

Sebastian Troitzsch



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Education

RWTH Aachen University, Germany, Master of Science 10/2014 – 03/2017

- Majored in Energy Engineering, specialised in Renewable Energy Systems.
- Awarded the Deutschland-Stipendium Scholarship for outstanding academic performance.
- Graduated with final grade 1.8

National University of Singapore, Student Exchange Programme 08/2014 – 12/2014

- Specialised in advanced building energy system modelling for tropical climates.
- Engaged in cultural exchange programmes and a community aid project in the Philippines.

RWTH Aachen University, Germany, Bachelor of Science 07/2010 – 07/2014

- Majored in Mechanical Engineering, specialised in Energy Engineering.
- Graduated with final grade 1.9

Work Experience

TUMCREATE Ltd (Singapore), Research Associate / PhD Candidate 01/2017 – present

- Projects: Flexible Distribution Grid Demonstrator (FLEDGE), Connecting Energy & Power Systems for Future Singaporean New Towns (CONCEPT)
- PhD Thesis "Exploration of Demand Response Options for Electric Public Transport in Singapore"
- Modelling the spatio-temporal impact of electric public transport and private electric vehicle (EV) charging onto the electric grid in Singapore.
- Developing optimal control algorithms for flexible loads and energy storage systems to mitigate the challenges in demand hot spots.

TUMCREATE Ltd (Singapore), Master Thesis Student 04/2016 – 11/2016

- Master Thesis "Model Predictive Control for Co-Optimization of Distribution Grid Congestion and Thermal Comfort in Office Buildings"
- Developed an optimal control framework for heating, ventilation & air-conditioning (HVAC) systems of office buildings to participate in load shifting/demand response (DR).
- Evaluated the load shifting potential of an office building in Singapore with the developed framework.

Institute for Energy Efficient Buildings, Student Assistant 06/2015 – 03/2016

- Designed and implemented a test bed for a demand response (DR) enabled heating system for residential buildings.

Robert Bosch SEA Pte Ltd (Singapore), Research Intern 01/2015 – 04/2015

- Conceived and discussed ideas, conducted technology research and delivered support data for the proposal of a research project on advanced control systems for air-conditioning systems.
- Designed and implemented an indoor air quality test bed.

Robert Bosch GmbH (Germany), Bachelor Thesis Student 04/2014 – 07/2014

- Bachelor Thesis "Grey-Box-Modelling of Commercial Buildings using a Maximum-Likelihood-Approach"
- Developed a thermal RC model for commercial buildings along with a parameter estimation approach (hybrid modelling).

Robert Bosch GmbH (Germany), Research Intern**10/2013 – 03/2014**

- Evaluated building simulation engines regarding ease of use and simulation accuracy with internal stakeholders.
- Conducted market research on non-intrusive load management.

Institute of Power Systems and Power Economics, Student Assistant**01/2013 – 09/2013**

- Implemented improvements to a comprehensive evaluation interface for electric grid (transmission system) simulations.

Co-Curricular Activities**Project Cebu 2014****12/2014**

Overseas community aid project to Cebu Island in the Philippines.

- Participated as a teacher in the preparation and conduction of IT and language lessons.

Project Velocity Aachen**01/2013 – 10/2013**

Student project to implement a bicycle rental system in the city of Aachen.

- Liaised with the public stakeholders to identify locations for rental stations.
- Conducted research to identify the requirements to the system.

Energie Forum Aachen, Energy Club**11/2011 – 04/2016**

Student organisation to educate and discuss energy technology and politics advancements.

- Founding member and board member from 09/2012 to 09/2013.
- Introduced organisational structures to the student driven project and co-drafted the statutes.

Skills

- Fluent in English and German, basic knowledge of Mandarin Chinese.
- Proficient with Python, MATLAB, Modelica, R, LabVIEW, SQL and the building simulation environments TRNSYS and EnergyPlus.
- Experienced in convex/linear programming/optimization, numerical parameter estimation, building climate modelling, electric distribution grid modelling.
- Interested in optimal planning and operation of district energy systems with a high share of renewables, EV charging and flexible loads.

Completed Projects**Project CONCEPT (Singapore)****01/2018 – 02/2019**

- Connecting District Energy and Power Systems in Future Singaporean New Towns (CONCEPT) is set up as 13-month pilot project between the Singapore-ETH Centre (SEC) and TUMCREATE under the "Intra-CREATE Seed Collaboration Grant" of the National Research Foundation (NRF) which was funded with 250,000 SGD.
- Outcome is the implementation of a method for integrated electric grid planning and flexible load operation on the district level which achieves investment cost savings of 25 % through peak shaving of air-conditioning loads in office buildings.

Selected Publications

Troitzsch, S., Hanif, S., & Hamacher, T. (2018). Distributed Robust Reserve Scheduling in Congested Distribution Systems. In *IEEE PES General Meeting*.

Troitzsch, S., Hanif, S., Zhang, K., Trpovski, A. & Hamacher, T. (2019). Flexible Distribution Grid Demonstrator (FLEDGE): Requirements and Software Architecture. In *IEEE PES General Meeting*. (Accepted).