

Organizer



cigre
Romania

International Conference on Condition Monitoring,
Diagnosis and Maintenance

CMDM 2019

In association with CIGRE SC A3 colloquium (with SC B3 participation)

- Modern Management Technology -



TH EDITION

Co-organizer



Societate Administrată în sistem Dualist

With support of:



September 9 - 11, 2019, Radisson Blu Hotel, Bucharest, Romania



CMDM 2019 - INTERNATIONAL CONFERENCE ON CONDITION MONITORING, DIAGNOSIS AND MAINTENANCE 2019

*On behalf of the
Romanian National
Committee of CIGRE,
it is our great pleasure
to welcome our
distinguished guests
of the fifth edition
of the International
Conference
on Condition
Monitoring, Diagnosis
and Maintenance,
event organized
every two years by
CIGRE Romanian
National Committee
as organizer and
CNTEE Transelectrica
(the Romanian TSO)
as co-organizer, in
Bucharest – Romania,
with the support of
CIGRE Paris.*

The main topics of CMDM 2019 cover the technical activities of minimum 7 (seven) CIGRE Study Committees: A1, A2, A3, B1, B2, B3, D1. Among the CMDM2019 topics we may mention: 1. Smart Grids; 2. Condition monitoring and diagnosis for power equipment and high voltage lines; 3. Condition monitoring and diagnosis in power plants; 4. Failure phenomena based on electrical, mechanical, chemical, and thermal causes; 5. Degradation assessment for power equipment; 6. Modern maintenance tools and technologies; 7. Advanced sensing techniques for condition monitoring and diagnosis; 8. Applications of artificial intelligence for data mining and condition assessment; 9. Substation automatization and automated metering; 10. Asset management tools for power equipment; 11. Distributed Resources and Renewables. CMDM 2019 includes also tutorials, technical papers sessions and a 3 days exhibition.

At its fifth edition, it is a major event for the national power system that provides an exceptional venue to CIGRE members and interested parties for presenting fundamental and technological developments and for promoting key suppliers of products and services for electrical power systems. The conference will bring together power systems engineers, decision makers, economists, academicians and others with interest in the power field. For more details on previous editions, please visit CMDM 2011, CMDM 2013, CMDM 2015 and CMDM 2017 websites: www.cmdm2011.org, www.cmdm2013.org, www.cmdm2015.org and www.cmdm2017.org.

We would like to give our warm welcome to all the CMDM 2019 conference participants and to wish a successful and enjoyable meeting. We hope that everyone will find the CMDM 2019 both technically interesting and stimulating, and that your staying in Bucharest will be an unforgettable and pleasant one.

Romanian National Committee of CIGRE

Dr. Ciprian Diaconu
Chairman

Dr. Constantin Moldoveanu
Vice - Chairman

Dr. Ioan Dorin Hategan
Secretary





ABOUT PREVIOUS EDITIONS

CMDM 2011

The first edition of the International Conference on Condition Monitoring, Diagnosis and Maintenance – CMDM 2011, was organized by the CIGRE's Romanian National Committee - as organizer and CNTEE Transelectrica - as co-organizer, under the patronage of the Romanian Ministry of Economy, Trade and Business Environment. The international event took place at Radisson Blu Hotel, Bucharest, Romania, on September 19 – 23, 2011.

Key facts of CMDM 2011:

- 253 registered participants, coming from 26 countries and a wide area of interest (public power sector, universities, private power sector, etc.), from national or international companies;
- 66 articles presented during 5 days;
- The conference included tutorials, technical paper sessions and a 3 days exhibition [more details on www.cmdm2011.org]

Main Topics

- Smart Grids
- Condition monitoring and diagnosis for power equipment and high voltage lines
- Condition monitoring and diagnosis in power plants
- Failure phenomena based on electrical, mechanical, chemical, and thermal causes
- Degradation assessment for power equipment
- Modern maintenance tools and technologies
- Advanced sensing techniques for condition monitoring and diagnosis
- Applications of artificial intelligence for data mining and condition assessment
- Substation automatization and automated metering
- Asset management tools for power equipment
- Distributed Resources and Renewables.





CMDM 2013

The second edition of the International Conference on Condition Monitoring, Diagnosis and Maintenance - CMDM 2013 was organized by the Romanian National Committee of CIGRE, as organizer and CNTEE Transelectrica (the Romanian TSO) and A-LST-R (the Romanian technical authority in the field of Live Maintenance), as co-organizers.

The international event took place at Radisson Blu Hotel, Bucharest, Romania, on September 2-5, 2013.

The conference also had a joint session with SC A1 (the SC A1 CIGRE Meeting and Colloquium took place at Hotel Howard Johnson, 31st August – 7th September 2013, Bucharest).

As a summary of CMDM 2013, joint session CIGRE – SC A1, we may mention:

- 260 registered participants, coming from 32 countries and a wide area of interest (public power sector, universities, private power sector, etc.), from national or international companies;
- 50 articles presented during 4 days technical paper sessions;
- 6 tutorials presented by international recognized experts;
- 4 days exhibition dedicated to key suppliers of products and services for electrical power systems.

Main topics

- Smart Grids
- Condition monitoring and diagnosis for power equipment and high voltage lines
- Condition monitoring and diagnosis in power plants
- Failure phenomena based on electrical, mechanical, chemical and thermal causes
- Degradation assessment for power equipment
- Modern maintenance tools and technologies
- Advanced sensing techniques for condition monitoring and diagnosis
- Applications of artificial intelligence for data mining and condition assessment
- Substation automation and automated metering
- Asset management tools for power equipment
- Distributed resources and renewable energy.



CMDM 2015

The third edition of the International Conference on Condition Monitoring, Diagnosis and Maintenance - CMDM 2015 was organized by the CIGRE's Romanian National Committee, as organizer and CNTEE Transelectrica (the Romanian TSO) as co-organizer.

The international event took place at Athénée Palace Hilton Bucharest Hotel - Le Diplomate Ballroom (a listed historic monument, recognized as a heritage site by UNESCO), on 5th – 8th October 2015.

As a summary of CMDM 2015, we may mention:

- 200 registered participants, coming from 22 countries and a wide area of interest (public power sector, universities, power private sector, etc.), from national or international companies;
- 61 articles presented during 4 days technical paper sessions;
- 5 tutorials presented by international recognized experts;
- 4 days exhibition dedicated to key suppliers of products and services for electrical power systems

Main topics

- Smart Grids
- Condition monitoring and diagnosis for power equipment and high voltage lines
- Condition monitoring and diagnosis in power plants
- Failure phenomena based on electrical, mechanical, chemical, and thermal causes
- Degradation assessment for power equipment
- Modern maintenance tools and technologies
- Advanced sensing techniques for condition monitoring and diagnosis
- Applications of artificial intelligence for data mining and condition assessment
- Substation automatization and automated metering
- Asset management tools for power equipment
- Distributed Resources and Renewables.





