

ICHVE 2018

2018 IEEE International Conference on High Voltage Engineering and Application

Athens, Greece
September 10-13, 2018

Program



IEEE



TRSC

TESTING
RESEARCH &
STANDARDS
CENTER

**HIGH
VOLT**

Test with the best.®

Raycap



CABLEL®
HELLENIC CABLES



ΑΔΜΗΕ
ΑΝΕΞΑΡΤΗΤΟΣ ΔΙΑΧΕΙΡΙΣΤΗΣ
ΜΕΤΑΦΟΡΑΣ ΗΛΕΚΤΡΙΚΗΣ ΕΝΕΡΓΕΙΑΣ

Megger.
Power on



IET
The Institution of
Engineering and Technology





Substation maintenance
& commissioning test systems



Circuit breaker testers



Protective relay testers



HD384 Electrical installation testers



Digital transformer testers



Power quality analyzers



Circuit breaker testers



Battery discharge devices



Transformer testers



VLF + tanD cable testers



Transformer oil testers



Cable fault location systems

Our company offers equipment for: Measurements of electrical parameters in low, medium and high voltage networks, Transformer and substation measurement systems, VLF and TanD measuring systems for medium and high voltage cables, Cable fault location systems.

Welcome



On behalf of the Organizing Committee, we are honored to welcome you at the 2018 IEEE International Conference on High Voltage Engineering and Application (ICHVE 2018), organized by National Technical University of Athens – Greece and endorsed by IEEE Dielectrics and Electrical Insulation Society. ICHVE 2018 will be held in Athens, Greece on September 10-13, 2018.

ICHVE 2018, after five successful conferences held in Chongqing, China (2008), New Orleans, USA (2010), Shanghai, China (2012), Poznan, Poland (2014) and Chengdu, China (2016), has been established as a reference point for the exchange of knowledge and experiences in High Voltage and Power engineering.

Founded in 1837, National Technical University of Athens (NTUA) is the oldest Technical University in Greece and in its current form houses nine schools (Civil engineering, Mechanical engineering, Electrical & Computer engineering, Architecture, Chemical engineering, Rural & Surveying engineering, Mining & Metallurgical engineering, Naval Architecture & Marine engineering and Applied Mathematical & Physical Sciences). Established as a prestigious university of science and technology, NTUA accommodates almost 10 thousand students of PhD, Master and undergraduate level.

Athens, the capital of Greece located in Attica region, is one of the world's oldest cities, famous for its recorded history spanning over 3,400 years. We are looking forward to welcoming you in Athens, Greece, during September 10-13, 2018. We hope and strongly believe that ICHVE 2018 will be as successful as the previous conferences becoming a memorable, exciting and inspiring experience for organizers and participants alike while ensuring a fruitful time, new contacts and a nice stay in Athens.



Ioannis F. Gonos
Chair of ICHVE 2018

CONFERENCE CHAIR

Gonos, I.F., National Technical University Athens, Greece

CONFERENCE CO-CHAIR

Stathopoulos, I.A., National Technical University Athens, Greece

Li, J., Chongqing University, China

Younan, N., Mississippi State University, USA

PAST CONFERENCE CHAIR

Sun, C.X., ICHVE 2008, Chongqing University, China

Grzybowski, S., ICHVE 2010, Mississippi State University, USA

Liao, R.J., ICHVE 2012, Chongqing University, China

Rakowska, A., ICHVE 2014, Poznan University of Technology, Poland

Li, J., ICHVE 2016, Chongqing University, China

STEERING COMMITTEE (IN ALPHABETICAL ORDER)

Chair: Gonos, I.F. (NTUA)

Grzybowski, S. (MSU)

Li, J. (CQU)

Liao, R.J. (CQU)

Rakowska, A. (PUT)

INTERNATIONAL SCIENTIFIC COMMITTEE (IN ALPHABETICAL ORDER)

Chair: Mikropoulos P.N. (Greece)

Beroual, A. (France)

Chen, G. (United Kingdom)

Fabiani, D. (IEEE DEIS)

Farzaneh., M. (Canada)

Fofana, I. (Canada)

Franck, C. (Switzerland)

Gerhard, R. (Germany)

Gonos, I. (Greece)

Gubanski, S. (Sweden)

Haddad, A. (United Kingdom)

Haller, R. (Czech Republic)

Harid, N. (UAE)

He, J.L. (China)

Jandrell, I. (South Africa)

Kindersberger, J. (Germany)

Kluss, J. (USA)

Kyritsis, A. (Greece)

Lehtonen, M. (Finland)

Li, J. (China)

Liao, R.J. (China)

Liu, Q. (United Kingdom)

Mcdermid, B. (Canada)

Muhr, M. (Austria)

Ohki, Y. (Japan)

Ozdemir, A. (Turkey)

Papailiou, K. (Switzerland)

Phung, T. (Australia)

Piantini, A. (Brazil)

Pyrgioti, E. (Greece)

Rakov, V. (USA)

Rakowska, A. (Poland)

Siodla, K. (Poland)

Smit, J.J. (Netherlands)

Suwarno, S. (Indonesia)

Tenbohlen, S. (Germany)

Visacro, S. (Brazil)

Walker, J. (South Africa)

Wang, F.P. (China)

Wang, Z. (United Kingdom)

Wlodek, R. (Poland)

Younan, N. (USA)

LOCAL ORGANIZING COMMITTEE (IN ALPHABETICAL ORDER)

Chair: Topalis, F. (NTUA)

Danikas, M. (DUTH)

Gonos, I.F. (NTUA)

Mikropoulos, P.N. (AUTH)

Pyrgioti, E. (UP)

Stathopoulos, I.A. (NTUA)

Svarnas, P. (UP)

Tsovilis, T. (AUTH)

PUBLICATION COMMITTEE (IN ALPHABETICAL ORDER)

Danikas, M. (DUTH)

Mikropoulos, P.N. (AUTH)

Svarnas, P. (UP)

Topalis, F. (NTUA)

LIST OF SESSION CHAIR (IN ALPHABETICAL ORDER)

Beroual, A.	University of Lyon, France
Charalambous, C.A.	University of Cyprus, Cyprus
Charalampakos, V.P.	Technological Educational Institute of Western Greece, Greece
Chen, W.	Chongqing University, China
Cheng, L.	Chongqing University, China
Danikas, M.	Democritus University of Thrace, Greece
Du, B.	Tianjin University, China
Fabiani, D.	University of Bologna, Italy
Farzaneh, M.	University of Quebec in Chicoutimi, Canada
Florkowski, M.	ABB Corporate Research, Poland
Fofana, I.	University of Quebec at Chicoutimi, Canada
Gao, Y.	Tianjin University, China
Georgilakis, P.	National Technical University of Athens, Greece
Gonos, I.F.	National Technical University of Athens, Greece
Gubanski, S.	Chalmers University of Technology, Sweden
Guedes da Costa, E.	Federal University of Campina Grande, Brazil
Haddad, M.	Cardiff University, United Kingdom, United Kingdom
Harid, N.	Khalifa University of Science and Technology, United Arab Emirates
He, J.	Tsinghua University, China
Kindersberger, J.	Technical University of Munich, Germany
Kluss, J.	Mississippi State University, United States of America
Kokkinos, N.	ELEMKO S.A., Greece
Korobeynikov, S.	Novosibirsk State Technical University, Russian Federation
Kyritsis, A.	National Technical University of Athens, Greece
Li, J.	Chongqing University, China
Li, Q.	Tsinghua University, China
Liu, W.	Xi'an Jiaotong University, China
Liu, Q.	The University of Manchester, United Kingdom
Lu, T.	North China Electric Power University, China
McDermid, W.M.	Manitoba Hydro, Canada
Mikropoulos, P.N.	Aristotle University of Thessaloniki, Greece
Mizuno, Y.	Nagoya Institute of Technology, Japan
Moronis, A.	University of West Attica, Greece
Niayesh, K.	Norwegian University of Science and Technology, Norway
Notingher, P.	University POLITEHNICA of Bucharest, Romania
Ohki, Y.	Waseda University, Japan
Ozdemir, A.	Istanbul Technical University, Turkey
Papadopoulos, T.	Democritus University of Thrace, Greece
Papailiou, K.	CIGRE, France
Patsch, R.	University of Siegen, Germany
Piantini, A.	University of Sao Paulo, Brazil
Pyrgioti, E.	University of Patras, Greece
Rakowska, A.	Poznan University of Technology, Poland
Rapp, K.J.	Cargill, Inc, United States of America
Rozga, P.	Lodz University of Technology, Poland
Sima, W.	Chongqing University, China
Siodla, K.	Poznan University of Technology, Poland
Smit, J.J.	Delft University of Technology, The Netherlands
Stathopoulos, I.A.	National Technical University of Athens, Greece
Svarnas, P.	University of Patras, Greece
Tan, Y.	Chongqing University, China
Tanaka, Y.	Tokyo City University, Japan
Tenbohlen, S.	University of Stuttgart, Germany
Topalis, F.	National Technical University of Athens, Greece
Tsovilis, T.	Aristotle University of Thessaloniki, Greece
Walker, J.	Vaal University of Technology, South Africa
Wang, Y.	Chongqing University, China
Wang, F.	Chongqing University, China
Wouters, P.	Eindhoven University of Technology, The Netherlands
Yang, Q.	Chongqing University, China
Younan, N.	Mississippi State University, United States of America
Zeng, F.	Wuhan University, China
Zhang, B.	Tsinghua University, China
Zhao, Y.	HeFei University of Technology, China
Zheng, Y.	Fuzhou University, China
Zhuang, C.	Tsinghua University, China

SCHEDULE OF ICHVE 2018 CONFERENCE

Times	Sunday 09.09.2018	Monday 10.09.2018	Tuesday 11.09.2018	Wednesday 12.09.2018	Thursday 13.09.2018
		Olympia	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
09:00-10:30		09:00-09:30 Opening Ceremony 09:30-10:00 IEEE Caixin Sun and Stan Grzybowski Awards Lifetime Achievement award	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
10:30-11:00		10:00-10:30 IEEE Caixin Sun and Stan Grzybowski Awards Young-Professional Achievement award	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
11:00-12:30		10:30-11:00 Group Photo 11:00-11:30 Keynote Speech 1 11:30-12:00 Keynote Speech 2 12:00-12:30 Keynote Speech 3	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
12:30-14:00		Lunch	Lunch	Lunch	Olympia Closing Ceremony
		<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
14:00-15:30		<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
15:30-16:00		Coffee Break	Coffee Break	Coffee Break	Technical Tour (14:00-20:00)
		<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
16:00-17:30		<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>	<div>Olympia A</div> <div>Olympia B</div> <div>Olympia A</div> <div>Olympia B</div> <div>Poster Area</div> <div>Vergina</div> <div>Poster Area</div>
17:30-19:00					
19:00-22:00	Welcome Reception	Dinner	Concert	Banquet	

O-EM: Oral session for Electromagnetic Fields)
O-TE: Oral session for Transients and EMC)
O-GS: Oral session for Grounding Systems
O-MD: Oral session for Monitoring and Diagnostics
O-PA: Oral session for Power and Industrial Applications
O-IS: Oral session for High Voltage Insulation Systems
O-TM: Oral session for High Voltage Testing and Measurement
O-AM: Oral session for Aging, Space Charge, and Maintenance

P-EM: Poster session for Electromagnetic Fields
P-TE: Poster session for Transients and EMC
P-GS: Poster session for Grounding Systems
P-MD: Poster session for Monitoring and Diagnostics
P-PA: Poster session for Power and Industrial Applications
P-IS: Poster session for High Voltage Insulation Systems
P-TM: Poster session for High Voltage Testing and Measurement
P-AM: Poster session for Aging, Space Charge, and Maintenance

