# GREGOR VERBIČ

**Associate Professor**
*Centre for Future Energy Networks*
*School of Electrical & Information Engineering*
*The University of Sydney*

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## RESEARCH INTERESTS AND KEY EXPERTISE

My expertise is in power system operation, stability and control, electricity markets, and applied optimisation. My research interested are in the area of power systems, sustainable energy systems and smart grids and include the following specific areas:

- Grid integration of renewable energies into power systems and markets
- Optimisation and control of distributed energy resources
- Demand response
- Energy management in residential buildings

## EDUCATION

**University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia**

2001 – 2003 PhD in Electrical Engineering
1996 – 2000 MSc in Electrical Engineering
1990 – 1995 BSc in Electrical Engineering

## PROFESSIONAL EXPERIENCE

2010 - present **The University of Sydney, School of Electrical & Information Engineering, Faculty of Engineering & IT**
Associate Professor, Centre for Future Energy Networks
- research in the area of power systems, sustainable energy systems and smart grids
- undergraduate and postgraduate teaching
- undergraduate and postgraduate research and project supervision

2008 - 2010 **Interenergo d.d., Ljubljana, Slovenia**
Head of investment department and Project director
- The company invests in energy sector in South Eastern Europe, in particular renewable energy sources, mostly hydro, wind and biomass.

2004 - 2008 **University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia**
Assistant Professor
- postgraduate research supervision
- BSc and MSc theses supervision
- postgraduate and undergraduate teaching
- principal consultant for Slovenian energy sector

2004 - 2005 **University of Waterloo, Ontario, Canada**
NSERC-NATO Postdoctoral Fellow under the supervision of prof. Claudio Cañizares
- research in the field of probabilistic optimal power flow applications in the context of electricity markets

1998 - 2004 **University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia**
Teaching Assistant

1995 - 1998 **KORONA d.d., Ljubljana, Slovenia**
System engineer responsible for design and commissioning of SCADA systems

## SELECTED REFERENCES

**Journal Papers**

1. S. Mhanna, G. Verbič and A. C. Chapman, "A Faithful and Tractable Distributed Mechanism for Residential Electricity Pricing," in *IEEE Transactions on Power Systems*, vol.PP, no.99, pp.1-1, 2017.
2. A. Ahmadyar, S. Riaz, G. Verbič, A. C. Chapman, and D. J. Hill, "A Framework for Assessing Renewable Integration Limits with Respect to Frequency Performance," in *IEEE Transactions on Power Systems*, vol.PP, no.99, pp.1-1, 2017.
3. S. Riaz, G. Verbič, and A. C. Chapman, " Computationally Efficient Market Simulation Tool for Future Grid Scenario Analysis," in *IEEE Transactions on Smart Grid*, vol.PP, no.99, pp.1-1, 2017.
4. Z. Rahimpour, A. Faccani, D. Azuatalam, A. Chapman, and G. Verbič, "Using Thermal Inertia of Buildings with Phase Change Material for Demand Response," *Energy Procedia*, vol. 121, pp. 102–109, Sep. 2017.
5. M. Garmroodi, G. Verbič and D. J. Hill, " Frequency Support From Wind Turbine Generators With A Time Variable Droop Characteristic," in *IEEE Transactions on Sustainable Energy*, vol.PP, no.99, pp.1-1, 2017.
6. S. Riaz, H. Marzooghi, G. Verbič, A. C. Chapman and D. J. Hill, "Generic Demand Model Considering the Impact of Prosumers for Future Grid Scenario Analysis," in *IEEE Transactions on Smart Grid*, vol.PP, no.99, pp.1-1, 2017.

