

PROGRAMME

Tuesday 7 December 2021

12:00	Chairs welcome		
12:05	Keynote UK's Progress in defining the needs of Grid Forming power electronic converters Antony Johnson, Power System Engineer – Senior Technical Codes Change Lead at National Grid (ESO) Chair: Carl Barker		
12:50	Themed Discussion group Market approach for energy based services; should delivering inertia, damping, etc. be a requirement or a procured service Moderator: Andrzej Adamczyk		
13:00	Break		
13:10	Beginning of Session 1		
	Session 1a, The integration and use of Grid Forming in power systems Chair: Colin Davidson	Session 1b, Assessment of HVDC control stability Chair: Chidinma Agwu	Session 1c, HVDC integrating offshore Wind Chair: Ben Marshall
031	Providing Synchronous Grid Forming Capability through HVDC Transmission Carl Barker, Andrzej Adamczyk, John Fradley, Omar Jasim, <i>GE Grid Solutions, UK</i>	008 Estimation of symmetrical components with fast dynamics for VSC-HVDC Pablo Briff, <i>GE Renewable Energy, UK</i>	024 A new control method for fault-ride-through of HVDC-connected offshore wind parks Omar Jasim, Pablo Briff, Aleem Abid, <i>GE Renewable Energy, UK</i>
027	Inertial Support by Virtual Synchronous Machine Control of a MMC-based VSC HVDC Link Francesco Giacomo Puricelli, Adedotun Jeremiah Agbemuko, Jef Beerten, <i>KU Leuven, Belgium</i>	011 Application of phasor-based functionality to HVDC control in reduced system strength Mohammad Golshani, Douglas Wilson, Seán Norris, <i>GE Digital, UK</i> , Ian Cowan, Md Habibur Rahman, Benjamin Marshall, <i>National HVDC Centre, UK</i>	023 A Systematic Review of DC Wind Farm Collector Cost-Effectiveness Victor Timmers, Agusti Egea-Alvarez, University of Strathclyde, UK, Aris Gkountaras, Siemens Energy, Germany
025	Assessment of droop and VSM equivalence considering the cascaded control dynamics Sam Harrison, Callum Henderson, Panagiotis N. Papadopoulos, Agusti Egea-Alvarez, <i>University of Strathclyde, UK</i>	014 Equivalence and Accuracy Evaluation of Linearized State-Space Models of the Modular Multilevel Converter for Small-Signal Stability Analysis Ozgur Can Sakinci, Jef Beerten, <i>KU Leuven, Belgium</i>	029 The use of Multi-Purpose Interconnectors to meet net zero by 2050 David Devoy, Christopher Smith, Morris Bray, Elizabeth Wells, Rajiv Lodhia, Martin Moran, <i>National Grid Ventures, UK</i>
034	Effect of short circuit ratio and current limiting on the stability of a virtual synchronous machine type grid-forming converter Arash Fazel Darbandi, Ajinkya Sinkar, Aniruddha Gole, <i>University of Manitoba, Canada</i>	010 Passivity-Based Sensitivity Analysis regarding Control Structures in Grid-Following MMC-HVdc Applications Carolin Hirsching, Alexander Bisseling, Michael Suriyah, Thomas Leibfried, <i>Karlsruhe Institute of Technology (KIT), Germany</i> , Simon Wenig, Max Goertz, <i>TransnetBW GmbH, Stuttgart</i>	021 Dynamic studies on HVDC-OWF systems – Impact of WTG on HVDC performances Hani Saad, Markus Vor Dem Berge, <i>RTE-international, France</i> , Benjamin Marshall, Oluwale D. Adeuyi, <i>HVDC Centre, UK</i> , Razvan Pabat-Stroe, <i>Scottish Power Renewables, UK</i>

