

# Spyridon (Spyros) Chatzivasileiadis

Office: Technical University of Denmark, Elektrovej, Building 325, 2800 Kgs. Lyngby, Denmark  
e-mail: spchatz@elektro.dtu.dk, tel:+45-45-25-5621

## Education

---

- |      |   |
|------|---|
| 2013 | <b>ETH Zurich</b> , Switzerland<br>PhD in Electrical Engineering (Power Systems Laboratory)<br>Advisor: Prof. Göran Andersson<br>Dissertation: "Power system planning and operation methods integrating the controllability of HVDC"                                  |
| 2007 | <b>National Technical University of Athens (NTUA)</b> , Greece<br>Diploma in Electrical and Computer Engineering<br>Advisor: Prof. Nikos Hatziargyriou<br>Thesis: "Development of a Control System for Islanded Power Systems based on Intelligent Agents Technology" |
| 2005 | <b>Technische Universität München</b> , Germany<br>Exchange Semester  |
| 2002 | Geitonas High School, Greece<br>Apolytirion   |

## Further Education

---

- |                |  |
|----------------|--|
| 2017 – Current | <b>Harvard Business School</b> , MA, USA<br>Executive Leadership Program<br>Selected to attend an 1-year leadership program at Harvard Business School (on-campus and distance courses), supported by the "Pasteur Program 2017" of Innovation Fund Denmark. Learning about leadership, strategy and execution, negotiation, and management of innovation. |
| 2016 – Current | <b>Technical University of Denmark</b> , Denmark<br>Education in University Teaching at DTU<br>One-year course on didactics and pedagogics for university teaching. Learning about teaching methods, assessment methods, and course design, with focus on student learning in engineering education.   |

## Research Experience

---

- |                |   |
|----------------|---|
| 2016 – Current | <b>Technical University of Denmark</b> , Denmark<br>Assistant Professor<br>Co-PI of the MULTI-DC project (25.7 million DKK). Technical lead of the Best Paths EU H2020 Project. Supervising three PhD students. Focus is currently on data-driven techniques for power system stability, and on control and economic operation of combined AC and HVDC grids. |
| 2015 – 2016    | <b>Massachusetts Institute of Technology</b> , MA, USA<br>Postdoctoral Researcher<br>Worked on the construction of convex stability certificates through semidefinite programming. Focus is on the incorporation of remedial actions which are offered through synthetic inertia, FACTS, and HVDC.  |

- 2014 – 2015 | **Lawrence Berkeley National Laboratory, CA, USA**  
 Postdoctoral Researcher  
 Technical lead of a research project with 10 scientists to develop a cosimulation platform, called VirGIL, that integrates power system simulation, building modeling and controls for demand response, and communications systems. Applied for and got awarded a US \$5 million grant from the US Department of Energy (DOE) to develop VirGIL to a tool for utilities. Actively participated in the US DOE Scoping Study for DC microgrids. Participated in the ARPA-E project for the development and deployment of micro-synchrophasors in distribution grids. Member of the CIGRE WG C6.22: Microgrids Evolution Roadmap.
- 2008 – 2014 | **ETH Zurich, Switzerland**  
 Member of the Scientific Staff  
 Worked on EU-sponsored IRENE-40 Project. Developed analytical approaches for network planning. Proposed the first Security-Constrained Optimal Power Flow formulation which takes into account the post-contingency control capabilities of VSC-HVDC lines. Led the task “Infrastructure Measures for Increased Power System Security”, involving three project partners (Partners: Siemens, Alstom Grid, ABB. Task duration: 12 months). Offered network consulting services to TenneT GmbH, Deutschland.
- 2011 | **University of Liège, Belgium**  
 Visiting Researcher  
 Developed two concepts. The Global Grid puts forward the vision of a global electricity grid which will harvest remote renewable energy sources and supply load centers with green energy. The second concept, Towards a Fully Controllable Power System, proposes analytical approaches for the placement of controllable devices. The objective is to decouple market operations from security considerations, eliminating the “Cost of Security”.
- 2007 – 2008 | **NTUA Power Systems Laboratory, Greece**  
 Research Assistant  
 Worked on EU-sponsored More Microgrids and EU-DEEP projects. Developed a distributed control algorithm based on machine learning techniques and Multi-Agent systems. Carried out one of the first field tests worldwide of Multi-agent technology in Microgrids (Kythnos island). Participated in the development of a Virtual Power Plant (VPP), involving three different sites.

