

Sunday June 23rd, 2019 - 17:15

AW Welcome Session

Sunday June 23rd, 2019 - 17:15 - 18:30 - Room: A (Richelieu)

AW.1 *ITER Project: bringing hydrogen fusion power to reality*
BIGOT Bernard; *ITER Organization Director-General, France*

Monday June 24th, 2019 - 09:00

A0 **Opening Session**

Monday June 24th, 2019 - 09:00 - 10:30 - Room: A (Richelieu)

A0.1 *HVDC Technology key issues for future grids*

SZECHTMAN Marcio; *Director General of CEPEL (Brazilian National Power Research Institute), Brazil*

Monday June 24th, 2019 - 11:00

A1 HV and EHV cable systems

Topic 7: HV and EHV AC Cable Systems

Monday June 24th, 2019 - 11:00 - 12:30 - Room: A (Richelieu)

Chairman: **AWAD** Ray; Independent Consultant, Canada

Rapporteur: **STELLA** Romain; Prysmian, France

- A1.1** *North American Performance Experience of HV and EHV Extruded Cable Systems*
RILEY Caryn, **HAMPTON** Nigel; NEETRAC, Atlanta, USA
- A1.2** *EHV Cables in Subsea Road Tunnels – Vision or Reality?*
SOLHEIM Kristian Thinn, **RISE** Torun, **FAREMO** Hallvard; SINTEF, Trondheim, Norway
HILLESUND Carl Erik; Statnett SF, Oslo, Norway
- A1.3** *Experiences and Challenges with the 420 kV XLPE Cable Systems of the London Power Tunnels Project*
WEINLEIN Andreas, **MEMMER** Horst, **PETERS** Ulrich, **HAERING** Dominik; Südkabel GmbH, Mannheim, Germany
BURDEN Gareth; National Grid, Warwick, United Kingdom
HAMMES Christo; HVI Ltd, London, United Kingdom
SCHELTINGA Leo; KEMA DNV GL, Arnhem, Netherlands
- A1.4** *Topography scanning as a part of process monitoring in power cable insulation process*
HARJUHAHTO Jaakko, **HARJUHAHTO** Janne, **LAHTI** Mikko; Maillefer, Vantaa, Finland
HANHIROVA Jussi; Aalto University, Espoo, Finland
SONERUD Björn; Verdilink Consulting, Gothenburg, Sweden
- A1.5** *Refurbishment of the Copenhagen Transmission Grid - Project Planning and Execution*
OLSEN Rasmus, **BRØNDUM** Daniel; Energinet Transmission, Fredericia, Denmark
GRIFFIOEN Willem; Plumettaz SA, Gouda, Netherlands
THOMASEN Kim; NCC, Copenhagen, Denmark
STADIE Gerolf; Nexans High Voltage, Hannover, Germany
- A1.6** *Electrical and physical characterisation of a 138 kV XLPE insulated cable with 12 years service life*
FRENTZAS Frank; ComEd (Commonwealth Edison), Chicago, USA
KELLEY Nathan; Prysmian Group, Lexington, USA
LOYENS Wendy, **SMEDBERG** Annika; Borealis AB, Stenungsund, Sweden

B1 Materials and characterization (A)

Topic 1: Materials, New Materials and Ageing Assessment in AC and DC

Monday June 24th, 2019 - 11:00 - 12:30 - Room: B (Lulli)

Chairman: **GAO** Jinghui; Xi'an Jiaotong University, China

Rapporteur: **CAPON** Guillaume; Nexans, France

- B1.2** *Comparative Study on LLDPE, LDPE Nano Dielectric for application in HVDC cables: Dielectric response, Electrical and Thermal properties*
BURJUPATI Nageshwar Rao; Central Power Research Institute, Bangalore, India
- B1.3** *Leakage current behaviors under high electric field in polymer minicables*
CHARRIER Dimitri; Nexans Research Center, Lyon, France
PEREGO Gabriele; Nexans Italia SPA, Pioltello, Italy
FROHNE Christian; Nexans Deutschland GmbH, Hannover, Germany
JARVID Markus; Nexans Norway AS, Halden, Norway
EYSSAUTIER Quentin; Nexans France, Calais, France
- B1.4** *Investigation of the PD behaviour of boundary surfaces with alternative PD-detection methods for AC and DC application*

VATERRODT Klaus, **HEIDMANN** Gerd, **FUßMANN** Philipp; *IPH GmbH, Berlin, Germany*
PLATH Ronald; *Technische Universität Berlin, Germany*

- B1.5** *Space Charge Properties of XLPE and PDMS Dual-dielectric with Graphene Coating*
LEI Zhipeng, **FABIANI** Davide, **PALMIERI** Fabrizio, **LI** ChuanYang, **SELLERI** Giacomo, **SPERANZA** Marco, **GROLLI** Filippo;
University of Bologna, Italy
CRISTIANO Francesco, **BERTOCCHI** Francesco; *Nanesa Srl, Arezzo, Italy*
- B1.6** *HVDC dielectric material comparison from cable characterizations as a mean for material selection*
BOYER Ludovic, **BUDDARAJU** Pavani, **HENRIKSEN** Martin, **CHEMARTIN** Laurent, **FESTAZ** Xavier; *SuperGrid Institute, Villeurbanne, France*

C1 Distribution network diagnostic and maintenance

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Monday June 24th, 2019 - 11:00 - 12:30 - Room: C (Condé / Pascal)

Chairman: **WALD** Detlef; *Eifelkabel, Switzerland*

Rapporteur: **MOREAU** Christophe; *EDF R&D, France*

- C1.1** *PD alarm - Lightweight automated diagnostic device for online detection and location of partial discharges on non-shielded accessories of a Medium Voltage Distribution Network*
REYNAUD Lionel, **PINEAU** Daniel, **CHARETTE** Martin; *Hydro-Québec, Varennes, Canada*
TRÉPANIÉ Michel; *Hydro-Québec Distribution, Canada*
- C1.2** *A new approach for evaluating the condition of cable systems and estimation of remaining life time of MV underground power cables*
NEIER Tobias, **KNAUEL** Jens, **BAWART** Manfred; *BAUR GmbH, Sulz, Austria*
KIM Sung-Min; *KEPCO (Korea Electric Power Corporation), Seoul, Korea, Republic of*
- C1.3** *Comparative Investigations of PD-Behaviour on an Artificial Accessory Failure under medium Voltage AC and Damped AC (DAC)*
MÜLLER Daniel, **BACH** Robert; *FH SWF, Soest, Germany*
WALTER Christian; *Bayernwerk, Bayreuth, Germany*
- C1.4** *Operating Extruded Distribution Cable Systems at Elevating Temperatures*
RICHARDSON Brent; *Dow Chemical, Midland, USA*
SHU Essay Wen, **HARTLEIN** Rick, **HAMPTON** Nigel; *NEETRAC, Atlanta, USA*
HAWIG Yushin; *Southwire, Villa Rica, USA*
SMALLEY Michael; *WEC Energy Group, Milwaukee, USA*
- C1.5** *Reducing cost throughout the power cable network with Online Condition Monitoring using Integrated SMART-SENSING*
SINGH Kuljit, **MINTO** Chris, **GODFREY** Alastair, **ELLWOOD** Robert; *OptaSense Ltd, Farnborough, United Kingdom*
- C1.6** *Proposition of New Diagnostic Features for VLF Tan Delta Measurements in Order to Improve Their Interpretative Value*
DRAPEAU Jean-François; *Institut de recherche d'Hydro-Quebec, Varennes, Canada*
BANERJEE Sarajit; *Kinectrics Inc., Toronto, Canada*

D1 Non-Electrical tests

Topic 3: Testing Methods: Electrical and non Electrical

Monday June 24th, 2019 - 11:00 - 12:30 - Room: D (Colbert)

Chairman: **KVARTS** Thomas; *Orsted Wind Power as, Denmark*

Rapporteur: **CALVERAS** Daniel; *Prysmian, Spain*

- D1.1** *Test Regimes for HV and EHV Cable Connectors*
UZELAC Milan, **HEAD** Julian; *CIGRE WG B1.46,*

- D1.3** *Full-scale compression capacity test of an offshore power cable*
KLAEBO Frank, **GIERTSEN** Egil; SINTEF Ocean, Trondheim, Norway
TYRBERG Andreas; NKT HV Cables AB, Karlskrona, Sweden
- D1.4** *A calorimetric measuring system for measurement of loss in high voltage cable conductors*
RYDLER Karl-Erik, **TRANEFORS** Kai, **NIEMINEN** Tatu, **LARSSON** Bo, **BERGMAN** Anders; RISE Research Institutes of Sweden, Borås, Sweden
- D1.5** *Curative maintenance to be accounted for in compliance tests*
CHRÉTIEN Antoine, **SALOMON** Violaine; Rte, Paris, France
- D1.6** *Relevant accelerated corrosion tests for buried low voltage power cables*
KEROMNES Laurent, **LEVIGOUREUX** Sophie, **DELATRE** Sophie, **DELEU** Fabien, **GIFFARD** Philippe; SYCABEL, Paris, France
GUILLOU Delphine; CETIM, Senlis, France
- D1.7** *Online monitoring of the cross-linking process of XLPE-insulated power cables during cable production using ultrasound*
BRAMMER Dr. Gregor, **SCHMIDT** Fabian; FGH e.V., Mannheim, Germany

E1 Sheath bonding and parallel circuit

Topic 2: Cables and Accessories – design and modelling

Monday June 24th, 2019 - 11:00 - 12:30 - Room: E (Montesquieu)

Chairman: **MOSIER** Rachel; Power Delivery Consultants, USA

Rapporteur: **NGUYEN TUAN** Minh; EDF R&D, France

- E1.1** *Capacitive and Inductive Coupling in Cable Systems – Comparative Study between Calculation Methods*
CHRYSOCHOS Andreas, **ALEXANDROU** Konstantinos, **CHATZIPETROS** Dimitrios, **KOSSYVAKIS** Dimitrios, **PAVLOU** Konstantinos, **TASTAVRIDIS** Konstantinos, **GEORGALLIS** Georgios; Cablel Hellenic Cables S.A., Viohalco Group, Athens, Greece
ANDERS George J.; Technical University of Lodz, Poland
- E1.2** *Sheath circulating currents calculation in asymmetrical installation schemes for power frequency models*
ALEXANDROU Konstantinos, **TASTAVRIDIS** Konstantinos, **GEORGALLIS** Georgios; Cablel Hellenic Cables S.A., Viohalco Group, Athens, Greece
ANDERS George J.; Department of Microelectronics and Computer Science of the Technical University of Lodz, Poland
- E1.3** *An updated method for evaluating current sharing between parallel single-core cables: Case studies and correlation with field measurements*
LESUR Frédéric; Nexans, Calais, France
KLINK Jacob; TU Clausthal University of Technology, Clausthal, Germany
KOSSYVAKIS Dimitrios; Cablel Hellenic Cables S.A., Viohalco Group, Athens, Greece
- E1.4** *Induced Sheath Voltages and Currents in Cross-Bonded Power Cables with Consideration of Improper Connections of the Bonding Leads*
NOUFAL Sameh; CDGA Engineering Consultants, Cork, Ireland
ANDERS George J.; Technical University of Lodz, Poland
- E1.5** *A practical method to compute the metallic sheath circulating current for non standard cases*
EL CHMOURI Mohamad; RIYADH CABLES GROUP, Riyadh, Saudi Arabia

Monday June 24th, 2019 - 14:30

A2 Design of HV and EHV cable systems

Topic 7: HV and EHV AC Cable Systems

Monday June 24th, 2019 - 14:30 - 16:00 - Room: A (Richelieu)

Chairman: **TYRBERG** Andreas; NKT, Sweden

Rapporteur: **TEYSSÈDRE** Gilbert; Laplace-CNRS, France

- A2.1** *Standardization and Optimization of High Voltage Cables Design*
ALGHOFALI Hisham, **METWALLY** Ahmed; National Grid Saudi Arabia, Riyadh, Saudi Arabia
- A2.2** *Hybrid analytical / finite-elements model to design optimal HVDC joint bays*
SALAME Basil, **CHARMETANT** Adrien; Nexans, Lyon, France
LESUR Frédéric; Nexans, Calais, France
- A2.3** *Thermal analysis of 3-core SL-type cables with jacket around each core using the IEC standard*
RAMIREZ Leon Dario, **KAMARA** Woulèye; EATON, Saint Bruno, Canada
ANDERS George J.; Lodz University of Technology, Poland
- A2.4** *Asymmetric joints for extruded and fluid-filled cables - Traditional use and new applications*
TSAKONAS Panos, **BODEGA** Riccardo, **GEENE** Henk; Prysmian Group, Delft, Netherlands
MAMMERI Mohamed, **BOFFI** Paolo; Prysmian Group, Milan, Italy
- A2.5** *Retrofitting HV External Gas Pressure Cable Systems*
VAN ROSSUM Jos, **WEGBRANS** Bas, **KOLTUNOWICZ** Tomasz, **TSEKMES** Alex, **VAN EEDEN** Corné; Prysmian Group, Delft, Netherlands
ZUIJDERDUIN Roy, **SMIT** Jacco; TenneT, Arnhem, Netherlands
- A2.6** *Hornsea projects 1 and 2 - Design and Optimisation of the Cables for the World Largest Offshore Wind Farms*
ZOURARAKI Maria, **KVARTS** Thomas, **ØSTERØ** Rogvi, **PAGE** Trevor, **HJERRILD** Jesper; Orsted Offshore, Gentofte, Denmark
VILHELMOSEN Morten Ahrenkiel; Orsted Offshore, Gentofte, Curaçao

B2 Materials and characterization (B)

Topic 1: Materials, New Materials and Ageing Assessment in AC and DC

Monday June 24th, 2019 - 14:30 - 16:00 - Room: B (Lulli)

Chairman: **RAKOWSKA** Aleksandra; Poznan University of Technology, Poland

Rapporteur: **CHARRIER** Dimitri; Nexans Research Center, France

- B2.1** *Interface Polarization Characteristics of Water-Tree Aged Cables based on Polarization and Depolarization Current Method*
ZHOU Kai, **RAO** Xianjie, **CHEN** Zelong, **ZHU** Guangya; Sichuan University, Chengdu, China
- B2.2** *A study on partial discharge and bubble behavior in oil gap on oil-impregnated paper insulation system*
MAKINO Yuta, **KURIHARA** Takashi, **TAKAHASHI** Toshihiro; CRIEPI (Central Research Institute of Electric Power Industry), Kanagawa, Japan
- B2.3** *Study on Degassing Efficiency of Crosslinked Polyethylene High Voltage Cable*
SUN Yabin, **MIAO** Shawn, **YANG** Yongyong, **JI** Clive; Dow Chemical (China) Invest. Co. Ltd., Shanghai, China
PERSON Timothy; The Dow Chemical Company, Collegetown, USA
KJELLQVIST Jerker; Dow Europe GmbH, Horgen, Switzerland
- B2.4** *Studies of diffusion of byproducts formed by the peroxide-induced cross-linking of polyethylene*
YANG Yafan, **NARAYANAN NAIR** Arun Kumar, **SUN** Shuyu; King Abdullah University of Science and Technology (KAUST), Thuwal, Jeddah, Saudi Arabia
SUN Yabin; Dow Chemical (China) Invest. Co. Ltd., Shanghai, China
VAN DUN Jozef, **KJELLQVIST** Jerker; Dow Europe GmbH, Zürich, Switzerland