14:35	Interfacing FACTS with HVDC Panel Discussion Simon Wenig, TransnetBW GmbH (TSO) Perry Hofbauer, PSC Consulting UK (HVDC/FACTS Consultant) Carl Barker, GE (HVDC supplier) Mark Norton, Smart Wires Inc. (FACTS supplier) Chair: Mike Barnes		
15:25	Themed Discussion group <i>Can grid forming converters do better than synchronous machines?</i> Moderator: Andrzej Adamczyk		
15:35	Beginning of Session 2		
Session 2a, Sub-System Simulation and Modelling Chair: Mike Barnes	Session 2b, Control & Protection of HVDC and FACTS Chair: Dechao Kong	Session 2c, Increasing Renewable's impact on the existing AC grid Chair: Chidinma Agwu	
012	Representative Modelling of Very Long HVDC Cables Josh Schipper, Radnya Mukhedkar, <i>University of Canterbury, New Zealand</i> , Saijie Sim, Quy Dang, <i>Sun Cable Pty Ltd, Australia</i>	020 Hardware-in-the-loop tests and analysis of HVDC systems impact on distance protection performance Di Liu, Qiteng Hong, Adam Dyško, Dimitrios Tzelepis, Campbell Booth, <i>University of Strathclyde, UK</i> , Ian Cowan, Bharath Ponnalagan, <i>National HVDC Centre, UK</i>	022 Cooling of large rotating machines in highly renewable electricity systems Vijay Shinde, Jan Braam, Hendrik Steins, Stephan Werkmeister, <i>Siemens Energy, Germany</i>
036	On modeling of air-core inductors for DC protection studies Willem Leterme, Dirk Van Hertem, <i>Ku Leuven, Belgium</i> , Christian Niederauer, Alexander Gaun, <i>Coil Innovation, Austria</i>	028 Evaluate HVDC Protection and Control Schemes Using High Speed Process Bus Technology Shane Jin, <i>RTDS Technologies Inc, Canada</i> , Tim Stott, <i>GE Grid Integration Solutions, UK</i>	Session 2.5c, VSC Switching Algorithms Chair: Pablo Briff
	013 A Novel Method to Provide Harmonics Damping to VSC-HVDC Converters Luiz Souza, Amit Kumar, Karolina Carvalho, <i>GE Grid Solutions, UK</i>	040 Optimal Switching of Submodules in Modular Multilevel Converters E. P.-Araujo, S. D.-Tavakoli, O. G.-Bellmunt, <i>Universitat Politècnica de Catalunya, Spain</i> , S. Fekriasl, <i>VITO, Belgium</i> , M. Bazargan, <i>Power Technologies Limited, UK</i>	
16:35	End of Day 1		

Wednesday 8 December 2021

12:00	Chair's Welcome	
12:05	Keynote Interconnectors – supporting the road to Net Zero Christopher Smith, Interconnector Asset Strategy Manager at National Grid (Ventures) Chair: Carl Barker	
12:50	Themed Discussion group <i>Future of bulk vs distributed generation; is the view that we will slowly walk away from bulk power generation in favour of distributed generation still true considering the increasing rating of renewable generation plants?</i> Moderator: Andrzej Adamczyk	
13:00	Break	
13:10	Beginning of Session 3	
	Session 3a, Operating experiences (lessons learned) from existing HVDC and FACTS installations Chair: Ben Marshall	Session 3b, Power electronic integration in distribution systems Chair: Mike Barnes
	Session 3c, AC Frequency Dynamics (Part 1) Chair: Omar Jasim	
037	Mid-life refurbishment of an HVDC interconnector control system Sam Gibson, Mutual Energy Limited, Northern Ireland, Nathaniel Cowton, TNEI, England, Mojtaba Mohaddes, TransGrid Solutions, Canada, Helmut Klimsa, Siemens Energy, Germany	001 The integration of renewable Generation with Electric Vehicle Charging Barrie Murray, <i>Electricity Market Services, UK</i>
		004 Dynamic Adjustment of a VSC's Reactive Current Limit to Improve Frequency Stability John Fradley, Carl Barker, Li Zou, <i>GE Grid Solutions, UK</i>
007	Considerations and type tests for steep fronted dv/dt and di/dt fault events in Voltage Sourced Converter HVDC valves Colin Davidson, Alistair Burnett, Mikel Olalquiaga-Sam-Emeterio, <i>GE Grid Integration Solutions, UK</i> , Theodor Heath, <i>The University of Manchester, UK</i>	038 Protection of LVDC networks integrating smart transformers: The case of LV engine Falkirk trial site Vasileios Psaras, Rafael P. Alzola, Ibrahim Abdulhadi, Graeme Burt, <i>University of Strathclyde, UK</i> , Ali Kazerooni, <i>SP Energy Networks, UK</i> , Francis Shillitoe, <i>WSP, UK</i>
		005 Impact of fast frequency response on power system transient stability Zaichun Zhang, Surat Asvapoositkul, Robin Preece, <i>The University of Manchester, UK</i>
	Session 3.5a, Line commutated Converter (LCC) HVDC in AC power system Chair: Amit Kumar	019 Application of a distribution Statcom to manage network voltages Orla Martin, <i>NIE Networks, UK</i> , Simon Terry, Nathaniel Bottrell, <i>Ricardo Energy & Environment, UK</i>
		006 Investigating Frequency Services to Stabilise Low Inertia Power Systems Kantitat Sasompholsawat, Robin Preece, <i>The University of Manchester, UK</i>
002	Calculation method for the contribution of HVDC stations with line-commutated converters (LCC) to the AC short-circuit current Andreas Saciak, Uriel Mora, Gerd Balzer, Jutta Hanson, <i>Technical University of Darmstadt, Germany</i>	
		030 Frequency restoration reserves procurement with HVDC systems Abhimanyu Kaushal, Hakan Ergun, Dirk Van Hertem, <i>KU Leuven, Belgium</i>
039	Test Case_Modular SSSC and LCC-based HVDC Link Technical Synergies Sebastian Hincapie, Camilo A. Ordonez, Mario Patino, <i>Alejandro Duque, Smart Wires Inc, USA</i>	
14:35	Lifecycle of HVDC interlink session Rajat Aggarwal, Mott MacDonald Chair: Pablo Briff	
15:25	Themed Discussion group <i>Future of grid level simulations – will today's approach hold; RMS to EMT? . Will we have to increase the model fidelity around medium or even low voltage networks?</i> Moderator: Andrzej Adamczyk	

