

ACDC 2019

15th International conference on AC and DC Power
Transmission

5 – 7 February 2019 | Doubletree by Hilton, Coventry, UK

PROGRAMME

| Wednesday 6 February 2019 | |
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| 08:30 | Registration and refreshments Exhibition opens |
| 09:10 | Conference Chair's welcome and introduction Carl Barker, Consulting Engineer, GE Grid Solutions, UK |
| 09:15 | Room: Minister Suite 1 Keynote: Development of AC/DC systems and Equipment in China Dr Ting An, Chief Expert and Technical Director, Global Energy Interconnector Research Institute (GEIRI), China |
| | Session 1: New HVDC or FACTS projects planned or under development 1 Session chair: Dr Anna Ferguson, WSP, UK |
| 10:00 | Session chair's summary |
| 10:05 | 1.1 The design and development of a 2000MW HVDC interconnector between Great Britain and France N MacLeod, N Cowton, V Barry, M McGuckin, WSP, UK, V Temerko, Aquind, UK |
| 10:20 | 1.2 Kriegers Flak combined grid solution – novel double use of offshore equipment A K Marten, R Stornowski, 50Hertz Transmission, Germany, Akhmatov, Energinet, Denmark |
| 10:35 | 1.3 Development of HVDC offshore grids in the European system: long-term transmission expansion analyses A L'Abbate, R Calisti, RSE SpA, Italy, S Rossi, ARERA, Italy |
| 10:50 | 1.4 NorthConnect HVDC interconnector G Love, PSC, Ireland, J Gleadow, Direct Current Consulting Ltd, UK |
| 11:05 | Refreshments and exhibition Poster session 1 |
| | Session 2a Room: Canterbury Suite Operating experiences (lessons learned) from existing HVDC and FACTS installations 1 Session chair: Dr Maryam Salimi, Fichtner GmbH, Germany |
| | Session 2b Room: Minister Suite 1 Moving towards 100% non-synchronous generation Session chair: Prof Jun Liang, Cardiff University, UK |
| 11:40 | Session chair's summary |
| 11:45 | 2a.1 The changing landscape of Great Britain's electricity interconnector usage N Cowton, K Harold, WSP, UK |
| | 2b.1 AC Fault dynamic studies of islanded grid including HVDC links operating in VF-control H Saad, S Dennetiere, G Denis, P Rault, RTE, France |