- B2.5** *The effect of mechanical pressure on the electrical resistivity and water transport capabilities of a semi-conductive superabsorbent tape*
VE Torbjørn Andersen, **OLSEN** Maria Nicté Polanco, **HVIDSTEN** Sverre; SINTEF Energy Research, Trondheim, Norway
FURUHEIM Knut Magne; Nexans, Norway
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C2 Offline diagnostic and maintenance

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Monday June 24th, 2019 - 14:30 - 16:00 - Room: C (Condé / Pascal)

Chairman: **TESTA** Luigi; Prysmian Cables and Systems, Spain

Rapporteur: **LEEMANS** Pieter; Elia, Belgium

- C2.1** *Low frequency dielectric spectroscopy applications to aged Medium Voltage Power Cable Diagnostics*
BANERJEE Sarajit, **ROUISON** David; Kinectrics Inc., Toronto, Canada
DRAPEAU Jean-François; Institut de recherche d'Hydro-Quebec, Varennes, Canada
- C2.2** *Methods and experience of Very Low Frequency (VLF) diagnostic testing to support asset management of critical MV circuits*
PERKEL Josh, **HAMPTON** Nigel; NEETRAC, Atlanta, USA
HERNANDEZ Jean Carlos; University of Merida, Venezuela, Bolivarian Republic of
DRAPEAU Jean-François; IREQ, Montreal, Canada
- C2.3** *Development of a method for the localization of PD-Faults in high voltage cables with UHF-Sensors*
BACH Robert, **BERKEMEIER** Rouven, **KÖSTER** Markus; Fachhochschule Suedwestfalen, Soest, Soest, Germany
- C2.4** *Partial Discharge measurements during AC voltage test: a fast and effective method for the site commissioning of long EHV XLPE cable systems*
CAPRARA Andrea, **PASCHINI** Lorenzo, **CIOTTI** Giacomo; Techimp - Altanova Group SrL, Zola Predosa (BO), Italy
- C2.5** *Condition based maintenance of HV cable line using damped AC technique - a case study*
EGYED Róbert; Omexom Magyarország Kft., Budapest, Hungary
TAMUS Zoltán Ádám; Budapest University of Technology and Economics, Budapest, Hungary
- C2.6** *Diagnostic of Underground Cable Systems Based on the Combination of Time Domain Dielectric Spectroscopy (TDDS) and VLF Tan Delta*
DRAPEAU Jean-François; Institut de recherche d'Hydro-Quebec, Varennes, Canada
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D2 Onsite and Laboratory Tests

Topic 3: Testing Methods: Electrical and non Electrical

Monday June 24th, 2019 - 14:30 - 16:00 - Room: D (Colbert)

Chairman: **CLASEN** Geir; Nexans, Norway

Rapporteur: **DUBOIS** David; Nexans, France

- D2.2** *Cable System Commissioning Update*
BYRNE Darren, **LANZ** Ben; IMCORP, Manchester, CT, USA
THOMAS Steve; Origis Energy, San Diego, USA
HUMMEL Rene; IMCORP, Berlin, Germany
SHANNON Charles; IMCORP, San Diego, USA
- D2.3** *Air Insulated Factory Routine Test System for High Voltage Cable Accessories Upto 550 kV*
TUNA Enis, **ÖZTÜRK** Samet; Demirer Kablo, İstanbul, Turkey
- D2.4** *Sensitive and selective partial discharge measurement method for DC and AC cable joints*
ESTERL Florian, **PLATH** Ronald; Technische Universität Berlin, Germany
- D2.5** *Performing of type tests for the qualification of three-core submarine cables and accessories for connections of offshore wind farms*

JEGUST Detlef, VATERRODT Klaus; IPH GmbH, Berlin, Germany

- D2.6** *138 kV Transition Joint between High-Pressure Fluid Filled and XLPE Cables*
MAKOVOZ Arie; Consolidated Edison of New York, USA

E2 Monitoring of lapped insulation and remaining life evaluation of transmission cable systems

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Monday June 24th, 2019 - 14:30 - 16:00 - Room: E (Montesquieu)

Chairman: **ZENGER** Walter; USI, USA

Rapporteur: **BELE** William; RTE, France

- E2.1** *Condition Assessment of Pipe-Type Joints Utilizing Limited-Angle Computed Tomography X-Ray Technology*
MAKOVOZ Arie, **BOSE** Sanjay; Consolidated Edison of New York, USA
MAZIUK Robert; V J Technologies, Inc., East Haven, CT, USA
HALLIWELL Stephen; V J Technologies, Inc., Bohemia, NY, USA
- E2.2** *A Study on Partial Discharge Pattern Analysis for HVDC MI-PPLP Cables*
JUNG Chae-Kyun, **HWANG** Jae-Sang, **KIM** Minju, **WOO** Jungwook, **KANG** Jiwon; KEPCO Research Institute, Daejeon, Korea, Republic of
KIM Seongweon, **KIM** Kyungoh; KEPCO (Korea Electric Power Corporation), Naju, Korea, Republic of
- E2.3** *How Can Life Assessment and Diagnostic Monitoring Influence the Choice of MV to EHVDC Cables for Interconnected Grids*
MORSHUIS Peter; Xi'an Jiaotong University, China
MONTANARI Gian Carlo; University of Texas, USA
STEVENS Gary C.; Gnosys Global, Guildford, United Kingdom
SERI Paolo; University of Bologna, Italy
VAUGHAN Alun; University of Southampton, United Kingdom
- E2.4** *Chemical ageing of subsea mass impregnated insulation cable paper*
LESAIN Cédric, **LILAND** Knut Brede, **HESTAD** Øystein; SINTEF Energy Research, Trondheim, Norway
- E2.5** *Water tree Degradation on Long Term Operated 60 kV Class XLPE Cables Decommissioned from Actual Power Grid*
TAKAHASHI Toshihiro, **KURIHARA** Takashi, **TAKAHASHI** Tsuguhiro, **OKAMOTO** Tatsuki; CRIEPI, Yokosuka, Japan
- E2.6** *Power cables and accessories survey - learnings from type tests, tests after installation and in-service failures*
VAN DER WIELEN Peter, **HE** Hong, **VAN MAANEN** Bernd, **PULTRUM** Edwin; DNV GL, Arnhem, Netherlands

F2 Young Researcher's Contest

Monday June 24th, 2019 - 14:30 - 16:00 - Room: F (Galerie Le Nôtre)

Chairman: **JEROENSE** Marc; MJ MarCable Consulting AB, Sweden

Rapporteur: **TEYSSÈDRE** Gilbert; CNRS / Laplace, University P. Sabatier, France

- F2.1** *Thermal rating of submarine cables installed in J-tubes using Lumped Element Method*
ARANCIO Jeremy, **OULD EL MOCTAR** Ahmed; LTEN (Heat Transfer and Energy Laboratory at Nantes), Nantes, France
NGUYEN TUAN Minh; EDF, Paris, France
TAYAT Faradj, **ROQUES** Jean-Philippe; TOTAL, Paris, France
- F2.2** *Modeling thermal distribution of submarine three-core XLPE cable with respect to the buried depth and thermal conductivity of the soil*
WANG Weiwang, **WANG** Zhaohui, **BU** Wen, **LI** Shengtao; Xi'an Jiaotong University, China
HU Yiru, **ZHANG** Lina; China National Offshore Oil Corporation (CNOOC) Research Institute Ltd., China
- F2.3** *Electrical properties of nanostructured polypropylene: a matter of morphology?*
SERI Paolo; Department of Electrical, Electronic and Information Engineering (DEI), University of Bologna, Italy

- F2.5** *Assessment of financial benefits in overplanted windfarm export cable*
HERNANDEZ COLIN Maria Angelica, **PILGRIM** James A.; University of Southampton, United Kingdom
- F2.6** *DC Conductivity measurements of polymeric HVDC insulation materials under consideration of a dynamic temperature profile*
HÄRING Dominik; Südkabel GmbH, Mannheim, Germany
JENAU Frank; University Dortmund, Germany
- F2.7** *Analysis of longitudinal interfaces by using frequency domain spectroscopy*
LOH Jun Ting, **DREßLER** Mario, **KITTAN** Stefan, **KORNHUBER** Stefan; University of Applied Sciences, Zittau, Germany
ARNDT Stephan; BBC Cellpack Electrical Products – Behr Bircher Cellpack Radeberg GmbH, Radeberg, Germany
- F2.8** *Post-irradiation effect investigation on low-voltage XLPE cables through dielectric spectroscopy*
SURACI Simone Vincenzo, **FABIANI** Davide; Department of Electrical Engineering (DEI) University of Bologna, Italy
- F2.9** *Identification and experimental determination of important thermal and hydraulic properties of bedding materials for energy cables*
SCHDEL Markus, **DREFKE** Christoph, **SASS** Ingo; Technische Universität Darmstadt, Geothermal Science and Technology, Germany
JACOBS Natalie Simone, **BRÜGGMANN** Jan; Amprion GmbH, Dortmund, Germany
- F2.10** *Role of holes in conduction phenomenon of Low Density Polyethylene under high fields and temperatures*
UPADHYAY Avnish Kumar, **REDDY** Chandupatala Chakradhar; Indian Institute of Technology Ropar, Ropar, India
- F2.11** *Partial discharge detection using distributed acoustic sensing*
KIRKCALDY Laurie, **PILGRIM** James; University of Southampton, United Kingdom
ROGERS Rosalie, **LEES** Gareth; AP Sensing, United Kingdom
- F2.12** *MV Insulated cables and screen arrangements: single-point bonding vs solid-bonding*
DAMBONE SESSA Sebastian, **BENATO** Roberto; University of Padova, Italy
MARCHESE Oscar, **TANZI** Luca, **ZAPPELLONI** Roberto; E-distribuzione, Rome, Italy
- F2.13** *HV Cable Diagnostic by Time Domain Reflectometry or Frequency Domain Analysis? A Comparison of Sensitivity to Fault Impedance and Cable Length*
NOROUZI Younes, **FROHNE** Christian; Nexans Deutschland GmbH and Leibniz university Hannover, Germany
WERLE Peter; Leibniz university Hannover, Institute of Electric Power Systems, Germany
- F2.14** *Application of Recurrent Neural Network with Long Short-Term Memory Cells for Partial Discharge Identification*
YEO Joel, **YUEN** Chau; SUTD Singapore University of Technology & Design, Singapore, Singapore
JIN Hui Fei, **NG** Chee Seng; T Yeo Engineers, Singapore, Singapore
- F2.15** *Electrical stresses of cable sheaths under normal and fault condition*
KÜCHLER Benjamin, **SCHMIDT** Uwe, **HAIM** Klaus-Dieter; University of Applied Sciences Zittau/Görlitz, Germany
- F2.17** *Modelling of electrical history effect on polymer conductivity*
GUFFOND Raphaël; Nexans, Lyon, France
COMBESSIS Anthony; Nexans, Lens, France
HOLÉ Stéphane; Laboratoire de Physique et d'Étude des Matériaux, (LPEM, UMR8213) CNRS, PSL Research University ESPCI-ParisTech, Sorbonne Universités, UPMC Univ Paris 6, Paris, France
- F2.19** *Aging Index of C&I Cable in Nuclear Power Plants via Time-Frequency Domain Reflectometry*
LIM Hobin, **LEE** Geon Seok, **BANG** Su Sik, **KWON** Gu-Young, **LEE** Yeong Ho, **JI** Gyeong Hwan, **SHIN** Yong-June; Yonsei University, Seoul, Korea, Republic of
- F2.20** *Investigation on Transition Joint Materials and Electric Field in Different Layers of Joint Insulation*
JOHRI Pranav, **REDDY** Chandupatala Chakradhar; Indian Institute of Technology Ropar, Ropar, India
- F2.21** *Global basis functions method for the efficient computation of power losses in submarine three-core cable armor*
GIUSSANI Luca, **DI RIENZO** Luca; Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria, Milan, Italy
BECHIS Massimo; Prysmian spa, Milan, Italy

DE FALCO Carlo; *Politecnico di Milano, MOX – Modeling and Scientific Computing, Dipartimento di Matematica, Milan, Italy*

F2.22 *FEM analysis on influence of semiconductors in 3-core submarine power cables regarding cable losses*

STURM Sebastian, **PAULUS** Johannes; *University of Applied Sciences, Schweinfurt, Germany*

BERGER Frank; *Ilmenau University of Technology, Germany*

F2.23 *Numerical and Empirical Determination of the Influence of Hydrodynamic Loads on the Fatigue Life of Submarine Cables*

SCHÜTT Clemens, **OTTO** Christoph, **MENZEL** Peter, **PASCHEN** Mathias; *University of Rostock, Faculty of Mechanical Engineering and Marine Technology, Chair of Ocean Engineering, Germany*

ZERBST Stephan, **SCHUMANN** Kai; *TenneT Offshore GmbH, Lehrte, Germany*

F2.24 *Local surface field- and charge distributions and their impact on breakdown voltage for HVDC cable insulation*

DOEDENS Espen, **JARVID** Markus; *Nexans, Halden, Norway*

SERDYUK Yuriy; *Chalmers Univ. of Technology, Gothenburg, Sweden*

GUFFOND Raphaël, **CHARRIER** Dimitri; *Nexans Research Centre, Lyon, France*

F2.25 *Influences of changed Grid Utilization by Renewable Energies on the Ageing Behaviour of Medium Voltage Cables*

MÜLLER Ann-Catrin, **BLENK** Tobias, **WEINDL** Christian; *Coburg University of Applied Sciences and Arts, Germany*

SCHRAMM Judith; *Rheinische NETZGesellschaft, (Germany), Germany*

F2.26 *Space Charge Behaviour in HVDC Cable Insulation*

ZHAN Yunpeng, **CHEN** George; *University of Southampton, United Kingdom*

F2.28 *Investigation on the tensile strength of silicone layers with different amount of graphite filler*

AGANBEGOVIĆ Mirnes, **WERLE** Peter; *Institute of Electric Power Systems, Division of High Voltage Engineering and Asset Management, Schering-Institute, Leibniz Universität Hannover, Germany*

Monday June 24th, 2019 - 16:30

A3 Installation and testing of cable systems

Topic 7: HV and EHV AC Cable Systems

Monday June 24th, 2019 - 16:30 - 18:00 - Room: A (Richelieu)