7. R. Liu; G. Verbič; J. Ma; D. J. Hill, "Fast Stability Scanning for Future Grid Scenario Analysis," in *IEEE Transactions on Power Systems*, vol.PP, no.99, pp.1-1, 2017.
8. C. Keerthisinghe; G. Verbič; A. C. Chapman, "A Fast Technique for Smart Home Management: ADP with Temporal Difference Learning," in *IEEE Transactions on Smart Grid*, vol.PP, no.99, pp.1-1, 2017.
9. G. Verbič; C. Keerthisinghe; A. C. Chapman, "A Project-Based Cooperative Approach to Teaching Sustainable Energy Systems," in IEEE Transactions on Education , vol. 60, no. 3, pp. 221-228, Aug. 2017.
10. A. S. Ahmadyar and G. Verbič, "Coordinated Operation Strategy of Wind Farms for Frequency Control by Exploring Wake Interaction," in *IEEE Transactions on Sustainable Energy*, vol. 8, no. 1, pp. 230-238, Jan. 2017.
11. A. C. Chapman and G. Verbič, "An Iterative On-Line Auction Mechanism for Aggregated Demand-Side Participation," in *IEEE Transactions on Smart Grid*, vol. 8, no. 1, pp. 158-168, Jan. 2017.
12. A. C. Chapman, G. Verbič and D. J. Hill, "Algorithmic and Strategic Aspects to Integrating Demand-Side Aggregation and Energy Management Methods," in *IEEE Transactions on Smart Grid*, vol. 7, no. 6, pp. 2748-2760, Nov. 2016.
13. S. Mhanna, A. C. Chapman and G. Verbič, "A Fast Distributed Algorithm for Large-Scale Demand Response Aggregation," in *IEEE Transactions on Smart Grid*, vol. 7, no. 4, pp. 2094-2107, July 2016.
14. M. Garmroodi, D. J. Hill, G. Verbič and J. Ma, "Impact of Tie-Line Power on Inter-Area Modes With Increased Penetration of Wind Power," in *IEEE Transactions on Power Systems*, vol. 31, no. 4, pp. 3051-3059, July 2016.
15. S. Mhanna, G. Verbič and A. C. Chapman, "A Faithful Distributed Mechanism for Demand Response Aggregation," in *IEEE Transactions on Smart Grid*, vol. 7, no. 3, pp. 1743-1753, May 2016.
16. S. Mhanna, A. C. Chapman and G. Verbič, "A Distributed Algorithm for Demand Response With Mixed-Integer Variables," in *IEEE Transactions on Smart Grid*, vol. 7, no. 3, pp. 1754-1755, May 2016.
17. H. Marzooghi, G. Verbič and D. J. Hill, "Aggregated demand response modelling for future grid scenarios," in *Sustainable Energy, Grids and Networks*, Volume 5, March 2016, Pages 94-104.
18. A. Žertek, G. Verbič, and M. Pantoš, "A Novel Strategy for Variable-Speed Wind Turbines' Participation in Primary Frequency Control," *IEEE Transactions on Sustainable Energy*, vol. 3, no. 99, pp. 1–9, Oct. 2012.
19. A. Žertek, G. Verbič, and M. Pantoš, "Optimised control approach for frequency-control contribution of variable speed wind turbines," *IET Renew. Power Gener.*, vol. 6, no. 1, p. 17, 2012.
20. G. Taljan, G. Verbič, M. Pantoš, M. Sakulin, and L. Fickert, "Optimal sizing of biomass-fired Organic Rankine Cycle CHP system with heat storage," *Renew. Energy*, vol. 41, pp. 29–38, May 2012.
21. G. Taljan, M. Fowler, C. A. Cañizares, and G. Verbič, "Hydrogen storage for mixed wind–nuclear power plants in the context of a Hydrogen Economy," *Int. J. Hydrogen Energy*, vol. 33, no. 17, pp. 4463–4475, Sep. 2008.
22. G. Taljan, C. A. Cañizares, M. Fowler, and G. Verbič, "The Feasibility of Hydrogen Storage for Mixed Wind-Nuclear Power Plants," *IEEE Transactions on Power Systems*, vol. 23, no. 3, pp. 1507–1518, Aug. 2008.
23. T. Tomšič, G. Verbič, and F. Gubina, "Revision of the underfrequency load-shedding scheme of the Slovenian power system," *Electr. Power Syst. Res.*, vol. 77, no. 5–6, pp. 494–500, Apr. 2007.
24. G. Verbič, M. Pantoš, and F. Gubina, "On voltage collapse and apparent-power losses," *Electr. Power Syst. Res.*, vol. 76, no. 9–10, pp. 760–767, Jun. 2006.
25. G. Verbič and C. A. Cañizares, "Probabilistic Optimal Power Flow in Electricity Markets Based on a Two-Point Estimate Method," *IEEE Transactions on Power Systems*, vol. 21, no. 4, pp. 1883–1893, Nov. 2006.
26. I. Šmon, G. Verbič, and F. Gubina, "Local Voltage-Stability Index Using Tellegen's Theorem," *IEEE Transactions on Power Systems*, vol. 21, no. 3, pp. 1267–1275, Aug. 2006.
27. M. Pantoš, G. Verbič, and F. Gubina, "An improved method for assessing voltage stability based on network decomposition," *Int. J. Electr. Power Energy Syst.*, vol. 28, no. 5, pp. 324–330, Jun. 2006.
28. M. Pantoš, G. Verbič, and F. Gubina, "Modified Topological Generation and Load Distribution Factors," *IEEE Transactions on Power Systems*, vol. 20, no. 4, pp. 1998–2005, Nov. 2005.
29. G. Verbič and F. Gubina, "A New Concept of Voltage-Collapse Protection Based on Local Phasors," *IEEE Transactions on Power Delivery*, vol. 19, no. 2, pp. 576–581, Apr. 2004.
30. G. Verbič and F. Gubina, "A novel scheme of local protection against voltage collapse based on the apparent-power losses," *Int. J. Electr. Power Energy Syst.*, vol. 26, no. 5, pp. 341–347, Jun. 2004.
31. G. Verbič and F. Gubina, "Cost-Based Models for the Power-Reserve Pricing of Frequency Control," *IEEE Transactions on Power Systems*, vol. 19, no. 4, pp. 1853–1858, Nov. 2004.
32. G. Verbič and F. Gubina, "Fast voltage-collapse line-protection algorithm based on local phasors," *IEE Proc. - Gener. Transm. Distrib.*, vol. 150, no. 4, p. 482, 2003.