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| 12:00 | 2a.2 Symmetrical VSC monopole scheme alternative grounding circuits C Sonnathi, R Ginnareddy, R Mukhedkar, <i>GE Power Grid Solutions, UK</i> | 2b.2 Extracting artificial inertia from a HVDC transmission scheme A Adamczyk, C Barker, M Ferraz, R Whitehouse, <i>GE, UK</i> |
| 12:15 | 2a.3 Implementation of a dedicated control to limit adverse interaction in multi-vendor HVDC systems P Rault, O Despouys, A Petit, H Saad, <i>RTE, France</i> , D Vozikis, <i>UoS</i> , S Gao, <i>ELIA</i> , J Freytes, <i>L2EP</i> , M Narayanan, M Ramet, <i>GE</i> , M Zeller, <i>SIEMENS</i> , P Askvid, <i>ABB</i> | 2b.3 Reliability and economic evaluation of high voltage direct current interconnectors for large-scale renewable energy integration and transmission A Thompson, <i>Western Power Distribution, UK</i> , B Kazemtabrizi, C Crabtree, C Dao, <i>Durham University, UK</i> , F Dinmohamadi, D Flynn, <i>Herriot Watt University, UK</i> |
| 12:30 | Lunch and exhibition Poster session 1 | |
| | Session 3a: Room: Canterbury Suite Multi-terminal HVDC converter control and protection (both VSC and LCC) 1 Session chair: Prof Mike Barnes, <i>Manchester University, UK</i> | Session 3b Room: Minister Suite 1 Applications and experience of power electronics in the distribution network Session chair: Dr Sajjad Fekriasl, <i>ABB, UK</i> |
| 13:30 | Session chair's summary | Session chair's summary |
| 13:35 | 3a.1 Novel partial power flow solver for multi-terminal HVDC control I Baptiste, M Barnes, O Marjanovic, <i>IEEE</i> | 3b.1 Assessment of passive islanding detection methods for dc microgrids A Makkieh, A Florida-James, D Tzelepis, A Emhemed, G Burt, S Strachan, <i>University of Strathclyde, UK</i> , A Junyent-Ferre, <i>Imperial College London, UK</i> |
| 13:50 | 3a.2 Single pole to ground fault location in HVDC transmission lines using low frequency current measurements N Mohamed Haleem, A Rajapakse, <i>University of Manitoba, Canada</i> | 3b.2 Analysis of harmonic transfer through MVDC Link T Joseph, W Ming, G Li, J Liang, <i>Cardiff University, UK</i> , A Moon, K Smith, J Yu, <i>SP Energy Networks, UK</i> |
| 14:05 | 3a.3 Analysis of steady-state power transfer capability and dynamic performance of VSC-HVDC with impedance-compensated synchronisation method connected to weak AC grid M Hamood, O Marjanovic, J Carrasco, <i>University of Manchester, UK</i> | 3b.3 Design and integration of an MVDC device on a uk distribution network operator's 33kV network J Berry, <i>Western Power Distribution, UK</i> , N Murdoch, D Hardman <i>GHD, UK</i> |
| 14:20 | 3a.4 A realistic telecommunication model for electromagnetic transient simulations and control assessment of multi-terminal VSC-HVDC networks in PSCAD/EMTDC J Carmona Sanchez, P Green, M Barnes, O Marjanovic, <i>The University of Manchester, UK</i> | 3b.4 The impact of MVDC upon conventional distance protection schemes in hybrid ac-dc distribution networks L Hunter, C Booth, A Dysko, <i>University of Strathclyde, UK</i> , S Finney, <i>The University of Edinburgh, UK</i> , A Junyent-Ferre, <i>Imperial College London, UK</i> |
| 14:35 | 3a.5 Improved droop control with DC Grid resonance damping capability A Egea -Álvarez, <i>University of Strathclyde, UK</i> , S Fekriasl, <i>ABB, UK</i> , E Prieto-Araujo, <i>CITCEA-UPC, Spain</i> | 3b.5 Multi-operational zone-based LVDC distribution system concept for facilitating low carbon technologies uptake A Emhemed, D Wang, G Burt, J Zafar <i>University of Strathclyde, UK</i> , A Kazerooni, <i>WSP, UK</i> , A Donoghue, <i>SP Energy Networks, UK</i> |
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| 14:50 | | 3b.6 Controlling a 33 kV flexible power link in GB's distribution network S Jupe, S Hoda, J King, D Dale, <i>Nortech Management Ltd, UK</i> , J Berry, <i>Western Power Distribution, UK</i> |
| 15:05 | Refreshments and exhibition Poster session 1 | |
| | Session 4a Room: Canterbury Suite New converter topologies for the power sector Session chair: Assistant Prof Jef Beerten, <i>KU Leuven - EnergyVille, Belgium</i> | Session 4b: Room: Minister Suite 1 New HVDC or FACTS projects planned or under development 2 Session chair: Dr Norman MacLeod, <i>WSP, UK</i> |
| 15:35 | Session chair's summary | Session chair's summary |
| 15:40 | 4a.1 DC-DC transformer for interconnecting HVDC grids of different technologies and grounding schemes into an HVDC multi-terminal grid R Ferrer San Jose, E Prieto-Araujo, O Gomis-Bellmunt, <i>CITCEA-UPC, Spain</i> , D Woodford, <i>Electranix Corporation, Canada</i> | 4b.1 Analysis of transient overvoltages in the rigid bipolar configuration M Goertz, S Wenig, C Hirsching, K Schäfer, M Suriyah, T Leibfried, <i>Karlsruhe Institute of Technologie, Institute of Electric Energy Systems and High-Voltage Technology, Germany</i> , S Beckler, J Reisbeck, M Kahl, <i>TransnetBW GmbH, Germany</i> |
| 15:55 | 4a.2 Filterless line commutated converter for HVDC transmission C Udagama, P Briff, K Vershinin, <i>GE's Grid Solutions Business, UK</i> | 4b.2 On control and balancing of MMC-HVDC links in rigid bipolar configuration C Hirsching, S Wenig, M Goertz, M Suriyah, T Leibfried, <i>Institute of Electric Energy Systems and High-Voltage Technology, Karlsruhe Institute of Technology, Germany</i> , S Beckler, M Kahl, J Reisbeck, <i>TransnetBW GmbH, Germany</i> |
| 16:10 | 4a.3 A hybrid cascaded converter applicable for UHVDC transmission and feeding to load centre R Yang, W Xiang, J Wen, <i>Huazhong University of Science and Technology, China</i> , W Lin, <i>TBEA China Xinjiang Sunoasis Co., Ltd, China</i> | 4b.3 A new test circuit for operational testing of HVDC valves C Davidson, J Vodden, J Snazell, <i>GE's Grid Solutions Business, UK</i> |
| 16:25 | | 4b.4 System stability by using a mobile STATCOM – Simulation in the UK grid T Schlegl, R Morgenstern, E Spahic, <i>Siemens AG, Germany</i> , S Clifford, <i>Siemens Transmission & Distribution Limited, UK</i> |
| 16:40 | Close of day 1 | |
| 18:30 | Coach arrival | |
| 19:00 | Drinks reception | |
| 20:00 | Conference Dinner | |