CMDM 2017

The fourth edition of the International Conference on Condition Monitoring, Diagnosis and Maintenance - CMDM 2017 was organized by the CIGRE's Romanian National Committee, as organizer and CNTEE Transelectrica (the Romanian TSO) as co-organizer.

The international event took place at Radisson Blu Hotel, Bucharest, Romania, on September 25th - 27th, 2017.

As a summary of CMDM 2017, we may mention:

- 215 registered participants, coming from 22 countries and a wide area of interest (public power sector, universities, power private sector, etc.), from national or international companies;
- 51 articles presented during 3 days technical paper sessions;
- 6 tutorials presented by international recognized experts;
- 3 days exhibition dedicated to key suppliers of products and services for electrical power systems.

We also had the pleasure to receive the effective support of Mr. Ito Hiroki - President SC A3 and Mr. Terry Krieg - President SC B3 in our conference.

Main topics

- Smart Grids
- Condition monitoring and diagnosis for power equipment and high voltage lines
- Condition monitoring and diagnosis in power plants
- Failure phenomena based on electrical, mechanical, chemical, and thermal causes
- Degradation assessment for power equipment
- Modern maintenance tools and technologies
- Advanced sensing techniques for condition monitoring and diagnosis
- Applications of artificial intelligence for data mining and condition assessment
- Substation automatization and automated metering
- Asset management tools for power equipment
- Distributed Resources and Renewables.



Key Speakers & Tutorials:

PRESENTER	TUTORIAL TITLE	PRESENTER DESCRIPTION
Buchs Gérald, BSc (Eng), CIGRE Distinguished Member	<i>Management of Risk in substation</i>	G.BUCHS, General Manager, Engineering and Maintenance Dept. Gérald started his career with Brown Boveri, which became ABB, and he spent 24 years in the field of building turnkey substations in the Middle East and Far East. He also spent time in the manufacturing of HV equipment, in production of insulating components and in the treatment of electrical insulation, solid and liquid. From 2008 to October 2012 he was in charge of the Department of Design and Maintenance of Alpiq HV Network, this network is now part of Swissgrid, the Swiss TSO. From 2013 to October 2018 he was acting as General Manager of the Engineering and Maintenance Department of Alpiq EnerTrans Ltd. Gerald is now continuing his activities in the company Bouygues E&S EnerTrans Ltd, The French Group Bouygues Construction bought the service activities of the Group Alpiq in October 2018. Active in CIGRE since 1996 as an observer, he later becomes a member of Working Group A3.23, became a Swiss member of study committee B3 in 2010 and has been a member of Working Group B3.31 and B3.32. He was Convenor of Working Group B3-38, "Management of risk in substations". The final report was printed in June 2018 as Technical Brochure No.734.
René Smeets (Ph.D), KEMA Laboratories of DNV GL	<i>Innovations in T&D switching technology</i>	René Peter Paul Smeets received a Ph.D degree for research work on switchgear in 1987. Until 1995, he was an assistant professor at Eindhoven University. During 1991 he worked with Toshiba Corporation in Japan. In 1995, he joined KEMA, the Netherlands. At present, he is with KEMA Laboratories of DNV GL, as a service area and innovation leader. In 2001 he was appointed part-time professor at Eindhoven University, the Netherlands in the field of high-power switching and testing technology. In 2013 he became adjunct professor at Xi'an Jiaotong University, China. Dr. Smeets is convener/member of working groups and study/advisory committees of CIGRE in the field of emerging high-voltage equipment such as high-voltage vacuum -, HVDC switchgear and SF6 alternatives. He is member of CIGRE SC A3 for the Netherlands. He was convener of CIGRE A3.27 (high-voltage vacuum switchgear), was secretary of CIGRE WG A3B4.34 (HVDC switchgear) and at present he is convener of CIGRE WG A3.41 (impact of SF6 alternatives on switching). As a workpackage leader in the EU Horizons 2020 project PROMOTioN ("Progress on meshed HVDC offshore transmission networks") he is responsible for testing of various technologies of HVDC circuit breakers. He is convener of two maintenance teams in IEC on high-voltage switchgear. Dr. Smeets published and edited three books and authored over 300 international papers on testing and switching in power systems; in addition he conducted many tutorials and workshops all over the world. In 2008 he was elected Fellow of IEEE and since 2008 he is chairman of the "Current Zero Club", a scientific study committee on current interruption. He received seven international awards, among which two from CIGRE.

PRESENTER	TUTORIAL TITLE	PRESENTER DESCRIPTION
Nenad Uzelac (MSEE, MS), G&W Electric	<i>Non-Intrusive Condition Assessment of T&D Switchgear</i>	Global Research & Standards Manager at G&W Electric Received MSEE in 1995 in Serbia and MS in Design & Development in 2004 in Chicago. 20 years R&D experience in MV Switchgear equipment –from conceptual ideas to commercialization.Current chairman of CIGRE A3 “Transmission and Distribution” Equipment Study Committee Current chairman of IEEE Switchgear Technology and Innovation Subcommittee.Research Interests: Switching Technologies, Internal Arc Studies, Condition Assessment, Low Power Instrument Transformers.
Simon RYDER, Doble	<i>Transformer Post- Mortem Analysis</i>	Simon RYDER was born in England in 1973. He studied Engineering Science at St John’s College, Oxford University, between 1992 and 1996. He worked for GEC Alsthon and later Alstom between 1997 and 2003, in transformer design, development, and eventually research. He is known for his work on thermal characteristics of transformers and frequency response analysis (FRA). He joined Doble in 2003, initially working mainly on transformer life management. He has wide experience of transformer and shunt reactor post-mortem analysis, in Great Britain and overseas. He is a senior member of IEEE-PES, a fellow of IET, and a Chartered Engineer. He was a member of CIGRE working groups A2.36 on transformer procurement and D1/A2.47 on advances in DGA interpretation; convenor of CUGRE working group A2.48 on shunt reactors; and a co-editor of the CIGRE Green Book on transformer procurement. He is also chairman of CIGRE Study Committee A2 on power transformers and reactors.
Doina Ilisiu, CNTEE RANSELECTRICA	<i>Demand side response and distributed generation aggregation supplying ancillary services.</i> <i>Opportunities and bottlenecks.</i>	Doina Ilisiu graduated “Polytechnic Institute of Bucharest”, the Faculty of Energetic, section Electrical - in 1984; and post graduated “Polytechnic Institute of Bucharest”, the Automatic Faculty (1989),Numerical control of industrial processes” course. Since 1984 she has been engineer, researcher III degree in ICEMENREG (Institute of research and modernization in energetic domain). Since 2002 she worked in National Dispatch Center, as head of Technical Control of Grid Cod Requirements Compartment and was involved in others team activities: Issuing of the National HV Grid Code; the National Commercial Code - consultant, Responsive on connection to the grid of generation units (included WPP&PHPP),elaborator of Connection Requirements national implementation of COMMISSION REGULATION (EU) 2016/631, 2016/1388, 2016/1447; author of Procedures: Units Tests for Primary Control, Unit Tests for Secondary Control, Procedure for monitoring and evaluating the Units in secondary control, Procedure for Qualifying Producers of generating units for Ancillary Services. She is appointed member in UCTE association, permanent member in two Sub-Groups: “TSO-Forum” – responsible of Primary Reserve calculation for component TSOs and UCTELFC performance monitoring; “Experts of Power System Stability” (for WAMS- Wide Area Measurement System- problems) and Working Groups: “Load Frequency Control – Compensation”, “Primary control reserve and Load shading (2007)”; from 2008 member in CIGRE- CN (National Association), president of National Committee CN CIGRE C2 from 2014.