## Teaching Experience

---

- 2016 – Current | **31765 - Optimization in modern power systems**  
 Course Responsible, Technical University of Denmark  
 Designed and offering the course.
- 2016 – Current | **31730 - Fundamentals of electric power engineering**  
 Lecturer, Technical University of Denmark  
 Responsible for about half of the course material.
- 2008 – 2012 | **Electric Power Systems**  
 Teaching Assistant, ETH Zurich  
 Offered the exercise sessions of the course. Held office hours. Prepared and graded the exams.

## Languages

---

- English: Fluent  
 German: Fluent  
 French: Basic knowledge  
 Greek: Mother tongue

## Computer Skills

---

Programming Languages: C, Python, Matlab, Java  
Power Systems Software: Powerfactory, PSS/E, Neplan, Powerworld

## Other Activities

---

- 2011-Current Serving as reviewer for IEEE Transactions on Power Systems, IEEE Transactions on Sustainable Energy, Electric Power Systems Research, IET Generation, Transmission, Distribution, IEEE Powertech, IEEE PES General Meeting, Power Systems Computation Conference (PSCC)
- 2006-2007 Organizing Committee — *1<sup>st</sup> National Student Conference of Electrical and Computer Engineers, Athens, Greece, 2007*  
Had the initiative and formed the Organizing Committee (12 members). The conference created a forum where Greek engineering students present their work, connect, exchange ideas, and listen to distinguished invited speakers (e.g., from UC Berkeley, MIT, GeorgiaTech, EPFL, Merrill Lynch, IBM, ABB). The 1<sup>st</sup> Conference was attended by 860 participants. Since 2007 it is organized by ECE students almost every year [Athens (2008), Thessaloniki (2009), Patras (2010), Xanthi (2012), Athens (2013)] with a peak of 1800 attendees in 2009.
- Summer 2004 *Volunteerism*  
Spectator Assistant, Athens 2004 Olympic Games
- 1998-2001 *Hellenic Mathematical Society*  
Succeeded in 4 Mathematical Contests and was selected as one of the top 25 students in Greece for the year 2000

## Memberships

---

- since July 2009 Technical Chamber of Greece  
since July 2004 Institute of Electrical and Electronic Engineers (IEEE)  
Power and Energy Society (PES)  
2014-2016 CIGRE WG C6.22: Microgrids Evolution Roadmap  
since 2017 CIGRE WG C1.35: Global electricity network feasibility study

## Publications

---

### PhD Thesis

- [1] Spyridon (Spyros) Chatzivasileiadis. *Power System Planning and Operation Methods Integrating the Controllability of HVDC*. PhD thesis, No. 21460, ETH Zurich, Switzerland, 2013.

### Journals

- [2] A. Venzke, L. Halilbasic, U. Markovic, G. Hug, and S. Chatzivasileiadis. Convex relaxations of chance constrained AC optimal power flow. *Under Review*, 2017.
- [3] T. L. Vu, S. Chatzivasileiadis, H. D. Chiang, and K. Turitsyn. Structural emergency control paradigm. *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, PP(99):1–12, 2017.
- [4] S. Chatzivasileiadis, J. Matanza, M. Bonvini, R. Yin, T. Nouidui, Z. Liu, E. C. Kara, R. Parmar, D. Lorenzetti, M. Wetter, and S. Kiliccote. VirGIL: A co-simulation platform for cyber-physical modeling of distributed resources for distribution system operations. *Proceedings of the IEEE*, 104(4):789–806, 2016.
- [5] M. Bucher, S. Chatzivasileiadis, and G. Andersson. Managing Flexibility in Multi-Area Power Systems. *IEEE Transactions on Power Systems*, 31(2):1218–1226, 2016.
- [6] E. Iggland, R. Wiget, S. Chatzivasileiadis, and G. Anderson. Multi-Area DC-OPF for HVAC and HVDC grids. *IEEE Transactions on Power Systems*, 30(5):2450–2459, 2015.
- [7] S. Chatzivasileiadis, D. Ernst, and G. Andersson. The Global Grid. *Renewable Energy*, 57:372–383, September 2013.