Chairman: **CHINOSI** Sergio; Prysmian, Italy

Rapporteur: **GALERON** Didier; Nexans, France

- A3.1** *Modular Test System for testing super long AC & DC cables*
BILINSKI Enrico, **KALTENBORN** Uwe, **HENSEL** Michael; HIGHVOLT Prüftechnik Dresden GmbH, Germany
- A3.2** *Projects with remote installation ("tube post") of energy cables in ducts*
GRIFFIOEN Willem, **GUTBERLET** Christophe, **UHL** Alexandre, **LAURENT** Gregory, **GROBETY** Selim; Plumettaz SA, Bex, Switzerland
- A3.3** *Tehachapi Renewable Transmission Project: North America's first 500 kV XLPE Cable System*
BUSBY Jon; Burns & McDonnell Engineering, Kansas City, USA
- A3.4** *A super-digital underground link to improve asset management policy*
COUTURIER Nicolas, **FABRE** Mathilde; RTE, Paris, France
- A3.5** *Combined qualification according to IEC IEEE ICEA of 345 - 400 kV cable components and system*
DUBOIS David, **MIREBEAU** Pierre, **AIT AMAR** Abdellatif, **GALERON** Didier; Nexans, Calais, France
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B3 Fire performance

Topic: Fire Performance

Monday June 24th, 2019 - 16:30 - 18:00 - Room: B (Lulli)

Chairman: **VERCELLOTTI** Uberto; CESI, Italy

Rapporteur: **COLOMBIER** Serge; Prysmian Câbles & Systèmes, France

- B3.1** *Special Communication (25 minutes allocated time)*
Products Construction Regulation: do HVAC and DC cable have to answer?
CHARLES Fabien; Prysmian Group, Montereau, France
MIREBEAU Pierre; Nexans, Calais, France
BENARD Laurent; Prysmian Group, SENS, France
ROUET Francis; SYCABEL, Paris, France
- B3.2** *ElecLink Cable Fire Performance and Bespoke Fire Test*
HUANG Ziyi (Uta), **WALKER** Michael; Mott MacDonald, Brighton, United Kingdom
DHILLON Steve, **JOYEZ** Patrick; ElecLink, Folkstone, United Kingdom
SVOMA Roman; PowerSure Technology, London, United Kingdom
- B3.3** *LSZH sheath cracking in harsh environment*
THOMBRE Arun; DUCAB, Dubai, UAE
- B3.4** *Current ratings and installation considerations for Fire Resistant Wiring Systems*
HOSIER Richard; Mineral Insulated Cable Company Co. Ltd., Washington, United Kingdom
- B3.5** *A Study of Smoke Release of Complete Cables and components of the cables*
ARUNJOTHI Rajendran, **THIRUMURTHY** T., **MEENA** K.P.; Central Power Research Institute, Bangalore, India
-

C3 Online diagnostic and maintenance

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Monday June 24th, 2019 - 16:30 - 18:00 - Room: C (Condé / Pascal)

Chairman: **BOONE** Wim; DNV GL, The Netherlands
Rapporteur: **TANZEGHTI** Houssam; Enedis, France

- C3.1** *Investigation of temperature effect on partial discharge patterns in high voltage XLPE insulated cables*
HAGHJOO Farhad; Shahid Abbaspour School of Engineering, Shahid Beheshti University, Tehran, Iran, Islamic Republic of
KARIMI Reza, **SABOURI** davood; Abhar Cable Co., Tehran, Iran, Islamic Republic of
- C3.2** *Performance of the Partial discharge equipment and the future of online monitoring system in National Grid SA network*
ALMALKI Abdullah; National Grid SA - Saudi Electricity Company, Riyadh, Saudi Arabia
- C3.3** *Experience with the commissioning and operation of a monitoring system on a 380 kV cable system in Belgium*
LEEMANS Pieter, **SARENS** Mario; Elia, Brussels, Belgium
BRONIECKI Ulrike, **GEHARDT** Daniel, **KOLTUNOWICZ** Wojciech; OMICRON Energy Solutions, Berlin, Germany
- C3.4** *High voltage outdoor terminations with integrated optical partial discharge measurement*
EIGNER Alexander, **DANIEL** Rhoda, **RADHAKRISHNAN** Snehalatha; Tyco Electronics Raychem GmbH, Ottobrunn, Germany
- C3.5** *In-service Partial Discharge Measurements on Power Cable Terminations*
CAO Hongyan, **LI** Jun, **LO** Kem Wah, **ONG** Kian Hai; SP Group, Singapore, Singapore
- C3.6** *Integral sensing of HV cable joints - monitor operation and predict failures early*
GRUND Ruben; Pfisterer, Winterbach, Germany
HOHLOCH Jens; Pfisterer, Altdorf, Switzerland
ROGERS Rosalie, **KAMMLER** Anja, **POHL** Clemens; AP Sensing, Böblingen, Germany
ROLAND Henrik; Energinet, Fredericia, Denmark

D3 Partial Discharge Methods and Measurement

Topic 3: Testing Methods: Electrical and non Electrical

Monday June 24th, 2019 - 16:30 - 18:00 - Room: D (Colbert)

Chairman: **FENGER** Mark; Prysmian Group, Canada
Rapporteur: **CASTELLON** Jérôme; University of Montpellier, France

- D3.1** *Fifteen Years Damped AC On-site Testing and Diagnosis of Transmission Power Cables*
GULSKI Edward, **JONGEN** Rogier; onsite hv solutions ag, Lucerne, Switzerland
QAUK Ben; Seitz Instruments AG, Niederrohrdorf, Switzerland
PARCIAK Jaroslaw; onsite hv solutions Central Europe Sp. z o.o., Warsaw, Poland
RAKOWSKA Aleksandra, **SIODLA** Krzysztof; Poznan University of Technology, Poland
- D3.2** *Partial discharge inception voltage and magnitude in polymeric cables under AC and DC voltage supply*
MONTANARI Gian Carlo, **HEBNER** Robert; Center for Electromechanics (CEM) of the Texas University at Austin, Austin, USA
SERI Paolo, **NADERIALLAF** Hadi; DEI - University of Bologna, Italy
- D3.3** *Application of PD monitored voltage withstand test method for high voltage power cable lines*
XIAO Chuan Qiang, **ZUO** XianKun; SINDIA Instruments Co., Ltd., China, Beijing, China
- D3.4** *Non-destructive after laying test with PD localization*
SMIT Jacco; TenneT TSO B.V., Arnhem, Netherlands
VAN RIET Maarten; Alliander, Arnhem, Netherlands
STAARINK Bram; Qirion, Arnhem, Netherlands
- D3.5** *Partial discharge localization in gas pressure cable routes through double sided-synchronous-multi point-measurement*
STAMENKOVIC Vladimir, **FELSHEIM** Frédéric, **BRUSENBACH** Roy, **PLATH** Ronald; Technische Universität Berlin, Germany

E3 Challenges for integrated optical fibers

Topic 9: Submarine Cable Systems (AC & DC)

Monday June 24th, 2019 - 16:30 - 18:00 - Room: E (Montesquieu)

Chairman: **OTTERSBERG** Heiner; Prysmian, Germany

Rapporteur: **LOUDIERE** Nathan; RTE, France

- E3.1** *Model-based predictive control for use in RTTR temperature sensing systems of high voltage cables*
AEGERTER Damian; Braavos GmbH, Stetten, Switzerland
MEIER Stephan; Emetor AB, Västerås, Sweden
- E3.2** *Combined distributed fibre optic sensing: the revolution in managing and reducing risks and costs of offshore power cable*
ROCHAT Etienne, **CHIN** Sanghoon, **RAVET** Fabien, **CURRAT** Matthieu; Omnisens SA, Morges, Switzerland
- E3.3** *Inherently safe designs of fibre optic cables integrated in three-core submarine power cables*
KVARTS Thomas, **COJOCARU** Claudia Georgiana; Orsted Offshore, Gentofte, Denmark
- E3.4** *Fibre optic related failure modes of submarine power cables*
DU PLESSIS Thinus, **PLET** Dr. Cornelis A., **DE WILD** Frank; DNV GL, Arnhem, Netherlands
VAN DER WIELEN Peter; Eindhoven University of Technology, Netherlands
- E3.6** *Electromagnetic coupling in HV and EHV three-core submarine cables during test and operation*
KARLSTRAND Johan; JK Cablegrid Consulting AB, Karlskrona, Sweden
OLSEN Espen; Nexans Norway AS, Halden, Norway
HATLO Marius; Unitech Power Systems AS, Oslo, Norway

A4 Operational experiences of HV and EHV cable systems

Topic 7: HV and EHV AC Cable Systems

Tuesday June 25th, 2019 - 09:00 - 10:30 - Room: A (Richelieu)

Chairman: **THUNBERG** Erik; SVK (Svenska kraftnät), Sweden

Rapporteur: **LIEMANS** Didier; Nexans, Belgium

A4.1 *Strategies for maintenance and repair of EHV cable systems*

SMIT Jacco, **MOUSAVI** Shima, **DE BES** Robert-Jan; TenneT TSO B.V., Arnhem, Netherlands

MACHL Anita; APG, Vienna, Netherlands

REICH Klemens; APG, Vienna, Austria

KLEIN Michael, **SVEJDA** Georg; Wienernetze, Vienna, Austria

A4.3 *Failure Experience on 380 kV Joints and Terminations in Saudi Arabia Transmission Network*

ALDHUWAIAN Abdullah; Saudi Electricity Company, Buraydah, Saudi Arabia

A4.4 *Qualification and experiences with large 400 kV XLPE cable systems installed on the Arabian Peninsula*

KAUMANN Johannes, **HEUSER** Jürgen, **FRANKE** Dirk, **OPPERMANN** Thomas, **HÄRING** Dominik, **SCHRÖDER** Gero, **WEINLEIN** Andreas; Südkabel GmbH, Mannheim, Germany

A4.5 *Degradation of silicone insulating fluids in cable sealing ends*

VIRTANEN Suvi, **CALENDER** George, **WHEATLEY** David, **PILGRIM** James A., **ANDRITSCH** Thomas, **BROWN** Richard, **LANGLEY** John, **LIU** Xiang; University of Southampton, United Kingdom

CWIKOWSKI Oliver; National Grid Electricity Transmission, Warwick, United Kingdom

A4.6 *Investigation and Mitigation of HV Cable Joint Failures in Thailand Metropolis*

RAJAKROM Asawin; MEA, Bangkok, Thailand

THANANCHANA Annop, **CHANDARASUPSANG** Tirapot, **CHALPITAK** Nopasit; Chiangmai University, Thailand

B4 New materials (A)

Topic 1: Materials, New Materials and Ageing Assessment in AC and DC

Tuesday June 25th, 2019 - 09:00 - 10:30 - Room: B (Lulli)

Chairman: **GUSTAFSSON** Anders; Borealis, Sweden

Rapporteur: **SAMUEL** Jorice; Nexans, Norway

B4.1 *Enhanced performance thermoplastic insulation systems*

STEVENS Gary C., **PYE** Amy, **FREEBODY** Nicola, **BASU** Susmit; Gnosys Global, Guildford, United Kingdom

GERMAN Ian, **THOMAS** Janet; Gnosys Global, Guildford, United Kingdom

HOSIER Ian, **VAUGHAN** Alun S, **ANDRITSCH** Thomas; University of Southampton, United Kingdom

B4.2 *Development of a thermoplastic insulation system for medium voltage cables*

WALD Detlef; Eifelkabel, Villmergen, Switzerland

POTS Laurens; TKF, Haaksbergen, Netherlands

B4.3 *Comparison of characteristics and behaviour of XLPE and P-laser MV-cable*

SOEPBOER Piet, **BROERSMA** Tjeerd; Enexis, 's-Hertogenbosch, Netherlands

HENNUY Blandine, **SIMAL** Robin; ENGIE-Laborelec, Linkebeek, Belgium

VAN ROSSUM Jos, **LAUWERS** Sander; Prysmian Netherlands B.V., Delft, Netherlands

B4.4 *A polystyrene pinning crosslinked polyethylene for potential application in HVDC cable insulation*

CAO Liang, **ZHONG** Lisheng, **YANG** Xiaoyu, **GAO** Jinghui, **CHEN** Guanghui; Xi'an Jiaotong University, China

LI Wenpeng, **CHEN** Xin, **ZHANG** Chong; Global Energy Interconnection Research Institute Co., Ltd., Beijing, China

LI Zhenyu, **GUAN** Jianxin; STATE GRID Corporation of China, Beijing, China

B4.5 *Performance of a strippable thermoplastic medium voltage cable*

WALD Detlef; Eifelkabel, Villmergen, Switzerland

LIU Xiongjun; Shangshang Cable, Liyang, China

RAIKISTO Pasi; HVCS, Savonlinna, Finland

C4 Space charge measurement (Interface and Material)

Topic 8: DC Cable Systems: LV, MV, HV and EHV

Tuesday June 25th, 2019 - 09:00 - 10:30 - Room: C (Condé / Pascal)

Chairman: **DOEDENS** Espen; Nexans Norway AS, Norway

Rapporteur: **GUFFOND** Raphaël; Nexans, France

- C4.1** *Development and Optimization of a Pulsed Electroacoustic System Suitable for Silicone Rubbers with Carbon Black Nanofillers*
HUSSAIN Rashid, **MOXTER** Julian, **HINRICHSSEN** Volker; Technische Universität Darmstadt, High-Voltage Laboratories, Germany
- C4.2** *Space Charge Accumulation between Different Insulating Materials Simulated Cable Joint for HVDC*
IGUCHI Kumiko, **TOHMINE** Tsuyoshi, **MIYAKE** Hiroaki, **TANAKA** Yasuhiro; Tokyo City University, Japan
MURATA Yoshinao, **INOUE** Yoshiyuki; Sumitomo Electric Industries, Ltd., Tokyo, Japan
- C4.3** *Space charge properties of EPDM under different electric field and thermal ageing*
MEN Rujia, **LEI** Zhipeng, **GENG** Pulong, **SONG** Jiancheng, **LI** Yuanyuan, **TIAN** Muqin; Taiyuan University of Technology, China
HAN Tao; Tianjin University, China
LI ChuanYang; Tsinghua University, Beijing, China
FABIANI Davide; University of Bologna, Italy
- C4.4** *HVDC extruded cable space charge measurement under operating condition with temperature difference*
HOU Shuai, **FU** Mingli, **HUI** Baojun, **LI** Xiaolin; Electric Power Research Institute China Southern Power Grid, Guangzhou, China
- C4.5** *Comparison and evaluation of deconvolution techniques for processing space charge measurement data*
LUNGE Kevin, **NIEDIK** Christoph Felix, **JENAU** Frank; TU Dortmund University, Germany
- C4.6** *Measurement of Trapped Charge Density and Trap Depth in XLPE Based on Polarization and Depolarization Current Method*
ZHOU Kai, **LI** Mingzhi; Electrical Engineering and Information Technology College of Sichuan University, Chengdu, China

D4 Partial Discharge Methods and Measurement - Equipment

Topic 3: Testing Methods: Electrical and non Electrical

Tuesday June 25th, 2019 - 09:00 - 10:30 - Room: D (Colbert)