Date: Sunday, 09/Sep/2018	
3:00pm - 7:00pm	Conference Reg: Conference Registration is Open!
7:00pm - 9:30pm	Welcome Reception
Date: Monday, 10/Sep/2018	
9:00am - 9:30am Olympia	OC: Opening Ceremony Session Chair: Ioannis Gonos, Jian Li, Aleksandra Rakowska
9:30am - 10:30am	I.E.: IEEE Caixin Sun and Stan Grzybowski Achievement Award Session Chair: Stanislaw Gubanski, Nicolas Younan
10:30am - 11:00am	Group Photo: Group Photo
11:00am - 12:30pm	KNS: Keynote Speeches Session Chair: William Malcolm McDermid, Masoud Farzaneh
12:30pm - 2:00pm	Lunch
2:00pm - 3:30pm Vergina	O-GS1: Oral session for Grounding Systems Session Chair: Jinliang He, Charalambos A. Charalambous
2:00pm - 3:30pm Olympia B	O-IS1: Oral session for High Voltage Insulation Systems Session Chair: Aleksandra Rakowska, Jian Li
2:00pm - 3:30pm Olympia A	O-MD1: Oral session for Monitoring and Diagnostics Session Chair: Yaxiong Tan, Petru Notingher
2:00pm - 5:30pm Poster Area	P-AM: Poster session for Aging, Space Charge, and Maintenance Session Chair: Thomas Tsovilis
3:30pm - 4:00pm	Coffee Break
4:00pm - 5:30pm Vergina	O-GS2: Oral session for Grounding Systems Session Chair: Qing Yang, Eleftheria Pyrgioti
4:00pm - 5:30pm Olympia B	O-IS2: Oral session for High Voltage Insulation Systems Session Chair: Kaveh Niayesh, Wenfeng Liu
4:00pm - 5:30pm Olympia A	O-MD2: Oral session for Monitoring and Diagnostics Session Chair: Stanislaw Gubanski, Youyuan Wang
7:00pm - 10:00pm	Dinner
Date: Tuesday, 11/Sep/2018	
9:00am - 10:30am Vergina	O-MD3: Oral session for Monitoring and Diagnostics Session Chair: Nouredine Harid, Fuping Zeng
9:00am - 10:30am Olympia B	O-PA1: Oral session for Power and Industrial Applications Session Chair: Antonios Moronis, Wenxia Sima
9:00am - 10:30am Olympia A	O-TM1: Oral session for High Voltage Testing and Measurement Session Chair: Frangiskos Topalis, Li Cheng
9:00am - 12:30pm Poster Area	P-GS: Poster session for Grounding Systems Session Chair: Tiebing Lu
9:00am - 12:30pm Poster Area	P-TE: Poster session for Transients and EMC Session Chair: Tiebing Lu
10:30am - 11:00am	Coffee Break
11:00am - 12:30pm Vergina	O-MD4: Oral session for Monitoring and Diagnostics Session Chair: Yoshimichi Ohki, Marek Florkowski
11:00am - 12:30pm Olympia B	O-PA2: Oral session for Power and Industrial Applications Session Chair: Nicolas Younan, Pavlos Georgilakis

11:00am - 12:30pm Olympia A	O-TM2: Oral session for High Voltage Testing and Measurement Session Chair: William Malcolm McDermid, Kevin James Rapp
12:30pm - 2:00pm	Lunch
2:00pm - 3:30pm Vergina	O-MD5: Oral session for Monitoring and Diagnostics Session Chair: Stefan Tenbohlen, Qiang Liu
2:00pm - 3:30pm Olympia B	O-PA3: Oral session for Power and Industrial Applications Session Chair: Yuesheng Zheng, Theofilos Papadopoulos
2:00pm - 3:30pm Olympia A	O-TM3: Oral session for High Voltage Testing and Measurement Session Chair: Krzysztof Siodla, Nikolaos Kokkinos
2:00pm - 5:30pm Poster Area	P-IS: Poster session for High Voltage Insulation Systems Session Chair: Pantelis N. Mikropoulos
3:30pm - 4:00pm	Coffee Break
4:00pm - 5:30pm Vergina	O-MD6: Oral session for Monitoring and Diagnostics Session Chair: Edson Guedes da Costa, Weigen Chen
4:00pm - 5:30pm Olympia B	O-PA4: Oral session for Power and Industrial Applications Session Chair: Chijie Zhuang, Thomas Tsovilis
4:00pm - 5:30pm Olympia A	O-TM4: Oral session for High Voltage Testing and Measurement Session Chair: Yukio Mizuno, Sergey Korobeynikov
7:00pm - 10:00pm	Concert
Date: Wednesday, 12/Sep/2018	
9:00am - 10:30am Vergina	O-AM1: Oral session for Aging, Space Charge, and Maintenance Session Chair: Josef Kindersberger, Yu Gao
9:00am - 10:30am Olympia A	O-IS3: Oral session for High Voltage Insulation Systems Session Chair: Feipeng Wang, Johan J. Smit
9:00am - 10:30am Olympia B	O-TM5: Oral session for High Voltage Testing and Measurement Session Chair: Abderrahmane Beroual, Qi Li
9:00am - 12:30pm Poster Area	P-EM: Poster session for Electromagnetic Fields Session Chair: Ioannis Stathopoulos
9:00am - 12:30pm Poster Area	P-PA: Poster session for Power and Industrial Applications Session Chair: Eleftheria Pyrgioti
10:30am - 11:00am	Coffee Break
11:00am - 12:30pm Vergina	O-AM2: Oral session for Aging, Space Charge, and Maintenance Session Chair: Michael Danikas, Joni Kluss
11:00am - 12:30pm Olympia A	O-IS4: Oral session for High Voltage Insulation Systems Session Chair: Konstantin Papailiou, Rainer Patsch
11:00am - 12:30pm Olympia B	O-TM6: Oral session for High Voltage Testing and Measurement Session Chair: Jerry Walker, Panagiotis Svarnas
12:30pm - 2:00pm	Lunch
2:00pm - 3:30pm Vergina	O-AM3: Oral session for Aging, Space Charge, and Maintenance Session Chair: Issouf Fofana, Boxue Du
2:00pm - 3:30pm Olympia A	O-IS5: Oral session for High Voltage Insulation Systems Session Chair: Manu Haddad, Bo Zhang
2:00pm - 3:30pm Olympia B	O-TM7: Oral session for High Voltage Testing and Measurement Session Chair: Davide Fabiani, Vassilios Panagiotis Charalampakos
2:00pm - 5:30pm Poster Area	P-MD: Poster session for Monitoring and Diagnostics Session Chair: Feipeng Wang

3:30pm - 4:00pm	Coffee Break
4:00pm - 5:30pm Vergina	O-AM4: Oral session for Aging, Space Charge, and Maintenance Session Chair: Yasuhiro Tanaka, Apostolos Kyritsis
4:00pm - 5:30pm Olympia A	O-IS6: Oral session for High Voltage Insulation Systems Session Chair: Masoud Farzaneh, Pawel Rozga
4:00pm - 5:30pm Olympia B	SM: Steering Committee
7:00pm - 10:00pm	Banquet
Date: Thursday, 13/Sep/2018	
9:00am - 11:30am Vergina	O-EM1: Oral session for Electromagnetic Fields Session Chair: Ioannis Stathopoulos, Aydogan Ozdemir
9:00am - 11:30am Olympia A	O-IS7: Oral session for High Voltage Insulation Systems Session Chair: Pantelis N. Mikropoulos, Yushun Zhao
9:00am - 11:30am Olympia B	O-TE1: Oral session for Transients and EMC Session Chair: Alexandre Piantini, Peter Wouters
9:00am - 12:00pm Poster Area	P-TM: Poster session for High Voltage Testing and Measurement Session Chair: Panagiotis Svarnas
11:30am - 12:00pm	Coffee Break
12:00pm - 1:00pm Olympia	CC: Closing Ceremony Session Chair: Ioannis Gonos, Jian Li
2:00pm - 8:00pm	Technical Tour

Presentations

OC: Opening Ceremony

Time: Monday, 10/Sep/2018: 09:00am - 09:30am, *Location:* Olympia

Session Chair: Ioannis Gonos, Jian Li, Aleksandra Rakowska

Welcome speeches

Tribute speech in memory of Stan Grzybowski

Nicolas Younan

Mississippi State University. USA

I.E.: IEEE Caixin Sun and Stan Grzybowski Achievement Award

Time: Monday, 10/Sep/2018: 9:30am - 10:30am, *Location:* Olympia

Session Chair: Stanislaw Gubanski, Nicolas Younan

The winner of "2018 IEEE Caixin Sun and Stan Grzybowski Lifetime Achievement Award" is Prof. Yasuhiro Tanaka of Tokyo City University, Japan. His major research field has concentrated on the development of the PEA space charge measurement system. His outstanding research achievements have stimulated many researchers working on development of cable insulating materials for HVDC applications. The present research of Prof. Yasuhiro Tanaka concentrates on the development of space charge measurement systems.

The winner of the "2018 IEEE Caixin Sun and Stan Grzybowski Young-Professional Achievement Award" is Dr. Qi Li, who is currently an Associate Professor at the Department of Electrical Engineering of Tsinghua University, Beijing, China. His research is focused on novel nanodielectrics for electrical energy storage and conversion.

IE-1: Advanced Application of Space Charge Measurement Using PEA Method for Evaluation of Insulating Materials

Yasuhiro Tanaka

Tokyo City University, Japan

IE-2: Polymer-based Dielectric Materials for High-temperature Film Capacitors

S. Cheng, Y. Zhou, Qi Li

Tsinghua University, People's Republic of China

KNS: Keynote Speeches

Time: Monday, 10/Sep/2018: 11:00am - 12:30pm, *Location:* Olympia

Session Chair: William Malcolm McDermid, Masoud Farzaneh

KNS-1: Medium and High Voltage DC Breaking Technology

Mingzhe Rong, Yi Wu, Hao Sun, Hailong He

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, People's Republic of China

KNS-2: The Resurrection of High Voltage Overhead Lines

Konstantin Papailiou

CIGRE Science & Engineering, CIGRE, Paris, France

KNS-3: Streamer Dynamics and DGA of Natural Ester Insulation Oil

Jian Li

Chongqing University, People's Republic of China

O-GS1: Oral session for Grounding Systems

Time: Monday, 10/Sep/2018: 2:00pm - 3:30pm, Location: Vergina

Session Chair: Jinliang He, Charalambos A. Charalambous

O-GS1-1: Study on the Effect of Peak Value of Currents on Double-pulse Recovery Characteristics of Soil

Donghui Luo, Wenxia Sima, Tao Yuan, Xiaochuan Li, Potao Sun, Ming Yang

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New,
People's Republic of China

O-GS1-2: The Research on New Type of Earth Resistivity Exploring Method for HVDC Deep-well Earth Electrode

Maoheng Jing¹, Xishan Wen¹, Zhuohong Pan¹, Hailiang Lu¹, Hansheng Cai², Shangmao Hu², Gang Liu², Lei Jia²

¹School of Electrical Engineering, Wuhan University, China; ²Electric Power Research Institute, CSG, Guangzhou, China

O-GS1-3: Electric Resistivity Variation of Ground Enhancing Compounds under Field Conditions

V.P. Androvitsaneas, C.A. Christodoulou, I.F. Gonos, I.A. Stathopoulos

National Technical University of Athens, Greece

O-GS1-4: Determination of Earthing System for 5MVA Medium Voltage Distribution Substations

Nurul Azlina Abd Rahman¹, Norhasliza Mohd Hatta¹, Hannah Ahmad Rosli², Aziz Marzuki Ahmad Marican³

¹TNB Research Sdn Bhd, Malaysia; ²Tenaga Nasional Berhad, Malaysia; ³DCS Engineering Sdn Bhd, Malaysia

O-GS1-5: A New Method to Include Complex Grounding System in Lightning Transient Studies and EMI Evaluations

