Mazana Armstrong
Specialist Engineer & Team Lead,
BC Hydro, Canada
Methodology & Mitigation of Lightning Induced Arcing to Pipeline Hazard
Dr. Armstrong has responsibilities at BC Hydro Engineering that include electrical aspects of the overhead transmission network, line design, operation and maintenance. She holds a degree in Electrical Engineering from the University of Zagreb, Croatia as well as a Masters and PhD from the University of British Columbia. A registered professional engineer in British Columbia, she is a Senior Member of IEEE, participates in the development of BC Hydro, Canadian and IEEE standards and is an IEEE PES Distinguished Lecturer.

Samuel Arturo Asto Soto
Transmission Line Coordinator, Red de Energía de Perú, (Power Grid of Peru), Peru
Performance of RTV-Coated Glass Insulators in Zones of High Salt Contamination
Mr. Asto Soto is an Electrical Engineer, graduated in 2000 from the National University of the Center of Peru (UNCP 2000) with further studies in Masters of Business Administration at the University Ricardo Palma. He has detailed experience in management, planning and supervision of electrical maintenance and projects in mining, concentrating plants and high voltage electrical transmission systems. He is a member of the Working Group with Tension of the Regional Energy Integration Commission (TiC CIER). His work experience also includes high voltage maintenance in transmission lines, hot line work, corrosion protection in transmission electrical systems and insulation.

Steve Aubertin
Managing Director, Goulden Reports, United Kingdom
Funding the Next Global T&D Investment Cycle 2020-2040: How Much It Will Cost
Mr. Aubertin specializes in market research and data collection for the electrical power industry. Reports on the world markets for T&D equipment, including HV insulators and bushings, have been issued for over 25 years.

Nadew A. Belda
Innovation Engineer, KEMA Laboratories, DNV GL Energy, The Netherlands
Metal-Oxide Surge Arresters for HVDC Circuit Breaker Applications
Mr. Belda received a joint M.Sc. in electric power engineering from the Eindhoven University of Technology (TU/e) and the Royal Institute of Technology (KTH), Sweden. Currently, his section is involved in development of test methods and design of test circuits for HVDC switchgear. His research is part of his Ph.D. at Technische University of Darmstadt (TU Darmstadt), Germany, where he is an external Ph.D. candidate. He is a member of IEEE and CIGRE and actively participates in related Working Groups.

R. Allen Bernstorf
Sr. Principal Engineer, Hubbell Power Systems, United States
Braced Line Post Testing & Loading Considerations
Mr. Bernstorf has been working professionally with insulators at Hubbell Power Systems since 1977 in positions ranging from Technician to Manager of Engineering Services. He is an active member of IEEE/PES, NEMA HVITC, ANSI C-29, CSA C411 and is the TA for the USNC of the IEC for TC-36, SC 36B and SC 36C.

Bryan Beske
Consulting Engineer, American Transmission Company, United States
Line Arrester Installations on ATC System: What Was Done Right & Further Improvements
Mr. Beske received his B.S. in Electrical Engineering from the University of Wisconsin-Platteville. He has been with the American Transmission Company since 2002 and is currently a Consultant Standards Engineer, with primary responsibilities that include lightning and grounding aspects of transmission lines. He is a member of IEEE, ASTM and CIGRE and is an ATC delegate for various industry research and standards working groups pertaining to lightning and grounding.
Mr. Bologna joined EPRI in Dec. 2006 and is now Senior Program Manager of Transmission and Substations, based in Charlotte, North Carolina. His duties cover the areas of overhead and underground lines as well as substations and his main fields of interest include inspection and assessment, lightning & grounding as well as insulators.

Mr. Brady has more than 17 years of experience in all aspects of thermal imaging of electrical systems and has expertise to design projects, provide technical oversight of field technicians and approve final reports to clients. Looking to apply innovative technologies, he has aimed to provide his clients with better options, as demonstrated by drone-based thermal surveys and solar blind UV corona camera inspections. A respected opinion leader in this industry, Mr. Brady frequently gives technical presentations on unique projects he has accomplished.

Mr. Cardano received his Doctoral Degree in Electrical Engineering from the Milano Polytechnic University. After graduation, he joined Passoni & Villa and has been working in various positions in the technical area. He is presently R&D senior expert for OIP, HVDC and gas bushings and also in charge of development of UHV AC bushings. He has been president of the Italian Committee 36A - Bushings and is active in several CEI/IEC working groups. He has published numerous papers at international conferences.

Mr. Bologna received his BSc in Mechanical Engineering from the University of KwaZulu-Natal in Durban South Africa. He worked for the Pfisterer Group in locations around the world, starting out in Pietermaritzburg, South Africa where he served as Production & Development Engineer responsible for line and string fittings. He spent two years in China as Technical Director at Pfisterer’s factory producing polymeric insulators and fittings and is now based at the Pfisterer Lapp facility in LeRoy N.Y. where he is responsible for insulator strings and fittings. He is a participating member in the IEEE OHL Sub-Committee.

Mr. Brady has more than 17 years of experience in all aspects of thermal imaging of electrical systems and has expertise to design projects, provide technical oversight of field technicians and approve final reports to clients. Looking to apply innovative technologies, he has aimed to provide his clients with better options, as demonstrated by drone-based thermal surveys and solar blind UV corona camera inspections. A respected opinion leader in this industry, Mr. Brady frequently gives technical presentations on unique projects he has accomplished.

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Dr. Chisholm is an expert in the effects of adverse weather on overhead power lines, including icing on insulators, lightning and grounding and thermal rating. He has been an IEEE Fellow for a decade – a distinction given after his long career at Ontario Hydro and Kinetics. He combines his consulting worldwide with teaching and writing for INMR as well as Wiley & McGraw Hill and also volunteers in the IEEE executive rotation as Chair and Past Chair of the PES T&D Committee. In 2017, he received the Claude de Tournel Memorial Award for Lifetime Achievement in the Field of Electrical Insulators.