PRESENTER**TUTORIAL TITLE****PRESENTER DESCRIPTION**

**Ciprian Diaconu,
CNTEE
TRANSELECTRICA**

*Impact of large
RES on system
development*

Ciprian Diaconu - Chairman of Romanian NC CIGRE, Director at the Romanian Transmission and System Operator - CNTEE Transelectrica

In 30 years of experience in the High Voltage Networks, Mr. Ciprian Diaconu achieved considerable knowledge in development, operation and maintenance, project management and others.

Mr. Ciprian Diaconu graduated the Technical University of Bucharest in 1986 and in 2009 he obtained the PhD degree from Technical University of Timisoara in Asset Management.

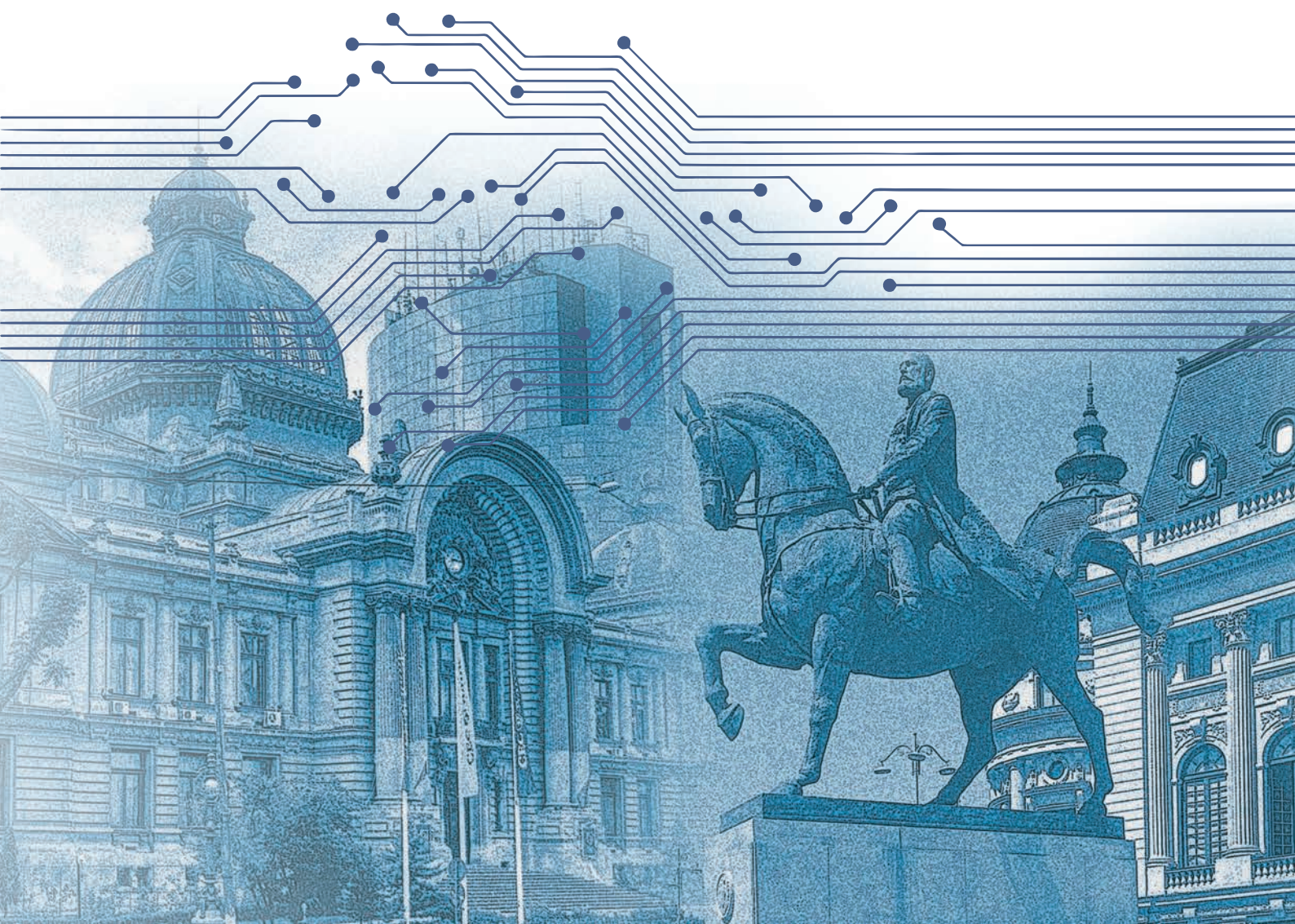
During his activity in network utilities Mr. Ciprian Diaconu hold different managerial positions as Director, Deputy General Director, member of Directorate and member of the Supervisory Board within Romanian Transmission and System Operator - Transelectrica. Main responsibilities where: system development and grid connection, asset management and maintenance, development and rehabilitation projects.

From 2009-2015 he was representing Transelectrica in the ENTSO-E's System Development Committee.

Within CIGRE he started activity in early 2000 as a one of the founders of Romanian National Committee.

He was member of Study Committee B3 "Substations" from 2006 to 2014, member of the Study Committee C1 "System development and Economics" from 2014 till today, member of several WG's within B5, B3, C1.

From 2010 Mr. Ciprian Diaconu hold the Chairman position of the Romania National Committee of CIGRE and also he was member of the CIGRE Administrative Council.



COMPANIES IN BRIEF

ORGANIZER:



Association of the Romanian National Committee CNR-CIGRE is officially recognized as the Romanian representative of the Board of International Council on Large Electric System (Conseil International des Grands Réseaux or Electriques), based in Paris, CIGRE hereinafter. CNR-CIGRE association is an independent, nongovernmental, apolitical nature, non-profit organization, according to the act of will expressly manifested in the constitutive acts by the founding members. The association has a technical & scientific profile . Currently CNR-CIGRE records 157 individual members and 32 corporate members.

www.cigre.org.ro

CO-ORGANIZER:



CNTEE TRANSELECTRICA is the Romanian Transmission and System Operator (TSO).