Vegard Steinsland, Lasse Hugo Sivertsen, Emil Cimpan, Shujun Zhang

Western Norway University of Applied Sciences, Norway

O-IS1: Oral session for High Voltage Insulation Systems

Time: Monday, 10/Sep/2018: 2:00pm - 3:30pm, Location: Olympia B

Session Chair: Aleksandra Rakowska, Jian Li

O-IS1-1: An Experimental Investigation of the Flashover Behavior of Outdoor Cable Terminations under Lightning Impulse Application

Myriam Koch¹, Jens Hohloch²

¹Pfisterer Kontaktsysteme GmbH, Germany; ²Pfisterer Ixosil AG, Switzerland

O-IS1-2: Dispersion of Carbon Blacks and their Influence on the Properties of Semiconductive Materials use for High-voltage Power Cables

Weikang Li¹, Chong Zhang¹, Junwei Zha², Zhimin Dang³

¹Global Energy Interconnection Research Institute Co. Ltd, People's Republic of China; ²University of Science & Technology Beijing, 100083, P. R. China; ³Tsinghua University, Beijing, 100084, People's Republic of China

O-IS1-3: Research on Parameters of Step-stress Test to Obtain Life Exponent of XLPE-material used in DC Cable

HaoRan Bian, LiJun Yang, ZhiPeng Ma, ZhongXuan Li

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New,
People's Republic of China

O-IS1-4: Investigation on Interaction between Lubricants and Polymeric Cable Insulations

Christoph Felix Niedik, Frank Jenau

Institute of High Voltage Engineering, TU Dortmund University, Germany

O-IS1-5: Partial Discharges at Artificial Defects in XLPE Cable Accessories under Superimposed Transients

Jiayang Wu, Luis Castro Heredia, Armando Rodrigo Mor, Johan Smit

Delft University of Technology, The Netherlands

O-IS1-6: Space and Interface Charge Simulation of Oil-Paper Insulation with Multi-Layer Oil Gap and Insulation Pressboard

Runhao Zou¹, Jian Hao¹, Lianpeng Wang², Ruijin Liao¹, Min Dan¹, Chao Tang³

¹The State Key Laboratory of Power Transmission Equipment & System Security and New Technology, People's Republic of China; ²TBEA Shenyang Transformer Group Co., Ltd. Shenyang, China; ³College of Engineering and Technology, Southwest University, Chongqing 400715, China

O-MD1: Oral session for Monitoring and Diagnostics

Time: Monday, 10/Sep/2018: 2:00pm - 3:30pm, Location: Olympia A

Session Chair: Yaxiong Tan, Petru Notingher

O-MD1-1: High Frequency Model of Cables for Frequency Domain Analysis from Fault Localization

Younes Norouzi, C. Frohne, P. Werle

Nexans Deutschland GmbH, Germany

O-MD1-2: Gas Production Mechanisms of Camellia Oil-paper Insulation under Thermal Stress Based on Molecular Dynamics Simulation

Jinghan Zhou¹, Chenmeng Xiang², Jian Li¹, Yachao Wang¹, Chaoyu Wang¹, Dongchun Ma³, Ruibao Li³

¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing 400044, China; ²State Grid Hebei Electric Power Research Institute, Shijiazhuang 050021, China; ³Jinzhong Power Supply Company of State Grid Shanxi Electric Power Company, Shanxi 030001, China

O-MD1-3: Influence of Dielectric Coatings on AE Signals Generated in High Voltage Gas Insulated Systems

Arkadiusz Dobrzycki¹, Władysław Opydo², Sebastian Zakrzewski³

¹Poznan University of Technology, Poland; ²University of Science and Technology, Poland; ³Tele-Fonika Kable S.A., Poland

O-MD1-4: Derivation and Verification of a Calculation Method for the Overhead Line Voltage Measurement considering the Influence of the Earth Conductor

Erwin Burkhardt, Frank Jenau

TU Dortmund University - Institute of High Voltage Engineering, Germany

O-MD1-5: Positive Streamer Development in Selected Dielectric Liquids in a Point-to-Sphere Electrode System with Pressboard Barrier

Paweł Rozga, Marcin Stanek, Konrad Strzelecki

Lodz University of Technology, Poland

O-MD1-6: Fundamental Difference of Partial Discharge Phenomena under AC and DC Stresses

Hassan Saadati¹, Peter Werle¹, Jens Martin Seifert², Ernst Gockenbach¹, Hossein Borsi¹

¹Leibniz Universität Hannover, Germany; ²LAPP Insulators GmbH, Germany

P-AM: Poster session for Aging, Space Charge, and Maintenance

Time: Monday, 10/Sep/2018: 2:00pm - 5:30pm, Location: Poster Area

Session Chair: Thomas Tsovilis

P-AM-1: Evaluation of the Damage caused by Bird Pecking Activity along Composite High Voltage Insulators

Nikolaos C. Mavrikakis¹, Pantelis N. Mikropoulos¹, Kiriakos Siderakis², Ioannis Pellas², Emmanouel Thalassinakis²

¹Aristotle University of Thessaloniki, School of Electrical and Computer Engineering, Thessaloniki, Greece; ²Hellenic Distribution Network Operator S.A. Islands Network Operations Department, Heraklion, Greece

P-AM-2: A Novel Methanol-detection-method for the Aging Prediction of Paper Insulation in Power Transformer

Lei Peng, Qiang Fu, Musong Lin, yihua Qian, Yaohong Zhao

Electric Power Research Institute, Guangdong Power Grid Co., Ltd., People's Republic of China

P-AM-3: Analysis on Carbohydrate as a Criterion for Solid Insulation Aging of Transformer**Qiang Fu¹, Mengjun Wang¹, Lei Peng¹, Shengli Li², Xin Liu²**¹Electric Power Research Institute, Guangdong Power Grid Co., Ltd., People's Republic of China; ²Huazhong University of Science and Technology**P-AM-4: Interaction of Partial Discharge in Air with Silicone Rubber****Kazuki Komatsu, Mitsuki Shimada, Yukio Mizuno**

Nagoya Institute of Technology, Japan

P-AM-5: Significance of Space Charge Accumulation & DC Endurance of XLPE under Varying Insulation Thickness**Muhammad Shoaib Bhutta, Lijun Yang, Zhipeng Ma, Haoran Bian, Muhammad Ali Mehmood, Jawad Ahmad**

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, People's Republic of China

P-AM-6: Preliminary Measurements and Simulations for Space Charges in Aeronautical Cables**Eddy Aubert, El Hadji, Ndongo Diaw**

Safran Electrical & Power, France

P-AM-7: Space Charge Analysis of Polyethylene with Chemical Defects Based on Density Function Theory**Tao Lin¹, Xi Chen², Xuefeng Zhao³, Jiaming Li², Junbo Deng², Jing Liu³, Lu Pu³, Feng Gao³, Nan Wang³, Minghao Fan⁴**¹State Grid Xi'an Electric Power Supply Company, Xi'an, China; ²Xi'an Jiao tong University State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China; ³Research Institute of State Grid Shaanxi Electric Power Company, Xi'an, China; ⁴Research Institute of State Grid Anhui Electric Power Company, Anhui, China**P-AM-8: Development of a Setup for Long-Term Investigations of Dielectric Ageing under Liquid Nitrogen****Stefan Seibel, Ralf Puffer**

RWTH Aachen University, Germany

P-AM-9: Study on Space Charge Characteristics During Aging Process of DC ZnO Varistors**Qian Wang, Jie Li, Chenjie Ji**

Xi'an University of Technology, People's Republic of China

P-AM-10: Influence of Coupling Materials on Space Charge Measurements of Silicone Elastomers**Simon Spelzhausen, Mario-Rafael Ionian, Ronald Plath**

Technische Universität Berlin, Germany

P-AM-11: Partial Discharge Patterns during Accelerated Aging of Medium Voltage Cable System**Martin Knenicky, Radek Prochazka, Jan Hlavacek**

Czech Technical University in Prague, Faculty of Electrical Engineering, Czech Republic

P-AM-12: Study on the Protective Effects of TTA, Irgamet39 and T571 Passivators on Multiple Corrosive Sulfides**Haoxi Cong¹, Xiang Shu¹, Minhao Zhang¹, Peng Ren¹, Shiyue Du¹, Qingmin Li¹, Hu Jin²**¹School of Electrical and Electronic Engineering, North China Electric Power University, China; ²Electric Power Research Institute, China Southern Power Grid, China**P-AM-13: Decoupling of the Effect of Multiple Sulfides Based on the Entropy-weight method****Minhao Zhang¹, Haoxi Cong¹, Xiang Shu¹, Shiyue Du¹, Qingmin Li¹, Hu Jin²**¹North China Electric Power University, People's Republic of China; ²Electric Power Research Institute, China Southern Power Grid**P-AM-14: The Effect of Charge Rate on Space Charge Accumulation in Damped Alternating Current (DAC) Testing for Power Cable****Wei Wang¹, Da Jiang¹, Wenyan Dong¹, Zhongzheng Ning¹, Jun Xiong², Gang Du²**¹Beijing Key Laboratory of High Voltage & Electromagnetic Compatibility, People's Republic of China; ²Electric Power Test & Research Institute, Guangzhou Power Supply Co. Ltd., People's Republic of China

P-AM-15: Measurement of Space Charge Distribution in a Corona Cage under Influence of different Atmospheric Conditions

Jules Simplicie Dieumen¹, Jeremiah Jesaja Walker¹, Nicholas John West²

¹Vaal University of Technology, South Africa; ²University of the Witwatersrand, South Africa

P-AM-16: Detecting Fillers Content of Silicone Rubber via Laser-induced Breakdown Spectroscopy

Qishen Lyu¹, Rognhui Huang¹, P. Chen², Xiao Hong², Xilin Wang², Zhidong Jia²

¹Shenzhen Power Supply Co. Ltd, Shenzhen, China; ²Graduate School at Shenzhen, Tsinghua University, China

P-AM-17: Influence of Defect Type within Solid Insulation on the Behaviour of High Voltage Cables

Yacine Mecheri, Slimane Bouazabia

Université of Science and Technology, USTHB, Algiers, Algeria, Algeria

P-AM-18: A Compact High-Voltage, Nanosecond Pulse Generator for Triggering Applications

Panagiotis G. Pouraimis, Alexios. P Platis, John M. Koutsoubis, Christos X. Manasis

Technological Educational Institute of Sterea Ellada, Greece

O-GS2: Oral session for Grounding Systems

Time: Monday, 10/Sep/2018: 4:00pm - 5:30pm, Location: Vergina

Session Chair: Qing Yang, Eleftheria Pyrgioti

O-GS2-1: Seasonal Variation and Timeless Evolution of Ground Resistance

V.P. Androvitsaneas¹, G.J. Tsekouras², I.F. Gonos¹, I.A. Stathopoulos¹

¹National Technical University of Athens, Greece; ²University of West Attica, Greece

O-GS2-2: A New Method of Grounding Grid Fault Diagnosis Based on Grounding Conductor Soundness

Shaojing Wang¹, Wenrong Si¹, Kai Gao¹, Fenghua Wang²

¹Electric Power Research Institute, State Grid Shanghai Electric Power Company, People's Republic of China; ²Key Laboratory of Control of Power Transmission and Conversion, Ministry of Education, Shanghai Jiao Tong University, Shanghai, China

O-GS2-3: Comprehensive Modelling Technique to Allow DC Interference Evaluations on Buried Pipeline Systems near Photovoltaic Installations

Andreas Dimitriou, Charalambos A. Charalambous

University of Cyprus, Cyprus

O-GS2-4: An improved scheme for flexible grounding fault suppression in distribution system based on IGBT

Jiaquan Ran, Qing Yang, Song Chen, Lewei He

Chongqing University, People's Republic of China

O-GS2-5: Manual Wiring Measurement of DC Deep Well Grounding Resistance

Shangmao Hu², Jiafeng Chen¹, Hansheng Cai², Shaodong Li¹, Lei Jia², Gang Liu², Hailiang Lu¹