**Conference Papers**

33. S. Mhanna, G. Verbič and A. C. Chapman, "Component-based dual decomposition and ADMM in the OPF problem," in X Bulk Power Systems Dynamics and Control Symposium, 2017.
34. A. C. Chapman, S. Mhanna and G. Verbič, "Cooperative Game Theory for Non-linear Pricing of Load-side Distribution Network Support," in X Bulk Power Systems Dynamics and Control Symposium, 2017.
35. A. Ramsden and G. Verbič, "An Educational Open-Source Market Modeling Toolbox for Future Grid Studies," in 2017 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia), 2017.
36. D. Azuatalam, A. C. Chapman and G. Verbič, "Optimal HVAC Scheduling Using Phase-Change Material as a Demand Response Resource," in 2017 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia), 2017.
37. B. Du, G. Verbič and J. Fletcher, "Thermal Modelling for Demand Response of Residential Buildings," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
38. R. Liu, G. Verbič and Y. Xu, "A New Reliability-Driven Intelligent System for Power System Dynamic Security Assessment," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
39. T. Power and G. Verbič, "A Nonparametric Bayesian Model for Forecasting Residential Solar Generation," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
40. M. Seidaliseifabad, G. Verbič, A. C. Chapman and J. Ma, "A Linear Method for Determining the Hosting Capacity of Radial Distribution Systems," in 2017 Australasian Universities Power Engineering Conference