Chairman: **KIM** Jung Nyun; LS Cable, Korea

Rapporteur: **SANTANA** José; Prysmian Câbles & Systèmes, France

- D4.1** *Optimized test setup and decoupling strategy for onsite PD measurements*
VATERRODT Klaus, **SPIELER** Martin, **KÖSZEGI** Andreas, **NIERHAUS** Tjalf, **KUCHARCZYK** Krzysztof; IPH GmbH, Berlin, Germany
- D4.2** *Innovative PD Site Location Optimized for FAT in the Cable Industry*
MRAZ Petr, **TREYER** Patrick, **HAMMER** Urs; Haefely Test AG, Basel, Switzerland
- D4.3** *HV withstand test for a 500 kV Power Cable Project Using 8 modular variable Frequency Resonant Test Systems*
XIAO Chuan Qiang, **ZHANG** FengXi, **DAI** Hongbin, **ZUO** XianKun; SINDIA Instruments, Beijing, China
- D4.4** *Procedures to qualify PD measuring instruments to use in the insulation condition of cable systems*
GARNACHO Fernando, **KHAMLI** Abderrahim, **RAMÍREZ** Ángel, **ROVIRA** Jorge; FFII-LCOE, Madrid, Spain
ÁLVAREZ Fernando, **ARCONES** Eduardo; Universidad Politécnica de Madrid, Spain

D4.6 *Partial discharge propagation in high voltage XLPE insulated cables - measurement vs. Modelling*
BOCHENSKI Boguslaw; Kinectrics Inc., Toronto, Canada

E4 **Monitoring of mechanical issues**

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Tuesday June 25th, 2019 - 09:00 - 10:30 - Room: E (Montesquieu)

Chairman: **MAIOLI** Paolo; Prysmian SpA, Italy

Rapporteur: **CABAU** Matthieu; RTE, France

E4.1 *Determination of the Depth of Burial of Submarine Power Cables from Temperature Measurements in Real-Time*
LUX Jonathan, **OLSCHEWSKI** Martin, **CZERNIUK** Thomas, **HILL** Wieland; NKT Photonics GmbH, Cologne, Germany

E4.2 *Experiences with depth of burial monitoring in the North Sea using Distributed Temperature Sensing*
VAN OOSTEROM Jozua, **VAN DOELAND** Wouter, **KONING** Richard; Energy Solutions B.V., Delft, Netherlands

E4.3 *Fault Localisation with Distributed Acoustic Sensing (DAS) – Service Experience*
OLSEN Rasmus, **STEFFANSEN** Simon, **OLESEN** Kristian; Energinet Transmission, Fredericia, Denmark
ROGERS Rosalie, **LEES** Gareth; AP Sensing, Stuttgart, Germany

E4.4 *Ultra-Long Reach Fiber Distributed Acoustic Sensing for Power Cable Monitoring*
CEDILNIK Gregor, **LEES** Gareth; AP Sensing GmbH, Böblingen, Germany
SCHMIDT Poul Erik, **HERSTRØM** Søren, **GEISLER** Tommy; OFS, Brøndby, Denmark

E4.5 *Online chafing fault diagnosis and characterization in twisted pair cables based on multi-carrier reflectometry and genetic optimization algorithms*
BEN HASSEN Wafa, **KAFAL** Moussa, **CABANILLAS** Esteban; CEA, LIST, Laboratoire de Fiabilité et Intégration Capteurs, Gif-sur-Yvette, France

E4.6 *Non-electric detection of internal discharges in High-Voltage Cable Accessories*
VATERRODT Klaus, **PETERSEN** Andreas; IPH Institut Prüffeld für elektrische Hochleistungstechnik GmbH (CESI Group), Berlin, Germany
LEISTNER André; Polymerics GmbH, Berlin, Germany
GRÄF Thomas; HTW Hochschule für Technik und Wirtschaft Berlin, Berlin, Germany

Tuesday June 25th, 2019 - 11:00

A5 HV and EHV Submarine cables

Topic 9: Submarine Cable Systems (AC & DC)

Tuesday June 25th, 2019 - 11:00 - 12:30 - Room: A (Richelieu)

Chairman: **COLLA** Luigi; Prysmian Power Link Srl, Italy

Rapporteur: **CHARLES** Fabien; Prysmian Sud Europe, France

A5.1 *Corrosion, we just have to live with it*

WALD Detlef; Eifelkabel, Villmergen, Switzerland

ORTON Harry; Orton Consulting Engineers Intl., North Vancouver, Canada

ALJINOVIĆ Srećko; HOPS, Split, Croatia

DROPULIĆ Toni; Dalekovod-Projekt, Zagreb, Croatia

A5.2 *Study on Degassing Process of the World's First 500 kV XLPE Insulated AC Submarine Cable*

WANG Wen-chao, **ZHAO** You-lin, **ZHANG** Jian-min, **YE** Cheng, **HU** Ming, **WANG** Liyuan; Zhongtian Technology Submarine Cable Co., Ltd., Nantong, China

XIE Shuhong; Zhongtian Technology Group Co., Ltd., Nantong, China

A5.3 *Research and Application of XLPE Insulated AC and DC Submarine Cables in China*

ZHANG Hongliang, **YAN** Zhiyu, **HU** Ming, **LU** Xinliang, **YAN** Yan, **SUN** Zhe, **YU** Hongmiao; Zhongtian Technology Submarine Cable Co., Ltd., Nantong, China

A5.5 *Toward Detecting Ship Characteristics and Movements using DAS and Machine Learning*

MALAPRADE Jacques, **HUNT** Ryan, **LEES** Gareth; AP Sensing, Basingstoke, United Kingdom

DRAPP Bernd; AP Sensing, Böblingen, Germany

A5.6 *Light armour cables for submarine deep water power application*

OTTE Olaf, **TROLLI** Alessandro, **CONSONNI** Enrico; Prysmian Group, Milan, Italy

B5 New materials (B)

Topic 1: Materials, New Materials and Ageing Assessment in AC and DC

Tuesday June 25th, 2019 - 11:00 - 12:30 - Room: B (Lulli)

Chairman: **CASIRAGHI** Flavio; Prysmian SpA R&D Material Director, Italy

Rapporteur: **SAHYOUN** Jihane; Nexans, France

B5.1 *Advancements in TR-XLPE Insulation Technology to Enable Use in High Voltage Cable Applications*

CARONIA Paul, **PERSON** Timothy, **COGEN** Jeff, **SENGUPTA** Saurav; The Dow Chemical Company, Colledgeville, USA

CREE Steve; The Dow Chemical Company, Horgen, Switzerland

SUN Yabin, **HE** Chao; The Dow Chemical Company, Shanghai, China

B5.2 *Fully-Crosslinked XLPE with low conductivity for DC insulation*

PERSON Timothy; The Dow Chemical Company, Colledgeville, USA

CREE Stephen; The Dow Chemical Company, Horgen, Switzerland

YANG Yong Yong; Dow Chemical (China) Invest. Co. Ltd., Shanghai, China

B5.3 *Formula and preparation of special rubber sheath material for Rolling Stock Cables*

XIE Xiangqian, **LIANG** Bin, **LU** Ruquan, **BAO** Degui; Zhongtian Technology industrial Wire & Cable System Co., Ltd, Nantong, China

B5.4 *Development of Novel Liquid Silicone Rubber Solutions for HVDC Cable Accessories*

DRAKE Robert; Dow Performance Silicones, Barry, United Kingdom

WOLF Hans Peter, **SCHENK** Xao Phung; Dow Performance Silicones, Wiesbaden, Germany

PERSON Timothy; The Dow Chemical Company, Colledgeville, USA

B5.5 *Recent Developments to Improve the degassing and long run extrusion performance of HV Cables*

KJELLQVIST Jerker; *Dow Europe GmbH, Horgen, Switzerland*
SUN Yabin; *Dow Chemical, Shanghai, China*
MÄKELÄ Timo, **LAHTI** Mikko; *Maillefer Extrusion Oy, Vantaa, Finland*
FRAIJA Samir, **DANDACHI** Jaber, **SAAD** Mohammed; *Jeddah Cable Co Ltd, Jeddah, Saudi Arabia*

- B5.6** *Self-healing dielectric fluids for fluid filled cables: from lab to circuits*
BASU Susmit, **GERMAN** Ian, **HERMAN** Henryk, **RHODES** Rhys, **STEVENS** Gary C.; *Gnosys Global Ltd, Guildford, United Kingdom*

C5 Interfaces and modelling of DC cable systems

Topic 8: DC Cable Systems: LV, MV, HV and EHV

Tuesday June 25th, 2019 - 11:00 - 12:30 - Room: C (Condé / Pascal)

Chairman: **KIM** Jeongtae; *Daejin University, Korea*

Rapporteur: **BOYER** Ludovic; *SuperGrid Institute, France*

- C5.1** *Special Communication (25 minutes allocated time)*
Overvoltages experienced by DC cables within an HVDC transmission system in a bipolar configuration – A simulation study approach
SALTZER Markus; *ABB Switzerland Ltd., Baden-Dättwil, Switzerland*
GÖRTZ Max; *Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany*
WENIG Simon; *TransnetBW GmbH, Stuttgart, Germany*
LETERME Willem; *KU Leuven, Leuven, Belgium*
SAAD Hani; *RTE, Paris, France*
JUVIK Jon Ivar; *Statnett, Oslo, Norway*
ZHANG Roland Dongping; *TenneT TSO GmbH, Bayreuth, Germany*
BARTZSCH Carsten; *SIEMENS AG, Erlangen, Germany*
KARMOKAR Tanumay; *NKT HV Cables AB, Karlskrona, Sweden*
JOUBERT Vincent; *Prysmian Group, Paris, France*
CRIPPA Alessandro; *CESI, Milan, Italy*
CIGRE WG; *JWG B4/B1/C4.73, various*
- C5.2** *Approach for a comprehensive definition of the electrical interface between HVDC converter and cable*
BECKLER Simon, **REISBECK** Jörg, **EXL** Florian; *TransnetBW GmbH, Stuttgart, Germany*
SHELL Fabian; *Fichtner GmbH, Stuttgart, Germany*
- C5.3** *Modeling of the Thermoelectric Performance of a ±320 kV HVDC Underground Cable System*
CHRYSOCHOS Andreas, **CHATZIPETROS** Dimitrios, **CHYTIRIS** Nathanail, **PAVLOU** Konstantinos, **TASTAVRIDIS** Konstantinos, **GEORGALLIS** Georgios; *Cablel Hellenic Cables S.A., Viohalco Group, Athens, Greece*
- C5.4** *Disruptive modelling of HVDC insulation system electrical properties from ab-initio material analysis*
GUFFOND Raphaël; *Nexans, Lyon, France*
COMBESSIS Anthony; *Nexans, Lens, France*
HOLÉ stéphane; *Laboratoire de Physique et d'Étude des Matériaux, (LPEM, UMR8213) CNRS, PSL Research University ESPCI-ParisTech, Sorbonne Universités, UPMC Univ Paris 6, Paris, France*

D5 MV AC Cables Systems

Topic 6: LV and MV AC Cable Systems

Tuesday June 25th, 2019 - 11:00 - 12:30 - Room: D (Colbert)

Chairman: **MAXIMO** Juan; *Viakable Mx, Mexico*

Rapporteur: **LIN** Christophe; *Enedis, France*

- D5.1** *Fault mechanisms of incorrectly installed force springs for ground screen connections in medium voltage cable systems*
HALVORSON Hans Lavoll, **HVIDSTEN** Sverre; *SINTEF Energy Research, Trondheim, Norway*
BAKKEN Robin Lyngseth, **MAUSETH** Frank; *NTNU, Norwegian University of Science and Technology, Trondheim, Norway*
- D5.2** *Aerial MV covered networks: Worth a new look?*

BATTLE Robert; *SICAME AUSTRALIA, Yatala, Australia*
KHANNA Rajesh; *SICAME INDIA, Kanchipuram, India*
BEAUGER Blaise, **JEANNEAU** Damien; *SICAME SAS, Pompadour, France*

D5.3 *Underground networks MV and LV - Certification of jointers*

MAZET Françoise; *SICAME, Pompadour, France*
TANZEGHTI Houssam, **ALDEBERT** Thierry; *ENEDIS, Paris, France*

D5.5 *MV cable under severe mechanical forces applied during its installation (case study)*

ASKAR Mohammed, **DESSUKY** Rayan; *Bahra Cables Company, Jeddah, Saudi Arabia*

D5.6 *MV enhanced thermoplastic polypropylene based cables to upgrade power distribution and transmission networks*

PEREGO Gabriele, **MAZEL** Christelle, **KOELBLIN** Christian, **CHARRIER** Dimitri; *Nexans, Lyon, France*
CHA Ki-Ho; *Nexans, Jincheon, Korea, Republic of*
STUERMER Michael; *Nexans, Hannover, Germany*
PAIXAO Marcelo; *Nexans, Nüremberg, Germany*
TUNDO Alessandro; *Nexans, Pomezia, Italy*
CACCIOTTI Mauro; *Nexans, Battipaglia, Italy*
KAYOUN Pierre; *Nexans, Paris, France*

E5 Non PD health assessment

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Tuesday June 25th, 2019 - 11:00 - 12:30 - Room: E (Montesquieu)

Chairman: **ORTON** Harry; *Consultant, Canada*

Rapporteur: **COUTURIER** Nicolas; *RTE, France*

E5.1 *Belgian experience with a sheath current monitoring system installed on a critical 150 kV cable*

LEEMANS Pieter, **DE RIDDER** Peter, **DE MUYTER** Laurence; *Elia, Brussels, Belgium*
VAN OOSTEROM Jozua, **GEVERS** Vincent; *ENSOL, Delft, Netherlands*

E5.2 *Real Time Monitoring of EHV Cable system*

SHARMA Arvind kumar; *University of Southampton, United Kingdom*
GODBOLE Sandeep, **KHAMKAR** Pares, **KHOLIYA** Sanjaykumar, **SONAR** Vikas; *Adani Electricity, Mumbai, India*

E5.4 *Condition assessment of cross-bonded HV cable system*

SMIT Jacco, **VAN DOORN** Joris, **ZUIJDERDUIN** Roy; *TenneT TSO B.V., Arnhem, Netherlands*
ROEFS Richard; *Qirion, Duiven, Netherlands*
VILLAS Georgios, **VAN EEDEN** Corne, **WEGBRANS** Bas; *Prysmian Netherlands B.V., Delft, Netherlands*

E5.5 *Cable sheath diagnosis in cross bonding cable systems*

SHOKRY Marina Adel, **KHAMLICHI** Abderrahim, **GARNACHO** Fernando, **ROVIRA** Jorge; *LCOE-FFII, Madrid, Spain*
MARTINEZ Julio; *UPM, Spain*
GONZALO Angel, **PRIETO** Diego, **LLANDRES** Jesus; *UFD, Spain*

E5.6 *Visualization based on HDR Image Processing for X-ray Inspection of Power Transmission Cable Joints*