Dr. Chmura received his MSc from Warsaw University of Technology in Poland. In 2009, he joined Delft University of Technology in the Netherlands where he completed his doctoral research in the field of asset management. His post-doctoral study was on impregnation optimization of transformer insulation. He has worked on various aspects of HV and MV insulation such as ageing, diagnostics and failure statistics. He is a member of IEEE and CIGRE WG D1.39. Currently, he is focused on developments in the field of MV joints and also lecturer at Delft University of Technology in the field of high voltage and diagnostics.

Dr. Craigen has a B.Sc. with Physics Major from the University of British Columbia and M.Sc. and PhD in Semiconductor Physics from the University of Waterloo (1991). Since then, he has served as Assistant Professor at Acadia University and taught as well as researched at the University of Winnipeg. He was also self-employed, working for companies in magnetic shielding, interfacing equipment to computers, modeling microwave communication networks and analyzing test data. In 2001, he joined Integrated Engineering Software and has since worked with scientists and engineers across the globe, assisting their decisions about how best to use software for simulations across a diverse range of electromagnetic and thermal applications.
Michele de Nigris  
Director, Sustainable Development & Energy Sources, RSE, Italy

Research & Experience with Coatings on Glass Insulators & Conductors

Mr. de Nigris received his degree in Electric Engineering from the University of Genoa in 1983 and now serves as Director of Sustainable Development & Energy Sources Department at RSE. He was elected Chairman, IEA Technology Collaboration Program ISGAN (International Smart Grids Action Network) at the first Executive Committee Meeting in Seoul. An international leader in the study, research and testing of electrical components for more than 30 years, he represents Italy at international forums such as the former European Electricity Grids Initiative and the IEA End-Use Working Party. He is author or co-author of nearly 100 scientific papers and has been coordinator of the GRID+ project.

Héctor de Santos  
R&D Engineer, La Granja Insulators, Spain

Monitoring Performance of Outdoor Insulators in Polluted Environments

Mr. de Santos received his Electrical Engineering Degree from the Technical University of Madrid, later completed his M.Sc. in Industrial Engineering and is currently working towards a Ph.D. at the ICAI School of Engineering at the Universidad Pontificia Comillas. After several years working for different power utilities as Project Engineer for overhead lines, he joined La Granja Insulators in 2014 as R&D Engineer. He is a member of the Spanish IEC TC 36 ‘Insulators’, IEEE Power & Energy as well as Dielectric & Electrical Insulation Societies.

Adam Dienes  
Energozt, Hungary

Insulator Diagnostics Using Drones (UAVs)

Mr. Dienes has been working with UAVs, especially quadcopters for several years, focusing on high voltage power line inspection. He studied Energy Engineering, specializing in high voltage electrical systems, and obtained his degree in 2015 from the Budapest University of Technology and Economics. He has been working in this industry since 2013, when he engaged in joint research and development with Pál Szaplonczay. His work experience includes high voltage, protection and control system design as a Design Engineer and also as an Area Referent at E.ON.

Jeff Door  
Research & Development Manager, The H-J Family of Companies, United States

Access Enabling Technology for Silicone Bushings in MV Transformers

Mr. Door received his B.S. in Mechanical Engineering from St. Louis University and his M.S. in Engineering Management from Missouri University of Science and Technology. He has been with The H-J Family of Companies since 2002 and is active in IEEE PES Switchgear and Transformer Committees.

Ron Duckstein  
Sales Director, Sediver, United States

Evaluation of Field Returned Insulators from U.S. Grid Through Laboratory Tests

Mr. Duckstein received his Electrical Engineering Degree from the University of Pittsburgh in 1986. His experience spans design and product support for distribution, substation and transmission systems from 5 kV through 765 kV. He began his career in the electric utility industry as a large power transformer design engineer for Cooper Power and then moved to technical sales with investor-owned utility, Duquesne Light Co., and eventually to Hubbell Power Systems. He joined Sediver in February 2014. He is a member of CIGRE and IEEE and participates in American standards committees including NEMA and ANSI C29 Insulator Working Groups.

Eric Euvrard  
President, RHM International, United States

Developments in RIS Bushing Technology

Mr. Euvrard received a B.Sc. in Chemical Engineering & Materials Science from the Toulouse Chemistry Engineering School in France as well as an M.Sc. in Metallurgical Engineering from the Georgia Institute of Technology in Atlanta. He also has an MBA from IMD, in Lausanne, Switzerland. His work experience consists of leading the development, industrialization and commercialization of advanced materials-based products in several industries, both in Europe and in the U.S.

Prof. Masoud Farzaneh  
Professor Emeritus, Université de Québec à Chicoutimi (UQAC), Canada

Overview of Impact & Mitigation of Icing on Power Network Equipment

Professor Farzaneh is an IEEE Fellow, IET Fellow, EIC Fellow and CAE Fellow. A specialist in the effects of icing and pollution on power network equipment, he has been President of IEEE DEIS (2013), contributor to IEEE 1783, P1820 and author of 10 position papers related to insulator icing and pollution. He is Convenor of CIGRE WG B2.44, B2.29 and B2.69 as well as contributor to TB 179, TB 256, TB 291, TB 322, TB 438, TB 631 and TB 645. He has authored 700 technical papers, 3 books and chapter lead of 14 others. He has served as Professor at the University of Quebec in Chicoutimi, teaching courses related to power engineering, high-voltage and physics of discharges and is currently Editor-in-Chief of IET High Voltage Journal.

Thomas Galloway  
Engineer/Scientist, Electric Power Research Institute (EPRI), United States

EPRI Sensor Suite: A Step Towards an Intelligent Electrical Power System

Mr. Galloway Jr. graduated with degrees in Mathematics and Systems Engineering and has now had 5 years of professional experience. His primary research focus is application of novel sensing technology for assessing asset health and for condition based monitoring.