(AUPEC), 2017.
41. Y. Ma, M. Seidaliseifabad, D. Azuatalam, G. Verbič and A. C. Chapman, "Impacts of Community and Distributed Energy Storage Systems on Unbalanced Low Voltage Networks," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
42. J. Guerrero, A. C. Chapman and G. Verbič, "A Study of Energy Trading in a Low-Voltage Network: Centralised and Distributed Approaches," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
43. M. Pantos, S. Riaz, A. C. Chapman and G. Verbič, "Evaluation of a multi-stage stochastic optimisation framework for energy management of residential PV-storage systems," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
44. D. Azuatalam, G. Verbič and A. C. Chapman, "Evaluation of a multi-stage stochastic optimisation framework for energy management of residential PV-storage systems," in 2017 Australasian Universities Power Engineering Conference (AUPEC), 2017.
45. M. Garmroodi, D. J. Hill and G. Verbič, "Sensitivity of inter-area modes to parameters of an oscillatory recovery load model," 2017 IEEE Manchester PowerTech, Manchester, 2017, pp. 1-6.
46. S. Ahmadyar, S. Riaz, G. Verbič, J. Riesz, and A. C. Chapman, "Assessment of minimum inertia requirement for system frequency stability," in *2016 IEEE International Conference on Power System Technology (POWERCON)*, 2016.
47. A. C. Chapman and G. Verbič, "Dynamic distributed energy resource allocation for load-side emergency reserve provision," in 2016 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia), 2016.
48. C. Keerthisinghe, G. Verbič, and A. C. Chapman, "Energy management of PV-storage systems: ADP approach with temporal difference learning," in 2016 Power Systems Computation Conference (PSCC), 2016.
49. R. Liu, G. Verbič, and J. Ma, "A machine learning approach for fast future grid small-signal stability scanning," in 2016 IEEE International Conference on Power System Technology (POWERCON), 2016.
50. H. Marzooghi, D. J. Hill, and G. Verbič, "Aggregated effect of price-taking users equipped with emerging demand-side technologies on performance of future grids," in 2016 IEEE International Conference on Power System Technology (POWERCON), 2016.
51. S. Mhanna, G. Verbič, and A. C. Chapman, "Tight LP approximations for the optimal power flow problem," in 2016 Power Systems Computation Conference (PSCC), 2016.
52. S. Riaz, A. C. Chapman, and G. Verbič, "Evaluation of concentrated solar-thermal generation for provision of power system flexibility," in 2016 Power Systems Computation Conference (PSCC), 2016.
53. S. Riaz, H. Marzooghi, G. Verbič, A. C. Chapman, and D. J. Hill, "Impact study of prosumers on loadability and voltage stability of future grids," in 2016 IEEE International Conference on Power System Technology (POWERCON), 2016.
54. J. W. Shim, G. Verbič, K. An, J. H. Lee, and K. Hur, "Decentralized operation of multiple energy storage systems: SOC management for frequency regulation," in 2016 IEEE International Conference on Power System Technology (POWERCON), 2016.
55. A. S. Ahmadyar and G. Verbič, "Control strategy for optimal participation of wind farms in primary frequency control," in 2015 IEEE Eindhoven PowerTech, 2015.
56. M. Garmroodi, D. J. Hill, J. Ma, and G. Verbič, "Impact of increased penetration of wind power on damping of low frequency oscillations in different network topologies," in 2015 IEEE Eindhoven PowerTech, 2015.
57. H. Marzooghi, G. Verbič, and D. J. Hill, "Aggregated Effect of Demand Response on Performance of Future Grid Scenarios," 2015 IEEE Eindhoven PowerTech, Jun. 2015.
58. S. Riaz, A. C. Chapman, and G. Verbič, "Comparing utility and residential battery storage for increasing flexibility of power systems," in 2015 Australasian Universities Power Engineering Conference (AUPEC), 2015.
59. Z. Zhao, G. Verbič, and F. Fiorito, "Model analysis of a residential building for demand response," in 2015 IEEE Eindhoven PowerTech, 2015.
60. A. S. Ahmadyar and G. Verbič, "Exploring wake interaction for frequency control in wind farms," in 13th Wind Integration Workshop, International Workshop on Large-scale Integration of Wind Power into Power Systems as well as on Transmission Networks for Offshore Wind Power Plants, 2014.
61. M. Garmroodi, D. J. Hill, J. Ma, and G. Verbič, "Impact of wind generation variability on small signal stability of power systems," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.
62. C. Keerthisinghe, G. Verbič, and A. C. Chapman, "Evaluation of a multi-stage stochastic optimisation framework for energy management of residential PV-storage systems," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.
63. C. Keerthisinghe, G. Verbič, and A. C. Chapman, "Addressing the stochastic nature of energy management in smart homes," in 2014 Power Systems Computation Conference (PSCC), 2014.
64. A. K. Marinov, G. Verbič, and A. C. Chapman, "An investigation into the economic benefits of fast-timescale demand response using thermostatically controlled loads on the NEM," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.
65. H. Marzooghi, D. J. Hill, and G. Verbič, "Performance and stability assessment of future grid scenarios for the Australian NEM," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.
66. S. Mhanna, G. Verbič, and A. C. Chapman, "Towards a realistic implementation of mechanism design in demand response aggregation," in 2014 Power Systems Computation Conference (PSCC), 2014.
67. S. Mhanna, G. Verbič, and A. C. Chapman, "Guidelines for realistic grounding of mechanism design in demand response," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.
68. J. W. Shim, G. Verbič, K. Hur, and D. J. Hill, "Impact of large scale penetration of concentrated solar thermal power on oscillatory stability of the Australian future grid," in 4th Solar Integration Workshop, International Workshop on Integration of Solar Power into Power Systems, 2014.
69. J. W. Shim, G. Verbič, K. Hur, and D. J. Hill, "Impact analysis of variable generation on small signal stability," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.