15:35	Beginning of Session 4	
Session 4a, Utilisation of Battery Energy Storage Systems (BESS) Chair: Ahmed Zobaa	Session 4b, Large network Simulation Chair: Anna Ferguson	Session 4c, AC Frequency Dynamics (Part 2) Chair: John Fradley
016 STATCOM+BESS modelling and harmonic analysis Damian Vilchis-Rodriguez, Arsim Ahmedi, Mike Barnes, <i>The University of Manchester, UK</i> , Shuhang Shen, Zhongdong Wang, <i>University of Exeter, UK</i> Siyu Gao, <i>National Grid, UK</i>	035 An accurate model for steady-state and dynamic analysis of the Sicilian network with HVDC interconnections Rossano Musca, Eleonora Riva Sanseverino, Gaetano Zizzo, <i>Univeristy of Palermo, Italy</i> , A. L'Abbate, <i>RSE, Italy</i>	032 Hybrid algorithm of particle swarm Optimization and Grey Wolf Optimizer for Load Frequency control aor Interconnected Power Systems M.A.Sobhy, M.Ezzat, Hany M. Hasanien, Y. Abdelaziz, <i>Ain Shams University, Egypt</i> , Ahmed F. Zobaa, <i>Brunel University London, UK</i>
026 Evaluation of a flexible solution, using a BESS scheme to supply 11kV distribution network in islanded mode during disturbances Dimitrios Vozikis, Abdullah Emhemed, Stewart Hynds, <i>WSP, UK</i> , Maciej Filla, Sarah Rigby, <i>SSEN, UK</i>	018 DC segmentation: A promising solution to improve angle stability of stressed power systems Mathieu Robin, Juan-Carlos Gonzalez-Torres, Abdelkrim Benchaib, <i>SuperGrid Institute, France</i> Javier Renedo, Aurelio Garcia-Cerrada, Pablo Garcia-Gonzalez, <i>Instituto de Investigación Tecnológica, Spain</i>	Session 4.5c, Multi-terminal HVDC converter control and protection Chair: Dechao Kong
033 Analysis and design of modular multilevel converters with partial integration of energy storage systems Leandro D O Porto, Florian Errigo, Florent Morel, <i>SuperGrid Institute, France</i>		015 A double bus configuration with multi-port DC circuit breakers for DC switching stations Shuai Shao, Kenichiro Sano, <i>Tokyo Institute of Technology, Japan</i>
		017 A MISO Fault detection for HVDC grids Ilka Jahn, Mehrdad Nahalparvari, Staffan Norrga, <i>KTH Royal Institute of Technology, Sweden</i>
16:35	End of Day 2	