Jean-Marie George  
Scientific Director, Sediver, France

1. Specifying RTV Silicone Coatings for Overhead Transmission Lines

2. Digital Solution for Transmission Line Risk Assessment

Mr. George received his Electrical Eng. Degree from the HEI School in France and joined Sediver as Research Engineer in 1986. After working as Production Manager for the Composite Insulator Division and Quality Mgr. and Technical Dir. for North America, he is now Scientific Director, with responsibilities covering R&D and technical assistance worldwide. His cross-functional positions with more than 30 years of experience have given him expertise in insulator performance as well as research and development. He has published and co-authored extensively on overhead lines, with 40 papers and articles and he is also author/co-author of patents and utility models. He is a member of CIGRE, IEEE, NEMA, ANSI and CSA as well as 2018 recipient of the Claude de Tourreil Memorial Award for Lifetime Achievement in Electrical Insulators.
Dr. Gramespacher studied physics and received his PhD from ETH Zurich. He has worked for more than 15 years at international companies in Germany and Switzerland in development of medium and high voltage cable accessories. One of his main research activities has been developing non-linear field grading material. In 2014, he founded ec4ac, a consulting company that offers technical support in high voltage cables and cable accessories for both AC and DC systems and networks and Dean of the Electrical Engineering Department at University of Applied Sciences Zittau/Görlitz.
Prof. He Jinliang
Chair of High Voltage & Insulation Technology Research Institute, Tsinghua University, China

Development & Application of Polymeric Surge Arresters for Transmission Lines in China

Professor He received a PhD in high voltage engineering from Tsinghua University in Beijing in 1994. Currently, he is a Cheung-Kong Scholar Distinguished Professor of the Ministry of Education of China in the Department of Electrical Engineering, Tsinghua University and leads the university's High Voltage and Insulation Technology Research Institute. His research interests include lightning and overvoltage protection technology, advanced power transmission technology, sensor network and grid big data mining, nanodielectric materials for recycling HVDC cable and environment-friendly gas-insulated power transmission lines. He was Chairman of several international conferences, is Convener of CIGRE C4.26 and a Fellow of IEEE and IET.

Falk Hardt
Head, Product Portfolio & Cable Accessory Development, Pfisterer Holding, Germany

Shearbolt Connectors for LV/ MV Underground Power Cables: Reliability & Failure Modes

Mr. Hardt is an Electrical Engineering professional. He has had more than 24 years of experience in manufacturing as R&D-Manager for connectors and fittings as well as in development of underground power cables and accessories. He has in-depth knowledge of related production processes, quality and environmental management and holds patents for bolted technology and ring connector technology.

Ramiro Hernández-Corona
Research Engineer, INEEL, Instituto Nacional de Electricidad y Energías Limpias, Mexico

Effect of Cooling Towers on External Insulation at Substations

Mr. Hernández, an Electrical Engineer, graduated from Universidad Autónoma del Estado de Morelos, México and in 1995 he obtained a Master of Science in the University of Salford in the United Kingdom. He has worked as a researcher for the Transmission and Distribution Division of the Instituto Nacional de Electricidad y Energía Limpia (National Institute of Electricity and Clean Energies) where his activities focus on modeling electromagnetic fields and evaluating behavior of external insulation on power networks under pollution. His achievements include development of test methodologies and selection criteria for polymeric insulators on transmission lines as well as Guides for visual inspection.

Eduardo Hilsdorf
Sales Director, PPC Santana, Brazil

Hybrid Insulators for Distribution Lines: Advantages & Application Experience

Mr. Hilsdorf, an Electrical Engineer with both M.Sc. and MBA degrees, has had an extensive technical background in the field of high voltage power equipment, electrical system maintenance, service and distribution. He is responsible for product technical design and performance and has also managed R&D projects. He is also an active member of ABNT/COBEI, the Brazilian Standards Committee.

Prof. Volker Hinrichsen
Professor & Head of HV Laboratory, Technical University of Darmstadt, Germany

Arrester Technology Today: Lessons Learned & Developments to Watch

Dr. Hinrichsen worked with Siemens from 1989 to 2001, where he held the position of Director R&D of the Surge Arrester Division. Since 2001, he is full professor in high-voltage engineering at Technische Universität Darmstadt, Germany. He is a member of several Committees and Working Groups within IEC, IEEE, Cigré and VDE/DKE. He is Chairman of IEC TC37 (Surge Arresters) and Convener of IEC TC37 MT4, responsible for all high-voltage arrester test standards. His most recent research activities in the field of surge arresters have been on energy handling capability and on optimization of external grading systems of UHV arresters.

Peter Hock
Research Associate, TU Darmstadt, Germany

Metal-Oxide Surge Arresters for HVDC Circuit Breaker Applications

Mr. Hock received his M.Sc. in electrical engineering in 2015 from Technische Universität Darmstadt, Germany. Since 2016, he is a research associate at TU Darmstadt in the working group of Prof. Volker Hinrichsen. His main focus is investigation of HVDC circuit breakers with special interest on the metal-oxide surge arrester as an energy absorption element in the breaker. Other research topics have been accelerated ageing of composite insulators made from epoxy resin filled with microvaristor particles as well as arc interrupting behavior of direct current load switches in electrified railways. He is active in CIGRE Working Group A3.40.

Martin Hughes
Sr. Technical Leader, Electric Power Research Institute (EPRI), United States

Mechanical Testing of Connection Leads for Transmission Line Surge Arresters

Mr. Hughes is a Senior Technical Leader in the Transmissions and Substations Area of the Power Delivery & Utilization Sector at the Electric Power Research Institute. A mechanical engineer with special areas of interest in component testing, robotic mechanisms, composite structures, mechanical design and stress analysis, he has years of experience in the engineering industry in both international and domestic environments.