¹Wuhan University, People's Republic of China; ²State Key Laboratory of HVDC, Electric Power Research Institute CSG, Guangzhou, China

O-GS2-6: Calculation of the Assembled Grounding Resistance from Complex Grounding Systems by using Analytical Considerations only

Martin Hannig

DEHN + SÖHNE GmbH + Co.KG., Germany

O-IS2: Oral session for High Voltage Insulation Systems

Time: Monday, 10/Sep/2018: 4:00pm - 5:30pm, Location: Olympia B

Session Chair: Kaveh Niayesh, Wenfeng Liu

O-IS2-1: Breaking Capacity of Disconnectors and Earthing Switches Operated in Alternative Gases

Torsten Psotta¹, Volker Hinrichsen¹, Bernhard Lutz²

¹TU Darmstadt /FG Hochspannungstechnik, Germany; ²Siemens AG, High Voltage Products, Germany

O-IS2-2: Surface Charging of Dielectric Barriers in Short Rod-plane Air Gaps – Experiments and Simulations

Hans Kristian Meyer¹, Andreas Blaszczyk², Schueller Michael³, Mauseth Frank¹, Pedersen Atle⁴

¹Norwegian University of Science and Technology (NTNU), Norway; ²ABB Ltd., Switzerland; ³Hochschule für Technik, Rapperswil, Switzerland; ⁴SINTEF Energy Research, Trondheim, Norway

O-IS2-3: Electric Field Feature Extraction and Breakdown Voltage Prediction of Sphere Gaps with Quasi-uniform Field

Zhibin Qiu, Jiangjun Ruan, Xuezhong Wang, Qi Jin

Wuhan University, People's Republic of China

O-IS2-4: Internal Fault Diagnosis of SF₆ High Voltage Circuit Breaker Based on Gas Composition Analysis

Yulong Miao¹, Siying Wu², Ju Tang², Fuping Zeng², Qiang Yao¹, Chaohai Zhang³

¹Electric Power Research Institute, State Grid Chongqing Electric Power Company, People's Republic of China;

²Wuhan University, People's Republic of China; ³State Grid Electric Power Research Institute, Wuhan NARI Co., Ltd., People's Republic of China

O-IS2-5: Surface Charge Accumulation Behavior on GIL Spacer under DC Voltages in SF₆/N₂ Mixtures

Ke-Feng Li¹, Yan-Qin Liu¹, Xiao-Feng Fan¹, Xiang-Yu Liu¹, Jian-Yi Xue², Jun-Bo Deng², Guan-Jun Zhang²

¹State Grid Sichuan Electric Power Company Chengdu Power Supply Company; ²Xi'an Jiaotong University, State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China

O-IS2-6: Influence of Surface Roughness on Breakdown in Air Gaps at Atmospheric Pressure under Lightning Impulse

Odd Christian Feet, Frank Mauseth, Kaveh Niayesh

Norwegian University of Science and Technology (NTNU), Trondheim, Norway

O-MD2: Oral session for Monitoring and Diagnostics

Time: Monday, 10/Sep/2018: 4:00pm - 5:30pm, Location: Olympia A

Session Chair: Stanislaw Gubanski, Youyuan Wang

O-MD2-1: Classification of Multiple PD Sources by Signal Features and LSTM Networks

Benjamin Adam, Stefan Tenbohlen

Institute of Power Transmission and High Voltage, Germany

O-MD2-2: Comparison of PD Characteristics Induced by Metal Particles and Bubbles in Flowing Transformer Oil

Yongze Zhang¹, Ju Tang^{1,2}, Cheng Pan², Shouxiao Ma³, Qiang Yao⁴, Yulong Miao⁴, Yi Luo²

¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University, China; ²School of Electrical Engineering, Wuhan University, Wuhan, China; ³Institute of Water Resources and Electric Power, Qinghai University, Qinghai, China; ⁴Electric Power Research Institute of State Grid Chongqing Electric Power Company, Chongqing, China

O-MD2-3: Efficient PD Monitoring of HV Electrical Systems Using HFCT Sensors

Fernando Alvarez¹, Eduardo Arcones¹, Fernando Garnacho², Ángel Ramírez², Javier Ortego³

¹Universidad Politecnica de Madrid, Spain; ²LCOE-FFII; ³DIAEL

O-MD2-4: A Versatile System for PD Diagnostics

Laurentiu Viorel Badicu, Wojciech Koltunowicz, Oliver Krause

OMICRON Energy Solutions GmbH, Germany

O-MD2-5: Recognition of Partial Discharge Types Based on SF₆ Decomposed Components under Negative DC

Yulong Miao¹, Xu Yang², Fuping Zeng², Ju Tang²

¹Chongqing Electric Power Company Electric Power Research Institute, Chongqing, China; ²School of Electrical Engineering, Wuhan University, Wuhan, China

O-MD2-6: Power Quality Indices for Electrical Power Systems under Non-Stationary Disturbances

Panagiotis Karafotis, Konstantinos Christodoulou - Galanopoulos, Dimitrios Siagkas, Pavlos Georgilakis
National Technical University of Athens, Greece

O-MD3: Oral session for Monitoring and Diagnostics

Time: Tuesday, 11/Sep/2018: 9:00am - 10:30am, Location: Vergina

Session Chair: Nouredine Harid, Fuping Zeng

O-MD3-1: Safety Analysis of Inner Capacitive Coupling Partial Discharge Sensor for 10kV Cable Joints under Lightning Impulse

Qinghua Zhan¹, Liezheng Tang², Xiaomei Ou¹, Yijun Liu¹, Tiecheng Li², Fan Yi², Guowei Li¹, Junbo Wang¹

¹Foshan Power Supply Bureau, People's Republic of China; ²Wuhan University, People's Republic of China

O-MD3-2: Modern Noise Rejection Methods and their Applicability in Partial Discharge Measurements on HVDC Cables

Andreas Elben¹, Tobias Fechner², Xianzhang Lei², Ronald Plath¹, Mingyu Zhou²

¹TU Berlin; ²Global Energy Interconnection Research Institute Europe GmbH

O-MD3-3: Calculation Method of Partial Discharge Severity Assessment Index Weight Using Factor Analysis Based on Mutual Information

Yulong Miao¹, Miao Jin², Ju Tang², Fuping Zeng², Siyuan Zhou², Yin Zhang²

¹Chongqing Electric Power Research Institute, Chongqing Power Company, Chongqing, China; ²School of Electrical Engineering, Wuhan University, Wuhan, China

O-MD3-4: Partial Discharges in Free Helium Bubbles in Transformer Oil

Sergey Korobeynikov^{1,2}, Alexander Ridel^{1,2}, Denis Karpov², Marina Merediva², Alexander Ovsyannikov¹

¹Novosibirsk State Technical University, Russian Federation; ²Lavrentyev Institute of Hydrodynamics

O-MD3-5: Understanding Corona Discharges using Digital Imaging

Shakthi Prasad D, Subba Reddy Basappa

Indian Institute of Science, Bangalore, India

O-MD3-6: Analysis of UHF Sensor Response to EM Waves Excited by Surface Discharge in Air Using FDTD Simulation

Alaa Loubani, Nouredine Harid, Huw Griffiths

Khalifa University of Science and Technology, United Arab Emirates

O-PA1: Oral session for Power and Industrial Applications

Time: Tuesday, 11/Sep/2018: 9:00am - 10:30am, Location: Olympia B

Session Chair: Antonios Moronis, Wenxia Sima

O-PA1-1: Resonant Fault Current Limiter for MV applications

Wojciech Piasecki, Adam Ruszczyk, Mariusz Stosur

ABB Corporate Research, Poland

O-PA1-2: Studies on the Variation of Transformer Reactive Power Caused by DC Bias and Its Impacts on System Voltage

Hanli Weng¹, Lei Liu¹, Yi Wan², Xiangning Lin¹, Zhenxing Li¹, Jingguang Huang¹

¹College of Electrical Engineering & New Energy, China Three Gorges University, China; ²Three Gorges Electric Energy Co., Ltd, Yichang, China

O-PA1-3: Analysis of Shock Wave Overpressure Induced by Impulse Discharge Arc

Jiaming Xiong, Lee Li, Hongyu Dai, Haibo Wu, Bin Yu, Mingyang Peng

Huazhong University of Science and Technology, Wuhan, China, People's Republic of China

O-PA1-4: Advanced Analysis and Diagnostics for Remote on-line PD Monitoring of HV Rotating Machines

Andreas Kokkotis, M. Seltzer-Grant, A. Polley, E. Barnwell
HVPD, United Kingdom

O-PA1-5: Broadband Far-infrared Spectroscopic Identification and Quantification of Antioxidants in Polymeric Insulation

Takaaki Ogishima, Takuya Kozai, Naoshi Hirai, Yoshimichi Ohki
Waseda University, Japan

O-PA1-6: Thermal Behavior Analysis in a Porcelain-Housed ZnO Surge Arrester by Computer Simulations and Thermography

Arthur Francisco Andrade, Josué Marcos Batista Fernandes, Helem Monyelle de Melo Alves, Edson Guedes Costa
Universidade Federal de Campina Grande, Brazil

O-TM1: Oral session for High Voltage Testing and Measurement

Time: Tuesday, 11/Sep/2018: 9:00am - 10:30am, Location: Olympia A
Session Chair: Frangiskos Topalis, Li Cheng

O-TM1-1: Statistical Analysis Research on Dynamic Testing Index Optimization of High Voltage Power Equipment

Yiping Cui¹, Yuehan Wang²

¹Electric Power Test & Research Institute of Guangzhou Power Supply Co. Ltd., People's Republic of China;
²Guangdong Power Grid Co., Ltd

O-TM1-2: Precision Electric Characterization of LDPE Specimens Made by Different Manufacturing Processes

Xiangdong Xu¹, Karolina Gaska¹, Mattias Karlsson², Henrik Hillborg³, Ulf Gedde²

¹Chalmers university of technology, Sweden; ²Royal Institute of Technology, Sweden; ³ABB AB, Power Technology, Corporate Research, Sweden

O-TM1-3: Methods for Post-Processing and Trend Analysis of Conductivity Measurement Data

Claudius Freye, Frank Jenau

TU Dortmund University, Germany

O-TM1-4: Study on Suppressing Voltage Increase of Current-Switching Capability Test

Lu Wang, Chunqiang Su

Xi'an High Voltage Apparatus Research Institute Co., Ltd., People's Republic of China

O-TM1-5: Study of Nitrogen-Oxygen Reaction Efficiency for High Current Graphite-electrode Gas Switch

Bin Yu^{1,2}, Lee Li¹, Hongyu Dai¹, Ming-yang Wu¹, Haibo Wu¹, Jiaming Xiong¹, Zhixue Wang²

¹State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science & Technology, Wuhan 430074, China; ²State Grid Wuhan Power Supply Company, Wuhan 430012, China

O-TM1-6: Partial Discharge Activity Studied by its Excess Current

Xiangdong Xu

Chalmers University of Technology, Sweden

P-GS: Poster session for Grounding Systems

Time: Tuesday, 11/Sep/2018: 9:00am - 12:30pm, Location: Poster Area
Session Chair: Tiebing Lu

P-GS-1: Assessment of Wind Turbine Grounding System

Sokratis Pastromas, Konstantinos Maimaris, Iason Stasinou, Ioannis Naxakis, Eleftheria Pyrgioti
University of Patras, Greece, Greece

P-GS-2: Examining the Operation of the Grounding System of a PV Installation

Ioannis Naxakis, Grigoris Michos, Sokratis Pastromas, Eleftheria Pyrgioti
University of Patras, Greece

P-GS-3: Examination of the Effectiveness of the Grounding Systems of Distribution Substations