JINNO Takao, **YOSHIDA** Yuki, **TAKAMIYA** Riku, **KOJIMA** Toshiki; *Osaka Institute of Technology, Osaka, Japan*
HOZUMI Naohiro; *Toyohashi University of Technology, Japan*
NAGOYA Yoshihisa; *Furukawa Electric Co., Ltd., Chiba, Japan*
IWASAKI Kimihiro; *TEPCO Power Grid, Inc., Tokyo, Japan*

A6 HVDC submarine cables

Topic 9: Submarine Cable Systems (AC & DC)

Tuesday June 25th, 2019 - 14:30 - 16:00 - Room: A (Richelieu)

Chairman: **GASPARI** Roberto; Nexans Norway, Norway

Rapporteur: **CORLU** Yannis; RTE, France

A6.0 *Special Communication (25 minutes allocated time)*

Invited Conference on NEMO Project

VISSER Gerke; Nemo Link, United Kingdom

A6.1 *Qualification, installation and commissioning of world's first DC 400 kV XLPE cable system*

IGI Tsuyoshi, **ASAI** Shinya, **NISIKAWA** Satoshi, **MASHIO** Shoji; Sumitomo Electric Industries, Ltd., Tokyo, Japan

TOMIOKA Satoshi, **MIYAZAKI** Takuya; Sumitomo Electric Industries, Ltd., Osaka, Japan

KAZAMA Tatsuya; Sumitomo Electric Industries, Ltd., Hitachi, Japan

A6.3 *Design features of HVDC cables crossing the German North Sea EEZ*

CAVALEIRO Pedro; Fichtner GmbH & Co. KG, Stuttgart, Germany

A6.4 *UK to Iceland HVDC Interconnector: Key Project Considerations*

SVOMA Roman; PowerSure Technology, Bexleyheath, Kent, United Kingdom

STURGEON Chris; Red Penguin, Fareham, Hampshire, United Kingdom

TRUELL Matthew; Atlantic Superconnection, London, United Kingdom

A6.5 *Continuous monitoring of HVDC Power cables with integrated fibre optic cables*

SVOMA Roman; PowerSure Technology, Bexleyheath, Kent, United Kingdom

MASHIO Shoji; Sumitomo Electric Industries, Ltd., Osaka, Japan

B6 Ageing and lifetime (A)

Topic 1: Materials, New Materials and Ageing Assessment in AC and DC

Tuesday June 25th, 2019 - 14:30 - 16:00 - Room: B (Lulli)

Chairman: **MONTANARI** Gian Carlo; Texas University, Austin, USA

Rapporteur: **MIREBEAU** Pierre; Nexans, France

B6.1 *Extracting optimal value from a medium voltage (MV) Qualification (wet ageing) Test?*

WALD Detlef; Eifelkabel, Villmergen, Switzerland

HAMPTON Nigel; None, Peachtree City, USA

B6.2 *Implementation of Ageing Laws and Cable Models to Estimate Service Life for MV Cable Designs using Laboratory Endurance Tests*

SHU Essay Wen, **PERKEL** Josh, **HAMPTON** Nigel; NEETRAC, Atlanta, USA

B6.3 *Can Cables Last 100 Years?*

JOSEPH Michael, **LANZ** Ben, **BYRNE** Darren, **ZIEGLER** Steffen; IMCORP, Manchester, CT, USA

HUMMEL Rene; IMCORP, Berlin, Germany

B6.4 *Lifetime prediction based on electro-thermal aging test and electric field simulation of a new ac 500 kV submarine cable*

LIU Zhiqian, **HAO** Jian, **DAI** Xize; State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University, Chongqing, China

GAO Zhen, **LI** Hanping; Zhoushan Power Supply Company of State Grid Zhejiang Electric Power Supply Company, Zhoushan, China

B6.5 *Aging of oil impregnated insulation paper of subsea HV cables in decades of service*

FURUHEIM Knut Magne; Nexans Norway AS, Halden, Norway

- B6.6** *Dielectric spectroscopy response and Mechanical properties of XLPE mini-cable aged under thermal stresses*
PELZER Quentin, **BEN HASSINE** Mouna, **RESMOND** Adrien; EDF, Ecuelles, France
PERRIN Lara, **FLANDIN** Lionel; LEPMI, Chambéry, France
NOTINGHER Petru; IES, Montpellier, France
COLIN Xavier; PIMM, Paris, France
TANZEGHTI Houssam; ENEDIS, Paris, France
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C6 Cable rating

Topic 2: Cables and Accessories – design and modelling

Tuesday June 25th, 2019 - 14:30 - 16:00 - Room: C (Condé / Pascal)

Chairman: **DU PLESSIS** Thinus; DNV GL, The Netherlands

Rapporteur: **LESUR** Frédéric; Nexans, France

- C6.1** *Use of conformal transform for current rating calculations of underground cable systems*
LESUR Frédéric, **DUBOIS** David, **SESSOUC** François; Nexans, Calais, France
- C6.2** *Ampacity calculation of multiple independent cable systems in ventilated tunnels*
AEGERTER Damian; Braavos GmbH, Stetten, Switzerland
MEIER Stephan; Emetor AB, Västerås, Sweden
- C6.3** *Extended approach for calculating thermal stress and ampacity of high voltage cable systems based on experimental data*
AINHIRN Florian, **WOSCHITZ** Rudolf; High Voltage Test Laboratory Graz Ltd., Graz, Austria
BOLZER Andreas; Wiener Netze GmbH, Vienna, Austria
- C6.4** *Novel Cooling Technique for Cables Crossing a Road Ramp*
ANDERS George J.; Lodz University of Technology, Poland
BOCHENSKI Boguslaw; Kinectrics Inc., Toronto, Canada
MIKKILI Leena; Black&Veatch, Kansas City, USA
- C6.6** *Special Communication (25 minutes allocated time)*
Overview of CIGRÉ WG B1.56 regarding the verification of cable current ratings
DE WILD Frank; DNV GL, Arnhem, Netherlands
ANDERS George J.; Technical University of Lodz, Poland
BASCOM III Earle C. (Rusty); Electrical Consulting Engineers P.C., Mesa, USA
CRAY Stefie; National Grid, Warwick, United Kingdom
JOO Jeayun (Jerry); LS Cable & System, Gumi-si, Korea, Republic of
KAMARA Woulèye; Cyme, Canada
KVARTS Thomas; Ørsted Wind Power a/s, Gentofte, Denmark
LESUR Frédéric; Nexans, Calais, France
LOTFTI Abbas; Nexans Norway AS, Halden, Norway
MOUTASSEM Wael; USi, Ronkonkoma, USA
PINKERT Kyrre; NKT, Germany
PILGRIM James A.; University of Southampton, United Kingdom
RIZOU Varvara; Hellenic Cables, Athens, Greece
VAN ROSSUM Jos; Prysmian Group, Delft, Netherlands
THYRVIN Ola; NKT HV Cables AB, Lyckeby, Sweden

D6 Interaction of the Cable System with the Environment

Topic 5: Cable Systems, Environment and Sustainable Development

Tuesday June 25th, 2019 - 14:30 - 16:00 - Room: D (Colbert)

Chairman: **GILLE** Alain; Verbraeken Infra, Belgium

Rapporteur: **DENIZET** Isabelle; General Cable, France

- D6.1** *Application of Fluoronitrile-based alternative gas to SF₆ to a High Voltage GIS cable termination*
LESUR Frédéric, **AIT AMAR** Abdellatif; Nexans, Calais, France

BOUKROUCHE Fahd, **MIGNE** Romain; RTE, Paris La Défense, France
KIEFFEL Yannick, **LARUELLE** Elodie; GE Power, Villeurbanne, France

- D6.2** *Recycling XLPE from cable waste*
HUUVA Ramona, **RIBARITS** Elisabeth; Borealis AB, Stenungsund, Sweden
- D6.3** *Enhanced adoption of the two-zone model to implement the drying out of soil in ampacity calculations of directly buried cable systems for different types of soil*
BALZER Constantin, **HINRICHSSEN** Volker; High Voltage Laboratories, TU Darmstadt, Germany
DREFKE Christoph, **SCHADEL** Markus, **SASS** Ingo; Geothermal Science and Technology, TU Darmstadt, Darmstadt, Germany
HENTSCHER Klaus; Bayernwerk AG, Regensburg, Germany
- D6.4** *Fluidized and Self Compacting Backfill with High Thermal Conductivity for Underground Insulated Cables Systems*
LOPES Julio, **PINHEIRO** Walter, **ARAÚJO** Simone, **ALMEIDA** Geraldo; TAG Inovação Tecnológica, São Paulo, Brazil
ROCHA Rogerio, **DE SOUZA** Paulo, **LEANDRO** Eduardo, **DIOGO** Anderson; Eletropaulo Eletricidade de São Paulo, Brazil
- D6.5** *MV self-supported insulated cables, a reliable and eco-friendly solution for protected and forest areas*
BALZA Xabier, **SOLDEVILA** Francesc; Prysmian Group, Barcelona, Spain
GONZALEZ Josep Manel, **GONZALEZ** Juan, **IRANZO** Rubén; Endesa Distribución, Barcelona, Spain
- D6.6** *Estimation of the thermal resistivity of backfill materials using a practical approach*
EBERG Espen; SINTEF Energy Research, Trondheim, Norway
ESPELAND Kåre; REN AS, Norway
RIEKSTIS Karlis; NTNU, Norwegian University of Science and Technology, Trondheim, Norway

E6 Poster session: Materials

Poster session: Materials

Tuesday June 25th, 2019 - 14:30 - 16:00 - Room: E (Montesquieu)

Chairman: **ALBERTINI** Marco; Prysmian SpA, Italy

Rapporteur: **NOTINGHER** Petru; University of Montpellier, France

- E6.5** *Study of inception mechanism of electrical trees from bow-tie trees*
KATAKAI Shoshi, **HIWATASHI** Shigeo, **SUZUKI** Hiroshi; Sumitomo Electric Industries, Ltd., Hitachi, Japan
SUZUKI Kozo, **MASHIO** Shoji; Sumitomo Electric Industries, Ltd., Tokyo, Japan
- E6.6** *Manhole Monitoring via IoT and GIS*
KANGKUN Watchara, **TUNGDUANGDEE** Paphawee; Metropolitan Electricity Authority, Bangkok, Thailand
- E6.7** *The Propagation Retardation of Electrical Tree in XLPE under Negative Impulse Superimposed AC Voltage*
ZHOU Kai, **LI** Zerui, **CHEN** Shijia, **ZHU** Guangya, **HUANG** Yonglu; College of Electrical Engineering and Information Technology, Sichuan University, Chengdu, China
- E6.8** *Space Charge Behavior in Polyethylene under Elevating Stepwise DC Voltage*
OGURA Kotaro, **MIYAKE** Hiroaki, **TANAKA** Yasuhiro; Tokyo City University, Japan
- E6.9** *Space charge behaviours of PP-based nanocomposites for HVDC cable insulation varying with temperatures*
HOU Zhaohao, **DU** Boxue, **LI** Zhonglei, **LI** Jin, **HAN** Chenlei, **HAN** Tao, **XIAO** Meng; Tianjin University, China
- E6.10** *Suppressing Space Charge Accumulation in XLPE with Voltage Stabilizer*
HAN Chenlei, **DU** Boxue, **LI** Zhonglei, **HOU** Zhaohao, **LIU** Chang, **LI** Jin, **HAN** Tao, **XIAO** Meng; Tianjin University, China
- E6.11** *Advanced cable self-repair materials for subsea and underground cables*
BASU Susmit, **GERMAN** Ian, **RHODES** Rhys, **STEVENS** Gary C., **THOMAS** Janet; Gnosys Global Ltd, Guildford, United Kingdom
- E6.12** *Comparative Analysis on Partial Discharge Inception Voltage in Interfacial Void Models with Different Materials for AC XLPE Cable Joints*
YOON Sung-Ho, **SON** Hyeong-Wook, **KIM** Jeong-Tae; Daejin University, Pocheon, Korea, Republic of

- E6.13** *Effects of switching impulse voltage on characteristics of electrical trees within silicone rubber*
HUI Baojun, **FU** Mingli, **HOU** Shuai, **ZHANG** Yifan, **LI** Xiaolin; *Electric Power Research Institute, CSG, Guangzhou, China*
PENG Yunshun, **XU** Man; *Xi'an Jiaotong University, (China), China*
- E6.15** *Innovation in cable ageing management for nuclear safety in long-term operation of generation II and III reactors*
MARQUE Grégory; *EDF R&D, Moret-sur-Loing, France*
PAUL Adeline, **SKOGSATER** Sara; *ARTTIC, Paris, France*

F6 Poster session: Cable Systems

Poster session: Cable Systems

Tuesday June 25th, 2019 - 14:30 - 16:00 - Room: F (Galerie Le Nôtre)

Chairman: **FROHNE** Christian; Nexans, Germany

Rapporteur: **HAERING** Dominik; Südkabel GmbH, Germany

- F6.2** *Modelling and Testing of Temporary Protective Grounds Cable Systems for High Fault Current Applications*
PODA Anil; *NEETRAC, Atlanta, Uganda*
PERKEL Josh, **LANCASTER** Thomas, **HAMPTON** Nigel; *NEETRAC, Atlanta, USA*
- F6.3** *Quality Checks on LV and MV cables as an act of Supplier Quality Management*
SOEPBOER Piet; *Enexis Netbeheer BV, 's-Hertogenbosch, Netherlands*
SIMAL Robin, **HENNUY** Blandine; *ENGIE-Laborelec, Linkebeek, Belgium*
- F6.6** *Development and testing of XLPE-insulated medium-voltage cables with sector-shaped conductors in Russia*
KAMENSKIY Mikhail, **SLIVOV** Alexey, **SHUVALOV** Mikhail; *JSC "VNIIEK", Moscow, Russian Federation*
- F6.7** *The Influence of Communication towards the Implementation of MEA Underground Cable Project and Communication Line Arrangement in Thailand*
JULLASAK Kittisak; *Metropolitan Electricity Authority, Bangkok, Thailand*
- F6.8** *Simulation study on DC electric field of a layer type HVDC MI-PPLP cable*
HWANG Jae-Sang, **JUNG** Chae-Kyun, **KANG** Ji-won, **WOO** Jung-wook; *KEPCO Research Institute, Daejeon, Korea, Republic of*
PARK Jin-Woo, **KIM** Jong-chaeh, **KWON** Kyu-bum; *KEPCO (Korea Electric Power Corporation), Naju, Korea, Republic of*
KWON Ik-Soo, **LEE** Bang-Wook; *Hanyang University, Ansan, Korea, Republic of*
- F6.10** *Study on the Mechanism of Buffer Layer Ablation on High Voltage XLPE Insulated Cable with Corrugated Aluminium Sheath Structure*
JIANG Lei, **XIN** Yue, **ZHAO** Xiyuan, **YAN** Wenbo, **YAO** Ruifeng, **GAO** Jinghui, **ZHONG** Lisheng; *Xi'an Jiaotong University, China*
WU Changshun, **YANG** Juanjuan; *Shanghai Intelligent Service and Technology Co, Ltd, Shanghai, China*
- F6.11** *Optimal Design of HV Underground XLPE Power Cables*
AIJAT Majdi; *Dubai Electricity and water authority, Dubai, UAE*
AMOURA Fathi K.; *Yarmouk university, Irbid, Jordan*
- F6.12** *Dynamic and fatigue analysis of Dynamic Cable (riser cable) for FOWT - Fukushima FORWARD Project*
KAGOURA Toru, **SASAKI** Takahiro; *Furukawa Electric Co., Ltd., Ichihara, Japan*
FUJII Shigeru, **SAKAKIBAR** Hiroyuki; *Furukawa Electric Co., Ltd., Tokyo, Japan*
- F6.13** *How coordinated, collaborative engagement with industry, regulators and stakeholders can help achieve the aims of promoting safety and protection of subsea cables*
MCCALL Rachel; *European Subsea Cable Association, London, United Kingdom*
ZYMELKA Tony; *European Subsea Cable Association, London, United States Minor Outlying Islands*
- F6.14** *Development of VSC DC 320 kV XLPE cable system*
LEE Soo-bong, **JUNG** Eui-hwan, **HONG** Sung-pyo, **CHO** Dong-sik, **SON** Si-ho, **NAM** Jin-ho; *LS Cable & System, Gumi-si, Korea, Republic of*