| Thursday 7 February 2019 | |
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| 08:30 | Welcome refreshments and exhibition |
| 09:00 | Room: Minister Suite 1 Keynote: DC Application at the Distribution Networks Dr James Yu, Future Networks Manager, Scottish Power, UK |
| | Session 5 Multi-terminal HVDC converter control and protection (both VSC and LCC) 2 Session chair: <i>Dr Rose Urban, WSP, UK</i> |
| 09:45 | Session chair's summary |
| 09:50 | 5.1 Study of the impact of DC-DC converters on the protection of HVDC grids J Paez, J Maneiro, P Dworakowski, A Bertinato, <i>SuperGrid Institute, France</i> , D Frey, S Bacha, <i>G2ELab, France</i> |
| 10:05 | 5.2 Tank test circuit for fast DC circuit-breakers S Nee, L Angquist, T Modeer, A Baudoin, S Norrga, <i>SCiBreak AB, Sweden</i> |
| 10:20 | 5.3 Investigation of the impact of interoperability of voltage source converters on HVDC grid fault behaviour V Psaras, A Emhemed, G Adam, G Burt, <i>University of Strathclyde, UK</i> |
| 10:35 | 5.4 Virtual capacitor control for stability improvement of HVDC system comprising DC reactors K Shinoda, A Benchaib, J Dai, <i>SuperGrid Institute, France</i> , X Guillaud, <i>L2EP, France</i> |
| 10:50 | Refreshments and exhibition Poster session 2 |
| | Session 6a Room: Canterbury Suite Multi-terminal HVDC converter control and protection (both VSC and LCC) 3 Session chair: <i>Dr Dechao Kong, National Grid, UK</i> |
| | Session 6b Room: Minister Suite 1 Hybrid AC/DC optimal power flow for meshed HVDC Grids Session chair: <i>Associate Prof Dirk Van Hertem, KU Leuven - EnergyVille, Belgium</i> |
| 11:15 | Session chair's summary |
| 11:20 | 6a.1 Small-signal dynamics of MMC-based DC grid system Y Wang, C Guo, C Zhao, <i>North China Electric Power University, China</i> |
| | 6b.1 Hybrid AC/DC optimal power flow for meshed HVDC grids: case studies H Ergun, J Dave, D Van Hertem, <i>KU Leuven/EnergyVille, Belgium</i> , T An, C Han, <i>Global Energy Interconnection Research Institute, China</i> , F Geth, <i>CSIRO, Australia</i> |
| 11:35 | 6a.2 Design and test of VSC assisted resonant current (VARC) DC circuit breaker L Angquist, S Nee, T Modeer, A Baudoin, S Norrga, <i>SCiBreak AB, Sweden</i> N Belda, <i>DNV GL KEMA Laboratories, The Netherlands</i> |
| | 6b.2 Wide area synchrophasor measurements based AC/DC integrated remedial action scheme for overload prevention N Vettuthuruthel Raju, A Rajapakse, <i>University of Manitoba, Canada</i> , I Fernando, D Diakiw, <i>Manitoba Hydro, Canada</i> |
| 11:50 | 6a.3 A Back-up protection strategy for future DC grids utilising travelling wave energy M Ikhide, <i>Coventry University, UK</i> , S Tennakoon, A Griffiths, <i>Staffordshire University, UK</i> , H Ha, A Adamczyk, <i>GE Power, Grid Solutions, UK</i> , S Subramanian, <i>Grid Engineering and Innovation Consultants, UK</i> |
| | 6b.3 Interoperability of different voltage source converter topologies in HVDC grids D Guo, M Rahman, G Adam, L Xu, A Emhemed, G Burt, <i>University of Strathclyde, UK</i> , Y Audichya, <i>The National HVDC Centre, UK</i> |