Lars Jonsson
Senior Specialist, ABB, Sweden

Impact of Bio-fouling on Performance of Outdoor Bushing Insulation

Mr. Jonsson has been closely involved with bushings and other transformer components as well as their applications for 30 years. His experience includes design, product development and a large number of field investigations. He is Chairman of IEC TC 36A - Insulated Bushings and he has presented many technical papers on bushings and tap changers at major international conferences such as CIGRE, IEEE, INMR, CEPSI and TechCon.
Aram Khalil-Pour
Director of Engineering & System Assets, FortisBC, Canada
Session Chairman

Mr. Khalil-Pour is an Electrical Engineer (P.Eng) with 20 years’ experience in the power industry, including 16 with electrical utilities and 4 in consulting engineering. He began work at FortisBC - a gas & electric utility in British Columbia - in 2009 as a Transmission & Distribution Line Standards Engineer and is currently Director of Engineering & System Assets. Mr. Khalil-Pour has been Chair of CEATI Grounding & Lightning Interest Group and is also a member of IEEE’s Overhead Lines Sub-Committee.

Detlef Klingberg
Technical Manager, Application Engineering Energy, Wacker Chemical Corp., United States

Interesting Aspects of Special Cables with Silicones

Dr. Klingberg studied Chemistry earning an M. S. degree from the University of Saarland in Saarbrücken, Germany, and a doctorate degree from the University of Utah in Salt Lake City. Since 1996, he has been employed by Wacker Chemical Corp. specializing in application engineering in the wire & cable industry and in the T&D industry.

Prof. Stefan Kornhuber
Professor, University of Applied Sciences Zittau/Görlitz, Germany

Long-Term Experience with Cable Joints Under Water Stresses

Dr. Kornhuber received his Electrical Engineering Degree and later his doctorate from Graz University of Technology with main research on temperature measurement and uprating of OHTLs. Until 2006, he worked at the Test Institute for High Voltage Engineering in Graz doing testing, simulation and investigation of stresses of transfients. He later joined Lemke Diagnostics/Doble Lemke with responsibility for production, development and sales and then ABB Power Transformers as Head of Condition Management as well as on-site and local HV test field and systems. In 2014, he was awarded Professorship in High Voltage and Theoretical Electrical Engineering. His research topics are electrical interfaces of polymeric materials as well as diagnostic test and measuring methods. He is a member of several Working Groups and Convener of CIGRE D1.58 and IEC TC 112 WG3.

Jan Lachman
Director, EGU-HV Laboratory, Czech Republic

Lessons from 25 Years Experience Testing Polymeric Insulators

Dr. Lachman graduated from the Czech Technical University in Prague, Faculty of Electrical Engineering where he later received his PhD degree. After graduation, he joined EGU-HV Laboratory as a test engineer. He has also had experience as a design engineer when working abroad. He is active in IEC/CIGRE Working Groups and represents the Czech Republic in SC D1.

Jens Lambrecht
Manager, Application Engineering, Wacker Chemie, Germany

Silicone Gel: More Than a Gap Filler

Dr. Lambrecht studied radio and power engineering, earning a doctorate degree from Dresden University of Technology. Since that time, he has made his career as a development engineer for silicone cable accessories as well as a specialist in application engineering for silicones for both medium and high voltage applications. He has been with Wacker Chemie since 2005.

John L. Lauletta
CEO, Exacter, United States

Using Grid Analytics to Evaluate Lightning Protection

Mr. Lauletta has been involved in electric utility measurement technology since 1975. His career includes 10 years with American Electric Power as Measurements Manager as well as 14 years as VP at Scientific Cumbres before becoming CEO/CTO at Exacter – a developer of predictive technologies for electric utility reliability, grid conditions-based assessment, grid preventive maintenance, and Smart Grid network performance. He holds electrical engineering degrees from both Ohio State University and Purdue University and is the Past Chair of the Central Ohio Power and Energy Society Chapter of IEEE. John holds several patents in predictive failure technologies and manages several research programs for IIoT sensor development for electric utility applications as Visiting Scientist at the University of Akron.

Darin Lawton
Lead Engineer, Burns & McDonnell, United States

Sheath Voltage Limiter Sizing for Underground Transmission & Distribution Lines

Mr. Lawton is an electrical engineer specializing in design of underground transmission lines. His current responsibilities include cable design, duct bank design, routing analysis, cost estimation, contract administration and specifications, quality control as well as procurement and construction support. He has also been involved in bidding, estimating, construction, and closeout portions of large commercial construction projects. His responsibilities have included specification revision and submittals, as-builts, daily reports, subcontractor supervision, submittal packages, quantity takeoff, estimating, material procurement, and closeout procedures. Mr. Lawton has also been involved with project management on energy efficient lighting projects where his responsibilities included employee supervision, scheduling, owner-contractor relations, material procurement, installation and safety.

LEE Yanmin
Chairman, Shenzhen Square Silicone, China

Applications for Liquid Silicone Rubber (LSR) in the Electrical Power Industry

Dr. LEE graduated from South China University of Technology with a degree in polymer science and was awarded his DBA from the Universite of Nice Sophia Antipolis in France. He founded Shenzhen Square Silicone in 2002, which became the first company in China to start local industrial production of addition type LSR. The company began supplying applications in the energy field in 2004. Dr. Lee was appointed Chairman in June 2016, after the company became a listed public company. As Chief Material Expert, he has been taking part in research of LSR use in high voltage cable accessories for DC as well as for anti-pollution coatings for glass insulators at the electrical technology laboratories of Tsinghua University Campus in Shenzhen.

