. **F. Teng** and G. Strbac, “Assessment of the Role and Value of Frequency Response Support from Wind Plants” *IEEE Trans. Sustain. Energy*, Vol 7, Issue 2, 2016
  4. **F. Teng**, M. Aunedi and G. Strbac, “Benefits of Flexibility from Smart Electrified Transportation and Heating in the Future UK Electricity System” *Applied Energy*, Vol 167, 2016
  3. **F. Teng**, V. Trovato and G. Strbac, “Stochastic Scheduling with Inertia-dependent Fast Frequency Response” *IEEE Trans. Power Syst.*, Vol 31, Issue 2, 2016

---

2. **F. Teng**, M. Aunedi, D. Pudjianto and G. Strbac, "Benefits of Demand Side Response in Providing Frequency Response Service" *Frontiers in Energy Research* 3 (2015): 36.

1. **F. Teng**, D. Pudjianto, G. Strbac, N. Brandon, A. Thomson and J. Miles, "Potential Value of Energy Storage in the UK electricity System" *Proceedings of the ICE – Energy*, Vol 168, Issue 2, 2015,

#### **Conference Papers**

17. ZD Chu, MC Zhao and **F. Teng** "Modelling of Dynamic Line Rating in System Scheduling: A MISOCP Formulation", *IEEE PES General Meeting*, Montreal, Canada, 2020.

16. ZD Chu and **F. Teng** "Assessment of Frequency Support from Wind Turbines under Alternative Control Schemes", *ISGT EU*, Bucharest, Romania, 2019

15. Luis Badesa, **F. Teng**, and G. Strbac "Optimal Scheduling of Frequency Services Considering a Variable Largest-Power-Infeed-Loss", *IEEE PES General Meeting*, Portland, USA, 2018.

14. Luis Badesa, **F. Teng**, and G. Strbac "Economic value of inertia in low-carbon power systems", *ISGT EU*, Torino, Italy, 2017

13. **F. Teng**, M. Aunedi, G. Strbac, V. Trovato and A. Dallagi "Provision of Ancillary Services in Future Low-carbon UK Electricity System", *ISGT EU*, Torino, Italy, 2017

12. X. Zhang, G. Strbac, P. Djapic and **F. Teng** "Optimization of Heat Sector Decarbonization Strategy through Coordinated Operation with Electricity System", *ICAE2017*, Cardiff, UK, 2017

11. K. Wang, SX. Wang, **F. Teng**, G. Strbac and L. Wu "Optimal Allocation of ESSs for Mitigating Fluctuation in Active Distribution Network", *ICAE2017*, Cardiff, UK, 2017

10. **F. Teng**, et al. "Business Case for Distributed Energy Storage", *CIRE2017*, Glasgow, UK, 2017.

9. **F. Teng** and G. Strbac "Primary Frequency Control in Future GB Power System with High Penetration of Wind Generation" in *PRG 2016*, London, UK, 2016.

8. YF. Chen, **F. Teng**, R. Moreno and G. Strbac "Impact of Dynamic Line Rating with Forecast Error on the Scheduling of Reserve Service" in *IEEE PES General Meeting*, Boston, USA, 2016.

7. V. Trovato, **F. Teng** and G. Strbac "Value of Thermostatic Loads in Future Low-Carbon Great Britain System", in *Proc. Power Systems Computation Conf. (PSCC)*, Genoa, Italy, 2016

6. **F. Teng** and G. Strbac "Commercial Strategy for Operating Energy Storage in Supporting Integration of Renewable Generation", in *8th International Power Electronics and Motion Control Conference*, Hefei, China, 2016 (**Invited Paper**)

5. **F. Teng**, et al, "Challenges of Primary Frequency Control and Benefits of Primary Frequency Response Support from Electric Vehicles" in *Applied Energy Symposium and Summit*, Fuzhou, China, 2015

4. **F. Teng** and G. Strbac, "Evaluation of Synthetic Inertia Provision from Wind Plants," in *IEEE PES General Meeting*, Denver, USA, 2015.

3. **F. Teng**, M. Aunedi and G. Strbac, "Value of Demand Side Participation in Frequency Regulation," in *CIRE2015*, Lyon, France, 2015.

---

2. **F. Teng**, D. Pudjianto, G. Strbac, F. Ferretti and R. Bove, "Assessment of the Value of Plant Flexibility," in *RPG 2014*, Naples, Italy, 2014.

1. R. Bove, F. Ferretti, P. Paelinck, G. Strbac and **F. Teng**, "Installed Base and Flexibility: New Realities for the European Power Sector," in *PowerGen Europe*, 2013.

**Book Chapter**

1. **F. Teng** and G. Strbac "Understanding of the Flexibility from Combined Cycle Gas Turbine Plant", *Advances in Power Engineering*, CRC Press, 2018