Yousef Pipelzadeh PhD DIC

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Key Interests

Power Systems, HVDC & FACTS, Integration of modern power electronics devices into power networks, AC/DC operation and control interaction, stability issues (angular, frequency, transient) in large interconnected power grids with HVDC & wind, Wide-area monitoring control. Entrepreneurship, Business development.

Professional Experience

Manitoba HVDC Research Centre, **London, U.K.**
Business Development Manager – U.K. ***2016-Present***

Imperial College, London, **U.K.**
Research Associate ***2012 -Present***

ICON (Imperial Consultants), London, **U.K.**
Principle Investigator ***2012-2016***

Smart Grid Research Institute, Beijing, **China**
HVDC R&D Engineer (3 month post) ***2013***

National Grid, Warwick, **U.K.**
Power Systems Engineer (3 month post) ***2010***

Magor Corporation, Kanata, Canada.
Technical Business Development ***2007 - 2008***

Qualifications

Imperial College, Control and Power Group, London, U.K.
PhD & DIC, Electric Power Systems ***2008 - 2012***

Swansea University, Swansea, U.K.
M.Eng, Communications Systems, 1st class (hons) ***2003 - 2007***

Awards and Recognition

- Paper selected amongst "Best Papers" in IEEE Power and Energy Society General Meeting 2016 (top 60-80 papers from approx. 3500 submitted)
- Full Scholarship Award from Power Network Research Academy (1 of 3 available awards in the U.K.), 2008-2012.
- IEEE Communications Chapter prize for best overall student in undergraduate Electrical & Electronics Engineering department.
- Winners of U.K. formula student car competition class 1 (200) in 2005 and 2006 runners-up in car design concept.

Present Employment Duties and Responsibilities

The Manitoba HVDC Centre (MHRC) is the world leader in power system simulation innovation and applied services. Our expertise provides a comprehensive array of engineering solutions and services. We foster new ideas and technologies through collaborative partnerships globally. Within MHRC my tasks include:

- Development and deployment of all MHRC's products and services including PSCAD, HVDC Line Fault Locator System, Identify and bid on Engineering Consulting projects, PSCAD Training, and Research & Development in the U.K.
- Marketing, promoting and conducted training workshops on a variety of power system topics for our global clients on PSCAD/EMTDC.
- Performing system planning and operation simulation studies in PSCAD/EMTDC and DIgSILENT.
- Develop training course materials, simulation models and tools.

In Addition, I collaborate closely with Imperial College London as a Researcher Fellow. My collaboration allows me to write scientific articles, provide lectures and workshops on Power System topics (in PSCAD) and work closely with facility staff.

Past Engineering/Consulting Projects

Principle Investigator (PI) for the following Engineering/consultancy projects:

C2. Adaptive HVDC Control System and Power Oscillation Damping Methods: Theoretical Developments and case studies on GB Transmission Network (P162.009). client: Electric Power Research Institute, California, USA. Developed System Identification Algorithms and novel robust and adaptive control systems for transient and power oscillation damping. Delivered monthly technical reports presented work to members from EPRI, National Grid and Scottish Power Energy Networks. Report available: https://www.epri.com/ Consulting duration: 18 months.

C1. Damping Contribution from DC Connected Offshore Wind Farms Networks. client: National Grid, U.K.: Reported on the ability of DC connected offshore wind farms to provide system services to the AC transmission networks. Presented findings to National Grid in presence of 6 wind manufacturers (GE, Vestas, etc). The outcome led to new requirements added to National Grids grid-code requirements for future offshore connections. Consulting duration: 2-3 months.

E2. Embedded HVDC links within the National Grid U.K. detailed transmission network. Verification of system performance and studying interaction between AC/DC transmission networks. Proposed novel control methods to enhance the angular stability of the GB transmission network. National Grid House, Warwick, United Kingdom. duration: 3 months.

E1. Interaction of Modular Multi-level Converter based HVDC Systems with AC system dynamics. State Grid Research Institute, Beijing, China. Duration: 3 months.

Grant Proposals

G5. PI: Adaptive HVDC Control System and Power Oscillation Damping Methods, Electric Power Research Institute, USA, circa. £125k. 2012-2013.