For the 18 years of its corporate life Transelectrica has managed and operated the electricity power system and transmission grid, providing transmission services for electricity transactions among central and south-eastern countries. It ensures electricity transmission from generators to the large consumers connected to the grid; manages the power system and wholesale electricity market operation, the grid and market infrastructure development and guarantees a regulated third party access to the Romanian electricity transmission network under transparent, non-discriminatory and fair conditions to all market players. Transelectrica's main processes are adequacy of the transmission grid, power system reliable and safe operation, and support of open liberalised electricity markets. Transelectrica comprises 6 legal subsidiaries (Opcom, Teletrans, Smart, Icemenerg, Icemenerg Service, Formenerg), as well as 8 transmission branches in Bucharest, Bacau, Cluj, Constanta, Craiova, Pitesti, Sibiu, and Timisoara. The Company has been listed to the Bucharest Stock Exchange since August 2006.

www.transelectrica.ro

WITH SUPPORT of:



CIGRE Central Office which is based in Paris France, counts 58 National Committees to enhance its relationship and get closer to its Members. CIGRE National Committees offer to its Members direct access to services and supports. CIGRE counts more than 14 000 equivalent Members composed of researchers, academics, engineers, technicians, suppliers, and other decision makers, in over 90 countries.

More than 3,500 experts from across the globe actively collaborate in structured work programmes with CIGRE. Their efforts are coordinated by 16 Study Committees which are overseen by a Technical Committee. Research efforts are anchored to four interlinked objectives : designing and deploying the power system of the future, optimizing existing equipment and power systems, respecting the environment, and offering access to information to international key players in the electrical power systems' industry.

www.cigre.org

GOLD SPONSORSHIP:



Phoenix Contact is the key partner for creative solutions in the fields of connection technology, electronics and automation on the journey to a smart world.

A privately held company founded in 1923 that is vertically integrated and independent in its entrepreneurial decision-making freedom. Our values provide the basis for the products and solutions that also guarantee your success:

- Innovation and quality are the cornerstones of technological progress.
- Courage and reliability are enduring influences on our future.
- Trust and proximity create partnership.
- Sustainable economic management and the conservation of resources are duties we owe to future generations.

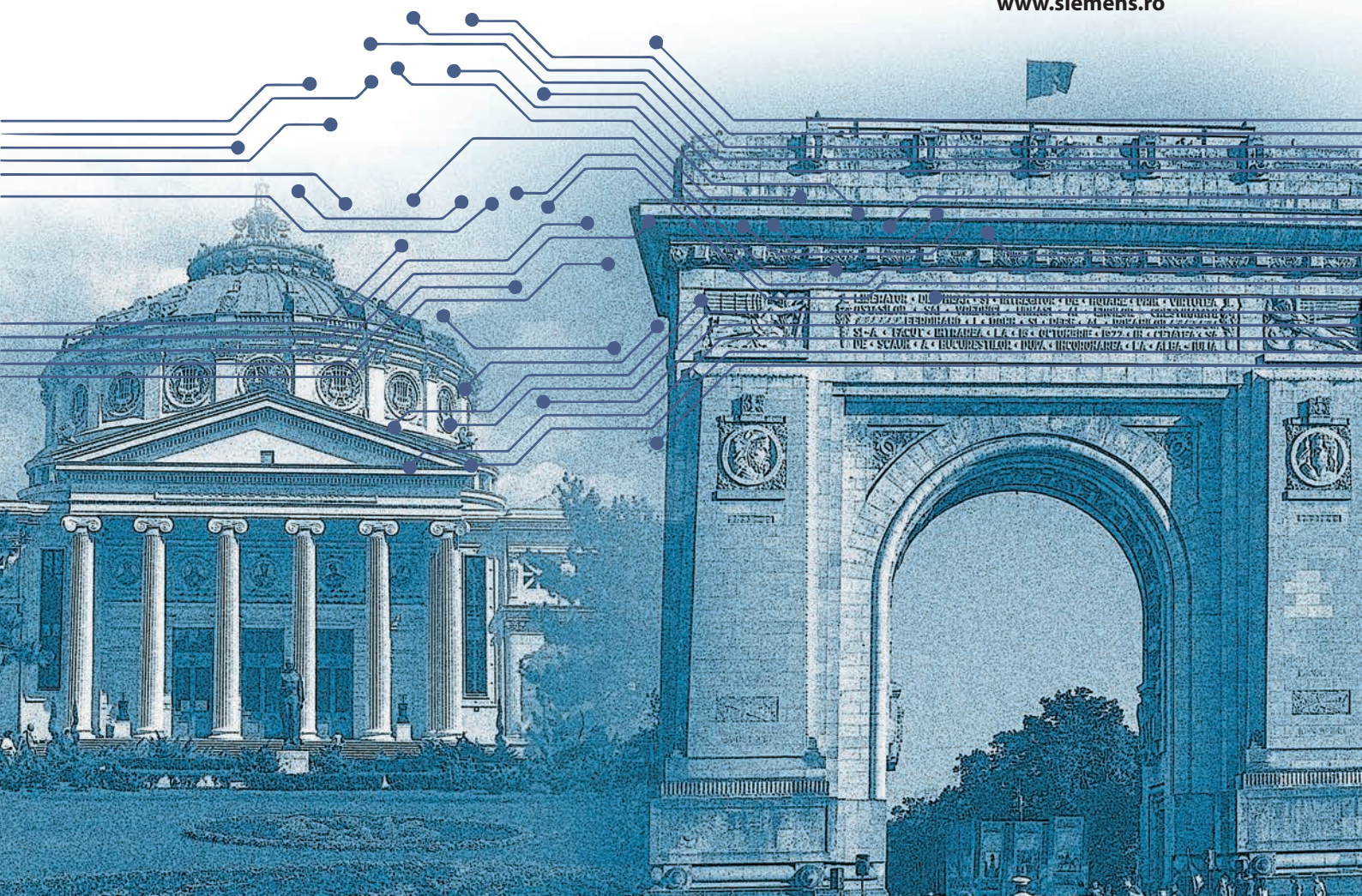
Let's shape the future together!

www.phoenixcontact.ro

SIEMENS

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for 170 years. The company is active around the globe, focusing on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of efficient power generation and power transmission solutions and a pioneer in infrastructure solutions as well as automation, drive and software solutions for industry. Further information is available on the Internet at www.siemens.com and www.siemens.ro.

www.siemens.ro



SILVER SPONSORSHIP:



ABB (ABBN: SIX Swiss Ex) is a leader in pioneering technology, with a complete offering for the digital industries. With an innovation history of over 130 years, ABB is today a leader in the digital industry, operating through four worldwide customer-oriented businesses: Electrification, Industrial Automation, Movement, Robotics & Actuators, supported by the ABB common digital platform Ability™. In Romania ABB provides safe and energy efficient solutions in the fields of utilities, transport and infrastructure, as well as in the industrial field, leading to the increase of industrial productivity.

www.abb.com/ro



CEZ Group in Romania is represented by its ten companies: Distribuție Oltenia, CEZ România, CEZ Vânzare, CEZ Trade, Tomis Team, MW Invest, Ovidiu Development, TMK Hydroenergy Power, CEZ ESCO Romania and High Tech Clima, being present on the Romanian market since 2005.