### Peer-Reviewed Conferences

- [8] F. Thams, L. Halilbasic, P. Pinson, S. Chatzivasileiadis, and R. Eriksson. Data-driven security constrained opf. In *2017 iREP Symposium - Bulk Power System Dynamics and Control - X (iREP)*, Porto, Portugal, pages 1–10, August 2017.
- [9] L. Halilbasic, S. Chatzivasileiadis, and P. Pinson. Coordinating flexibility under uncertainty in multi-area ac and dc grids. In *IEEE Powertech 2017, Manchester, UK*, pages 1–6, June 2017.
- [10] F. Thams, S. Chatzivasileiadis, E. Prieto-Araujo, and R. Eriksson. Disturbance attenuation of dc voltage droop control structures in a multi-terminal hvdc grid. In *IEEE Powertech 2017, Manchester, UK*, pages 1–6, June 2017.
- [11] T. L. Vu, S. Chatzivasileiadis, H. D. Chiang, and K. Turitsyn. Structural emergency control for power grids. In *2017 American Control Conference (ACC)*, pages 3418–3423, May 2017.
- [12] J. Schmidli, L. Roald, S. Chatzivasileiadis, and G. Andersson. Stochastic ac optimal power flow with approximate chance-constraints. In *IEEE Power and Energy Society General Meeting 2016, Boston, MA, USA*, pages 1–5, July 2016.
- [13] S. Chatzivasileiadis, T. L. Vu, and K. Turitsyn. Remedial actions to enhance stability of low-inertia systems. In *IEEE Power and Energy Society General Meeting 2016, Boston, MA, USA*, pages 1–5, July 2016.
- [14] T. L. Vu, S. Chatzivasileiadis, and K. Turitsyn. Towards electronics-based emergency control in power grids with high renewable penetration. In *American Control Conference 2016, Boston, MA, USA*, pages 1–8, July 2016.
- [15] S. Rotger-Griful, S. Chatzivasileiadis, R. Hylsberg Jacobsen, E. M. Stewart, J. Matanza Domingo, and M. Wetter. Hardware-in-the-loop co-simulation of distribution grid for demand response. In *19th Power Systems Computation Conference*, pages 1–7, June 2016.
- [16] C. Marnay, S. Chatzivasileiadis, J. Geza, C. Abbey, P. Lombardi, R. Iravani, and P. Mancarella. Micro-grid evolution roadmap: Engineering, economics, and experience. In *International Symposium on Smart Electric Distribution Systems and Technologies (EDST) 2015*, September 2015.