70. Z. Zhao, G. Verbič, and F. Fiorito, "Investigating thermal inertia in lightweight buildings for demand response," in 2014 Australasian Universities Power Engineering Conference (AUPEC), 2014.
71. C. Byrne and G. Verbič, "Feasibility of residential battery storage for energy arbitrage," in 2013 Australasian Universities Power Engineering Conference (AUPEC), 2013.
72. A. C. Chapman, G. Verbič, and D. J. Hill, "A healthy dose of reality for game-theoretic approaches to residential demand response," in 2013 IREP Symposium Bulk Power System Dynamics and Control - IX Optimization, Security and Control of the Emerging Power Grid, 2013.
73. H. Wang, K. Meng, F. Luo, Z. Y. Dong, G. Verbič, Z. Xu, and K. P. Wong, "Demand response through smart home energy management using thermal inertia," in 2013 Australasian Universities Power Engineering Conference (AUPEC), 2013.
74. D. J. Hill, T. Liu, and G. Verbič, "Smart grids as distributed learning control," in 2012 IEEE Power and Energy Society General Meeting, 2012.
75. G. Taljan, G. Verbič, M. Pantoš, M. Sakulin, and L. Fickert, "Optimal Sizing of Biomass-Fired Organic Rankine Cycle CHP System with Heat Storage," in 2011 International Conference on Clean Electrical Power (ICCEP), 2011.
76. H. Tischer and G. Verbič, "Towards a smart home energy management system - A dynamic programming approach," in 2011 IEEE Innovative Smart Grid Technologies - Asia (ISGT-Asia), 2011.
77. A. Žertek, G. Verbič, and M. Pantoš, "Participation of DFIG wind turbines in frequency control ancillary service by optimized rotational kinetic energy," in 2010 7th International Conference on the European Energy Market, 2010.
78. G. Taljan, C. A. Cañizares, M. Fowler, and G. Verbič, "Study of mixed wind-nuclear-hydrogen power plants," in 2008 40th North American Power Symposium, 2008.
79. I. Šmon, G. Verbič, and F. Gubina, "Local voltage-stability index using tellegen's Theorem," in 2007 IEEE Power Engineering Society General Meeting, 2007.
80. G. Verbič, A. Schellenberg, W. Rosehart, and C. A. Cañizares, "Probabilistic Optimal Power Flow Applications to Electricity Markets," in 2006 International Conference on Probabilistic Methods Applied to Power Systems, 2006.
81. T. Tomšič, G. Verbič, and F. Gubina, "Revision of the underfrequency load-shedding scheme of the slovenian power system," in 2005 IEEE Power Engineering Society General Meeting, 2005.
82. G. Verbič and F. Gubina, "A simple probabilistic approach for the power-reserve pricing," in 2004 IEEE Power Engineering Society General Meeting, 2004.
83. G. Verbič and F. Gubina, "A new concept of voltage collapse protection based on apparent power losses," in Eighth IEE International Conference on Developments in Power System Protection, 2004.
84. G. Verbič and F. Gubina, "A simple probabilistic approach for the power-reserve pricing," in 2004 IEEE Power Engineering Society General Meeting, 2004.
85. G. Verbič and F. Gubina, "Countermeasures against voltage collapse based on apparent-power losses and local phasors," in The IEEE Region 8 EUROCON 2003. Computer as a Tool., 2003.
86. G. Verbič and F. Gubina, "A new concept of voltage-collapse protection based on local phasors," in 2003 IEEE Power Engineering Society General Meeting, 2003.
87. G. Verbič and F. Gubina, "Fast algorithm for voltage collapse protection based on local phasors," in 2002 IEEE Power Engineering Society General Meeting, 2002.
88. G. Verbič and F. Gubina, "A novel concept for voltage collapse protection based on local phasors," in 2002 IEEE/PES Transmission and Distribution Conference and Exhibition, 2002.
89. G. Verbič and F. Gubina, "Ancillary services management in the Slovenian power system," in 2002 IEEE Power Engineering Society General Meeting, 2002.
90. G. Verbič and F. Gubina, "Protection against voltage collapse based on local phasors," in 2001 IEEE Porto PowerTech, 2001.
91. G. Verbič and F. Gubina, "A new concept of protection against voltage collapse based on local phasors," in 2000 IEEE International Conference on Power System Technology (POWERCON), 2000.