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| 12:05 | 6a.4 Coordination of mechanical DCCBs and temporary blocking of Half Bridge MMC M Zaja, D Jovcic, <i>University of Aberdeen, UK</i> | 6b.4 Effects of Time Delay, DC offset, and truncation errors on interfacing of a phase-locked loop (PLL) with a real-time simulator for controller hardware-in-loop (CHIL) simulation Y Yi, A Sinkar, A Gole, <i>University of Manitoba, Canada</i> |
| 12:20 | Lunch and exhibition Poster session 2 | |
| 13:20 | Conference Chair's closing remarks Carl Barker, Consulting Engineer, GE Grid Solutions, UK | |
| | Session 7a Room: Canterbury Suite Multi-terminal HVDC converter control and protection (both VSC and LCC) 4 Session chair: Chidnma Agwu, <i>WSP, UK</i> | Session 7b Room: Minister Suite 1 Modelling of power electronic systems for large area AC network stability studies Session chair: Prof Eduardo Prieto, <i>Citcea, Spain</i> |
| 13:25 | Session chair's summary | Session chair's summary |
| 13:30 | 7a.1 Preventive coordination of active power set-points and DC voltage control for enhanced N-1 security in mixed AC-HVDC-systems T Sennewald, F Sass, F Linke, D Westermann, <i>TU Ilmenau, Germany</i> | 7b.1 Modelling of VSC-HVDC multi-terminal systems for small-signal angle stability analysis J Renedo, L Sigrist, A García-Cerrada, L Rouco, <i>Universidad Pontificia Comillas, Spain</i> |
| 13:45 | 7a.2 Installation and interfacing HVDC control replicas at The National HVDC Centre I Cowan, S Marshall, <i>The National HVDC Centre, UK</i> | 7b.2 Small signal state space model of the frequency-dependent DC cable based on direct curve fitting S Kovacevic, D Jovcic, <i>University of Aberdeen, UK</i> , P Rault, A Schwob, <i>RTE, France</i> |
| 14:00 | 7a.3 Protection and pole voltage rebalancing for pole-to-ground faults in symmetrical monopolar HVDC grids M Wang, W Leterme, G Chaffey, J Beerten, D Van Hertem, <i>KU Leuven, Belgium</i> | 7b.3 Methodology for state-space modelling of power electronic elements in modern electrical energy M Patino, S Höhn, <i>Siemens AG, Germany</i> , R Dimitrovski, M Luther, <i>Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany</i> |
| 14:15 | 7a.4 Development of a small-signal model for multi-terminal LCC schemes K Ma, <i>Manitoba Hydro, Canada</i> , U Annakkage, <i>University of Manitoba, Canada</i> , C Karawita, <i>TransGrid Solutions Inc., Canada</i> | 7b.4 Investigation of sub-synchronous control interaction for ICC using the generalized nyquist stability criterion Y Qi, A Gole, <i>University of Manitoba, Canada</i> , X Chen, <i>Electranix Corporation, Canada</i> |
| 14:30 | 7a.5 Bipolar fault performance analysis and protection solutions in VSC-MTDC system X Zhang, <i>University of Birmingham, UK</i> , L Chen, <i>State Grid Global Energy Interconnection Research Institute, China</i> | 7b.5 Vector fitting-based reduced order modelling method for power cables W Zhou, Y Wang, Z Chen, <i>Aalborg University, Denmark</i> |
| 14:45 | | 7b.6 A new practical approach to evaluate critical gain for an HVDC based damping controller using wide area measurement system R Vaid, M Das, A Gole, <i>University of Manitoba, Canada</i> |
| 15:00 | Refreshments and exhibition Poster session 2 | |