- [17] S. Chatzivasileiadis and G. Andersson. Security constrained OPF incorporating corrective control of HVDC. In *18th Power Systems Computation Conference*, pages 1–8, August 2014.
- [18] A. Ulbig, T. Rinke, S. Chatzivasileiadis, and G. Andersson. Predictive control for real-time frequency control and frequency inertia provision in power systems. In *52nd IEEE Conference on Decision and Control*, pages 1–8, December 2013.
- [19] M. Vrakopoulou, S. Chatzivasileiadis, and G. Andersson. Probabilistic security-constrained optimal power flow including the controllability of HVDC lines. In *IEEE Innovative Smartgrid Technologies (ISGT) 2013*, pages 1–5, October 2013.
- [20] M. Vrakopoulou, S. Chatzivasileiadis, E. Iggland, M. Imhof, T. Krause, O. Mäkelä, J. Mathieu, L. Roald, R. Wiget, and G. Andersson. A unified analysis of security-constrained OPF formulations considering uncertainty, risk, and controllability in single and multi-area systems. In *2013 iREP Symposium - Bulk Power System Dynamics and Control - IX (iREP)*, Rethymnon, Greece, pages 1–19, August 2013.
- [21] S. Chatzivasileiadis, T. Krause, and G. Andersson. Supergrid or local network reinforcements, and the value of controllability – an analytical approach. In *IEEE Powertech 2013*, pages 1–6, June 2013.
- [22] S. Chatzivasileiadis, T. Krause, and G. Andersson. HVDC line placement for maximizing social welfare – an analytical approach. In *IEEE Powertech 2013*, pages 1–6, June 2013.
- [23] S. Chatzivasileiadis, T. Krause, and G. Andersson. Security-constrained optimal power flow including post-contingency control of VSC-HVDC lines. In *XII SEPOPE, Rio de Janeiro, Brazil*, pages 1–12, May 2012.
- [24] T. Krause, S. Chatzivasileiadis, M. Katsampani, and G. Andersson. Impacts of grid reinforcements on the strategic behavior of power market participants. In *9th International Conference on the European Energy Market (EEM)*, Florence, Italy, pages 1–8, May 2012.
- [25] S. Koch, M.D. Galus, S. Chatzivasileiadis, and G. Andersson. Emergency control concepts for future power systems. In *18th IFAC World Congress, Milan, Italy*, pages 1–9, August 2011.
- [26] A. Ulbig, M. Arnold, S. Chatzivasileiadis, and G. Andersson. Framework for multiple time-scale cascaded MPC application in power systems. In *18th IFAC World Congress, Milan, Italy*, pages 1–9, August 2011.
- [27] S. Chatzivasileiadis, M. Bucher, M. Arnold, T. Krause, and G. Andersson. Incentives for optimal integration of fluctuating power generation. In *17th Power Systems Computation Conference (PSCC)*, Stockholm, Sweden, pages 1–8, August 2011.
- [28] S. Chatzivasileiadis, T. Krause, and G. Andersson. Flexible AC transmission systems (FACTS) and power system security – a valuation framework. In *IEEE Power and Energy Society General Meeting 2011, Detroit, USA*, pages 1–8, July 2011.
- [29] S. Chatzivasileiadis, M.D. Galus, Y. Reckinger, and G. Andersson. Q-learning for optimal deployment strategies of frequency controllers using the aggregated storage of PHEV fleets. In *IEEE PowerTech 2011, Trondheim, Norway*, pages 1–8, June 2011.
- [30] S. Koch, S. Chatzivasileiadis, M. Vrakopoulou, and G. Andersson. Mitigation of cascading failures by real-time controlled islanding and graceful load shedding. In *2010 iREP Symposium - Bulk Power System Dynamics and Control - VIII (iREP)*, Buzios, Brazil, pages 1–19, Aug. 2010.
- [31] A. Ulbig, M.D. Galus, S. Chatzivasileiadis, and G. Andersson. General frequency control with aggregated control reserve capacity from time-varying sources: The case of PHEVs. In *2010 iREP Symposium - Bulk Power System Dynamics and Control - VIII (iREP)*, Buzios, Brazil, pages 1–14, Aug. 2010.
- [32] A.L. Dimeas, S.I. Hatzivasiliadis, and N.D. Hatziaergyriou. Control agents for enabling customer-driven microgrids. In *IEEE Power and Energy Society General Meeting 2009, Calgary, Canada*, pages 1–7, July 2009.
- [33] A. Dimeas, N. Hatziaergyriou, S. Chatzivassiliadis, P. Moutis, and T. Tomtsi. Multi-agent system for creation of virtual power plant (VPP) with aggregated and decentralized control. In *3rd International Conference on Integration of Renewable and Distributed Energy Resources (IREN)*, Nice, France, December 2008.

- [34] A. Dimeas, N. Hatziargyriou, and S. Chatzivasiliadis. Design of an agent based virtual power plant with aggregated load. In *6th Mediterranean Conference and Exhibition on Power Generation, Transmission and Distribution (MedPower)*, Thessaloniki, Greece, November 2008.
- [35] A. Dimeas, N. Hatziargyriou, and S. Hatzivasiliadis. Implementation of agent based control for microgrids in the island of Kythnos. In *6th Mediterranean Conference and Exhibition on Power Generation, Transmission and Distribution (MedPower)*, Thessaloniki, Greece, November 2008.
- [36] S.J. Chatzivasiliadis, N.D. Hatziargyriou, and A.L. Dimeas. Development of an agent based intelligent control system for microgrids. In *IEEE Power and Energy Society General Meeting 2008, Pittsburgh, USA*, pages 1–6, July 2008.

## Book Chapters

- [37] S. Chatzivasileiadis and D. Ernst. Towards a Global Grid: The state of play in cross-border electricity markets. In Thomas Cottier, editor, *International Trade in Electricity and the Greening Economy*. Cambridge University Press, 2017.
- [38] S. Chatzivasileiadis, D. Ernst, and G. Andersson. Global power grids for harnessing world renewable energy. In Lawrence E. Jones, editor, *Renewable Energy Integration: Practical Management of Variability, Uncertainty and Flexibility in Power Grids*. Elsevier, 2014.