The Group holds the largest on-shore wind farm in Europe, Dobrogea region, in Fântânele, Cogeașlac and Grădina. The wind farm meant an investment of 1.1 billion euros and has 240 wind turbines with a total installed capacity of 600 MW. The entire capacity of CEZ Wind Farm was commissioned at the end of 2012.

www.cez.ro



EnergoBit is a competitive, strong and trustworthy company in the sector of major electrical energy players. Our company developed its activity driven by responsibility, top level performance, elegance and professional values and ethics. After almost three decades, EnergoBit has remained an elite business partner, highly appreciated by customers, suppliers and the community.

Our people are committed to deliver complete solutions in electricity: technical design and energy audit, design, production of electrical equipment, general contracting, maintenance and operation services.

Our solutions are designed to meet customers' needs, including extensive experience and innovation for sustainable development.

www.energobit.com



Muntenia North Electricity Distribution Company (SDEE Muntenia Nord), part of Electrica Group, is the electricity distribution operator serving the north area of Muntenia. The company operates in Brăila, Buzău, Dâmbovița, Galați, Prahova and Vrancea counties, with an operating area of approximately 29,000 square kilometers.

With a tradition of 120 years, SDEE Muntenia Nord offers services for approximately 1.3 million consumers, through a distribution network with a length of over 73,000 kilometers and a team of 2,260 employees.

www.distributie-energie.ro



Societatea de Distribuție a Energiei Electrice Transilvania Nord (SDEE Transilvania Nord), part of Electrica Group, is the electricity distribution operator serving the North-West area of Transylvania. The company operates in Satu Mare, Maramureș, Bistrița Năsăud, Bihor, Sălaj and Cluj counties, covering an operating area of approximately 34,160 km².

With 120 years of tradition, SDEE Transilvania Nord offers services to approximately 1.26 million consumers, through a distribution network with a length of over 68,700 kilometers and a team of more than 2,240 employees.

www.distributie-energie.ro



Transylvania Southern Electricity Distribution Company (SDEE Transilvania Sud), part of Electrica Group, is the electricity distribution operator serving the central and southern areas of Transylvania. The company operates in Alba, Brașov, Covasna, Harghita, Mureș and Sibiu counties, with an operating area of approximately 34,100 square kilometers.

With a tradition of 120 years, SDEE Transilvania Sud offers services for approximately 1.2 million consumers, through a distribution network with a length of over 53,000 kilometers and a team of 2,000 employees.

www.distributie-energie.ro

BRONZE SPONSORSHIP:



Starting from the idea that electricity, through the large number of applications has become the most used form of energy, we have developed a department for marketing and distribution of cables, cable accessories and electrical equipment.

Our company offers to the market participants products of the major manufacturers of cables, electrical equipment and cable accessories, managing to offer complete solutions for:

1. Electrical networks: production, transport and distribution;
2. Industries & Construction: equipment manufacturers;
3. Infrastructure: lighting and transport.

Our suppliers include the following international brands:

TE Connectivity Raychem, Telefonika, Siemens, Trench, Kamat, etc.

www.energoline.ro



GE DRIVES THE WORLD FORWARD BY TACKLING ITS BIGGEST CHALLENGES

By combining world-class engineering with software and analytics, GE helps the world work more efficiently, reliably, and safely. For more than 125 years, GE has invented the future of industry, and today it leads new paradigms in additive manufacturing, materials science, and data analytics.

GE people are global, diverse and dedicated, operating with the highest integrity and passion to fulfill GE's mission and deliver for our customers.

www.ge.com

Partners



Dynamic Ratings provides condition based monitoring programs to the utility industry. We use our products and services to help utilities to have better awareness of their high voltage electrical equipment.

Condition based monitoring is a way for utilities to

1. Improve safety for the workforce
2. Extend the life of their assets
3. Create awareness of asset life and reliability

A condition based monitoring program may include

- Transformer monitoring
- DGA monitoring
- Bushing monitoring
- Partial discharge monitoring
- Battery monitoring
- Circuit breaker monitoring
- Secure communications
- Data Dashboard
- Engineering Service
- Technical Support
- And more...

www.dynamicratings.com



ENERGOTECH S.A. is a private owned business focusing its activities especially in the Conventional and Nuclear Energy up to 400 kV having as expertise the following:

- Complete substations rehabilitation (design, supply of equipment, construction and commissioning, training of client personnel);
- Consultancy, expertise, complex tests and rehabilitation of MV/HV equipment;
- Complex monitoring systems for substations;
- Explosion prevention and fire extinguishing systems for power transformers;
- SCADA, protection and automation systems: design, configuration and commissioning;
- MV/HV equipment supply: power transformers, circuit breakers, instrument transformers, disconnectors, reclosers, insulators, clamps and fittings etc.;
- Insulating/hydraulic oils and greases;
- MV/HV overhead lines, underground cables and accessories;
- Maintenance works.

www.energotech.ro



Eximprod is a Romanian group of companies founded in 1994, focusing its activities to supply products and services for T&D sector. Eximprod started with high voltage products in 2001, when we have introduced line insulators for 110, 220 and 400 kV. Beside insulators, our today's high voltage range include 123/145 kV equipment:

- Circuit Breakers
- Instrument Transformers
- Disconnectors

In Smart Grid area, our main achievements in distribution grids during the past years are:

- partnership with CISCO to develop a new generation of SCADA systems,
- commissioned the 1st Big Data applications,
- advancing in designing a new range of IoT-enabled equipment.

www.eximprod.ro



IPROEB S.A. is a company with tradition in the electric industry, being one of the leading companies in this activity domain.

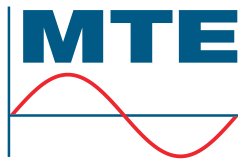
For over 40 years our products promote the development and the modernization of our national energetic system in order to achieve high industrial and civil objectives.

Including new technologies and last generation materials, we are answering to our clients increasing demands.

Our company's evolution trajectory made us known on domestic and external markets directly or through famous montage companies.