Paul Leufkens
President, Power Projects Leufkens, United States

1. Damped AC for Commissioning & Diagnostic Testing of HV Cable Circuits
2. Developments to Watch in HV Surge Arresters

Mr. Leufkens holds an MS EE Degree from Delft Technical University in the Netherlands and has had more than 20 years’ experience as an executive in the power sector. He worked internationally for consulting and testing companies, including 13 years with KEMA in Netherlands and in the United States. Previously he directed product development in the cable and switchgear industry. In recent years, he has built technical and business cases for new High Voltage, High Power and Energy Storage laboratories as well as a technical and commercial market introduction of new generation switchgear. His U.S.-based consulting firm now provides strategic support to manufacturers and testing organizations in growing their business.
Jody Levine
Asset Manager, Transmission Stations, Hydro One Networks, Canada

**Experience Applying Surge Protection at Hydro One**

Ms. Levine spent 16 years in the high voltage and high current laboratories at Kinectrics and learned how things break. In 2007, she joined Hydro One’s Stations Technical Services group as the team lead for ancillary equipment and saw which things break. She moved to Asset Management in 2016 to fix some things. She is the chair of IEEE 400.3 on cable partial discharge testing, a member of CIGRE B1.60, and holds B.A.Sc. and M.A.Sc. degrees from the University of Waterloo.

Daniel Loder
Israel Electric Corp., Israel

**Research Findings Linking Corona to Brittle Fracture Failure**

Mr. Loder received his B.Sc. in materials engineering, B.A. in Chemistry and M.Sc. in energy engineering from the Technion - Israel Institute of Technology. In 2013, he joined Israel Electric Corporation and has since worked as an engineer at the company’s main materials laboratory. He specializes in failure analysis, metallurgical analysis, microscopy and standards compliance and has published papers on these topics. In addition, he sits on various Committees and Task Forces dealing with insulator failures as well as innovative maintenance methods.

Patrick Maloney
Chief Engineer, PPC Insulators, United States

**Porcelain Insulators Under Cyclic Loading**

Mr. Maloney holds a BS ME degree from Purdue University and has worked for PPC Insulators for the past 19 years, coordinating product testing, quality and application engineering. He is active in American Standards Committees, including NEMA and C29 insulator Working Groups.

Sebastian Marra
Engineering Manager, K-Line Insulators, Canada

**Case Study for Application of 400 kV Interphase Spacers**

Mr. Marra graduated in Electrical Engineering from the University of Waterloo after which he worked for Ontario Hydro (Hydro One) for 26 years a Senior Distribution Engineer for Lines and Stations. Later, he joined K-Line Insulators as Manager of Engineering. During his long career he has been actively involved in the development of CSA, ANSI, and IEC Standards for composite insulators.

Daniel McCullough
Principal Engineer, San Diego Gas & Electric Co., United States

**Optimizing Insulator Selection with Regard to Performance, Installation, Stocking & Maintenance**

Mr. McCullough received his BS degree in Electrical Engineering from San Diego State University in San Diego, California. His current position is in the Apparatus Group of Substation Engineering where he is responsible for specifying and ordering porcelain and polymer insulators for substation applications. He has been involved with development of substation plans and designs, protection systems, cost estimating, equipment specifications, technical support for field personnel, engineering studies, materials, and electric system operations during his career at SDG&E.

Alison Meredith
Manager, Engineering (Electric), FortisBC, Canada

**Replacing Insulators on Ageing Long Span Lake Crossing**

Ms. Meredith holds a Bachelors Degree in Electrical Engineering from the University of Newcastle in Australia. She worked for Energy Australia before emigrating to Canada and for the past 11 years has worked at FortisBC – a utility in south-central British Columbia, where she leads the Transmission Lines Engineering Group. Her responsibilities include oversight of transmission line design and refurbishment, fiber optic projects, transmission planning studies and estimates, engineering investigations, providing input to development of internal transmission standards as well as engineering support to Operations and System Control. She also coordinates the FortisBC Engineers in Training (EIT) program.

Eric Moal
Electrical & Mechanical Designer, Reinhausen France SAS, France

**Pollution Performance of Composite Hollow Core Insulators with HTV/LSR Housings**

Mr. Moal received his Engineering Degree from l’Ecole Nationale Supérieure d’Electricité et de Mécanique in Nancy in 1990. He has worked for over 25 years in development of hollow core composite insulators for high voltage apparatus as well as composite insulators for overhead lines. He is an electrical & mechanical design specialist and a member in IEC TC 36 as well as CIGRE D1 Working Groups dealing with composite insulators.

Ed Niedospial
Sr. Product Manager, Transmission Insulators, MacLean Power Systems, United States

1. **Longitudinal Loading: Fact Vs. Myth**
2. **Maximizing & Validating Ultimate Capacity in High Strength Applications**
3. **Manufacturing Quality of Toughened Glass Insulators**

Mr. Niedospial holds a B.S. in Physics and Mathematics from Elmhurst College as well as an MBA in Project Management and Marketing from Keller Graduate School of Management at Devry University. He has worked for Maclean Power Systems since 1996 as part of the Technical Engineering Team where his focus is on high strength mechanical applications. This includes development of features for improved insulator performance and service life through product testing and validation. He is an active member of IEE and other Technical Committees.

Marco Nosilati
Technology Leader, GE Grid Solutions, Italy

**Optimized Selection of Post Insulators for AIS Disconnectors & Other Substation Applications**

Mr. Nosilati is an Electrical Engineer, graduated at the University of Padova with a Masters thesis in collaboration with the Helsinki University of Technology. He started his work experience in 2009 as R&D Test Engineer in Areva and he is currently the Technology Leader of air-insulated disconnectors in GE Grid Solutions. He is holder of several patent applications linked mainly to HV equipment and technological solutions for HVDC applications. He has served as a member of IEC as well as ad hoc Working Groups for DC switchgear.
Prof. Derek Oliver
Director, Manitoba Institute for Materials, University of Manitoba, Canada

**Insulator Performance & Characteristics Required of Innovative Materials from Renewable Resources**

Prof. Oliver’s research interests include developing insulation materials and characterization techniques for electrical infrastructure, in addition to materials for solar energy conversion. A Professor in Electrical & Computer Engineering, he is Director of the Manitoba Institute for Materials, co-ordinating interdisciplinary research across 5 faculties. He serves as Canadian representative to CIGRE SC D1 and the Advisory Group AG D1.03 (Solid Materials).