## Further Publications

- [39] S. Backhaus, G.W. Swift, S. Chatzivasileiadis, W. Tschudi, S. Glover, M. Starke, J. Wang, M. Yue, and D. Hammerstrom. DC microgrids scoping study — estimate of technical and economic benefits. LA UR 15 22097. Study funded by the Office of Electricity Delivery and Energy Reliability of the U.S. Department of Energy, 2015.
- [40] C. Marnay, C. Abbey, G. Joos, K. Ash, S. Bando, M. Braun, S. Chatzivasileiadis, J. Driesen, N. Hatziargyriou, R. Iravani, G. Jimenez, F. Katiraei, P. Lombardi, K. Lunch, P. Mancarella, D. Moneta, C. Moreira, A. Oudalov, M. Khattabi, G. Morris, Y. Nakanishi, J. Reilly, M. Ross, T. Shinji, and J. von Appen. Microgrids 1: Engineering, economics, experience. WG C6.22: Microgrids Evolution Roadmap, Technical Report (Brochure), Cigre, 2014.
- [41] Spyros Chatzivasileiadis. Transmission investments in deregulated electricity markets. Technical Report, ETH Zurich, EEH Power Systems Laboratory, 2012. [Online]: <http://e-collection.library.ethz.ch/view/eth:5559>.

## Research Grants

---

Danish Innovation Fund, Grand Solutions – Energy. MULTI-DC – Innovative Methods for Optimal Operation of Multiple HVDC connections and Grids. 48 months, 25’7000’000 DKK. Together with Jacob Østergaard. Co-Principal Investigator. Awarded.

California Energy Commission, Electric Program Investment Charge (EPIC). DC Current as an Integrating and Enabling Platform. 36 months, 1’000’000 USD. Start date: July 2015. Together with William Tschudi, Richard Brown, Gerald Robinson, Evangelos Vossos. Awarded.

US Department of Energy, SunShot National Laboratory Multiyear Partnership (SunShot SuNLaMP). CyDER: A Cyber Physical Co-simulation Platform for Distributed Energy Resources in Smart Grids. 36 months, 4’700’000 USD. Together with Emma Stewart, Michael Wetter, Emre C. Kara. Awarded.

## External Research Stays

---

Skolkovo Institute of Technology (Skoltech), Russia.	November 2016.	Host: Prof. J. Bialek
Massachusetts Institute of Technology, MA, USA.	July 2016.	Host: Prof. K. Turitsyn
ETH Zurich, Switzerland.	August-October 2015.	Host: Prof. F. Dörfler
University of Liège, Belgium.	May-June 2011.	Host: Prof. D. Ernst

## Invited Talks

---

- S. Chatzivasileiadis, Semidefinite Programming for Power System Stability and Chance-Constrained Optimization, *Oxford University*, Oxford, UK, May 2017.
- S. Chatzivasileiadis, Semidefinite Programming for Power System Stability and Chance-Constrained Optimization, *Stanford Smartgrid Seminar Series, Stanford University*, Palo Alto, CA, USA, April 2017.
- S. Chatzivasileiadis, Semidefinite Programming for Power System Stability and Optimization, *MOSEK Workshop on Semidefinite Optimization in Power Flow Problems*, Copenhagen, Denmark, February 2017.
- S. Chatzivasileiadis, Convex Relaxations for Optimization of Power Grids Under Uncertainty, *International Conference on Future Electric Power Systems and the Energy Transition*, Champéry, Switzerland, February 2017.
- S. Chatzivasileiadis, Semidefinite Programming for Power System Stability and Optimization, *1st Hellenic International Power Group Workshop*, National Technical University of Athens, Greece, December 2017.
- S. Chatzivasileiadis, Power System Control and Optimization: Challenges and Possible Solutions, *Russian Academy of Sciences*, Moscow, Russia, November 2017.
- S. Chatzivasileiadis, Global Power Grids for Harnessing World Renewable Energy, *Energy Security Summit 2016*, Berlin, Germany, June 2016.
- S. Chatzivasileiadis, Robust Power System Stability Assessment with Extensions to Inertia Control, *University of Michigan*, Ann Arbor, MI, USA, February 2016.
- S. Chatzivasileiadis, Robust Power System Stability Assessment with Extensions to Inertia Control, *KU Leuven*, Leuven, Belgium, November 2015.
- S. Chatzivasileiadis, Robust Power System Stability Assessment with Extensions to Inertia Control, *UC Louvain*, Louvain-la-Neuve, Belgium, November 2015.
- S. Chatzivasileiadis, Robust Power System Stability Assessment with Extensions to Inertia Control, *University of Liège*, Liège, Belgium, November 2015.
- S. Chatzivasileiadis, VirGIL: A Demand Response Platform for Smartgrids, *ETA Noon Seminar at Lawrence Berkeley National Laboratory*, Berkeley, CA, USA, March 2015.
- S. Chatzivasileiadis, VirGIL: A Demand Response Platform for Smartgrids, *Los Alamos National Laboratory*, Los Alamos, NM, USA, March 2015.
- S. Chatzivasileiadis, S. Kiliccote, VirGIL: A Demand Response Platform for Smartgrids, *SunPower Corporation*, Richmond, CA, USA, February 2015.
- S. Chatzivasileiadis, S. Kiliccote, R. Yin, VirGIL: A Co-Simulation Platform for Advanced Distribution Management Systems including Demand Response, *University of California, Berkeley, CA, USA*, September 2014.
- S. Chatzivasileiadis, Towards a Global Grid: The state of play in Cross-Border Electricity Markets, *World Trade Forum 2014: International Trade in Electricity and the Greening Economy*, Bern, Switzerland, September 2014.
- S. Chatzivasileiadis, The Global Grid, *Stanford Policy and Economics Research Roundtable, Stanford University, CA, USA*, May 2014.
- S. Chatzivasileiadis, Interaction between AC and DC Power Systems: The Need for Controllability, *IEEE PES Swiss Chapter Workshop, Bern, Switzerland*, September 2013.
- S. Chatzivasileiadis, T. Krause, Infrastructure Roadmap for the Energy Networks in Europe, *Swissgrid*, January 2013.