F6.15 *Challenges and solutions for power cables with low smoke halogen free polymers requirements and reaction to fire performance*
SCHRÖDER Gero, **NISHABURI** Afsaneh, **FENSKE** Dietmar, **KAUMANN** Johannes, **HÄRING** Dominik; *Südkabel GmbH, Mannheim, Germany*

A7 Submarine cables installation

Topic 9: Submarine Cable Systems (AC & DC)

Tuesday June 25th, 2019 - 16:30 - 18:00 - Room: A (Richelieu)

Chairman: **SVOMA** Roman; PowerSure Technology, UK

Rapporteur: **GIFFARD** Philippe; SYCABEL, France

- A7.1** *Installation engineering of export cables for offshore wind farm connections*
GUSTAFSSON Ola, **JOHANNESSON** Kenneth, **CRONHOLM** Kent; NKT HV Cables AB, Karlskrona, Sweden
- A7.2** *Madeira-Porto Santo very high water depth submarine cable feasibility study*
COTRIM Josè, **NETO** Miguel; EEM, Funchal-Madeira, Portugal
CRIPPA Alessandro, **MEREGALLI** Sergio; CESI, Milan, Italy
- A7.3** *Tensile Test and Finite Element Analysis of Flat Steel Wire Armoured Submarine Fiber Optic Composite Power Cable*
WANG Wenchao, **ZHANG** Jianmin, **ZHAO** You-lin, **CHEN** Jie, **HU** Ming, **XUE** Jianling, **YE** Cheng; Zhongtian Technology Submarine Cable Co., Ltd., Nantong, China
- A7.4** *Cable in pipe in an Offshore Windfarm*
SOERENSEN Johnny; SGRE, Brande, Denmark
- A7.5** *Submarine Cable Route Optimizing System Based on Marine Environmental Conditions*
TANAKA Miku, **MAYAMA** Shuuji; Sumitomo Electric Industries, Ltd., Osaka, Japan
OGURA Yu, **BABA** Junpei; The University of Tokyo, Japan
- A7.6** *Fatigue- Creep in conductors and armouring as constraint for allowable installation depth*
JOHANSON Audun; Nexans Norway, Oslo, Norway
ADEDAYO Adedayo; Nexans Norway, Halden, Norway
ALVARO Antonio; Sintef Industry, Trondheim, Norway

B7 Ageing and lifetime (B)

Topic 1: Materials, New Materials and Ageing Assessment in AC and DC

Tuesday June 25th, 2019 - 16:30 - 18:00 - Room: B (Lulli)

Chairman: **ISUS FEU** Daniel; General Cable, Spain

Rapporteur: **CHRETIEN** Antoine; RTE, France

- B7.1** *Thermal-electrical aging of selected polymeric LVAC cables under DC voltage stress*
FUCHS Karsten, **BERGER** Frank, **SCHAFFRINNA** Dominik, **APEL** René; Technische Universität Ilmenau, Germany
EGE Guido, **KOERNER** Werner; U.I. Lapp GmbH, Stuttgart, Germany
- B7.2** *Phased propagation characteristics of water trees in XLPE cables during the accelerated water tree aging experiment*
ZHOU Kai, **LI** Kangle; College of Electrical Engineering and Information Technology, Sichuan University, China
- B7.3** *Influence of Thermal Ageing on Water Sorption in EPDM Rubbers*
LACUVE Maxime, **COLIN** Xavier; PIMM, Paris, France
TOURCHER Christophe, **RESMOND** Adrien, **BEN HASSINE** Mouna; EDF R&D, Moret-sur-Loing, France
FLANDIN Lionel; LEPMI, Chambéry, France
NOTINGHER Petru; IES, Montpellier, France
TANZEGHTI Houssam; ENEDIS, Paris La Défense, France
- B7.4** *Assessment of the impact of the electrical stress on the ageing for a HVDC model cable*
CÈNES Julien, **TEYSSEBRE** Gilbert, **LE ROY** Séverine, **BERQUEZ** Laurent; LAPLACE, Toulouse, France
HONDÂA Pierre; RTE, Paris La Défense, France
ERIKSSON Virginie, **BAILLEUL** Marc, **LOYENS** Wendy; Borealis AB, Stenungsund, Sweden
MOREAU Christophe; EDF R&D, Moret-sur-Loing, France

- B7.5** *Estimation of chemical changes of thermally aged XLPE cable insulator*
MISAKA Hideki, **TAKAHASHI** Tohishiro; Central Research Institute of Electric Power Industry, Yokosuka, Japan
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C7 Cable rating (armour losses and dynamic effects)

Topic 2: Cables and Accessories – design and modelling

Tuesday June 25th, 2019 - 16:30 - 18:00 - Room: C (Condé / Pascal)

Chairman: **MOUTASSEM** Wael; USi, USA

Rapporteur: **GODARD** Alexandre; RTE, France

- C7.2** *DC Cable Thermoelectric Rating Design*
HUANG Ziyi (Uta), **SALVATORE** Marco, **BENTON** Kenneth; Mott MacDonald, Brighton, United Kingdom
- C7.3** *Endowing a configurable and computationally light underground cable temperature prediction algorithm with real-time rating capabilities*
MILLAR John, **LEHTONEN** Matti; Aalto University, Espoo, Finland
- C7.4** *FAST Modelling of armour losses in 3D validated by measurements*
WILLÉN Dag, **THIDEMANN** Carsten; NKT Group A/S, Brøndby, Denmark
THYRVIN Ola; NKT HV Cables AB, Karlskrona, Sweden
WINKEL Daniel, **ZERMENO** Victor M. R.; NKT Gmbh & Co. KG, Cologne, Germany
- C7.5** *An electrical method for measuring the complex magnetic permeability of steel wires*
ABKEN Karl-Ludwig; Prysmian Group, Nordenham, Germany
COLLA Luigi; Prysmian Group, Milan, Italy
TIMMERBERG Josef; Jade-Hochschule, Wilhelmshaven, Germany
- C7.6** *Parametric analysis of three-core submarine power cables by means of simplified 3D FEM simulations*
DEL-PINO-LÓPEZ Juan Carlos, **CRUZ-ROMERO** Pedro; Departamento de Ingeniería Eléctrica, Universidad de Sevilla, Spain
-

D7 System Considerations for Sustainability

Topic 5: Cable Systems, Environment and Sustainable Development

Tuesday June 25th, 2019 - 16:30 - 18:00 - Room: D (Colbert)

Chairman: **ZHONG** Lisheng; Xi'an Jiaotong University, China

Rapporteur: **SARTIEAUX** Anne-Catherine; Nexans, Belgium

- D7.1** *Special Communication (25 minutes allocated time)*
Eco Designs in Power Cables - a Case Study
KOLTUNOWICZ Tomasz, **MIDDEL** Frank, **VAN ROSSUM** Jos, **TSEKMES** Alex; Prysmian Group, Delft, Netherlands
BAREGGI Alberto; Prysmian Group, Milan, Italy
- D7.2** *Qualification of a fully dry 225 kV cable system from outdoor terminations to GIS & transformer terminations*
MIREBEAU Pierre, **AIT AMAR** Abdellatif; Nexans, Calais, France
GAHUNGU François; FGC, Maubeuge, France
STREIT Pascal; Bouygues E&S EnerTrans SA, Prilly, Switzerland
- D7.3** *Behaviour of Cable Systems under Large Disturbances – Status Report*
ORTON Harry; OCEI International, Vancouver, Canada
CHERUKUPALLI Sudhakar; BC Hydro, Burnaby, Canada
WEN Yingli; Consolidated Edison of New York, USA
TOP Abdou-Karim; Prysmian Cables, Paris, France
JOYCE Richard; TransPower, Christchurch, New Zealand
BERGAMO Giulia; CESI, Milan, Italy
KRISTIANDOTTIR Unnur; Landsnet, Reyjavik, Iceland
JOHNSON Dennis; Power Engineers, Kansas, USA
MAXIMO Juan; CMSA, Mexico City, Mexico
EIDINGER John; Eidinger and Associates, San Francisco, USA

OKAMURA Daisuke; *Kansai Electric, Osaka, Japan*

XIE Quang; *Tongji University, Shanghai, China*

WHEATLAND Russel; *Ausnet, Canberra, Australia*

D7.4 *Long Term Temperature Measurements Compared with Transient Calculation acc. to IEC 60853-2*

WERLE Volker, **PLEWE** Rouven, **FREITAG** Dr. Christian; *TenneT TSO GmbH, Bayreuth, Germany*

RATHKE Christian, **KUMBARTZKY** Guido; *TenneT TSO GmbH, Lehrte, Germany*

D7.5 *Prospects for HVDC links in the electricity network of Vietnam*

VU Thi Thu Nga, **ANH** Tung Tran, **TRAN** Thanh Son; *Electrical Engineering Department, Electric Power University, Hanoi, Vietnam*

TEYSSÉDRE Gilbert, **LE ROY** Séverine; *Laplace, University of Toulouse and CNRS, Toulouse, France*

NGUYEN Xuan Truong; *Energy Department, University of Science and Technology of Hanoi, Vietnam*

NGUYEN Quang Vinh; *Vietnam Electricity, Hanoi, Vietnam*

E7 Poster session: Diagnosis, Monitoring, Testing Methods, Cables and Accessories, Emerging Technologies

Poster session: Diagnosis, Monitoring, Testing Methods, Cables and Accessories, Emerging Technologies

Tuesday June 25th, 2019 - 16:30 - 18:00 - Room: E (Montesquieu)

Chairman: **BASCOM III** Earle C. (Rusty); *Electrical Consulting Engineers, P.C., USA*

Rapporteur: **LAGOMARSINI** Clara; *Nexans, France*

E7.2 *The development of intelligent self-driving monitoring system for 345 kV underground transmission line in tunnel*

PARK Jae Yong, **YOON** Jong Keon, **KIM** Du Jin, **LIM** Seung-myun, **CHOI** Sung Won; *KEPCO (Korea Electric Power Corporation), Seoul, Korea, Republic of*

E7.3 *Study on Water Tree Degradation Diagnosis for Dry-cured and Extruded Three-layer 6.6 kV XLPE Cables with Penetrated Water Tree*

KURIHARA Takashi; *Central Research Institute of Electric Power Industry, Yokosuka, Japan*

SATO Tomoyuki, **KABASAWA** Yuichiro, **NAGASHIMA** Tomohiro; *Tohoku Electric Power Co., Inc., Sendai, Japan*

E7.5 *On-site Application of the VHF Partial Discharge Detection Method for the Underground Power Cable Terminations*

KANG Shin Sub, **PARK** Sangsuh, **KANG** Yu Won, **ROH** Tae Hyueng, **KIM** Jae Seung, **KIM** Jong Chae, **KIM** Youn Chan; *KEPCO (Korea Electric Power Corporation), Naju, Korea, Republic of*

LIM Jae Seop, **JOH** Gye Hyun; *KEPCO (Korea Electric Power Corporation), Daejeon, Korea, Republic of*

E7.8 *Discovery of a New Degradation Mechanism of Self-Contained Fluid-Filled Cables (SCFF or SCOF) and Development of Diagnostic Technology*

AIHARA Yasuhiko, **NAKAMURA** Takeshi; *TEPCO Holdings, Inc., Tokyo, Japan*

IWASAKI Kimihiro, **MASHIMO** Nobuhiro, **GOTO** Yo, **MATSUI** Takeo; *TEPCO Power Grid, Inc., Tokyo, Japan*

SUGIMOTO Shu, **HANEDA** Jyunya, **NAGAHARA** Shigeki; *Tokyo Densetsu Service Co., Ltd., Tokyo, Japan*

E7.10 *Effect of air density factors on performance of EHV cable terminations during lightning transients*

MEENA K.P., **THIRUMURTHY** T., **ARUNJOTHI** Rajendran; *Central Power Research Institute, Bangalore, India*

E7.11 *Standardization of sample preparation for mechanical tests on cable Insulation and sheathing materials*

SATHEESHKUMAR P.V., **RAJA** G.K., **MEENA** K.P.; *Central Power Research Institute, Bangalore, India*

E7.14 *Integrated Testing and Diagnosis of Distribution Cables using Damped AC and Very Low Frequency Voltages*

CEJKA Gregor; *onsite hv international ag, Lucerne, Switzerland*

GULSKI Edward, **JONGEN** Rogier; *onsite hv solutions ag, Lucerne, Switzerland*

QUAK Ben; *Seitz Instruments AG, Niederrohrdorf, Switzerland*

PARCIAK Jaroslaw; *onsite hv solutions Central Europe Sp. z o.o., Warsaw, Poland*

RAKOWSKA Aleksandra; *Poznan University of Technology, Poznan, Poland*

E7.15 *Evolution of MV Extruded Cable Designs Used in the US from 1996 to 2014*

SHU Essay Wen, **HAMPTON** Nigel; *NEETRAC, Atlanta, USA*

E7.16 *How cables fail – Debunking the myths and reinforcing the fundamentals to ensure long cable life*

LANZ Ben, **JOSEPH** Michael, **SZATKOWSKI** Andy; IMCORP, Manchester, CT, USA
WALLACE Michael; Duke Energy, Raleigh, USA
HUMMEL Rene; IMCORP, Berlin, Germany