G4. PI: Damping Contribution from Offshore Networks, National Grid, U.K.

£12.5k. 2013.

G3. Co-I: Smart Offshore Grids for Onshore Systems Support, EPSRC, SOGOS,(EP/L02148X/1) National Grid, U.K. £822k. submitted 2014.

G2. Co-I: Design and Application Technology of DC Grids, State Grid Corporation China, China. £300k. Submitted 2014.

G1. PI: Role of Smart Grid Technology and Corrective Control in Enhancing Network Capacity Utilisation in GB, PNRA, U.K. £25k. Submitted 2014.

Research Projects

EPSRC Funded Research Projects under the supervision of Prof T.C. Green and Dr Balarko Chaudhuri:

R4. Hubnet: Research leadership and networking for power networks (EP/I013636/1). Corrective Control with Transient Assistive Measures. Infeed loss of large DC links and cascading loss of HVDC stations in close AC proximity analysed and strategies for maintaining system operation devised. 2015-2016 (role: RA)

R3. Enhanced Renewable Integration through Flexible Transmission Options (EP/K006312/1). Study the interaction between Modular Multi-level Converter HVDC links with AC system. 2013-2015 (role: RA)

R2. Control for Energy and Sustainability (EPSRC EP/G066477/1): Adaptive HVDC control system and robust transient stability methods to ensure secure operation of GB power systems. 2012-2013. (role: RA)

R1. Power Network Research Academy (EP/F037686/1), PhD project with Industrial (National Grid) Sponsorship , Coordination of Damping Control in Transmission Networks with HVDC links (published over 10 top-tier journal/conference papers. 2008-2012. Undertook Internships at National Grid in Warwick.

Publications

Standards

S1. System Aspects of HVDC Grids. CENELEC European Committee for Electrotechnical standardization (2015 –present). Bi-monthly meetings in Frankfurt, Germany.

Technical/Consultancy Reports

T3. Electrical Models of New Network Technologies and Devices Including Power Electronics and Supporting ICT Infrastructures, IET Special Interest Publication for the Council for Science and Technology on Modelling Requirements of the GB Power System Resilience during the transition to Low Carbon Energy, Tim Green et al. (co-author).

T2. Adaptive HVDC Control System and Power Oscillation Damping Methods: Theoretical Developments and case studies on GB Transmission Network, Dec 2012. EPRI technical Report, HVDC Transmission, Product ID: 1024321, Available www.epri.com

T1. Damping contribution from HVDC connected offshore wind power plants. National Grid U.K. consultancy report. Sept 2013.

Journals

J5. Pipelzadeh Y, Moreno R, Chaudhuri B, Green T.C., Strbac G., Corrective Control with Transient Assistive Measures: Value Assessment for Great Britain Transmission System, IEEE Transactions on Power Systems, September 2016

J4. Pipelzadeh Y, Ray Chaudhuri N.R.,Chaudhuri B, Green T.C., Coordinated Control of Offshore Wind Farm and Onshore HVDC Converter for Effective Power Oscillation Damping, IEEE Transactions on Power Systems, September 2016

J3. Junyent-Ferré A, **Pipelzadeh Y**, Green T.C., Blending HVDC-link energy storage and offshore wind turbine inertia for fast frequency response, IEEE Transaction on Sustainable Energy, October 2014

J2. Pipelzadeh Y, Ray Chaudhuri N.R.,Chaudhuri B, Green T.C., System stability improvement through optimal control allocation in voltage source converter-based high-voltage direct current links, IET Generation, Distribution, Transmission, Sept. 2012

J1. Pipelzadeh Y, Chaudhuri B, Green T.C., Control Coordination of VSC-HVDC Link for Power Oscillation Damping: A Robust Decentralized Approach Using Homotopy, IEEE Transaction on Control System Technologies, March 2012

Conferences

C17. Oulis Rousis A, **Pipelzadeh, Y**, Green T C, Strbac G, Harvesting Reactive Power from Distributed Generation to Support Transmission Network, CIGRE Paris, Aug 2018.

C16. Oulis Rousis A, **Pipelzadeh, Y**, Green T C, Strbac G, Voltage Support from Distribution Level Resources in South-East England, IEEE PES, Portland, USA, July 2018.