## PhD (Co-)Supervision

---

Andreas Venzke. Optimization, Control, and Stability of Combined AC and DC Grids under Uncertainty. Technical University of Denmark. June 2017-ongoing.

Lejla Halilbasic. Economic Market Operation of HVDC Grids under uncertainty. Technical University of Denmark. March 2016-ongoing.

Florian Thams. Control impact assessment of HVDC links in the European system. Technical University of Denmark. March 2016-ongoing.

## (Co-)Supervised Master and Semester Theses

---

Nicolas Marenne. Data-driven stability assessment for DC microgrids. *Master Thesis, Technical University of Denmark, 2017.*

Andreas Venzke. Convex Relaxations for Optimization of AC and HVDC Grids under Uncertainty. *Master Thesis, ETH Zurich and Technical University of Denmark, 2017.*

Jeremias Schmidli. AC optimal power flow with approximate chance-constraints. *Semester Thesis, ETH Zurich, 2015.*

Florian Schmidt. Security-Constrained Optimal Power Flow including post-contingency control of FACTS devices with application on the European network. *Semester Thesis, ETH Zurich, 2012.*

Marina Katsampani. Impacts of Grid Reinforcements on the Strategic Behaviour of Power Market Participants. *Semester Thesis, ETH Zurich, 2011.*

Yves Reckinger. On Profit Maximization of Fluctuating Generation Coupled with Energy Storage. *Master Thesis, ETH Zurich, 2011.*

Ektor Sotiropoulos. Evaluation of Coherency-based aggregation Methods. *Semester Thesis, ETH Zurich, 2011.*

Matthias Bucher. Impacts of Electricity Storage on the Integration of Fluctuating Generation. *Semester Thesis, ETH Zurich, 2011.*

Tobias Rinke. MPC-based Frequency Regulation and Inertia Mimicking for Improved Grid Integration of Renewable Energy Sources. *Master Thesis, ETH Zurich and Ruhr Universität Bochum, 2011.*

Maria Zerva. Voltage Stability Assessment of the Swiss Power Transmission System. *Master Thesis, ETH Zurich and Swissgrid, 2010.*

Yves Reckinger. Control and Frequency Regulation for Distributed Renewable Energy Sources using the Aggregated Storage of large Fleets of Distributed, Mobile PHEVs. *Semester Thesis, ETH Zurich, 2010.*

Raffael Bühler. Integration of Renewable Energy Sources Using Microgrids, Virtual Power Plants and the Energy Hub Approach. *Semester Thesis, ETH Zurich, 2010.*

Lucas Friedrich and Matthias Gautschi. Grid Stabilization Control and Frequency Regulation for Inverter-connected Distributed Renewable Energy Sources. *Master Thesis, ETH Zurich and Univ. Wisconsin-Madison, 2009.*

## Further Mentoring

---

Markus Heimberger. Efficiency gains from DC microgrids. Exchange Student at Lawrence Berkeley National Lab. PhD Student, Vienna University of Technology, Austria. June-September 2014.

Ciaran Roberts. Power System Modeling of unbalanced distribution systems. Intern at Lawrence Berkeley National Lab. Master Student, University College, Dublin, Ireland, June-September 2014.

Sergi Rotger Grifol. Hardware-in-the-Loop Co-simulation of Distribution Grid for Demand Response. PhD Student at Aarhus University, Denmark. May-August 2015.