- E7.17** *New Generation of Accessories for EHVDC extruded power transmission applications*
BOFFI Paolo, **MAMMERI** Mohamed, **POZZATI** Giovanni, **POGLIANI** Stefano, **CAIMI** Luigi, **IADANZA** Andrea, **GIANNINI** Simone, **ORIGO** Graziella; Prysmian spa, Milan, Italy
- E7.18** *Ampacity calculation of multi-system cable crossings at 40 MVA frequency converter station Mendrisio*
AEGERTER Damian; Braavos GmbH, Stetten, Switzerland
MEIER Stephan; Emetor AB, Västerås, Sweden
- E7.19** *Pure Mathematical DLR Model for Implementation in Embedded IT Systems – Modelling Principles and Accuracy*
OLSEN Rasmus, **SARTO** Tommaso, **MEYBODI** Soroush; Energinet, Fredericia, Denmark
- E7.20** *Basic Engineering for Overhead Insulated Transmission Line*
ALMEIDA Geraldo; Techsys, Santo Andre (SP), Brazil
VASCONCELOS Gil; Consulting, São Paulo, Brazil
MACEDO Amadeu; ENEL BRAZIL SP, São Paulo, Brazil
- E7.21** *A study of field enhancement from semiconductive protrusions in power cables*
NILSSON Ulf H.; Borealis AB, Stenungsund, Sweden
- E7.22** *Cable Degassing, Strand Filling Mastic and Cable Defects*
JOSEPH Michael, **LANZ** Ben; IMCORP, Manchester, CT, USA
SMALLEY Michael; WE Energies, Milwaukee, USA
HUMMEL Rene, **KINGERSKE** Mathias; IMCORP, Berlin, Germany

A8 Development and testing of DC cable systems

Topic 8: DC Cable Systems: LV, MV, HV and EHV

Wednesday June 26th, 2019 - 09:00 - 10:30 - Room: A (Richelieu)

Chairman: **TANAKA** Hideo; Furukawa Electric, Japan

Rapporteur: **REMY** Christian; Prysmian, France

- A8.1** *Influence of Relaxation Polarization on Charge Transportation in a Cable Geometry*
SUN Yunlong, **LI** Zhonghua, **GUO** Wenmin, **HAN** Yongsen; Harbin University of Science and Technology, China
- A8.2** *Recommendation of Pre-Qualification Test for the DC 500 kV MI-PPLP cable*
PARK Jin-woo, **KIM** Sang-jun, **LEE** Jung-won, **KIM** Kyung-oh, **KIM** Seong-weon, **KIM** Jae-seung, **KIM** Jong-chae; Korea Electric Power Corporation, Naju, Korea, Republic of
JUNG Chae-Kyun; KEPCO Research Institute, Daejeon, Korea, Republic of
- A8.3** *Twenty years of extruded HVDC cables from a material supplier's perspective*
ENGLUND Villgot, **LOYENS** Wendy, **NILSSON** Ulf H.; Borealis AB, Stenungsund, Sweden
- A8.4** *Application of extruded MVAC cables for DC Power Transmission*
BUCHNER Anton, **SCHICHLER** Uwe; Institute of High Voltage Engineering and System Performance, Graz, Austria
- A8.5** *Follow up of space charge distributions in HVDC cable during a Pre-Qualification test using the Pulse ElectroAcoustic technique and the Thermal Step Method*
BOYER Ludovic; SuperGrid Institute, Villeurbanne, France
MIREBEAU Pierre; Nexans, Calais, France
VERSHININ Konstantin, **TZIMAS** Antonios; General Electric, Stafford, United Kingdom
CASTELLON Jérôme, **NOTINGHER** Petru; Institut d'Electronique et des Systèmes, Université Montpellier 2, France
- A8.6** *Development and set-up of a non-intrusive technique for measuring space charges in specimens of DC cables*
JEBLI Mourad, **BOYER** Ludovic; SuperGrid Institute, Villeurbanne, France
MARTIRE Thierry, **LAURENTIE** Jean-Charles, **CASTELLON** Jérôme, **NOTINGHER** Petru; Université de Montpellier/CNRS, France
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B8 Dynamic cables and mechanical design

Topic 2: Cables and Accessories – design and modelling

Wednesday June 26th, 2019 - 09:00 - 10:30 - Room: B (Lulli)

Chairman: **SALES** Lluís; Prysmian, Spain

Rapporteur: **LAURE** Emmanuelle; RTE, France

- B8.1** *Full Scale Fatigue Test on Dynamic Submarine Power Cable*
PAN Pan, **SHAO** Pengjing, **WANG** Haitao; Zhongtian Technology Submarine Cable Co., Ltd., Nantong, China
XIE Shuhong; Zhongtian Technology Group Co., Ltd., Nantong, China
- B8.3** *An Experimental and Modelling Approach for Assessing Dynamic Cable Capability to Withstand Operational Constraints*
MAISON Antoine, **DAMBLANS** Guillaume, **BERHAULT** Christian; France Energies Marines, Plouzané, France
FRANCHET Maud; EDF, Moret-sur-Loing, France
DEMMOUICHE Younes; ENSTA Bretagne, Brest, France
CARTRAUD Patrice, **MENARD** Fabien; Ecole Centrale de Nantes, France
GERMAIN Grégory; Ifremer, France
- B8.4** *Large HVAC export cables under tensile loading*
TJAHJANTO Denny; ABB AB, Corporate Research, Västerås, Sweden
TYRBERG Andreas; NKT HV Cables AB, Karlskrona, Sweden
KLUTHE Arne; NKT GmbH & Co. KG, Cologne, Germany

- B8.5** *Load and fatigue evaluation for 66 kV floating offshore wind submarine dynamic power cable*
THIES Philipp, **HARROLD** Magnus J, **JOHANNING** Lars; *University of Exeter, Penryn, United Kingdom*
GRIVAS Konstantinos, **GEORGALLIS** Georgios; *Fulgor SA, Athens, Greece*
- B8.6** *A new time-domain model-based diagnosis method for assessing the offshore floating wind turbine umbilical state of health*
SCHAEFFER Emmanuel; *IREENA, Université de Nantes, France*
MATINE Abdelghani; *IFSTTAR (The French Institute of Science and Technology for Transport, Development and Networks), Nantes, France*
SOULARD Thomas; *SEMREV, Ecole Centrale de Nantes, Nantes, France*

C8 Modelling of HV and EHV cable systems

Topic 7: HV and EHV AC Cable Systems

Wednesday June 26th, 2019 - 09:00 - 10:30 - Room: C (Condé / Pascal)

Chairman: **PILGRIM** James; *Univ. Southampton, UK*

Rapporteur: **BARATON** Philippe; *EDF R&D, France*

- C8.1** *3D FEM analysis of armour loss in three core submarine cables*
MATSUMOTO Yuki, **YONEYA** Kazuhiro; *Furukawa Electric Co., Ltd., Ota-ku, Japan*
HIRAYAMA Yosuke; *Furukawa Electric Co., Ltd., Yokohama, Japan*
MARUYAMA Satoru; *Furukawa Electric Co., Ltd., Ichihara, Japan*
- C8.2** *Impact of Laying Conditions on Temperature Distribution in HVDC Cables Based on Numerical Simulations*
FROBIN Saskia Josefine, **FRIEBE** Kerstin, **JENAU** Frank; *TU Dortmund University, Germany*
- C8.5** *Numerical analysis of methane degassing from XLPE Insulated cable: role of cable conductor*
YOUN Dong Joon, **LI** Jingfa, **SUN** Shuyu; *King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*
SUN Yabin; *Dow Chemical (China) Invest. Co. Ltd., Shanghai, China*
KJELLQVIST Jerker, **VAN DUN** Jozef; *Dow Europe GmbH, Horgen, Switzerland*
- C8.6** *Transient overvoltage distribution in sectionalized screens of HV joints*
KHAMLICH Abderrahim, **GARNACHO** Fernando; *FFII-LCOE, Madrid, Spain*
DENCHE Gregorio; *REE, Madrid, Spain*
BALZA Xabier; *General Cable, Barcelona, Spain*
- C8.7** *Estimation of the Remaining Life Time of Oil-Filled Cable Systems Based on Mathematical Modelling their Electrical Insulation Ageing Process*
OVSIIENKO Vladimir, **PESHKOV** Izjaslav, **SHUVALOV** Mikhail; *JSC "VNIIEP", Moscow, Russian Federation*

D8 Risk Assessment and management of cable systems

Topic 11: Asset Management of cable systems all along their life cycle

Wednesday June 26th, 2019 - 09:00 - 10:30 - Room: D (Colbert)

Chairman: **SMIT** Jacco; *TenneT, The Netherlands*

Rapporteur: **DURCIK** Elie; *EDF, France*

- D8.1** *Risk management in the presence of partial discharges in HV joints by means of periodic monitoring*
BALZA Xabier; *Prysmian Group, Barcelona, Spain*
- D8.2** *Challenges of cable engineering from offshore to onshore and project to operation*
ZHANG Dr. Roland Dongping, **FREITAG** Dr. Christian, **WAGNER** Dr. André; *TenneT TSO GmbH, Bayreuth, Germany*
- D8.3** *Quality Control of HVDC Cables - The next industry challenge*
JEROENSE Marc; *MJ MarCable Consulting AB, Karlskrona, Sweden*
- D8.4** *Enhanced Overvoltage Protection for Reliability beyond the First Decade*
HUMMEL Rene; *IMCORP, Berlin, Germany*

WALLACE Michael; *Duke Energy, Raleigh, USA*

LANZ Ben, **SHANNON** Charles, **ZIEGLER** Steffen Ziegler; *IMCORP, Manchester, CT, USA*

D8.5 *European Subsea Cable Association: providing technical advice to manage the life cycle of subsea cables*

DREWS Anja, **MCCALL** Rachel, **ZYMELKA** Antony; *European Subsea Cable Association, Guisborough, United Kingdom*

D8.6 *Application of a Combined Technical Approach for Medium Voltage Cable Aging Management at South Texas Project Nuclear Operating Company*

KHONDKER Raihan; *South Texas Project Nuclear Operating Company, Bay City, USA*

BANERJEE Sarajit, **EASTERLING** Rick, **ROUISON** David; *Kinectrics Inc., Toronto, Canada*

Wednesday June 26th, 2019 - 11:00

A9 Qualification of HV DC cable systems

Topic 8: DC Cable Systems: LV, MV, HV and EHV

Wednesday June 26th, 2019 - 11:00 - 12:30 - Room: A (Richelieu)

Chairman: **JEROENSE** Marc; MJ MarCable Consulting AB, Sweden

Rapporteur: **PAILLER** Benjamin; RTE, France

- A9.1** *Investigation and Qualification of ± 320 kV HVDC cable systems for VSC and LCC applications*
HÄRING Dominik, **SCHRÖDER** Gero, **KAUMANN** Johannes; Südkabel GmbH, Mannheim, Germany
- A9.2** *PQ Test of Extruded HVDC 525- kV-Underground Cables: Results and Conclusion*
POEHLER Stephan, **MARTIN** Florian; TenneT TSO GmbH, Bayreuth, Germany
BRAUN Armin, **BRÜGGMANN** Jan; Amprion GmbH, Dortmund, Germany
SCHRANK Thorsten, **KRAUSE** Marcel; 50Hertz Transmission GmbH, Berlin, Germany
SENER Olaf, **EXL** Florian; TransnetBW GmbH, Stuttgart, Germany
KLEIN Thomas; Strescon GmbH, Esslingen, Germany
- A9.3** *Qualification of 400 and 525 kV HVDC XLPE cable systems including a multitude of accessory configurations*
FRISK Nils-Bertil, **GASPARI** Roberto, **DOEDENS** Espen; Nexans, Halden, Norway
EYSSAUTIER Quentin; Nexans, Calais, France
FROHNE Christian; Nexans, Hannover, Germany
- A9.4** *Performance evaluation of 525 kV and 640 kV extruded DC cable systems*
ABBASI Amirhossein, **HOANG** Anh, **BERGELIN** Pehr, **ERIKSSON** Erik, **FÄLTH** Fredrik; NKT HV Cables AB, Karlskrona, Sweden
- A9.5** *Development of 350 kV and 525 kV HVDC extruded cable system*
NAOTO Shigemori, **MASASHI** Yagi, **TAKAHISA** Tabuchi; Furukawa Electric Co., Ltd., Ichihara, Japan
HIROKI Mori; Furukawa Electric Co., Ltd., Haneda, Japan
- A9.6** *270 kV DC Extruded Land Cable Systems for LCC Power Transmission*
MAMMERI Mohamed, **PAUPARDIN** Marie-Laure, **GENESTE** Mathieu, **DHUICQ** Bernard; Prysmian, Montereau, France
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B9 Submarine cables current rating

Topic 9: Submarine Cable Systems (AC & DC)

Wednesday June 26th, 2019 - 11:00 - 12:30 - Room: B (Lulli)

Chairman: **STØLAN** Ronny; Nexans Norway AS, Norway

Rapporteur: **JOUBERT** Vincent; General Cable (Silec Cable), France

- B9.1** *Accurate measurement of losses in three core armoured cables*
PILGRIM James A., **GODDARD** Kevin; University of Southampton, United Kingdom
- B9.2** *Analysis of an array of wires in a low-frequency time-harmonic magnetic field*
GIUSSANI Luca, **DE FALCO** Carlo, **DI RIENZO** Luca; Politecnico di Milano, Milan, Italy
BECHIS Massimo; Prysmian spa, Milan, Italy
- B9.3** *Research on improving the ampacity of high voltage single core submarine cable*
WANG Liyuan, **ZHANG** Xiaolong, **ZHAO** You-lin, **ZHANG** Jianmin, **HU** Ming, **YAN** Zhiyu; Zhongtian Technology Submarine Cable Co., Ltd., Nantong, China
XIE Shuhong; Zhongtian Technology Group Co., Ltd., Nantong, China
- B9.4** *Investigation of the biofouling thermal effects on offshore wind turbine power cables*
MATINE Abdelghani; IFSTTAR (The French Institute of Science and Technology for Transport, Development and Networks), Nantes, France
SCHAEFFER Emmanuel; IREENA, Université de Nantes, France
BONNARD Charles-Henri; SATIE, Ecole Normale Supérieure de Rennes, Rennes, France

- B9.5** *Towards optimum construction of HV AC cables*
MAIOLI Paolo, **BECHIS** Massimo; Prysmian spa, Milan, Italy
COLLA Luigi; Prysmian Powerlink, Milan, Italy
- B9.6** *Seabed soil controls on the design and lifetime performance of marine HV cables.*
DIX Justin, **PILGRIM** James A., **CALLENDER** George, **ELLIS** Daniel, **PORTER** Hannah; University of Southampton, United Kingdom

C9 Development of Accessories

Topic 2: Cables and Accessories – design and modelling

Wednesday June 26th, 2019 - 11:00 - 12:30 - Room: C (Condé / Pascal)