Andrew Phillips
Vice President, EPRI, United States

**Development of Small Scale Test to Verify Corona Performance of Polymeric Insulators**

Dr. Phillips is Vice President of Transmission and Distribution Infrastructure for EPRI’s Power Delivery and Utilization research sector. In this role, he has overall management and technical responsibility for more than $48 million in annual research activities conducted by EPRI’s T&D programs in collaboration with its global membership. Over the course of his career, he has been intimately involved in development of advanced inspection techniques and technologies, including radio frequency sensors, robotics and data analytics.

Alberto Pigni
T&D Consultant, Italy

**Optimal Insulator Type & Dimensioning in Harsh Service Environments**

Mr. Pigni received a Doctoral Degree in Electrical Engineering from the University of Milan. He worked for more than 35 years at CESI, first as a researcher, then as Research Manager and finally as Division Director, responsible for a number of aspects of HV electrical system, including environmental impact and generation. He is a Distinguished Member of CIGRE, Fellow of IEEE and active in various WG and Committees at these bodies. Recipient of the 2015 Claude de Tourreil Memorial Award for Lifetime Achievement in the Field of Electrical Insulators, he acts as consultant to international clients and has also served as expert contributor to INMR for more than 10 years.

Christian Pons
Research Engineer, Électricité de France (EDF) Lab Les Renardières, France

**Operating a Test Station in a Polluted Environment**

Mr. Pons joined the Electrical Equipment Laboratory at EDF Lab Les Renardières in 2001, where he has worked in the fields of software data processing as well as metrology management for high voltage and high current equipment. His current position is Research Engineer on external insulation. For more than a decade now, he has dealt with studies and tests on insulators for both overhead line and substation applications, with the main research focus being on insulator performance, behavior under pollution, monitoring and diagnostics. He is a member of IEC TC 36 ‘Insulators’.

Milan Radosavljevic
Sr. Engineer & Asset Manager, Svenska Kraftnät (Swedish Transmission System Operator), Sweden

**Selection of Optimal Outdoor Insulation for Refurbishment of 400 kV AC Substation under Coastal Pollution**

Mr. Radosavljevic obtained his Master of Science in Electrical Engineering from the University of Belgrade and, after working in different positions in the former Yugoslavia, has spent the past 15 years within the Swedish power industry. He worked as a consultant both at SwedPower and at Vattenfall Power Consultants before joining Svenska Kraftnät in 2011. His broad industry experience covering more than two decades has made him an expert in both substations and cables, covering all aspects from their design to installation to commissioning to refurbishment. This also includes writing technical guidelines for components such as post insulators, insulator sets, surge arresters and connectors.

Tim Rastall
Senior Electrical Engineer, Enspec Power, United Kingdom

**Application of Surge Arresters in MV/HV Capacitor Bank Protection**

Mr. Rastall received his M.Eng. in Electrical Engineering from the University of Sheffield. He specializes in Grid Code compliance solutions for large-scale industry and renewables and has had extensive experience and knowledge in the modelling as well as application of surge arresters for protection of MV/HV capacitor banks and harmonic filters.

Iryani Mohamed Rawi
Head, Product Certification, Research Div., Tenaga Nasional Berhad, Malaysia

**Quality Evaluation of MV/HV Network Components at TNB: Past Experience with Failures & Lessons Learned**

Dr. Rawi (P.Eng) received her bachelor degree in Electrical Engineering from Universiti Teknologi Malaysia, Johor in 2002. She was as an electrical engineer in the Engineering Department of Tenaga Nasional Berhad Transmission Division, responsible for the design, testing and specification of HV transmission lines equipment. Her main interest includes Transmission and Distribution HV switchgear, overhead lines performance, design and application of surge arresters and environmental impact on power system performance and renewable energy.

Bastian Robben
Design Engineer/R&D Project Manager, Siemens AG, Germany

**Innovative Compact Line Design: Reducing Clearances by Integrating Externally Gapped Line Arresters on HV Transmission Lines**

Mr. Robben, an expert in design of composite insulators and surge arresters, received his Dipl.-Ing. degree in mechanical engineering from the Technical University of Berlin in Germany in 2010. He has been working for Siemens AG since 2011 and is currently responsible for development and engineering of composite insulators, transmission line arresters and overhead line solutions. He is a member of international Insulator Working Groups in IEC TCs 18 &19 as well as German Insulator Working Group AK451.0.2.
Robert Ross
Professor, Technical University of Delft & Asset Management Strategist for TenneT, The Netherlands
Asset Replacement Strategies in Ageing Grids: Maintenance vs. Condition-Based

Dr. Ross is Director at the Institute for Science & Development, Ede and Professor at HAN University of Applied Sciences. He is also Asset Management Research Strategist for the transmission grid operator in the Netherlands and parts of Germany. He worked in the past at KEMA in the area of reliability and post-failure forensic investigation and his present fields of specialization include reliability statistics, electro-technical materials, sustainable technology and superconductivity. He was granted a SenterNovem Annual Award, nominated Best Researcher by the World Technology Network and wrote a book ‘Reliability Analysis for Asset Management of Electric Power Grids’ based on his extensive experience with power utilities.

Markku Ruokanen
Group R&D Director, PPC Insulators, Austria
Adding Intelligence to Ceramic Insulators

Mr. Ruokanen has an M.Sc. degree in Materials Science from the University of Technology in Helsinki, Finland. Before joining PPC in 2014, he held several leading technical positions at Maxwell Technologies in both the Ultra-Capacitor and HV Capacitor Divisions. He is a member of Cigré Switzerland.