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| | Session 8a Room: Canterbury Suite Operating experiences (lessons learned) from existing HVDC and FACTS installations 2 Session chair: Dr Ziming Song, <i>Toshiba International, UK</i> | Session 8b Room: Minister Suite 1 Off-shore wind connections brought to shore with the assistance of power electronics Session chair: Dr Jenny Z. Zhou, <i>Teshmont Consultants LP, Canada</i> |
| 15:30 | Session chair's summary | Session chair's summary |
| 15:35 | 8a.1 Modelling requirements for harmonic studies N Denboer, C Karawita, M Mohaddes, <i>TransGrid Solutions Inc., Canada</i> | 8b.1 On the performance of the energy-controlled MMC: impact of the internal and the DC capacitances in HVDC applications E Sánchez-Sánchez, E Prieto-Araujo, O Gomis-Bellmunt, <i>CITCEA-UPC, Spain</i> |
| 15:50 | 8a.2 Provision of fast frequency response by SVC PLUS frequency stabiliser K Frey, M Garg, E Spahic, R Morgenstern, N Platt, <i>Siemens AG, UK</i> | 8b.2 A Novel control strategy for frequency and voltage support from off-shore wind farm through HVDC link X Chen, G Irwin, A Isaacs, <i>Electranix Corporation, Canada</i> |
| 16:05 | 8a.3 Compensation of the voltage fluctuations in the distribution network of London Underground using the SVC PLUS® S Schneider, S Henschel, H Platz, <i>Siemens AG, Germany</i> , S Marshall, <i>Siemens Mobility, UK</i> , A Pallett, <i>London Underground Limited, UK</i> | 8b.3 Parallel operation of HVDC DRU and VSC converters for offshore wind farm connection: technical-economic feasibility M Hoffmann, M Kurrat, N Hemdan, <i>Technische Universität Braunschweig, Germany</i> , C Rathke, A Menze, <i>TenneT Offshore GmbH, Germany</i> |
| 16:20 | | 8b.4 Mathematical harmonic model of VSC HVDC for offshore applications E Lavopa, O El-Sanharawi, R Mukhedkar, J Monteiro, <i>GE Power, Grid Solutions, UK</i> |
| 16:35 | Close of Conference | |