Georgios Poulimenos, Katerina Damianaki, Christos Christodoulou, Vasilios Androvitsaneas, Ioannis F. Gonos
National Technical University of Athens, Greece

P-GS-4: Research on the Method of Risk Probability Evaluation of Grounding Grid

Peng Kang¹, Weidong Shi¹, Xiaochuan Li², Sen Wang³, Zhizhong Li³, Tao Yuan²

¹China Electric Power Research Institute, Beijing, China; ²Chongqing University, People's Republic of China; ³State Grid Shanxi Electric Power Research Institute, Xian, China

P-GS-5: Corrosion Condition Detect of Entire Grounding System in a 500kV Converting Station Using Electrical Impedance Imaging Method

Yifan He^{1,2}, Xianjun Shao¹, Jiayuan Hu¹, Yuancheng Liu¹, Chaohui Jin³, Jianqiao Pan³

¹Research Institute of State Grid Zhejiang Electric Power Limited Company; ²Xi'an Jiaotong University Electric Engineering Institute; ³Pinghu Electric Service Company of State Grid Zhejiang Electric Power Limited Company

P-GS-6: Optimal Arrangement of Long Vertical Rods to Reduce Ground Resistance Considering their Shielding Effect

Sen Wang¹, Yongli Wang¹, Jian Zhang¹, Zhizhong Li¹, Wei Li¹, Xinliang Lv²

¹Shaanxi Electric Power Research Institute, People's Republic of China; ²State grid Shaanxi Electric Power Company

P-GS-7: Regularity of Current Dispersal in Different Kinds of Grounding Electrode

Hanwu Luo¹, Lekai Zou², Fan Yang², Muhammad Tanveer Riaz², Shigang Cui¹, Bing Gao²

¹State Grid East Inner Mongolia Electric Power Maintenance Company; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, School of Electrical Engineering, Chongqing University

P-GS-8: Measurement and Analysis of Impulse Grounding Impedance for UHV Transmission Tower

Wenrong Si¹, Chenzhao Fu¹, Tianyi Wu¹, Shaojing Wang¹, Peng Yuan²

¹State Grid Shanghai Electrical Power Research Institute, People's Republic of China; ²Xi'an MaoRong Power Equipment Co., Ltd

P-GS-9: Electrochemical Test and Simulation of Corrosion Rate of Five Common Ground Electrode Materials

Zhihui Zheng¹, Hansheng Cai², Shangmao Hu², Maoheng Jing¹, Gang Liu², Lei Ja², Hailiang Lu¹, Xishan Wen¹

¹School of Electrical Engineering, Wuhan University, People's Republic of China; ²Electric Power Research Institute, CSG, Guangzhou, People's Republic of China

P-TE: Poster session for Transients and EMC

Time: Tuesday, 11/Sep/2018: 9:00am - 12:30pm, Location: Poster Area

Session Chair: Tiebing Lu

P-TE-1: Computation of Transient Profiles along Non-uniform Transmission Lines using the Numerical Laplace Transform

Rodrigo Nuricumbo-Guillén¹, Fermin Pascual Espino-Cortés¹, Pablo Gomez², Carlos Tejada-Martínez¹

¹Instituto Politécnico Nacional, Mexico; ²Western Michigan University, USA

P-TE-2: Experiment and Research on Induced Electric Field Generated by 110kV AIS Disconnecting Switch

Zihao Gao, Jie Guo, Xuni Rao, Mengzhen Li, Wei Zhang

Xi'an Jiao Tong University, People's Republic of China

P-TE-3: Parameter Identification of Surge Arrester Models Using Levenberg-Marquardt and Shuffled Complex Evolution Methods

Thainá Santos Xavier¹, George Rossany Soares Lira¹, Valdemir Silva Brito²

¹Federal University of Campina Grande, Brazil; ²Federal Institute of Paraíba

P-TE-4: On the Dynamic Electric Field Distribution of 500kV GIS Basin-type Insulators under Very Fast Transient Over-voltage**Tao Yang¹, Rui Yang¹, Hengxin He¹, Junjia He¹, Hai Qian², Wenhao Lu², Jun Deng²**¹State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, People's Republic of China; ²Maintenance & Test Center, EHV Power Transmission Company, CSG**P-TE-5: Transient Overvoltage in 10kV Hybrid OHL-Cable System during Energization****Xuefeng Zhao¹, Jiaming Li², Lu Pu¹, Zeli Ju¹, Shuangzan Ren¹, Wei Duan¹, Haofei Sun¹, Minghao Fan³, Xi Chen², Junbo Deng²**¹Electric Power Research Institute of State Grid Shaanxi Electric Power Company, China; ²Xi'an Jiao tong University State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China; ³Electric Power Research Institute of State Grid Anhui Electric Power Company, China**P-TE-6: Parameters Analysis of Measured Lightning Overvoltages from a Substation****Qinzhu Chen¹, Huangjing Zhang², Jian Yin¹, Wenxia Sima², Song Huang¹, Potao Sun², Yang Yu¹, Zhengzheng Fu²**¹Hainan Power Grid Co. Ltd, Haikou 570311, China; ²Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing 400030, China**P-TE-7: Calculation and Analysis of Audible Noise of Transmission Lines in the Crossing Area****Gonghao Xie¹, Wangling He¹, Wanzhang Fu¹, Lei Lan¹, Changcheng Zhu², Yeqiang Deng¹**¹Wuhan University, People's Republic of China; ²State Grid Hubei Electric Power Company limited Research Institute**P-TE-8: Study on 330kV GIS Transient Enclosure Voltage Caused by Disconnecting Switch Operation****Xuni Rao, Jie Guo, Zihao Gao, Xiaoke Wu, Zexin Zhao**

School of electrical engineering of Xi'an Jiao Tong University, People's Republic of China

P-TE-9: Investigation of lightning surge effects on a grid-connected PV plant**Pitshou Bokoro, Wesley Doorsamy**

University of Johannesburg, South Africa

P-TE-10: Research on Lightning Withstand Level of 110kV Transmission Line Installed Current Limiting Coil**Hansheng Cai¹, Huaifei Chen², Lei Jia¹, Gang Liu¹, Shangmao Hu¹, Hailiang Lu², Xishan Wen²**¹Electric Power Research Institute, CSG, Guangzhou, China; ²School of Electrical Engineering Wuhan University, Wuhan, China**O-MD4: Oral session for Monitoring and Diagnostics***Time: Tuesday, 11/Sep/2018: 11:00am - 12:30pm, Location: Vergina**Session Chair: Yoshimichi Ohki, Marek Florkowski***O-MD4-1: Fiber-Enhanced Raman Spectroscopic Monitoring of Fault Characteristic Gases Dissolved in Transformer Oil by Hollow-Core Photonic Crystal Fiber****Jianxin Wang¹, Weigen Chen¹, Fu Wan¹, Pinyi Wang¹, Jiaxuan Wang¹, Haiyang Shi¹, Xiaobo Li², Ronghua Zhang²**¹Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China; ²State Grid Dezhou Power Supply Company**O-MD4-2: Comparative Analysis between Three Attributes Used for Monitoring High Voltage Insulators****José Alexandro R. Xavier, José Mauricio B. Bezerra, Ayrlw Manyson C. Arcanjo**

UFPE - Universidade Federal de Pernambuco, Brazil

O-MD4-3: Condition Monitoring of Metal-oxide Surge Arresters using Leakage Current Signal Analysis**Wesley Doorsamy, Pitshou Bokoro**

University of Johannesburg, South Africa

O-MD4-4: Energy Monitoring and Control of Distribution Network using Smart Metering**Subba Reddy Basappa, Umanand L**

Indian Institute of Science, Bangalore, India, India

O-MD4-5: Substation-oriented PMU Placement Considering Transformer Tap Settings**Nikolaos M. Manousakis¹, George N. Korres²**¹University of West Attica; ²National Technical University of Athens**O-MD4-6: Nondestructive Testing Method of Weak Adhesion Defects in Composite Insulation Equipment Based on Analysis of Ultrasonic Signal****Sida Zhang¹, Hanqing Wang¹, Li Cheng¹, Ruijin Liao¹, Chenjun Guo²**¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, People's Republic of China; ²China South Power Grid International Co. LTD.**O-PA2: Oral session for Power and Industrial Applications***Time:* Tuesday, 11/Sep/2018: 11:00am - 12:30pm, Location: Olympia B*Session Chair:* Nicolas Younan, Pavlos Georgilakis**O-PA2-1: Induced Losses in Non-Magnetically Armoured HVAC Windfarm Export Cables****Dimitrios Chatzipetros^{1,2}, James A. Pilgrim¹**¹University of Southampton; ²Hellenic Cables S.A.**O-PA2-2: The Research on Selective Discharge Experiment of Double Scaling Wind Turbines****Yeqiang Deng¹, Xishan Wen¹, Yu Wang¹, Lei Lan¹, Lu Qu², Tianjun Si¹, Jianwei Xu¹, Jian Wang¹**¹Wuhan University, People's Republic of China; ²South China Power Grid Research Institute, Guanzhou, People's Republic of China**O-PA2-3: Enhanced Oil Recovery by Repetitive Electrohydraulic Shock Waves: Fracturing and Enhanced-Permeability****Siwei Liu, Yi Liu, Hua Li, Qin Zhang, Fuchang Lin**

State Key Laboratory of Advanced Electromagnetic Engineering and Technology (Huazhong University of Science and Technology)

O-PA2-4: Physical Constraints at Design of a High Current Damping Inductor for the High Energy Capacitor Bank**Haibo Wu, Lee Li, Hongyu Dai, Jiaming Xiong, Bin Yu, Mingyang Peng**

Huazhong University of Science and Technology, People's Republic of China

O-PA2-5: On the Modelling of a Hybrid HVAC-HVDC Overhead Transmission Line: Techniques and Challenges**Effrosyni Maria Gralista^{1,2}, Madeleine Gibescu¹, Konstantinos Velitsikakis²**¹Eindhoven University of Technology, The Netherlands; ²DNV GL Energy Advisory, The Netherlands**O-PA2-6: Study on the Electromagnetic Field in HVDC/AC Hybrid Submarine Cable Tunnel****Ting Zhu¹, Shuhong Wang¹, Naming Zhang¹, Youxiang Yan^{1,2}, Ze Guo¹, Shuyu Wang¹, Shuang Wang¹**¹Xi'an Jiaotong University, People's Republic of China; ²Xiamen Power Supply Company, State Grid Fujian Electric Power Company, North Yunding Rd, Xiamen, China**O-TM2: Oral session for High Voltage Testing and Measurement***Time:* Tuesday, 11/Sep/2018: 11:00am - 12:30pm, Location: Olympia A*Session Chair:* William Malcolm McDermid, Kevin James Rapp**O-TM2-1: Voltage Dependence of Dissipation Factor Measurements on High Voltage Instrument Transformers****David Archie Wallace, Joni Klüss, Zeeshan Ahmed**

Mississippi State University, United States of America

O-TM2-2: A Model Considering Deep Saturation of the Iron Core for 10 kV Potential TransformersYuan Zhou¹, Cuiru Yang¹, Wenxia Sima², Linglong Cai¹, Xiaochuan Li², Tao Yuan², Yonglai Liu²¹Electric Power Research Institute of Guangdong Power Grid Co., Ltd., Guangzhou, Guang Dong, China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing, China**O-TM2-3: Development of a Pulsed High Frequency Source for Testing Cellulosic Insulation Material for High Voltage Solid State Transformer Applications**Michael Schueller¹, Philipp Schmitt², Stefan Jaufer², Christoph Krause², Giuseppe Gatti², Reto Christen¹, Matthias K. Bucher¹, Jasmin Smajic¹¹University of applied Sciences Rapperswil, Institute for Energy Research, Switzerland; ²Weidmann Electrical Technology AG, Switzerland**O-TM2-4: On-line Monitoring of Current Transformer Dielectric Loss Based on Absolute Measurement**Kai Wang¹, Jun Jiang¹, Chaohai Zhang¹, Min Chen², Haojun Liu², Wenlin He², Hong Zheng³¹Nanjing University of Aeronautics and Astronautics, People's Republic of China; ²State Grid Zhejiang Electric Power Co. Ltd. Research Institute; ³Hangzhou Kelin Electric Power Equipment Co., Ltd**O-TM2-5: Study on Applying Corona Effect to Prevent Ice Disaster of Transmission Line**Xingliang Jiang, Meilin Zhu, Qin Hu, Yafei Huang, Ledong Hou