C15. Oulis Rousis A, **Pipelzadeh, Y**, Green T C, Strbac G, Voltage Stability Assessment of the GB Transmission Network: Case Study on South-East region, IET RTDN, Sept 2017.

C14. Goharrizi A Y, **Pipelzadeh, Y**, Muthumuni D, Modeling of Type-3 WF and Investigation of Fault Contribution in Power Systems, IEEE PES GM, Boston, USA, July 2016

C13. Pipelzadeh Y, Green T C , Wu Y, Pang Hui, Cao J., Modelling and Dynamic Operation of the Zhoushan DC Grid: Worlds First Five-Terminal VSC-HVDC Project, HVDC 2015, Korea, Oct 2015

C12. Pipelzadeh Y, Chaudhuri B, Green T.C., Adapa R., Role of Western HVDC Link in Stability of Future Great Britain (GB) Transmission System, IEEE Power and Energy Society General Meeting, Denver, USA, July 2015 (Accepted)

C11. Pipelzadeh Y, Moreno R, Chaudhuri B, Green T.C., Strbac G., Role of Smart Grid Technology and Corrective Control in Enhancing Network Capacity Utilisation in Great Britain with HVDC links, CIGRE May 2015, Lund, Sweden, Sept 2015

C10. Spallarossa, C.E., **Pipelzadeh Y**, Merlin, M.M.C,, Green T.C., Reduced Dynamic

Model of a Modular Multilevel Converter in PowerFactory, IEEE Compel 2015

C9. Spallarossa, C.E., **Pipelzadeh Y**, Green T.C., Influence of Frequency-Droop Supplementary Control on Disturbance Propagation through VSC HVDC Links, IEEE Power and Energy Society General Meeting, Vancouver, Canada, July 2013

C8. Spallarossa, C.E., **Pipelzadeh Y**, Chaudhuri B, Green T.C., Assessment of Disturbance Propagation between AC Grids through HVDC Links using Reduced Great Britain Model, ACDC 2012, Birmingham, U.K., Dec 2012

C7. Pipelzadeh Y, Moreno R, Chaudhuri B, Green T.C., Strbac G., An Assessment of Transient Assistive Measures Using HVDC for Special Protection Schemes: Case on the GB Transmission System, ACDC 2012, Birmingham, U.K., Dec 2012

C6. Pipelzadeh Y, Chaudhuri B, Green T.C., Inertial Response from Remote Offshore Wind Farms Connected Through VSC-HVDC Links: A Communication-less Scheme, IEEE Power and Energy Society General Meeting, San Diego, USA, July 2012

C5. Pipelzadeh Y, Chaudhuri B, Green T.C., The Impact of Significant Wind Penetration and HVDC Upgrades on the Stability of Future Grids: A Case Study on the Australian Power System, CIGRE International Symposium, Bologna, Italy, Sept 2011

C4. Pipelzadeh Y, Chaudhuri B, Green T.C., Coordinated Damping Control Through Multiple HVDC Systems: A Decentralized Approach, IEEE Power and Energy Society General Meeting, Detroit, USA, July 2011

C3. Pipelzadeh Y, Chaudhuri B, Green T.C., Wide-area Power Oscillation Damping Control through HVDC: A case study on the Australian equivalent network, IEEE Power and Energy Society General Meeting, Minnesota, USA, July 2010

C2. Pipelzadeh Y, Chaudhuri B, Green T.C.., Decentralized Control for Damping Multi-Modal Oscillations through CSC/VSC HVDC Transmission, ACDC 2010, London, U.K.

C1. Pipelzadeh Y, Chaudhuri B, Green T.C., Stability Improvement through HVDC Upgrade in the Australian Equivalent System, UPEC 2010, Cardiff, U.K.