Dennis Schlender
Principal, DBS Energy Services, Canada
Practical Field Inspection & Condition Assessment of Transmission Insulators

Mr. Schlender has offered high voltage professional consulting and engineering services across Canada for almost three decades, covering issues from fibre optics to 500 kV. He previously held positions at TransAlta Utilities, West Kootenay Power and Aquila Networks Canada, with responsibilities in Senior Management, Project Management, Engineering, Line Construction & Maintenance, Substations, Telecommunications, Metering and Material Services. Over the last 16 years he has been Principal at DBS Energy Services, a firm providing consulting services in transmission design, standards development, line rehabilitation, fibre optic communication, asset management, maintenance, submarine cable installation, estimating & planning and owner engineering. He has also been involved in safety, life cycle evaluations, training and facility inspections.

John M. Schneider
Principal, Complex Energy Solutions, United States
Development of 765 kV Externally Gapped Lightning Arresters

Dr. Schneider received his Doctor of Engineering Degree in Electric Power (Computational Electromagnetics) from Rensselaer Polytechnic Institute, Troy, New York. He was employed by AEP (American Electric Power) from 1980 to 2010 and held technical positions in business units including Transmission, Corporate Engineering, Generation and Distribution while also providing consultancy services. His responsibilities included: high-level technical support; complex problem solving; technical assessment of emerging technologies; corporate technology planning and execution. Currently, he is an Independent Utility Technology Consultant providing services in power system transient modeling and analysis, insulation coordination, equipment failure analysis, AC interference on railway and pipeline facilities, emerging power electronics and renewables technologies, electrical accident investigation as well as grounding, bonding, shielding and surge protection of facilities.

John Schonewolf
Senior Design Engineer, Hubbell Power Systems, United States
1. Braced Line Post Testing & Loading Considerations
2. Advantages of Enhanced Silicone Polymer for Distribution Arresters
3. Monitoring Interior Temperature to Determine Health of Substation Arresters

Mr. Schonewolf received his B.S. in Mechanical Engineering from Lehigh University in 2004 and has worked in product design, manufacturing and leadership positions over a 15-year engineering career. He has been working professionally with insulators at Hubbell Power Systems for two years, leading the Insulator Design Engineering team.

Jens Seifert
Senior Expert, Reinhausen Power Composites, Germany
1. Application of Station Posts
2. Innovative Applications & Development for Composite Hollow Core Insulators

Dr. Seifert obtained his Ph.D. degree from TU Braunschweig in 1998. He has had 20 years of experience in development of composite materials for high voltage insulating applications. In 2018 he joined the MR Group as Senior Expert for basic development. He serves as Chairman of IEC TC 36 Insulators and is also Convener of CIGRE Working Groups D1.58 and D1.59.

Timothy Shaw
Project Manager, Electric Power Research Institute (EPRI), United States
Development of Small Scale Test to Verify Corona Performance of Polymeric Insulators

Mr. Shaw is a Technical Leader at EPRI, with current research focused on polymeric, porcelain and glass insulators for transmission lines. His research evaluates performance of insulators under diverse environmental conditions and in various applications using ageing chambers and stress tests as well as by tracking service performance (e.g. failures and removals). The aim is to better understand their impact on insulator performance so as to be able to offer guidance to maximize effective use.

Glenn Stapleton
Principal Engineer, Transmission Lines & Cables, Powerlink Queensland, Australia
Lessons from 20 Years’ Experience with Composite Insulators on Transmission Lines in Queensland

Mr. Stapleton has more than two decades of experience at Powerlink Queensland – the transmission network owner, operator and maintainer in Queensland, Australia. During this time, he has held a number of senior engineering roles across a portfolio of transmission projects, with primary responsibilities including project electrical design and transmission line construction management. Presently, he is responsible for electrical design standards, including overhead and underground cable primary procurement standards, including those for transmission line insulators. He is a Fellow of Engineers Australia and presently chairs the Standards Australia Committee EL-010 Overhead Lines. He also serves a post-graduate lecturing role at Queensland University of Technology, specializing in overhead and underground cable ratings.
Karl Emil Steenholt-Eliasson  
Power Lines Engineer, Energinet, Denmark  
_transmission Structures for Reduced Cost & Increased Public Acceptance_

Mr. Steenholt-Eliasson received a B.Sc. degree in 2015 before starting his career at Energinet’s Power Lines Department, where he has been involved in various retrofit projects. In parallel, he has conducted a strategic cost optimization project for overhead lines where the goal has been to reduce cost of new towers while keeping a focus on visual aspect of the final design. This has resulted in an optimized version of the Eagle Tower as well as a new more cost-effective portfolio of towers to be used on future 400 kV lines across Denmark.

Guoyan Sun  
Scientific Engineer, Brugg Cables, Switzerland  
_designing & Optimizing HV Cables & Accessories to Withstand High Short-Circuit Current Faults_

Dr. Sun received her doctorate in nuclear physics and has worked for many years at nuclear research institutes in China, Germany and Switzerland. In 2007, she joined Brugg Kabel AG where her main activity is feasibility study of new high-voltage cable accessory products, using finite element method simulation that couples multi- physic phenomena, i.e. electromagnetic, thermal & mechanical.

Andrei Szabo  
Marketing Manager, Wacker Chemie, Germany  
_Silicones In T&D: Advantages of This Versatile Material_

Mr. Szabo received his M.Sc. in Electrical Engineering from the University of Oradea and his M.B.A. from the Budapest University of Technology and Economics. After several years spent at a leading chipmaker, he joined Wacker Chemie in 2005 and has since been fulfilling Sales and Marketing positions related to silicone rubber materials. In 2014, he was appointed Marketing Manager for Energy Applications in the Rubber Solutions Business Team at Wacker Silicones.