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China

O-TM2-6: Study on MVU Tests Method of $\pm 1100\text{kV}$ Thyristor Valves for HVDC Power TransmissionChunqiang Su¹, Chen Liu¹, Mingang Zhou¹, Dongfei Huang¹, Qiang Li¹, Yantao Lou²¹Xi'an High Voltage Apparatus Research Institute Co., Ltd., People's Republic of China; ²Xi'an XD Power Systems Co., Ltd., People's Republic of China**O-MD5: Oral session for Monitoring and Diagnostics**

Time: Tuesday, 11/Sep/2018: 2:00pm - 3:30pm, Location: Vergina

Session Chair: Stefan Tenbohlen, Qiang Liu

O-MD5-1: Sensitivity of Connection Schemes for Detection of Axial Displacement of Transformer Winding by Frequency Response AnalysisSatoru Miyazaki¹, Mehran Tahir², Stefan Tenbohlen²¹Central Research Institute of Electric Power Industry, Japan; ²University of Stuttgart, Germany**O-MD5-2: Validation of Simulated UHF Electromagnetic Wave Propagation in Power Transformers by Time and Frequency Domain Measurements**Takahiro Umemoto¹, Stefan Tenbohlen²¹Mitsubishi Electric Corporation, Japan; ²University of Stuttgart, Germany**O-MD5-3: Experiences with Measurement and Analysis of the Dielectric Response of Instrument Transformers**Maik Koch¹, Martin Anglhuber²¹University of Applied Sciences Magdeburg-Stendal, Germany; ²Omicron Electronics GmbH**O-MD5-4: State Assessment on Distribution Network Equipment Oriented by Big Data Visualization**Yiping Cui, Le Luan, Yuquan Liu, Wenxiong Mo, Hongbin Wang

Guangzhou Power Supply Co. Ltd, People's Republic of China

O-MD5-5: Fault Prediction of Power Transformer by Association Rules and MarkovHouying Li¹, Youyuan Wang¹, Yigang He², Yushun Zhao², Xuanhong Liang¹¹Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China; ²HeFei University of Technology, HeFei, China

O-MD5-6: The Feasibility Study of $\pm 1100\text{kV}$ On-site Assembled $\pm 1100\text{kV}$ Converter Transformer

Jianxin Guan, Pengfei Jia, Shuqi Zhang, Xinru Yu, Chao Wu
China Electric Power Research Institute, People's Republic of China

O-PA3: Oral session for Power and Industrial Applications

Time: Tuesday, 11/Sep/2018: 2:00pm - 3:30pm, Location: Olympia B

Session Chair: Yuesheng Zheng, Theofilos Papadopoulos

O-PA3-1: Improving the Process for Distribution Network Optimization in Medium Voltage Level (11) kV by Developing Short Term Load Forecast Method

Maha Ismail AIDahmi, Omar Reyadh AlAhmad
AlAin Distribution Company, United Arab Emirates

O-PA3-2: Controlled HVDC Links between RES and Strong or Weak Power Grids: Comparative Review

Christos Dikaiakos¹, Panos Papageorgiou², Antonio Alexandridis², George Papaioannou¹

¹Independent Power Transmission Operator, Greece; ²Department of Electrical and Computer Engineering, University of Patras, Greece

O-PA3-3: Calculation of Losses in Three-Core Submarine Cables for Fractional Frequency Transmission Operation

Dimitrios Kossyvakis, Andreas Chrysochos, Konstantinos Pavlou
Hellenic Cables, Greece

O-PA3-4: Simulation of a DC Superconducting Fault Current Limiter for the Design of Online Monitoring System

Jiajun Pan¹, Yaxiong Tan¹, Chao Sheng², Leishi Xiao², Jian Li¹, Weigen Chen¹

¹Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China; ²Electric Power Research Institute of Guangdong Power Grid Corporation, Guangzhou 510080, China

O-PA3-5: Enhancement of DUBAL Network Operational Performance Using HTS-FCL

Hamood Naji Ahmed², Noureddine Harid¹, Huw Griffiths¹

¹Khalifa University of Science and Technology, United Arab Emirates; ²Dubai Global Aluminium, Abu Dhabi, United Arab Emirates

O-PA3-6: The Simulation Model of SFCL and its Cooperation with Circuit Breaker

MingQian Wen, Quan Zhou, Xi Ouyang, Taotao Xiong

Chongqing University, People's Republic of China

O-TM3: Oral session for High Voltage Testing and Measurement

Time: Tuesday, 11/Sep/2018: 2:00pm - 3:30pm, Location: Olympia A

Session Chair: Krzysztof Siodla, Nikolaos Kokkinos

O-TM3-1: Evaluation, Optimization and Test of a Standard Air-Dielectric Coaxial Cable Filled With Oil for Possible Use in HV Kicker Systems at CERN

Dimitrios Kontelis^{1,2}, Alvaro Ferrero Colomo², Ioannis Gonos¹, Thomas Kramer², Tobias Stadlbauer²

¹National Technical University of Athens, Greece; ²CERN, CH-1211 Geneva 23, Geneva, Switzerland

O-TM3-2: On-Site Acceptance and Diagnostic Testing of Submarine Inter-Array Cables at Offshore Wind Farms using Damped AC

Edward Galski¹, Rogier Jongen¹, Matthijs de Heus², Aleksandra Rakowska³, Krzysztof Siodla³, Hans Gaal⁴

¹onsite hv solutions ag, Switzerland; ²onsite hv solutions Benelux BV, The Netherlands; ³Poznan University of Technology, Poland; ⁴Visser and Smit Hanab BV, The Netherlands

O-TM3-3: Contemporary Techniques and Case Studies in Offline Condition Assessment of MV Underground Power Cables

Adeola Adebomi, Hein Putter, Philipp Legler

Megger, Germany

O-TM3-4: Analysis of Alternative Parameters of Dynamic Resistance Measurement in High Voltage Circuit Breakers**Herbet Filipe Sousa¹, Adiano Costa de Oliveira¹, Henrique Nunes de Santana¹, Edson Guedes da Costa¹, Tarso Vilela Ferreira²**¹Federal University of Campina Grande, Brazil; ²Federal University of Sergipe, Brazil**O-TM3-5: Short-Circuit Making of Medium Voltage Load Break Switches Using a Grid Connected Test Circuit****Philipp C. Jabs¹, Kaveh Niayesh¹, Nina Sasaki Støa-Aanensen²**¹NTNU, Norway; ²SINTEF Energy Research, Norway**O-TM3-6: Cables XLPE-insulation Residual Life Monitoring****Dmitry A. Polyakov¹, Dmitry A. Yurchuk¹, Konstantin I. Nikitin²**¹Omsk State Technical University, Russian Federation; ²Tyumen Industrial University (Tobolsk Industrial Institute), Russian Federation**P-IS: Poster session for High Voltage Insulation Systems***Time: Tuesday, 11/Sep/2018: 2:00pm - 5:00pm, Location: Poster Area**Session Chair: Pantelis N. Mikropoulos***P-IS-1: Study on Electric Field Distribution and Metal Joints Optimization of Insulated Rods for UHV Live Working****Yuqun Fang¹, Guangkai Yu², Bin Wang¹, Chen Chen¹, Tian Wu³**¹State Grid Jinhua Power Supply Company, China; ²China Electric Power Research Institute, China; ³Three Gorges University, China**P-IS-2: Effect of Temperature on Dielectric Loss Factor of Biodegradable Transformer Oil****Maciej Jaroszewski¹, Abderrahmane Beroual², Damian Gołębowski¹**¹Wroclaw University of Science and Technology, Poland; ²University of Lyon, Ecole Centrale de Lyon, AMPERE Lab**P-IS-3: Analysis of Dielectric Properties and Breakdown Characteristics of Vegetable Insulating Oil With Modified by ZnO Nanoparticles****Gang Chen¹, Jian Li¹, Hua Yin¹, Zhengyong Huang¹, Qian Wang², Lin Liu³, Jianxin Sun³, Jianfeng He¹**¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing 400044, China; ²State Grid Shanxi Electric Power Company, Shanxi 030001, China; ³Jinzhong Power Supply Company of State Grid Shanxi Electric Power Company, Shanxi 030600, China**P-IS-4: Characteristics of Negative Corona on RTV SIR Coated Insulating Surface under Ramp High Voltages****Nikolaos C. Mavrikakis, Pantelis N. Mikropoulos**

Aristotle University of Thessaloniki, School of Electrical and Computer Engineering, Thessaloniki, Greece

P-IS-5: A study on the Breakdown Characteristics of Natural Ester Based Nanofluids with Magnetic Iron Oxide and SiO₂ Nanoparticles**Georgios D. Peppas¹, Vassilios P. Charalampakos², Eleftheria C. Pyrgioti³, Aristides Bakandritsos⁴, Aikaterini D. Polykrati⁵, Ioannis F. Gonos⁵**¹Raycap, S.A.; ²Department of Electrical Engineering, Technological Educational Institute of Western Greece, Patras, Greece; ³Department of Electrical and Computer Engineering, University of Patras, Patras, Greece; ⁴Department of Physical Chemistry, Palacky University in Olomouc, Czech Republic; ⁵School of Electrical and Computer Engineering, National Technical University of Athens, Athens, Greece**P-IS-6: Study on the Motion Pattern of a Spherical Metal Particle in DC GIL****Qianqiu Shao, Wenxia Sima, Potao Sun, Hang Xu, Ze Yin, Zhengzheng Fu**

Chongqing University, People's Republic of China

P-IS-7: The Diagnostic Method of Decomposed Components for Sulfur Hexafluoride Electrical Equipment**Qiang Yao¹, Zhicheng Lei², Yulong Miao¹, Ju Tang², Fuping Zeng²**¹Electric Power Research Institute of Chongqing Power Company Electric Power Research Institute of Chongqing Power Company; ²Wuhan University, People's Republic of China

P-IS-8: HVDC Cable: LDPE Nano Dielectric and its Response to Low Frequencies**Nageshwar Rao Burjupati, Nandakumar V S, Anju R K, Ashwin Parthasarathy, Kandiban R**

Central Power Research Institute, Bangalore, India, India

P-IS-9: Calculation Method of Corona Loss of Transmission Line Based on AC/DC Power Flow**Wenxia Pan, Xin Chen, Yi Li**

The College of Energy and Electrical Engineering, Hohai University, China

P-IS-10: Study of the Influence of Void Defect Size on Partial Discharge Characteristics in Solid Insulation**Bo Ma¹, Xutao Wu¹, Xiuguang Li¹, Xiu Zhou¹, Qian Zhang², Junhao Li², Xutao Han²**¹State Grid Jiangsu Electric Power Company Research Institute, Jiangsu, China; ²Xi'an Jiaotong University, People's Republic of China**P-IS-11: Study on the Noise Characteristics of 10kV Vegetable Insulating Oil Transformer****Xiangrong Li¹, Jian Li¹, Feipeng Wang¹, Zhenyong Huang¹, Wei Yao¹, Gang Chen¹, Jianfeng He¹, Jiajun Pan¹, Hanxiang wang¹, Yuqing Chen², Wenxiong Mo²**¹State Key Laboratory of Power Equipment & System Security and New Technology, Chongqing University, People's Republic of China; ²Tests and Research Institute of Guangzhou Power Supply Bureau Co., Ltd, Guangzhou, People's Republic of China**P-IS-12: Study on Pollution Classification and External Insulation Configuration of ± 1100 kV DC Transmission Line****Liang Tian, Ruiping Huang, Jun Zhou, Bo Liu, Songsong Zhou**