| Wednesday 6 February 2019 | |
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| Poster session 1 | |
| P1 | Control of VSC to emulate the inertia support of a synchronous machine M Annakkage, C Karawita, H Suriyaarachchi, <i>TransGrid Solutions Inc., Canada</i> , U Annakkage, <i>University of Manitoba, Canada</i> |
| P2 | A new islanding detection method for grid-connected photovoltaic system based on harmonic impedance sequence component S Gao, K Wang, <i>Xi'an University of Science and Technology, China</i> , B Yun, <i>Xi'an Xirui Engineering Technology Limited Company, China</i> |
| P3 | Optimal proportion and interconnection performance of hybrid half-wavelength AC transmission line H Liang, Y Liu, G Sheng, X Jiang, <i>Shanghai Jiao Tong University, China</i> |
| P4 | Quantification of transient fault let-through energy within a faulted LVDC distribution network D Wang, A Emhemed, G Burt, K smith, J Zafar, <i>University of Strathclyde, UK</i> , A Kazerooni, <i>WSP, UK</i> , A Donoghue, <i>SP Energy Networks, UK</i> |
| P5 | Lifetime estimation and performance evaluation for offshore wind farms transmission cables J A Pérez-Rúa, K Das, NA Cutululis, <i>DTU Wind Energy, Denmark</i> |
| P6 | Cost analysis and comparison between modular multilevel converter (MMC) and modular multilevel matrix converter (M3C) for offshore wind power transmission J Luo, K Lin, J Li, Y Xue, X Zhang, <i>University of Birmingham, UK</i> |
| P7 | Analysis of maximum power transfer capability of a hybrid modular multilevel converter C Nanayakkara Yapa, U Annakkage, S Filizadeh, <i>University of Manitoba, Canada</i> , C Karawita, <i>TransGrid Solutions Inc., Canada</i> |
| P8 | Impact of MTDC grid reconfiguration and control on the dynamics of the GB System R Shah, <i>CQUniversity, Perth and The University of Manchester, UK</i> M Barnes, R Preece, <i>The University of Manchester, UK</i> |
| P9 | Internal model design for power electronic controllers R Gunasekara, S Filizadeh, <i>University of Manitoba, Canada</i> |
| P10 | A priori error estimation of the structure-preserving modal model reduction by state residualization of a grid forming converter for use in 100% power electronics transmission systems Q Cossart, F Colas, X Kestelyn, <i>Université Lille, France</i> |
| P11 | Adaptive control of energy filters to smooth power fluctuations at different power levels Z Yan, X P Zhang, <i>IEEE</i> |
| P12 | Onshore grid frequency control using multi-terminal HVDC connected to full-scale converter for offshore wind generator and adjustable speed motor drive for offshore plant H Matsuda, Y Ota, T Nakajima, <i>Tokyo City University, Japan</i> |
| P14 | Virtual reality interface for HVDC substation and DC breaker design and maintenance C Marsh, M Barnes, W Crowther, S Watson, D Vilchis-Rodriguez, J Carmona-Sanchez, R Shuttleworth, K Kabbabe, M Heggo, A Smith, <i>The University of Manchester, UK</i> , X Pei, <i>University of Bath, UK</i> |
| P15 | Analysis of hybrid LCC-VSC HVDC transmission system configurations J Song, M Cheah-Mane, R Ferrer-San-Jose, E Prieto-Araujo, O Gomis-Bellmunt, <i>CITCEA-UPC, Spain</i> |
| P16 | Analysis of the variables influencing inter-area oscillations in the future Great Britain power system S Asvapoositkul, R Preece, <i>The University of Manchester, UK</i> |
| P17 | Design, construction and testing of modular multilevel converter with a distributed control architecture T Heath, P Green, M Barnes, <i>The University of Manchester, UK</i> , D Kong, <i>National Grid, UK</i> |
| P18 | DC Grid Demonstration to verify the control flexibility of the grid connected with renewable power generation and energy storage L Yao, J Zhuang, Y Cao, Z Wang, B Yang, <i>China Electric and Power Research Institute, China</i> and <i>Jiangsu Engineering Technology Research Center for Energy Storage Conversion and Application, China</i> |
| P19 | Operation strategy of multi-terminal HVDC-connected windfarm R Irnawan, F da Silva, C Leth Bak, <i>Aalborg University, Denmark</i> , A Perilla, <i>Delft University of Technology, The Netherlands</i> , A M Lindefelt, <i>Energinet, Denmark</i> , A Alefragkis, M van der Meijden, <i>TenneT TSO B.V., The Netherlands</i> |
| P20 | Impact of the DC circuit breaker design on selective fault detection and fault clearing methods in multi-terminal HVDC systems P Tünnerhoff, C Brantl, <i>RWTH Aachen University, Germany</i> , D Ergin, F Schettler, A Schon, D Döring, <i>Siemens AG, Germany</i> |

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| P21 | Experimental validation of DC circuit breakers for MTDC grid protection G Li, J Liang, S Balasubramaniam, T Joseph, <i>Cardiff University, UK</i> , D Kong, <i>National Grid, UK</i> |
| P22 | Power system stability enhancement via VSC-HVDC control using remote signals: Application on the Nordic 44-bus test system J C Gonzalez, S Silvant, A Benchaib, <i>SuperGrid Institute, France</i> , J Mermet-Guyennet, <i>Ecole Polytechnique, France</i> |