**COMPETITIVE RESEARCH FUNDING**

| | | | |
|---|---|---|---|
| 2016 | ARENA Research and Development Program - Stage 2 | G. Verbič, A.C. Chapman, "CONSORT: Consumer Energy Systems Providing Cost-Effective Grid Support" (consortium with ANU, University of Tasmania, Reposit Power and TasNetworks) | $831,295 (USyd) $4,162,941 (total project) |
| 2016 | University of Sydney, FEIT, Mid-career Researcher Development Scheme | G. Verbič, "A unified framework for prosumer aggregation for a sustainable future grid" | $35,000 |
| 2015 | University of Sydney–Yonsei University Joint International Program Development Fund 2015 Round | G. Verbič, Z.Y. Dong, J. Ma, "Maximizing the Value of Central and Distributed Energy Resources to Accommodate Increasing Variability and Uncertainty of the Future Power Grid" | $10,000 |
| 2015 | ARC LIEF (LE150100021) | Z.Y. Dong, D.J. Hill, D. Lu, G. Verbič, J. Ma, "Smart Grid Testing Facility" | $430,000 |
| 2013 | ARC DP (DP130102244) | Z.Y. Dong and G. Verbič, "Wide Area Demand Response", | $340,000 |
| 2011 | University of Sydney Research Networks Scheme (EStoReN) | T. Maschmeyer et. al., Australian Centre for Energy Storage Research (ACESeR) (a member of a team of 12 people spanning six Sydney University faculties) | $200,000 |
| 2011 | ARC LP with Ausgrid (LP110200784) | G. Verbič, D.J. Hill "Smart House Energy | $620,000 |