China Electric Power Research Institute

P-IS-13: Electrical Field Distribution in ± 600 kV Converter Transformer Bushing Core with the Application of Epoxy Resin with Nonlinear Conductivity**Jin Li¹, Boxue Du¹, Hucheng Liang¹, Meng Xiao¹, Mingli Fu², Yi Jing², Y. Gao¹**¹School of Electrical Engineering & Automation, Tianjin University; ²Electric Power Research Institute, China Southern Power Grid**P-IS-14: Study on Flashover Characteristic and Critical Flashover Current of Icing and Polluted 110kV Composite Insulators****Maogiang Bi¹, Zhangang Yang², Tianyan Jiang¹, Xi Chen¹, You Wang³**¹Chongqing University of Technology, People's Republic of China; ²State Grid Chongqing Jiangbei Electric Power Supply Branch, People's Republic of China; ³Chongqing Vocational Institute of Engineering, People's Republic of China**P-IS-15: AC Breakdown Characteristics of Air Insulated Sphere-Plane Gaps with Glass Barriers****Yuesheng Zheng¹, Yong Chen¹, Hongzhi Zhang¹, Yuriy V. Serdyuk²**¹Fuzhou University, People's Republic of China; ²Chalmers University of Technology, Sweden**P-IS-16: Study on Lightning Protection of Wind Turbine Blades****Qian Wang, Jie Li, Jun Lu**

Xi'an University of Technology, People's Republic of China

P-IS-17: Study on the Insulation Reliability Model of Printed Circuit Boards under Continuous Square Impulse Voltage**Taotao Xiong, Quan Zhou, Xi Ouyang, Tianyan Jiang, Mingqian Wen**

Chongqing University, People's Republic of China

P-IS-18: Optimal Design of Spacer for High Voltage Gas Insulated Switchgear**HyunWoo Joo, ChaeYoon Bae, JongUng Choi, YoungGeun Kim**

LS Industrial Systems, Republic of Korea, (South Korea)

P-IS-19: Simulation and Analysis on Surface Discharge Development in Composite Dielectrics**Chong Pan¹, You Wang²**¹Chengdu Power Supply Company of State Grid, People's Republic of China; ²Chongqing Vocational Institute of Engineering, People's Republic of China

P-IS-20: Numerical Simulation of Surface Erosion of Pantograph Strip during the Pantograph Lowering Process

Pan Xu, Guoqiang Gao, Zefeng Yang, Chengkun Li, Xuwei Duan, Wenfu Wei, Guangning Wu
Southwest Jiaotong University, People's Republic of China

P-IS-21: Study on the Influence of Slight Looseness of Steel Foot on Performance of Suspended Porcelain Insulators

Maogiang Bi¹, Jinlin Hu², Tianyan Jiang¹, Xi Chen¹, You Wang³

¹Chongqing University of Technology, People's Republic of China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing 400030, China; ³Chongqing Vocational Institute of Engineering, Chongqing, 402260, China

P-IS-22: Thermal and Electric Conductivity of Insulating Oils with Magnetite Nanoparticles

Aikaterini D. Polykrati¹, C.S. Koutsira¹, Vasilios Charalampakos², A. Kyritsis¹, Georgios Peppas³, Ioannis F. Gonos¹, Eleftheria Pyrgioti³

¹National Technical University of Athens, Greece; ²Technological Educational Institute of Western Greece; ³University of Patras, Greece

P-IS-23: Performance Evaluation of Polymeric Insulators from a Dynamic Variations Analysis of Voltage Distribution along the String

Victor Andrade L. Ferreira, José Maurício B. Bezerra, Diego S. Lopes
UFPE - Universidade Federal de Pernambuco, Brazil

P-IS-24: Different Approaches for Mathematical Evaluation of Resorption Currents in Nanodielectrics

Jaroslav Hornak, Pavel Trnka, Václav Mentlík, Ondřej Michal, Pavel Totzauer
University of West Bohemia, Czech Republic

P-IS-25: Acid Rain Pollution Effect on the Electric Field Distribution of a Glass Insulator

Chibuike Ilomuanya, Shahab Farokhi, Azam Nekahi
Glasgow Caledonian University, United Kingdom

P-IS-26: The Transition of Surface Charge Accumulation Dominating Way in HVDC GIS

Yi Luo¹, Ju Tang¹, Cheng Pan¹, Jia Yin¹, Yongze Zhang², Bo Zhang³, Quansheng Zhu⁴

¹Wuhan University, People's Republic of China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, People's Republic of China; ³Pinggao Group Co., Ltd, State Grid Corporation of China, People's Republic of China; ⁴State Grid Henan electric power company, State Grid Corporation of China, People's Republic of China

P-IS-27: Study on the Neutral Reactor of Shut Reactor of Insulation Level for UHV Transmission Lines

Qian Wang, Wen Sun, Chenjie Ji
Xi'an University of Technology, People's Republic of China

P-IS-28: Corona Resistance Improvement of Polyimide Films by Non-Thermal Plasma Modification

Yan Yang, Yixin Lei, Guangning Wu
Southwest Jiaotong University, People's Republic of China

P-IS-29: Electric Field Calculation and Optimization of Shielding Device for Filter Capacitor Tower in ±1100kV Indoor DC Yard

Bo Yue¹, Weiqi Li², Jialong Wang^{1,2}, Shuo Wang², Teqing Liu², Zongren Peng²

¹ State Power Economic Research Institute, Beijing, 102209, China; ²State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, People's Republic of China

P-IS-30: The Electro-Thermal Coupling Computation of Resin Impregnated Paper Oil-SF6 Immersed Bushings

Shiling Zhang¹, Qiang Yao¹, Chenyu Zhao²

¹State Grid Chongqing Electric Power Company Chongqing Electric Power Research Institute, People's Republic of China; ²State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an 710049, China



Testing Research & Standards Center of Public Power Corporation

The services provided include tests in its laboratories, accreditations, researches, inspections at the sites of PPC Group, instrument calibration, specialized studies, applications and analyses, specialized consultation studies as well as materials and equipment inspections for quality control of existing and under purchasing materials and equipment of all installations.

Testing Research & Standards Center is accredited by the Hellenic Accreditation System (E.SY.D) according to ISO 17020 and ISO 17025 standards. In order to maintain E.SY.D accreditation, the Center is subject to regular thorough inspections by E.SY.D which monitors not only the mode of Center's operation but also evaluates the tests and inspections realized by it, in terms of reliability and accuracy of their measurements.

.....

High Standard Services

Accredited Laboratory Tests, Research and Development, Third party Inspections, Instrument Calibration, Specialized Engineering & Consultation Studies, Infrastructure Remaining Life Assessment.

.....

Accredited Laboratory Tests

NDT Lab, Metallographic Lab, Mechanical Properties Testing Lab, High Voltage and Dielectric Tests, Electrical tests Labs, High Power Lab, Temperature Rise Lab, Metrology Labs, Fuels-Lubricants Lab, Analytical Chemistry Lab, Environmental and Special Materials Lab, Concrete and Soil Mechanics Lab, Photometry Lab.



TRSC

TESTING
RESEARCH &
STANDARDS
CENTER



Fields of Electrical Section Activities

In Electrical Section of TRSC, perform Laboratory tests mainly on High Voltage, Medium Voltage and Low Voltage Equipment in order to verify their compliance with the applicable standards.

The main Laboratory Tests are accredited according to ELOT EN ISO 17025 by ESYD.



Public Power Corporation S.A.-Hellas

P-IS-31: Study on the Analysis and Diagnosis of Dissolved Gases in Camellia Insulating Oil**Hanxiang Wang¹, Jian Li¹, Chenmeng Xiang², Zhengyong Huang¹, Feipeng Wang¹, Sijing He¹**¹State Key Laboratory of Power Equipment & System Security and New technology, Chongqing University, Chongqing 400044, China; ²State Grid Hebei Electric Power Research Institute, Shijiazhuang 050021, China**P-IS-32: New and Reclamation Transformer Oil Behavior under Accelerated Thermal Aging****Fettouma Guerbas, L. Adjaout, A. Abada, D. Rahal**

LSEI Laboratory, University of Science and Technology Houari Boumediene, Algeria

P-IS-33: Study on Current Density and Conductivity Mathematical Model of SF6 under DC Uniform Field Strength**Zhousheng Zhang, Na Dong**

College of Electrical Engineering/Shanghai University of Electric Power, People's Republic of China

P-IS-34: Verification of Relative Permittivity Models for Composite Nanodielectrics at Elevated Temperatures**Jaroslav Hornak, Ondřej Michal, Pavel Trnka, Petr Kadlec, Václav Mentlík, Pavel Totzauer**

University of West Bohemia, Czech Republic

P-IS-35: Air Gap Discharge Characteristics and Altitude Correction of 500 kV Tower at Areas Higher than 4000m above Sea Level**Yujian Ding¹, Xiuyuan Yao¹, Ming Liang², Buqiong Xiao³**¹China Electric Power Research Institute, People's Republic of China; ²Southwest Electric Power Design Institute, People's Republic of China; ³Tibet Electric Power Research Institute, People's Republic of China**P-IS-36: Study of Field Aged Transformer Insulation Oil Properties using GC-MS****Muhammad Ali Mehmood, Jian Li, Huang Zhengyong, Wang Feipeng, Muhammad Shoaib Bhutta, Li Xudong, Jawad Ahmad**

Chongqing University, People's Republic of China

P-IS-37: Analytical Modeling of Arc Re-ignition Conditions on Polluted Insulating Surfaces**Hadjrioua Farid¹, Mahi Djillali¹, Slama Mohammed El Amine²**¹Laghouat University, Algeria; ²Advanced High Voltage Engineering Centre, School of Engineering, Cardiff University, The Parade, CF24 3AA, Cardiff, UK.**O-MD6: Oral session for Monitoring and Diagnostics***Time:* Tuesday, 11/Sep/2018: 4:00pm - 5:30pm, Location: Vergina*Session Chair:* Edson Guedes da Costa, Weigen Chen**O-MD6-1: Studies on High Voltage Composite Insulators under very low Temperature****Dinesh Sharma, Subba Reddy Basappa**

Indian Institute of Science, Bangalore, India, India

O-MD6-2: Safety Condition Evaluation of the Contaminated Insulators Based on the Characteristic of the UV images**Shenghui Wang¹, Leilei Niu¹, Nan Li², Fangcheng Lv¹, Yunpeng Liu¹**¹North China Electric Power University, People's Republic of China; ²State Grid Baoding Electric Power Supply Company, People's Republic of China**O-MD6-3: 110kV Cable Joint Temperature Computation Based on Radial Basis Function Neural Networks****Qinghua Zhan¹, Liezheng Tang², Xiaomei Ou¹, Yijun Liu¹, Ke Tang², Rou Chen², Guowei Li¹, Junbo Wang¹**¹Foshan Power Supply Bureau, People's Republic of China; ²Wuhan University, People's Republic of China**O-MD6-4: ¹H NMR Tests on Damaged and Undamaged XLPE Samples****Taiji Wang¹, Lydia Gkoura², Nouredine Harid¹, Georgios Papavassiliou², Huw Griffiths¹**¹Khalifa University of Science and Technology, United Arab Emirates; ²National Centre for Scientific Research "Demokritos", Athens, Greece

O-MD6-5: Effects of Suspended Moisture Particles on AC Breakdown Voltage and Electric Field Distribution of Vegetable Insulation Oil**Muhammad Ali Mehmood**, Jian Li, Huang Zhengyong, Wang Feipeng, Li Xi, Muhammad Shoaib Bhutta, Li Xudong