| Thursday 7 February 2019 Poster session 2 | |
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| P23 | Inertia effect and load sharing capability of grid forming converters connected to a transmission grid T Qoria, F Gruson, F Colas, T Prevost, X Guillaud, <i>Université Lille, France</i> . G Denis, <i>RTE, France</i> |
| P24 | An analysis of the impact of an advanced aero-hydro-servo-elastic model of dynamics on the generator-converter dynamics, for an offshore fixed 5MW PMSG wind turbine J Carmona Sanchez, M Barnes, O Marjanovic, <i>The University of Manchester, UK</i> , Z Lin, M Collu, <i>University of Strathclyde, UK</i> , D Cevasco, <i>Cranfield University, UK</i> |
| P25 | Simulation and experimental study on application principles of high power PP-IGBT in the DC circuit breaker H Chen, F Wakeman, J Pitman, G Li, <i>IXYSUK Westcode, UK</i> |
| P27 | Superconducting circuit breaker concepts for the protection of HVDC systems M Larruskain, A Etxegarai, A Iturregi, O Abarategi, <i>University of the Basque Country UPV/EHU</i> , S Apiñañiz, <i>Tecnalia Research and Innovation</i> |
| P28 | Parameter optimization of current commutation coupling reactor in hybrid DCCB H Liu, Y Huang, Y Zhou, Y Tai, <i>Tsinghua University, China</i> , W Xie, Wei Li, Z Zhang, Z Song, <i>Shandong Taikai High Voltage Switchgear Co., Ltd, China</i> |
| P29 | A calculation method for steady-state short-circuit currents in multi-terminal HVDC-grids A Saciak, G Balzer, J Hanson, <i>TU Darmstadt, Germany</i> |
| P30 | FMEA of a non-selective protection strategy for HVDC grids G Dantas de Freitas, A Bertinato, <i>SuperGrid Institute, France</i> , B Raison, <i>G2ELab, France</i> , E Niel, <i>Laboratoire Ampere, France</i> , O Despouys, <i>RTE, France</i> |
| P31 | Effects of windfarm curtailment on a 5-terminal VSC-HVDC network I Baptiste, M Barnes, O Marjanovic, <i>IEEE</i> , |
| P32 | Impact of Synchronous Machine dynamics on the stability of a power grid with high penetration of variable renewable energies G Santos Pereira, V Costan, <i>EDF R&D, France</i> , X Guillaud, A Bruyère, <i>Université Lille, France</i> |
| P33 | An initiative for modelling DC grids for large scale transient stability studies C Karawita, H Suriyaarachchi, M Mohaddes, <i>TransGrid Solutions Inc., Canada</i> , D Jacobson, P Wang, <i>Manitoba Hydro, Canada</i> |
| P34 | Fault behaviour of bipolar overhead line based HVDC grids P Torwelle, A Bertinato, <i>SuperGrid Institute, France</i> , B Raison, <i>G2ELab and SuperGrid Institute, France</i> , T D Le, M Petit, <i>Geeps, France and CentraleSupélec, France</i> |
| P35 | The series bridge converter: a compact and economic VSC HVDC converter O Idehen, D Traniner, K Vershinin, H Dang, S Brehaut, E Farr, <i>GE's Grid Solutions Business, UK</i> |
| P36 | Coupling of HV distributions systems through multiple point-to-point-DC-connections S Schlegel, D Westermann, <i>Technische Universität Ilmenau, Germany</i> |
| P38 | A comparative study of master-slave control and virtual synchronous machine control for parallel VSC-HVDC links feeding passive loads on offshore platforms M Das, C Jiang, A Sinkar, A Gole, <i>University of Manitoba, Canada</i> , V Pathirana, <i>Teshmont Consultants LP, Canada</i> |
| P39 | Experimental validation of a model predictive control strategy on a three-terminal VSC-HVDC mock-up M Belhaouane, K Almaksour, F Colas, X Guillaud, <i>Université Lille, France</i> , L Papangelis, T Van Cutsem, <i>University of Liège, Belgium</i> , T Prevost, <i>RTE, France</i> |
| P40 | Efficient modular multilevel converter based on active-forced-commutated hybrid packed u-cells for HV networks A Darwish, <i>Lancaster University, UK</i> |
| P41 | Impact factors on the active power flow recovery in multiterminal HVDC systems after DC fault clearing C Brantl, P Tünnerhoff, A Peitz, A Schnettler, <i>RWTH Aachen University, Germany</i> |
| P42 | Solid state transformer: an overview of circuit configurations and applications N Kadandani, <i>Beyero University, Nigeria and Newcastle University, UK</i> , M Dahidah, S Ethni, <i>Newcastle University, UK</i> , J Yu, <i>Scottish Power Energy Networks, UK</i> |
| P44 | Evaluation of "Open Grid" protection strategy for a DC network S Wang, R Zheng, J Liang, <i>Cardiff University, UK</i> , A Adamczyk, C Barker, R Whitehouse, <i>GE Power, Grid Solutions, UK</i> |

ACDC 2019 Exhibition Floorplan

The 15th IET International Conference on AC and DC Power Transmission