We are part of the great contemporary energetic family."

www.iproeb.ro



MTE AG is a Swiss global supplier of transformer monitoring systems for transformers. Through continuous innovations, MTE provides a comprehensive portfolio, the HYDROCAL family. With its instruments for the permanent online monitoring of transformers, MTE offers both the extension of the transformer lifetime and the contribution to a more secure high-voltage power transmission.

HYDROCAL products are online transformer monitoring systems for the dissolved gas analysis (DGA) of key gases (up to 8 gases) as well as individual measurement of moisture in the transformer oil. Thanks to its modular system components and extension packages, MTE provides the optimal customer-oriented solutions.

www.mte.ch/products/transformer-monitoring



NOVA INDUSTRIAL S.A. is a Romanian Company, one of the most well-known and experienced power sector consultancy companies, operating successfully on the Romanian market since 1996.

NOVA INDUSTRIAL S.A. meets the demands of power sector / Smart Grids through:

- Consultancy services;
- Studies, research and development activities, engineering;;
- Designing, manufacturing, delivering and maintenance of high technical level products, specific to the power field.

As example, NOVA INDUSTRIAL S.A. designed, manufactured, delivered, installed and put into operation, the EMCSIT equipment and related software for the SMART GRIDS pilot project that included three high-voltage substations (400/220/110 kV and 220/110 kV) belonging to CNTEE Transelectrica (the Romanian TSO) – the project involved over 500 pcs. of on-line monitoring equipment and was appreciated as a premiere in Romania and internationally, at that moment. Also, Nova Industrial developed the OHLM intelligent system for on-line monitoring overhead power lines, system tested in laboratories and recently used on 400 kV Bucuresti Sud – Pelicanu overhead power line.

www.novaindustrial.ro



Scando Trading București, fondată în anul 1991 de către inginerul Marin Stancu, este lider național în furnizarea de materiale, componente și echipamente pentru transformatoare de putere, instalații de tratare online și offline a uleiului de transformator, instalații de regenerare a uleiului de transformator, sisteme de monitorizare și alte echipamente pentru industria energetică românească.

Pe parcursul a peste 25 de ani de activitate, compania a strâns în portofoliu numele tuturor fabricilor românești producătoare de transformatoare, ale companiilor de producere, transport și distribuție a energiei electrice, precum și ale atelierelor de reparații pentru transformatoare de putere.

www.Scando.ro



CMDM 2017.4

CMDM 2013

CMDM 2015

CMDM 2015

CMDM 2015

CMDM 2019 (5th edition)

Radisson Hotel, Bucharest, Romania

September 9th -11th, 2019

PROGRAM TIME TABLE

Monday, September 9, 2019, Atlas Conference Room

09:00 - 10:00 **Registration**

10:00 - 13:00 **Opening Plenary**
Exhibition Opening
Welcome Coffee

Tutorial 1: Non-Intrusive Condition Assessment of T&D Switchgear, presented by Mr. Nenad Uzelac, USA, Chairman of CIGRE SC A3

Tutorial 2: Transformer post-mortem analysis, presented by Mr. Simon Ryder, UNITED KINGDOM, Chairman of CIGRE SC A2

13:00 - 14:00 **Lunch and Break**

14:00 - 15:00 **Session 1 Chair Hiroki Ito, JAPAN**

1-1 RCAM Dynamic Tool – Reliability Centered Asset Management Solution, A. Schreiner*, N. Kaiser, GERMANY

1-2 Tools for lifecycle management of T&D switchgear based on data from condition monitoring systems, N. Gariboldi^{1*}, J.D. Mantilla¹, A. Apostolov², A. Maheshwari³, R. Pater⁴, SWITZERLAND¹, USA², AUSTRALIA³, CANADA⁴

1-3 Power station condition monitoring: what are you expecting?, J. Beardsall¹, R. Heywood¹, A. McGrail^{2*}, UK¹, USA²

1-4 Advances in circuit breaker monitoring, D. Legrand*, UK

1-5 Electrical equipment analysis and diagnostics: Methods for model parameterization, fault and normal condition simulation, J. N. Kahlen*, A. Mühlbeier, M. Andres, B. Rusek, D. Unger, K. Kleinekorte, GERMANY

Discussions

15:00 - 16:00 **Tutorial 3 : Innovations in T&D switching technology**, presented by Mr. René Smeets, The NETHERLANDS

16:00 – 16:30 **Coffee Break**

16:30 - 18:00 **Session 2 Chair Frank.Richter, GERMANY**

2-1 CIGRE fourth reliability survey on equipment, H. Ito^{1*}, N. Uzelac², F. Richter³, R. le Roux⁴, W. Paper⁵, Li Peng⁶, A. Man-Im⁷, I. Hategan⁸, K. Kawakita¹ JAPAN¹, USA², GERMANY³, IRELAND⁴, AUSTRALIA⁵, CHINA⁶, THAILAND⁷, ROMANIA⁸

Exhibition
10:00 - 18:00
Prefunction
Area, 1st Floor

2-2 Enhanced UHF partial discharge sensor for high voltage gas-insulated switchgear, M. Boltze, M. Kuschel, R. Schulz, W. Grunwald, T. Huecker, GERMANY

2-3 Educational game concepts applied to substation operation and maintenance improvement, L.C. Magrini*, F. Crispino, J. Horta, N. Caldeira, R. Bota Filho, F. Costa, BRAZIL

2-4 Effect of fast transient overvoltages generated by disconnectors on "top-core" current transformers, Class 500 kV, F. E. Spressola; H. J. A. Martins, J. G. B. M. Andrade, BRAZIL

2-5 Advantage of condition based assessments in enhancing the maintenance strategies for the assets, F. Al-Shukaili, OMAN

2-6 Benchmark case of multiphysics simulation for temperature rise calculation, M. Kriegel¹*, E. Fjeld², A. Pedersen², P. G. Nikolic³, T. Krampert³, J. Snajdr³, SWITZERLAND¹, NORWAY², GERMANY³

2-7 Environmental factors that affects the infrared thermal stress monitoring of electrical equipment A. Dragomir*, M. Adam, M. Andruşca, M. Dragomir, B. Filip, A. Iamandi, ROMANIA

2-8 Composite voltages generated by a modified Greinacher Cascade, O. Pischler*, U. Schichler, AUSTRIA

Discussions

19:00 - 22:00 Cocktail Reception - Radisson Hotel, Dacia Felix Restaurant

Exhibition
10:00 - 18:00
Prefunction
Area, 1st Floor

Tuesday, September 10, 2019, Atlas Conference Room

9:00 - 10:00 Session 3 Chair Buchs Gérald, SWITZERLAND

3-1 Sensformer[®] and Sensgear[®] - Intelligent IoT-connected High Voltage T&D Products, M. Kuschel*, D. Helbig, T. Hammer, M. Heinecke, P. H. Singh, GERMANY