Chairman: **UZELAC** Milan; G&W Electric, USA

Rapporteur: **SALAME** Basil; Nexans, France

- C9.2** *Analysis and testing of internal arc phenomena in gas insulated outdoor HVDC cable termination up to ± 640 kV*
KARMOKAR Tanumay, **FÄLTH** Fredrik; NKT HV Cables AB, Karlskrona, Sweden
ADITYA Julian; DNV GL B.V., Arnhem, Netherlands
- C9.4** *Technical evolution of high power EHV systems*
AIT AMAR Abdellatif; Nexans, Calais, France
GENIN Guillaume; Nexans, Cortaillod, France
STAUCH Gert; Nexans, Hof, Germany
- C9.5** *Development of Augmented Reality (AR) application for Cable Terminations and Joints*
JOVANOVIC Ivan; G&W Electric Company, Bolingbrook, USA
MAKOVOZ Arie; Con Ed, New York City, USA
- C9.6** *Qualification of a 220 kV transition joint to connect MI pipe-type cable with extruded single-core cables*
AIT AMAR Abdellatif; Nexans, Calais, France
AUE Volker; Nexans, Hannover, Germany
MIREBEAU Pierre; Nexans, Courbevoie, France
SALOMON Violaine; RTE, Paris La Défense, France

D9 Maintenance of cable systems

Topic 11: Asset Management of cable systems all along their life cycle

Wednesday June 26th, 2019 - 11:00 - 12:30 - Room: D (Colbert)

Chairman: **ZHANG** Roland Dongping; TenneT TSO GmbH, Germany

Rapporteur: **CHARVET** Jean; RTE, France

- D9.1** *Condition Assessment of Aged Medium Voltage Network Cables*
WHEATLAND Russell; AusNet Services, Melbourne, Australia
LEE Dong Chur; Select Solutions a Division of AusNet Services, Melbourne, Australia
- D9.2** *O&M and design challenges of floating wind farm power cables*
CHARVET Jean, **LAURE** Emmanuelle, **SBRAGGIA** Fanny, **GABARROT** François; RTE, Paris La Défense, France
- D9.3** *Safe and non-destructive Verification of Absence of Voltage (VAT) prior to maintenance works on long cable lengths*
MIREBEAU Pierre; Nexans, Calais, France
DHUICQ Bernard; Prysmian Group, Montereau, France
TACHÉ Clément; Prysmian Group, SENS, France
ROUET Francis; SYCABEL, Paris, France
SCHERRER Bruno; FAMECA, Rixheim, France
- D9.4** *Towards Active Cable Reburial Monitoring using Distributed Fiber-Optic Sensing over 40 km of a High Voltage Marine Interconnector*
ROGERS Rosalie, **ERDMANN** Matthias, **LEES** Gareth; AP Sensing, Basingstoke, United Kingdom

STEFFANSEN Simon, **OLSEN** Rasmus; *Energinet, Erritsø, Denmark*

D9.5 *Location of Micro Leaks in FFLP Cables with Bi Directional Bridge*

ALMEIDA Geraldo; *Techsys, Santo Andre (SP), Brazil*

VASCONCELOS Gil; *Consulting, São Paulo, Brazil*

SOUZA Paulo; *ENEL BRAZIL, São Paulo, Brazil*

D9.7 *DGA (Dissolved Gas Analysis) Value in Detecting and Locating Potential Problems in Laminar Dielectric Cable Systems*

SINGH Nirmal, **SINGH** Sandeep, **REYES** Rommy; *DTE Energy, Detroit, USA*

MARTINEZ Eduardo; *Hawaiian Electric, Honolulu, USA*

JULIAN Elino; *American Electric Power, Columbus, USA*

UZELAC Milan; *G&W Electric Company, Bolingbrook, USA*

ZHAO Tiebin; *EPRI, Charlotte, USA*

E9 Nuclear and LV cables diagnostic and remaining life evaluation

Topic 4: Diagnosis, Monitoring, Remaining Life Estimation

Wednesday June 26th, 2019 - 11:00 - 12:30 - Room: E (Montesquieu)

Chairman: **FABIANI** Davide; *DEI - University of Bologna, Italy*

Rapporteur: **BEN HASSINE** Mouna; *EDF R&D, France*

E9.1 *Aging assessment of XLPE LV cables used in nuclear power plants*

SURACI Simone Vincenzo, **LI** Chuanyang, **FABIANI** Davide; *Department of Electrical Engineering (DEI) University of Bologna, Italy*

XU Anne, **ROLAND** Sébastien, **COLIN** Xavier; *PIMM (UMR CNRS 8006), Arts et Métiers ParisTech, Paris, France*

E9.3 *Detection of Vibration Faults of I&C Cables via Time-Frequency Domain Reflectometry*

LEE Hyeong Min, **LEE** Chun-Kwon, **SHIN** Yong-June; *Yonsei University, Seoul, Korea, Republic of*

E9.4 *Low Frequency Dielectric Spectroscopy as a condition monitoring technique for low voltage cable in nuclear plants*

BANERJEE Sarajit, **ROUISON** David; *Kinectrics Inc., Toronto, Canada*

MANTEY Andrew; *EPRI, Charlotte, USA*

E9.5 *Condition monitoring of thermally aged low voltage cables with polarization-depolarization current testing*

BANERJEE Sarajit, **ROUISON** David; *Kinectrics Inc., Toronto, Canada*

MANTEY Andrew; *EPRI, Charlotte, USA*

E9.6 *Low-voltage cable systems: aluminium conductor corrosion and online monitoring*

VAN DEURSEN Armand, **WOUTERS** Peter; *Eindhoven University of Technology, Eindhoven, Netherlands*

VAN DER WIELEN Peter, **STEENNIS** Fred; *DNV GL, Arnhem, Netherlands*

E9.7 *A multiscale analysis on K1 qualified cables, taken on nuclear power plants, face to thermal ageing, irradiation and accidental conditions (LOCA)*

BEN HASSINE Mouna; *EDF R&D, Ecuelles, France*

FRANÇOIS Sandrine; *EDF Nuclear Engineering Division, Lyon, France*

A10 Testing for DC cables

Topic 3: Testing Methods: Electrical and non Electrical

Wednesday June 26th, 2019 - 14:30 - 16:00 - Room: A (Richelieu)

Chairman: **PLATH** Ronald; Technische Universität Berlin, Germany

Rapporteur: **DUMONT** Adrian; Prysmian, France

A10.1 *Superimposed voltage tests on DC cables*

GAMLIN Michael, **TREYER** Patrick, **HAMMER** Urs; Haefely Test AG, Basel, Switzerland

A10.2 *Cost-effective and practical solutions for testing HVDC cable systems*

HE Hong, **SLOOT** Wouter, **BEVERWIJK** Chris, **KUIJPERS** Pieter, **SMEETS** Rene; DNV GL KEMA Laboratories, Arnhem, Netherlands

A10.3 *Testing experiences on extruded cable systems up to 525 kV DC in the first third party worldwide laboratory*

VERCELLOTTI Uberto; CESI, Milan, Italy

JAHN Heiko; FGH Engineering & Test GmbH, Mannheim, Germany

A10.4 *Enhancing the Effectiveness of Partial Discharge Measurements on HVDC*

ELBEN Andreas, **PLATH** Ronald; Technische Universität Berlin, Germany

FECHNER Tobias, **ZHOU** Minguy; GEIRI Europe GmbH, Berlin, Germany

A10.5 *Modular DC Test System for testing long DC Cables including a fault location system*

PIETSCH Ralf, **BILINSKI** Enrico, **HENSEL** Michael, **STEINER** Thomas; HIGHVOLT Prüftechnik Dresden GmbH, Germany

A10.6 *Safe discharge of high cable capacitances under HV DC Stress*

GUSTKE Ulf, **STEIN** Gunnar; Megger Hagenuk KMT GmbH, Radeburg, Germany

B10 Submarine cables testing

Topic 9: Submarine Cable Systems (AC & DC)

Wednesday June 26th, 2019 - 14:30 - 16:00 - Room: B (Lulli)

Chairman: **TROLLI** Alessandro; Prysmian Group, Italy

Rapporteur: **FRANCHET** Maud; EDF R&D, France

B10.1 *After Installation Testing of Inter-array Cables at Offshore Wind Farms using Damped AC Voltages*

JONGEN Rogier, **GULSKI** Edward; onsite hv solutions ag, Lucerne, Switzerland

RAKOWSKA Aleksandra, **SIODLA** Krzysztof; Poznan University of Technology, Poland

GAAL Hans; Visser & Smit Hanab BV, Papendrecht, Netherlands

B10.2 *Full Scale Wet Age Testing of XLPE Insulated Power Cables in Salt Water*

FEATHERSTONE Jeremy, **WAN** Jingyi; JDR Cable Systems Ltd, Littleport, United Kingdom

NEUMANN Alex, **HARRIS** Lee; ORE Catapult, Blyth, United Kingdom

B10.3 *On-Site Testing of 66 kV Subsea Array Cables for Off-Shore Windfarms*

STEPHAN Uwe, **COORS** Peter, **HENSEL** Michael, **PIETSCH** Ralf, **KALTENBORN** Uwe; HIGHVOLT Prüftechnik Dresden GmbH, Germany

B10.5 *Bend stiffness of submarine cables - an experimental and numerical investigation*

TYRBERG Andreas, **HEDLUND** Johan; NKT HV Cables AB, Karlskrona, Sweden

TJAHJANTO Denny, **EVENBOM** Marcus; ABB AB, Corporate Research, Västerås, Sweden

B10.6 *Conditioning of High Voltage XLPE Cables in Salt Water - A Review of Ion Diffusion and Impact on Water Treeing*

VE Torbjørn Andersen, **HØLTO** Jorunn, **HVIDSTEN** Sverre; SINTEF Energy Research, Trondheim, Norway

BENGTSSON Karl Magnus; Nexans Norway AS, Oslo, Norway

C10 Dry type accessories

Topic 2: Cables and Accessories – design and modelling

Wednesday June 26th, 2019 - 14:30 - 16:00 - Room: C (Condé / Pascal)

Chairman: **MAMMERI** Mohammed; Prysmian, Italy

Rapporteur: **AIT AMAR** Abdellatif; Nexans, France

- C10.1** *Electro-thermal simulation methodology for HVDC cable GIS termination*
TOIGO Caterina, **ANDRE** Aymeric, **VU-CONG** Thanh, **GIRODET** Alain, **HENRIKSEN** Martin; SuperGrid Institute, Villeurbanne, France
- C10.2** *A unique dry 145 kV prefabricated one-piece self-supporting outdoor cable-termination*
SÖRQVIST Torbjörn, **LUNDBLAD** Anders, **SVAHN** Jörgen; NKT HV Cables AB, Alingsås, Sweden
- C10.3** *Design and Qualification of 500 kV dry terminations and joints for extruded cables*
JOVANOVIĆ Ivan; G&W Electric Company, Bolingbrook, USA
WU Grand; G&W Electric Company, Shanghai, China
- C10.4** *New generation of dry type high voltage termination*
EIGNER Alexander, **KRANZ** Thomas, **SCHEINER** Andreas; Tyco Electronics Raychem GmbH, Ottobrunn, Germany
- C10.5** *Development of Self-supporting Dry Type Outdoor Terminations for 100 kV Extruded Underground Cable Connection in AIS Substation*
MAMMERI Mohamed, **TOP** Abdou-Karim, **AIELLO** Carlo, **DHUIQ** Bernard; Prysmian, Montereau, France
- C10.6** *A High Voltage Dry Type Outdoor Cable Termination*
ADILI Sedat, **SUN** Guoyan, **SEKULA** Oldrich, **NASSI** Andrea; Brugg Kabel AG, Brugg, Switzerland

D10 Management of data received from diagnostic tests and monitoring systems

Topic 11: Asset Management of cable systems all along their life cycle

Wednesday June 26th, 2019 - 14:30 - 16:00 - Room: D (Colbert)

Chairman: **PENSERINI** Paul; RTE, France

Rapporteur: **CHANIOLLEAU** Julia; RTE, France

- D10.1** *Asset Management of MV Cables using Data Driven Health Indices for Water Treeing*
HAMPTON Nigel, **PERKEL** Josh, **WILLIAMS** Dean; NEETRAC, Atlanta, USA
- D10.2** *A new algorithm to define a health index for HV and MV polymeric cables*
SERI Paolo, **MONTANARI** Gian Carlo; Department of Electrical, Electronic and Information Engineering (DEI), University of Bologna, Italy
HEBNER Robert; Center for Electromechanics (CEM) of the Texas University at Austin, Austin, USA
- D10.3** *Optical System for Underground Cable Maintenance, Mixed Lines Fault Discrimination and Underground Cable Fault Location*
BENGOECHEA Javier; Lumiker, Derio - Vizcaya, Spain
SARTO Tommaso; Energinet, Copenhagen, Denmark
- D10.4** *Large Scale Monitoring of Extruded Cables – Review of TSO's Needs and Options*
NIELSEN Jonas, **OLSEN** Rasmus; Energinet Transmission, Fredericia, Denmark
- D10.5** *Multilevel design approach for industrial distribution network optimization*
LAGOMARSINI Clara, **BLONBOU** Franck, **CHARMETANT** Adrien; Nexans, Lyon, France

E10 Emerging Technologies

Topic 10: Emerging technologies and challenges

Wednesday June 26th, 2019 - 14:30 - 16:00 - Room: E (Montesquieu)

Chairman: **TO BE DEFINED**
Rapporteur: **SAUGRAIN** Jean-Maxime; Nexans, France

- E10.1** *Green Installation and Method for Manufacturing Hyper Clean XLPE AC/DC Compounds*
LABBE Denis; P&M Cable Consulting, Geneva, Switzerland
LOVIAT François, **NISING** Philip; BUSS AG, Pratteln, Switzerland
- E10.2** *Prequalification test of the complete 1200 m HTS DC cable system*
SYTNIKOV Victor, **KASHCHEEV** Andrey, **DUBININ** Mikhail, **KARPOV** Victor, **RYABIN** Timofey; R&D Center of FGC UES, Moscow, Russian Federation
- E10.3** *Listening to your cable with Artificial Intelligence for Asset Monitoring*
HUNT Ryan, **ROGERS** Rosalie, **LEES** Gareth; AP Sensing UK Ltd, Basingstoke, United Kingdom
OLSEN Rasmus; Energinet Transmission, Erritsø, Denmark
- E10.4** *Time-Frequency Based Analysis of Wave Propagation Characteristics in Cooling Process of AC 154 kV HTS Cable System*
LEE Geon Seok, **LEE** Yeong Ho, **BANG** Su Sik, **SHIN** Yong-June; Yonsei University, Seoul, Korea, Republic of
HWANG Si-Dole, **YANG** Hyung Suk; Korea Electric Power Research Institute, Daejeon, Korea, Republic of
- E10.6** *Demonstration of a HVDC 3.2 GVA MgB₂ superconducting cable system within the Best Paths Project*
LESUR Frédéric; Nexans, Calais, France
BRUZEK Christian-Eric; Nexans, Lens, France
MARIAN Adela; IASS, Potsdam, Germany

Wednesday June 26th, 2019 - 16:30

A11 Closing Session

Poster session: Materials

Wednesday June 26th, 2019 - 16:30 - 18:00 - Room: A (Richelieu)

Chairman: **ORTON** Harry E.; Orton Consulting Engineers International, Canada

A11.1 *Round Table: Cables behaviour under large disturbances and events*

VARIOUS **VARIOUS**; *(The list of presentations of this round table will be reported prior to the session),*