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| (3 years) | | Management System" | |
| 2010 | Sydney University ECR Grant | G. Verbič, "Participation of Distributed Energy Resources in System Support" | $30,000 |
| 2010 | Energy Australia Project Concept Brief | G. Verbič, "Smart House Energy Management System" | $19,980 |
| 2009-2015 (4,5 years) | Slovenian Research Council, Junior Research Programme | G. Verbič, "Control of Variable Speed Wind Turbines for Frequency-Control Contribution" | Eur 143,200 (≈$200,500) |
| 2010 (4 months) | The Slovene Human Resources and Scholarship Fund, Grants for Collaboration of Slovenian Researchers with Foreign Academic Institutions | Research visit of PhD student Andraz Žertek at Delft University of Technology, The Netherlands | Eur 5,000 (≈$7,000) |
| 2006-2009 (3,5 years) | Slovenian Research Council, Junior Research Programme | G. Verbič, "The feasibility of hydrogen storage in power systems" | Eur 102,000 (≈$143,000) |
| 2009 (4 months) | The Slovene Human Resources and Scholarship Fund, Grants for Collaboration of Slovenian Researchers with Foreign Academic Institutions | Research visit of PhD student Gregor Taljan at TU Graz, Austria | Eur 5,000 (≈$7,000) |
| 2007 (8 months) | The Slovene Human Resources and Scholarship Fund, Grants for Collaboration of Slovenian Researchers with Foreign Academic Institutions | Research visit of PhD student Gregor Taljan at University Of Waterloo, Ontario, Canada | Eur 10,000 (≈$14,000) |
| 2005-2006 (2 years) | Slovenian Research Council, Junior Research Programme | G. Verbič, "Local Methods for Voltage Instability Prediction" | Eur 55,000 (≈$77,000) |

## TEACHING

### The University of Sydney

#### Courses Taught

1. ELEC5206 Sustainable Energy Systems (2010 - ongoing)
2. ELEC3203 & ELEC9203 Electricity Networks (2010 - ongoing)
3. ELEC4710/11: Engineering Project A/B (2010 - ongoing)
4. ELEC4712/13: Thesis A/B (2010 - ongoing)
5. ELEC5020/21: Capstone Project A/B (2010 - ongoing)
6. ELEC5222/3: Dissertation A/B (2010 - ongoing)

#### PhD Student Supervision

1. Hesamoddin Marzooghi, "Modelling and Stability Assessment of Future Grid Scenarios", associate supervisor, co-supervised by Prof David Hill, conferred September 2016.
2. Jae-Woong Shim, "Impact of Large-Scale Renewable Energy on Grid Small-Signal and Frequency Stability: Modelling, Analysis and Control", main supervisor, co-supervised by Prof Kyeon Hur (Yonsei University, Korea), conferred September 2016.
3. Sleiman Mhanna, "A Fast Distributed Mechanism for Large-scale Nonconvex Residential Energy Management and Coordination", main supervisor, co-supervised by Dr Archie Chapman, conferred September 2016.
4. Mehdi Garmroodi Doiran, "Sensitivity Analysis for Future Grid Stability Studies", associate supervisor, co-supervised by Prof David Hill, conferred May 2017.
5. Chanaka Keerthisinghe, "Fast Solution Techniques for Energy Management in Smart Homes", main supervisor, co-supervised by Dr Archie Chapman, conferred May 2017.
6. Shariq Riaz, "Generic Market Modelling for Future Grid Scenario Analysis", main supervisor, co-supervised by Dr Archie Chapman, thesis submitted September 2017.
7. Ahmad Shabir Ahmadyar, "Frequency Performance Assessment of Future Grids", main supervisor, co-supervised by A/Prof Jin Ma, thesis submission deadline January 2018.
8. Ruidong Liu, "Machine Learning in Power System Security Assessment", main supervisor, co-supervised by A/Prof Jin Ma, thesis submission deadline January 2018.