3-2 Breakthrough monitoring system for high-accuracy online measurement of generator circuit-breakers contact erosion, M. Palazzo¹*, A. Antoniadis¹, T. Schulze-Koenig², SWITZERLAND¹, GERMANY²

3-3 Impact of short-circuit current on T&D equipment, R.P.P. Smeets, The NETHERLANDS

3-4 Using smart technology to effectively manage SF₆ emissions on aging assets., Stephen West, IRELAND

3-5 Gas handling and assessment of gas quality in gas-insulated switchgear containing clean air; B. Lutz, M. Kuschel*, K. Pohlink, R. Kurte, GERMANY

Discussions

10:00 - 11:00 Tutorial 4 : Management of risk in substation, presented by Mr. Buchs Gérald, SWITZERLAND, Convenor of CIGRE WG B3-

11:00 - 11:30 Coffee Break

Exhibition
09:00 - 18:00
Prefunction
Area, 1st Floor

11:30 - 13:00 **Session 4 Chair Koji Kawakita, JAPAN**

4-1 Machine learning to monitor the performance of controlled switching devices, E. Viberg, T. Lindquist, A. Lindsko, SWEDEN*

4-2 Considerations for equipment of underground cable network, S. Tsukao, I. Yoshida, T. Kobayashi, M. Kosakada, H. Sugiyama, JAPAN*

4-3 Partial Discharge Monitoring System for 400kV GIS Using Loop-type Sensor Embedded in Dielectric Insulator. S. Maruyama, M. Saito, T. Hoshino, T.Saida, JAPAN*

4-4 Prediction of AC and Lightning Breakdown Voltage based on PD Measurements, T. Huecker, GERMANY

4-5 Application of NoDi pattern for UHF PD measurement on HVDC GIS/GIL, A. Pirker*, U. Schichler, AUSTRIA*

4-6 Role of the switchgears inspection in reducing the maintenance cost, A. Z. AL-Busaidi, OMAN

4-7 MOSA experience, application and reliability, R. le Roux^{1*}, L. Peng¹, F. Richter³, H. Ito⁴, IRELAND¹, CHINA², GERMANY³, JAPAN⁴

4-8 Utilization of metal oxide surge arrester in HVDC circuit breaker and similar applications, R. le Roux^{1*}, S. Roche¹, N. Belda², Ireland¹, the NETHERLANDS²

Discussions

13:00 - 14:00 **Lunch and Break**

14:00 - 15:00 **Session 5 Chair Simon Ryder, UNITED KINGDOM**

5-1 Evaluation of a modular and flexible architecture for condition monitoring systems, C. Silva, S. Costa, R. D. Jorge, PORTUGAL*

5-2 Insulating liquids for Power Transformers – key aspects today and future landscape, C. P. Wolmarans¹, B. Pahlavanpour^{2*}, SWEDEN¹, UK²

5-3 Investigation of degradation of oil-immersed insulated systems for transformer ageing evaluation in substation, F. Kato, H. Sadakuni, T. Minagawa, R. Nishiura, JAPAN*

5-4 Study of diagnosis of aged resin type bushings by electro-magnetic wave detector, M. Nakahata, A. Eto, T. Maekawa, S. Tamura, S. Tsukao, JAPAN*

5-5 Online DGA - state of the art and influencing parameters, C. Riedmann, U. Schichler AUSTRIA*

Discussions

15:00 - 16:00 **Tutorial 5: Demand side response and distributed generation aggregation supplying ancillary services. Opportunities and bottlenecks, presented by Mrs. Doina Ilisiu, ROMANIA**

16:00 - 16:30 **Coffee Break**

Exhibition
09:00 - 18:00
Prefunction
Area, 1st Floor

16:30 - 18:00 **Session 6 Chair, Ioan Hategan, ROMANIA**

6-1 Transformer monitoring system evaluation using the Pareto method, I. Stancu, T. Chiulan, ROMANIA*

6-2 Real time monitoring and analysis system of power losses in electrical transmission and distribution systems, C. Moldoveanu, I. Ionita, V. Brezoianu, S. Zaharescu, St. Mesteacan, S. Grigorescu, ROMANIA*

6-3 Service experience with overhead lines conductors galloping: a Romanian Pilot Program for mitigation of galloping effects, D. Marginean, I. .D. Hategan, L.N. Iacobici, R. Sava, M. Marcolt, ROMANIA*

6-4 Romanian experience with antigalloping devices: technical and financial approach, G.A. Florea, E. Mateescu, L. Lipan. S. Tibuliac, M. Vaju, D. Balaci, C. Baci, ROMANIA*

6-5 The advantages of a condition-based approach to the management of power line assets and a comparison of data acquisition methods, M. de la Paz, M. Vaskela, LITUANIA

6-6 An example of the a.c. interference modeling, Negru Voda- Isaccea right of way, C. Munteanu, M. Purcar, ROMANIA*

6-7 Severe weather effects on overhead lines and line restoration in Romanian power grid, M.N. Oltean , V. Zaharescu, O. Stef, ROMANIA*

6-8 Using drones in overhead line maintenance- more than a regular inspection, M..N. Oltean, V.Zaharescu, T. Fagarasan, ROMANIA*

6-9 OHL monitoring using drones, R. Dinculescu, Al. Constantin, ROMANIA*

Discussions

19:30 - 22:00 **Conference Networking Party - Romanian Traditional Evening at Hanu' lui Manuc**

Exhibition
09:00 - 18:00
Prefunction
Area, 1st Floor

Wednesday, September 11, 2019, Atlas Conference Room

9:00 - 10:00 **Session 7 Chair Constantin Moldoveanu ROMANIA**

7-1 Preliminary assessment towards high renewable-based energy systems in Romania for year 2030, M. Sanduleac, C. Chimirel, Ci. Diaconu, ROMANIA*

7-2 On the feasibility of massive deployment of energy storage systems, L. Toma, M. Sanduleac, M. Eremia, I. Picioroaga, D. O. Sidea, ROMANIA*

7-3 Storage facilities for TSO secure and efficient operation, C. L. Chimirel, M. C. Marcolt, R. Dinculescu, ROMANIA*

7-4 Supervised machine learning applied to diagnosis of wind turbine gearbox using vibration harmonic distortion feature, F.L. Freitas, G.L. Mourao, M.H. Nishioka, BRAZIL*

7-5 Influence of modern reactive power compensation in National Power System - Power quality results - E. D. Dinu, D. Ilişiu, ROMANIA*

Discussions

10:00 - 11:00 **Tutorial 6: Impact of large RES on system development, presented by Mr. Ciprian Diaconu, ROMANIA**

11:00 - 11:30 **Coffee Break**

Exhibition
09:00 - 15:45
Prefunction
Area, 1st Floor

11:30 - 13:00 **Session 8 Chair Doina Ilisiu, ROMANIA**

8-1 Using electrical parameters measurement results in protection settings, Gh. Moraru, F. Balasiu, ROMANIA*