Invited Speaker

I8. Stationery Energy Storage System Using Second Life EV Batteries, European Utility Week, Amsterdam, Netherlands. October 2017. http://programme2017.european-utility-week.com/presentation/session-development-10

I7. Transition to a Low Carbon Economy – Hydro Resources and their Integration in the Transmission Network, European Bank for Reconstruction and Development (EBRD), London, U.K. Feb 2016. Attended by all prime ministers from the Western Balkan region, government ministers, political decision-makers and leading entrepreneurs. http://www.ebrd.com/news/events/western-balkans-investment-summit.html

I6. Panel Discussion: Game Changing Technologies, African Energy Forum, London, U.K., June 2016. Attended by government ministers, political decision-makers and leading entrepreneurs. Fully sponsored by the Canadian High Commission (Panelist/Speaker)

I5. Increasing Renewables in the Energy Mix, Crans Montana Forum on Central and Eastern Europe, Vienna, Austria, July 2016 (Panellist)

I4. Operating Future Power Systems: Challenges and Opportunities, Nigerian Energy Forum, April 2016 (Keynote speaker)

I3. Design, Control and Optimization Challenges in HVDC Systems, Manitoba Hydro, Winnipeg, Canada, March 2015 (Speaker)

I2. The Future of Offshore HVDC Grids in the UK: Big Challenge, Big Opportunity. Theme: Towards HVDC Grids Challenges for the Future Power System, IEEE EnergyCon, May 2014, Dubrovnik, Croatia (Invited Speaker)

I1.Coordinated Control of Offshore Wind Farms and VSC-HVDC links for Effective Power Oscillation Damping, CIGRE, Alstom UK, Staffordshire, U.K, Sept 2011

Professional Training & Supervision

T5. PSCAD/EMTDC Training: conducted as the lead instructor PSCAD/EMTDC training globally. 2016 - Present.

T4. Center for Doctoral Training (CDT) in Future Networks and Smart Grids, *Control and Protection of Future Networks:* Course instructor to PhD scholars teaching practical insight into Power System topics in PSCAD/EMTDC & DIgSILENT. Developed course material and marking. 2015 - Present.

T3. MSc Sustainable Energy Futures, Imperial College: lead instructor on Power Systems Application in simulation tools. Developed course material & marking. 2011-2015.

T2. BEng Electrical Energy Systems, Imperial College: lead course instructor on Power Systems Application in DIgSILENT. Developed course material and marking. 2011-2014.

T1. Lab Demonstrator, Imperial College: Provide guidance to undergraduate students in the Maurine Hancock Lab at Imperial College, 2008-2009.

S3. Advisor/Mentor to several PhD students, Imperial College: 2012-present

S2. Final year MEng & MSc project supervisor, Imperial College: Advised bi-weekly MEng group project, 2010 – 2017

S1. Mathematics Tutor, Imperial College: Provided additional support to 1st year Electrical Engineering students, 2009-2012

Service

- Nominated by the British Standard Institute as **U.K. Principle Expert** in Cenelec TC8X/WG 06 (System Aspects of HVDC Grids). An active participating member in several working groups "Coordination of HVDC Grid and AC systems", "HVDC Grid Systems".
- Presented at over 25 conferences/events across the world (6 continents)
- Reviewer for IEEE Transactions on (Power Delivery, Smart Grids, Power Systems), IET

GDT and Elsevier.

- Reviewed book proposal and contents for Wiley
- Member of Imperial College futsal team
- Regional representative for IET across South Wales
- Electrical Engineering class representative and student union ambassador
- Swansea University formula student team member. Designed, developed, built and raced a formula student car. Obtained 1st position from 12 universities in the class 1 (200 series)

Entrepreneurship Appointments

Technical Business Development, Wesley Clover (Magor Corporation), Kanata, Canada

Selected as one of four graduates from U.K. to undertake an Entrepreneurial programme by establishing a new-start up venture under the mentorship of business magnate, serial high-tech entrepreneur Sir Terry Matthews in the silicon valley of Canada. We developed vertical solutions targeted at customers requirements. A full life-cycle development of a product was experienced from understanding the competitors, contributing in writing design specifications, developing the product through to end-user sales. 2007-2008.

Professional Memberships

- Institute of Electrical and Electronics Engineering (IEEE)
- IEEE Power and Energy Society
- Institute of Engineering and Technology (IET)
- CIGRE

Relevant Software Skills and Training

- **Operating systems:** Windows, Mac OS X, Unix/Linux
- **Softwares:** PSCAD/EMTDC, DIgSILENT, MATLAB, MS packages, LaTeX