### University of Ljubljana

#### Postgraduate Courses Taught

1. Power System Stability (2004 - 2010)

#### Undergraduate Courses Taught

1. Power System Dynamics (2006 - 2010)
2. Power System Automation and Control (2004)

#### Teaching Assistant

1. System Automation and Control (1998 - 2008)
2. Power System Dynamics (1999 - 2008)
3. Power System Operation and Planning (2006 - 2008)

#### PhD Student Supervision

1. Andraz Žertek, "Control of Variable Speed Wind Turbines for Frequency-Control Contribution", Jul. 2013.
2. Gregor Taljan, "The feasibility of hydrogen storage in power systems", Dec. 2009.

#### MSc Thesis supervision

1. Tomaž Tomšič, "Comparison of Local Methods for Voltage Instability Prediction", Sept. 2007.

## ADMINISTRATIVE DUTIES

**The University of Sydney**

- Year 1 academic adviser (2012 - ongoing)
- Year 2 academic adviser (2011 - ongoing)

## PROFESSIONAL ACTIVITIES AND SERVICES

**IEEE**

Associate Editor, *IEEE Transactions on Smart Grid* (2014 - ongoing)
PES Power System Dynamic Performance Committee, Technical Committee Program Chair (2016 - 2018)
Member of PES Power System Dynamic Performance Committee, PES Power System Operations Committee, PES Electricity Market Economics Subcommittee, PES Power System Stability Subcommittee, PES Intelligent Systems Subcommittee.

**CIGRE**

Member of Australian Study Committee C5 Electricity Markets and Regulation
Member of WG C5-26 Auction Markets and Other Procurement Mechanisms for Demand Response Services

**ARC Assessor** for LP, DP and FT projects

**Reviewer for Journals**

*IEEE Transactions on Power Systems*; IEEE Transactions on Power Delivery; IEEE Transactions on Energy Conversion; *IEEE Transactions on Smart Grid*s; *IEEE Transactions on Sustainable Energy*; IEEE Power Engineering Letters; IET Generation, Transmission & Distribution; IET Renewable Power Generation; Electric Power Systems Research; International Journal of Electrical Power & Energy Systems; Energy; Renewable Energy; Energy; Sustainable Energy, Grids and Networks; International Journal of Numerical Modelling; and Wind Energy.

**Program Committee (TPC) member**

- Australasian Universities Power Engineering Conference 2015 (AUPEC 2015), Wollongong, Australia.
- International Conference on Smart Grids for Smart Cities (SGSC), 13-16 October 2015, Toronto, Canada.

**Australian Energy Regulator**

- AER's Consumer Challenge Panel, shadow member (2016 – ongoing).

## HONOURS AND AWARDS

| | |
|---|---|
| 2016 | IEEE Powercon, IEEE PES Poster Award for the paper "Assessment of Minimum Inertia Requirement for System Frequency Stability" by Ahmad Shabir Ahmadyar, Shariq Riaz, Gregor Verbič, Jenny Riesz, and Archie Chapman. |
| 2012 | Dean's Award for Outstanding Teaching, High Commendation School Award 2012 |
| 2011 | Senior Member of the IEEE |
| 2006 | IEEE PES Prize Paper Award for the paper "A New Concept of Voltage-Collapse Protection based on Local Phasors" |
| 2003 | Bedjanic Award for Doctoral Thesis |
| 1995 | Dean's award for BSc Thesis |
| 1994 | Faculty Preseren Student Award for BSc Thesis |

## LANGUAGE PROFICIENCY

Slovene – native; Bosnian/Croatian/Serbian – fluent; English – fluent; German – spoken; French – basic

## HOBBIES

mountaineering, ski-touring, running, sport climbing, mountain biking, photography, traveling