8-2 Methods for estimating the zero sequence line impedance, M. Dragomir, Gh. Moraru, A. Iamandi, A. Dragomir, B. Filip, A. Miron, ROMANIA*

8-3 Transmission line differential protection using travelling wave technology principle, L. Calugar, S. Bugnar, M. Coroiu, ROMANIA*

8-4 Teleprotection scheme used for three terminal transmission line, A. Iamandi, I. Ionescu, M. Dragomir, S. St. Iliescu, ROMANIA*

8-5 Deterministic frequency deviations impacts. Cr.M. Tudor, D. Ilisiu, ROMANIA*

8-6 Swarming the energy measurements data, D. Loghin, ROMANIA

Discussions

13:00 - 14:00 **Lunch and Break**

14:00 - 15:30 **Session 9 Chair Ciprian Diaconu, ROMANIA**

9-1 Special climatic challenges for in-service substation equipment R. G. Sava, M. Vaju, L. Iacobici, M. Marcolt, ROMANIA*

9-2 Scenarios for consumption and renewables evolution used for network development, D. Bolborici, G. Giosanu, ROMANIA*

9-3 New solutions regarding the power evacuation from Dobrogea area, A. Constantin, R. Dinculescu, ROMANIA*

9-4 Perspectives and challenges for Romanian wholesale market metering operator C. Diaconu, F. Radoi, A. Lichiardopol, C. Stanescu, ROMANIA*

9-5 Implementation of a wireless sensor node for multi-purpose blockchain applications, G. Suciu, G. Bucur, S. D. Plechi, A. M. Tudor, I. Buzau, ROMANIA*

9-6 SF6 circuit breaker life cycle management (a case study: SS Portile de Fier), L. Radut, M. Cruceru, G. Jiroveanu, ROMANIA

9-7 EU Regulation 2017/2195 on 15-minute settlement of the Romanian wholesale electricity market, Ci. Diaconu, F. Radoi, ROMANIA

9-8 Connection power plants - Specific parameters. European regulation, I. Serbanescu, D. Ilisiu, D. Firica, ROMANIA*

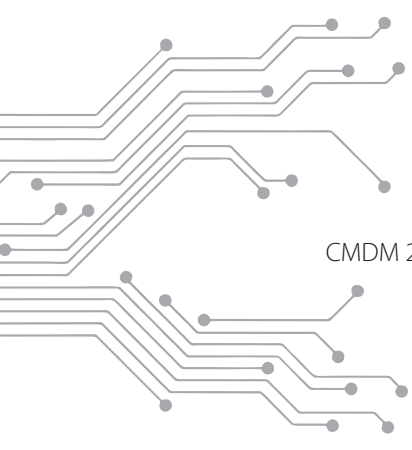
9-9 Spectral analysis of distribution networks, S.B. Leu, O. Lebedov, ROMANIA*

9-10 Smart metering in Romania and the world, V. Vilcu, ROMANIA*

Discussions

15:30 - 15:45 **Closing Plenary**

Exhibition
09:00 - 15:45
Prefunction
Area, 1st Floor



CMDM 2019 EXHIBITION

CMDM 2019 Exhibition takes place in parallel with other activities of
CMDM 2019 International Conference (scientific & technical sessions, tutorials, visits, etc.)

CNTEE Transelectrica
www.transelectrica.ro

DYNAMIC RATINGS INC.
www.dynamicratings.com

ENERGOBIT
www.energobit.com

ENERGOTECH
www.energotech.ro

EXIMPROD
www.eximprod.ro

I PROEB S.A.
www.iproeb.ro

MTE AG
www.mte.ch

NOVA INDUSTRIAL SA
www.novaindustrialsa.ro

PHOENIX CONTACT
www.phoenixcontact.com

SIEMENS
www.siemens.com

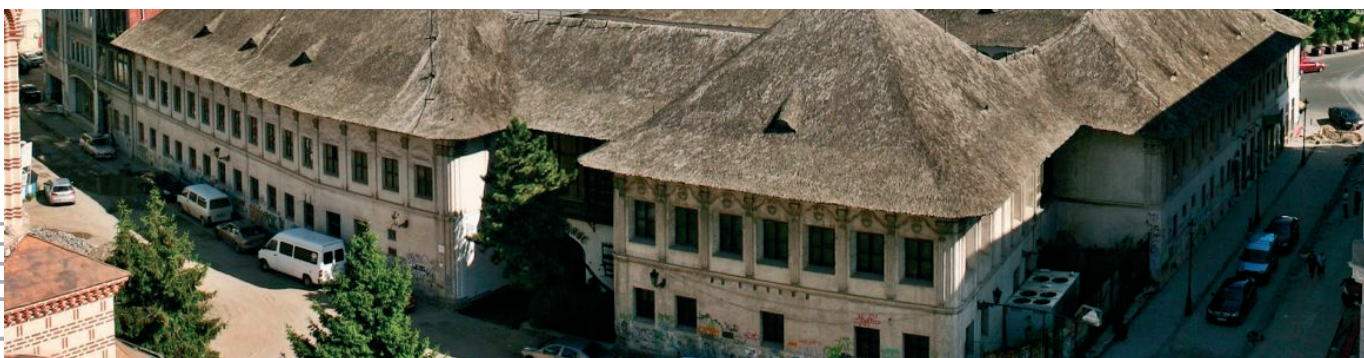
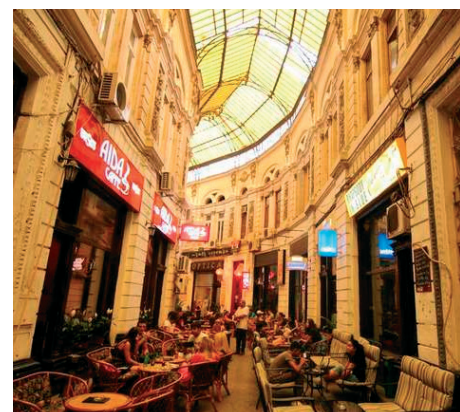
SMART SA
www.smart-sa.ro



Conference Networking Party

Romanian Traditional Evening at Hanu' lui Manuc

Address: 62-64 Franceza st., Bucharest



Romanian National Committee "CIGRE" (CNR CIGRE)

Address: Gen. Gheorghe Magheru, Nr. 33, 10325, Bucharest, Romania
Correspondence Address: Str. Olteni, Nr. 2 - 4, RO-030786, Bucharest, Romania
Phone: +4 021 303 59 56;
Fax: +4 021 303 58 30;
www.cigre.org.ro

CMDM 2019 Conference Secretary
Email: secretary@cmdm2019.org
www.cmdm2019.org



Organizer:



Co-organizer:



With support of:



Gold Sponsorship



Silver sponsorship



Bronze sponsorship



Partners

