Energy Course Special Lecture
May 24 (Thurs.) 16:00-17:00
Room: S221
All Students and Faculty are welcome
Sponsor: Energy Course
Contact: Prof. Jeffrey Cross, ext. 3723 (cross.j.aa@m.titech.ac.jp)

Grid Smartness Achieved through Forecasting and Energy Storage

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Energy sector in most countries is undergoing a complex transition not only due to access to increasingly affordable solar technologies but also due to the increased ability to predict how electricity will be used by consumers, which then can be used to optimize the usage of non-dispatchable energy. In Australia, there are remote areas where grid electricity is not available and cost prohibitive. Therefore, fully renewable off grid opportunities for houses will be a practical and sustainable solution for energy crisis and challenges facing in Australia and other countries.

We have completed some initial work including publications [1-5] with doctoral students and industry partners.

References
[1] H. Weeratunge, G. Narsilio, J. de Hoog, S. Dunstall and S. Halgamuge, Model predictive control for a solar assisted ground source heat pump system Energy, Elsevier, 2018
[2] K Abdulla, J De Hoog, K Steer, A Wirth, S Halgamuge, "Multi-resolution Dynamic Programming for the Receding Horizon Control of Energy Storage", IEEE Transactions on Sustainable Energy, 2017
[3] K Abdulla, K Steer, A Wirth, S Halgamuge, "Improving the on-line control of energy storage via forecast error metric customization", Journal of Energy Storage 8 (November), 51–59, 2016
[4] K Abdulla, J De Hoog, V Muenzel, F Suits, K Steer, A Wirth, S Halgamuge, "Optimal Operation of Energy Storage Systems Considering Forecasts and Battery Degradation", IEEE Transactions on Smart Grid, 2016
[5] K Abdulla, K Steer, A Wirth, J de Hoog, S Halgamuge, "Integrating Data-Driven Forecasting and Optimization to Improve the Operation of Distributed Energy Storage" (Best paper award), The 14th IEEE International Conference on Smart City (IEEE SmartCity 2016), Sydney.