Konstantinos Velitsikakis  
Sr. Consultant Insulation Coordination & Team Leader, DNV GL Energy Advisory, The Netherlands  
_Strategies for Effective Application of Line Surge Arresters on the 400 kV Overhead Network in Hong Kong_

Mr. Velitsikakis received his M.Sc. in High Voltage Engineering from the Technical University of Delft in 2013 and has worked as a senior expert in the field of Insulation Coordination and Electromagnetic Transient (EMT) studies for transmission systems. He is member of IEEE and an active member of CIGRE, acting as the secretary of the C4.46 Working Group on ‘Evaluation of Temporary Overvoltages due to Low Frequency Resonance Conditions’ as well as being active in C4.48 ‘Overvoltage Withstand Characteristics of Power System Equipment 35-1200 kV’ and C3.13 ‘Interactions between Electrical Infrastructure and Wildlife’. In 2018, he has took up the role of Team Leader within the Transmission & Distribution Technology Dept. at DNV GL Energy.

Uberto Vercellotti  
Testing & Certification, CESI Group, Italy/Germany  
_Experience from Long Duration Tests on Extruded Cable Systems up to 525 kV DC_

Dr. Vercellotti received his PhD in Electrical Engineering from the Milan Polytechnic in 1984 and joined CESI in 1985. He has gained 30 years of experience in the cable sector where he has been engaged in testing different cable accessories. He is also involved in standardization bodies such as CENELEC and IEC, has served as Chairman of IEC TC 89 ‘Fire Hazard Testing’ and has written numerous papers on testing and certification of power components.

Rogerio Verdolin  
President, Verdolin Solutions, Canada  
_Application of Surge Arresters in Mitigating Breaker Transient Recovery Voltage_

Dr. Verdolin received B.Sc. and M.Sc. degrees in Electrical Engineering from the Federal University of Rio de Janeiro and a Ph.D. from the University of Manitoba. He spent more than 20 years with CEPEL Electrical Energy Research Centre in Brazil, where he managed the high voltage laboratory as well as research programs from utilities and equipment manufacturers. His has worked with SNC Lavalin, Enmax, ATCO and Teshmont Consultants supporting substation design, HV equipment specifications, power system transient overvoltage studies and services including transient recovery voltage, insulation coordination and geomagnetically-induced current simulations. He has long involvement with IEEE, including the PES Transformers Committee and is currently Chair of two working groups and Secretary of the Performance Characteristics Subcommittee. He has authored many technical papers and is a member of APEGA, IEEE and CIGRE.

Bas Verhoeven  
Director High Voltage Laboratory, Global Quality & Innovation, KEMA Laboratories, The Netherlands  
_Laboratory Experience in Type Testing Insulators & Cables_

Mr. Verhoeven received an M.Sc. in Power Engineering from Eindhoven University of Technology before joining KEMA in 1991 as R&D Specialist on digital protection systems for high voltage networks. Starting 1995, he worked as consultant on international projects for network design and protection before being appointed in 2000 as Manager of KEMA’s High Voltage Laboratory, which became the world’s largest commercially operated laboratory under his guidance. He was assigned Director of KEMA Laboratories, including the High Power Laboratory and the High Voltage Laboratory, in 2011. He is a Member of the Board of the NEC, the Dutch IEC and Member of the Board of the International Short Circuit Test Liaison (STL). He has authored numerous papers on testing and certification of power components.

Chenyang Wang  
Transmission Line Design, Manitoba Hydro, Canada  
_Optimizing Structure Design on 500 kV Line Using Transmission Line Arresters_

Mr. Wang received his B.Sc. degree from McMaster University in Hamilton in 2007 and his M. Eng. degree from University of Alberta in 2009, both in electrical engineering. His current position is in the Transmission & Civil Design Department of Manitoba Hydro where he is the lead transmission line design engineer of the new 500 kV AC Manitoba-Minnesota transmission project. His professional experience includes designing new/refurbished transmission lines, grounding and lightning protection and AC interference of lines.
Erika Willis
Research Leader, Electric Power Research Institute (EPRI), United States
Advanced Coatings for Insulators & Conductors: Overview of EPRI Research
Ms. Willis received a B.S. in Ocean Engineering from Virginia Polytechnic Institute and State University. She has been working in the power industry since 2010 and presently leads research by EPRI in advanced coatings and surface modifications, robotic development, external insulation, contamination and line switches. Prior to joining EPRI, she worked for a manufacturer, designing insulating components for the power industry.

Dan Windmar
Vice President, STRI, Sweden
1. Cases of Non-Standardized Testing
2. Progress on Revision of IEC 60383
Dr. Windmar received a Ph.D. degree in high voltage engineering from Uppsala University in Sweden. His professional experience includes extensive work in such areas as insulators (production, testing, materials), high power testing, high voltage testing and dielectric insulation. He has held several management positions at ABB and since 2009 has served as Vice President, Testing at STRI.

Jonathan Woodworth
Principal, ArresterWorks, United States
1. Overview of Progress on Harmonization of IEC & IEEE Arrester Standards
2. Best Practice in Lightning Protection of Distribution Lines
Mr. Woodworth is founding partner of ArresterWorks, a 12-year old independent consulting firm. His areas of specialization include insulation coordination studies, surge arrester design and application issues and arrester forensic analysis. He has written more than 40 columns and articles for INMR on surge arresters since 2008 and is Convenor of IEEE Working Group and co-Convenor of IEC Working Group responsible for High Voltage Arrester Test Standards. He has been active in this industry since 1980 when he first joined Cooper Power Systems.

Raouf Znaidi
T&D Consultant, Tunisia
Field & Laboratory Assessment of RTV Coated Insulators in Harsh Desert Environments
Mr. Znaidi has had a long career at STEG, the power grid operator in Tunisia, where he was responsible for setting up insulator test stations across the country. Through this work he has become an expert on the comparative performance of different insulator types and designs in severe service environments. He has visited power companies across the globe reporting on service problems as well as remedial solutions using RTV coatings to combat pollution flashover. He is active in relevant CIGRE Working Groups.