Chongqing University, People's Republic of China

O-MD6-6: Gas Sensors Based on Flower-like ZnO Structures: Detection of Acetylene Gas Dissolved in Transformer Oil**He Zhang**¹, Weigen Chen¹, Zihao Song¹, Zikai Jiang¹, Xiaobo Li², Ronghua Zhang²¹Dept. of High Voltage and Insulation Engineering, School of Electrical Engineering, Chongqing University, Chongqing, China; ²State Grid Dezhou Power Supply Company, Shandong, China**O-PA4: Oral session for Power and Industrial Applications***Time:* Tuesday, 11/Sep/2018: 4:00pm - 5:30pm, Location: Olympia B*Session Chair:* Chijie Zhuang, Thomas Tsovilis**O-PA4-1: Effect of Spark Plasma Sintering Process on Dielectric Properties of CaCu₃Ti₄O₁₂ Ceramics****Chao Xu**, Xuetong Zhao, Lulu Ren, Jianjie Sun, Ruijin Liao

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, People's Republic of China

O-PA4-2: A Research on the Super-hydrophobic Surface Constructing Method for the Out-door Insulator Based on the Recycling of Composite**Xiangjun Zeng**¹, **Xueer Wang**², **Li Cheng**², **Sida Zhang**², **Ruijin Liao**²¹Electric Power Research Institute. CSG. Guangzhou. China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, People's Republic of China**O-PA4-3: Influence of Pulse Bursts on PD Magnitude Distributions in SF₆ Gas under Positive DC Voltage****Xinyu Luo**¹, **Ju Tang**^{1,2}, **Cheng Pan**², **Qiang Yao**³, **Yulong Miao**³¹State Key Laboratory of Power Transmission Equipment and System Security and New Technology, Chongqing University, China; ²School of Electrical Engineering, Wuhan University, China; ³Electric Power Research Institute of State Grid Chongqing Electric Power Company, Chongqing, China**O-PA4-4: Experimental Study on Reducing Icing on Conductor Using Self-heating Ring****Yafei Huang**, Xingliang Jiang, Ledong Hou, Meilin Zhu, Xingbo Han

CHONGQING UNIVERSITY, People's Republic of China

O-PA4-5: Surge Arrester with High Performance Metal Oxide Varistors for Deeply Suppressing Overvoltage in AC UHV Systems**Pengfei Meng**, Yao Zhou, Jinbo Wu, Jun Hu, Jinliang He

Tsinghua University, People's Republic of China

O-PA4-6: Statistical Study of Needle-plate Partial Discharge Stage Characteristics under DC Voltage**Disheng Wang**, **Lin Du**

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China

O-TM4: Oral session for High Voltage Testing and Measurement*Time:* Tuesday, 11/Sep/2018: 4:00pm - 5:30pm, Location: Olympia A*Session Chair:* Yukio Mizuno, Sergey Korobeynikov**O-TM4-1: Experimental Investigation on Corona Charge-Voltage Characteristics in the Coaxial Configuration under Lightning Impulse Voltages****Evanthia Bousiou**, **Pantelis Mikropoulos**

Aristotle University of Thessaloniki, Greece

O-TM4-2: Investigations of Transformer Winding Responses to Standard Full and Chopped Lightning Impulses

Marek Florkowski¹, Jakub Furgal², Maciej Kuniewski², Piotr Pająk²

¹ABB Corporate Research, Poland; ²AGH University of Science and Technology, Poland

O-TM4-3: Generation of Non-standard Lightning Impulse Unipolar Waveshapes

Miltom Shighara, Alexandre Piantini, Celso Braz, Daiana Silva, Clovis Kodaira

University of Sao Paulo, Brazil

O-TM4-4: Application of Neural Network in Atmospheric Correction of High Voltage Test

Chen Liu, Meng Shen, Qiang Li, Chunqiang Su, Peng Wei

Xi'an High Voltage Apparatus Research Institute, People's Republic of China

O-TM4-5: Determination of Corona Inception Voltages of Rod-Plane Electrode Systems

Suat Ilhan¹, Aytug Font¹, Aydogan Ozdemir¹, Fermin Espino-Cortes²

¹Istanbul Technical University, Turkey; ²SEPI ESIME Zacatenco, Instituto Politécnico Nacional, Mexico

O-TM4-6: Experimental Study on the Flashover Characteristics of Polluted Insulators under Short-tail Lightning Impulse Waveform

Pei Xiao, Hengxin He, Junjia He, Chen Cheng, Mian Xiao

State Key Laboratory of Advanced Electromagnetic Engineering and Technology, People's Republic of China

O-AM1: Oral session for Aging, Space Charge, and Maintenance

Time: Wednesday, 12/Sep/2018: 9:00am - 10:30am, Location: Vergina

Session Chair: Josef Kindersberger, Yu Gao

O-AM1-1: Discharge Characteristics of Different Air Terminals for Lightning Protection

Chijie Zhuang¹, Zezhong Wang¹, Rong Zeng¹, Lei Liu², Te Li³, Min Li², Yingzhe Cui¹, Jinliang He¹

¹Tsinghua University, People's Republic of China; ²China Southern Grid (CSG) Electric Power Research Institute;

³Electric Power Research Institute of Zhejiang Power Grid

O-AM1-2: Surface Charge Distribution Measurement before and after DC Flashover: A Novel Insight to the Influence of Surface Charge on Flashover Voltage

Yu Gao, Minghang Wang, Ning Zhao, Ziyi Li, Yong Liu, Tao Han, Boxue Du

Tianjin University, People's Republic of China

O-AM1-3: Effect of UV Radiation on Liquid Silicone Rubber

Qian Wang, Xidong Liang, Weining Bao, Tingyu Jiang, Shaohua Li

Tsinghua University, People's Republic of China

O-AM1-4: Test of Durability of Epoxy Resin Insulation of Converter Valve Saturable Reactor under Pulsed Voltage and Pulsed Heat

Yi Zhang¹, Zhiguo Tang¹, Chongshan Zhong², Chenhao Zhao¹, Xueheng Gao¹

¹North China Electric Power University, People's Republic of China; ²China Agricultural University, People's Republic of China

O-AM1-5: Partial Discharges under DC Voltage Stress Simulation and Measurement

Lucas Hoefer, Josef Kindersberger

Technical University of Munich, Germany

O-AM1-6: Theoretical and Empirical-Based Thermal Modelling of Power Transformers

Ahmed Gamil¹, Ali Al-Abadi¹, Franz Schatzl¹, Eberhard Schluecker²

¹SGB Power Transformer (SGB-SMIT Group), Regensburg, Germany; ²Institute of Process Machinery and Systems Engineering (iPAT), Friedrich-Alexander-University, Erlangen, Germany

O-IS3: Oral session for High Voltage Insulation Systems

Time: Wednesday, 12/Sep/2018: 9:00am - 10:30am, Location: Olympia A

Session Chair: Feipeng Wang, Johan J. Smit

O-IS3-1: Suppression of Surface Charge Accumulation of Dry and Oil-impregnated Nomex Paper by Surface Fluorination

Li He, Feipeng Wang, Jian Li, Tao Zhang, Khan Muhammad Zeeshan, Yushuang He, Tianyan Jiang
Chongqing University, People's Republic of China

O-IS3-2: Enhancement DC Breakdown and Thermal Property of Insulation Pressboard by Deposition Al₂O₃/PTFE Nano-Structure Functional Film

Jian Hao^{1,3}, Cong Liu¹, Yanqing Li¹, Shengxun Zheng², Ruijin Liao¹, Qu Zhou⁴

¹The State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, People's Republic of China; ²State Grid Zhejiang Electric Power CO. LTD. Hangzhou Electric Power Company, Hangzhou, China.; ³College of Power Engineering, Chongqing University, Chongqing 400044, China; ⁴College of Engineering and Technology, Southwest University, Chongqing 400715, China

O-IS3-3: The Effect of Alumina Nanorods on Breakdown Performance of Transformer Oil

Muhammad Rafiq¹, Chengrong Li¹, Yuzhen Lv²

¹Beijing Key Laboratory of High Voltage & EMC; ²School of Energy, Power and Mechanical Engineering, North China Electric Power University, Beijing, 102206, China

O-IS3-4: Effect of Different Impurities on Motion Characteristics and Breakdown Properties of Insulation Oil under DC Electrical Field

Min Dan¹, Jian Hao¹, Wei Qin¹, Ruijin Liao¹, Runhao Zou¹, Zhu Mengzhao², Shuaiwei Liang³

¹Chongqing University, China, People's Republic; ²State Grid Shandong Electric Power Co. LTD. Shandong Electric Power Research Institute Jinan, China; ³State Grid Zhejiang Electric Power Co. LTD. Ningbo Electric Power Company Ningbo, China

O-IS3-5: AC Breakdown Strength of Natural Ester Oil based Nanofluid with Graphene Nanosheets

Vasileios Charalampakos¹, Evaggelos Chatzikalymnios², Eleftheria Pyrgioti², Georgios Peppas³, Aristeidis Bakandritsos⁴, Aikaterini Polykrati⁵, Ioannis Gonos⁵

¹Technological Educational Institute of Western, GREECE; ²University of Patras, GREECE; ³Raycap S.A., Athens, Greece; ⁴Palacky University in Olomouc, Czech Republic.; ⁵National Technical University of Athens, Athens, Greece

O-IS3-6: Experience with Iso-Paraffinic Insulating Oil for Power Transformers

William Malcolm McDermid, M. Partyka, T. Black

Manitoba Hydro, Canada

O-TM5: Oral session for High Voltage Testing and Measurement

Time: Wednesday, 12/Sep/2018: 9:00am - 10:30am, Location: Olympia B

Session Chair: Abderrahmane Beroual, Qi Li

O-TM5-1: Breakdown Characteristics of C3F7CN/CO2 Gas Mixtures in Rod-Plane Gaps

Loizos Loizou, Lujia Chen, Qiang Liu

The University of Manchester, United Kingdom

O-TM5-2: Creeping Discharge Development Over Insulator Surfaces in Natural Gases: Design and Implementation of Test Procedure

Michail Michalarakis¹, Phillip Widger¹, Abderrahmane Beroual², Abderrahmane {Manu} Haddad¹

¹Advanced High Voltage Engineering Research Centre School of Engineering, Cardiff University, The Parade, Cardiff, United Kingdom; ²University of Lyon, Ecole Centrale de Lyon, Ampere CNRS UMR 5005, 36 avenue Guy Collongue, 69134 Ecully, France

O-TM5-3: Superimposed Voltage Testing of HVDC Equipment with Oscillating Impulse Voltage

Martin Hallas, Christian Dorsch, Volker Hinrichsen

Technische Universitaet Darmstadt, Germany

O-TM5-4: AC Breakdown Strength and Volume Resistivity Characteristics of Epoxy Resin Composite with Surface Modified Alumina Nanoparticles

Muhammad Zeeshan Khan, Feipeng Wang, Jian Li, Muhammad Arshad Shehzad Hassan, Jawad Ahmad, He Li, Kaizheng Wang

State Key Laboratory of Power Transmission Equipment System Security and New Technology, School of Electrical Engineering, Chongqing University, Chongqing 400044, China

O-TM5-5: Is dry-band Characteristic a Function of Pollution and Insulator Design?

Maurizio Albano, A. Manu Haddad, Nathan Bungay

Cardiff University, United Kingdom

O-TM5-6: 1200KV High Power Testing Laboratory Configuration and Optimized Design Method of Oscillating Circuit

Wenjie Zhou, Shen Hong, Yong Chen, Ling Zhang

NARI Group Corporation (State Grid Electric Power Research Institute), People's Republic of China

P-EM: Poster session for Electromagnetic Fields

Time: Wednesday, 12/Sep/2018: 9:00am - 12:30pm, *Location:* Poster Area

Session Chair: Ioannis Stathopoulos

P-EM-1: AC Interference Evaluation of a Cathodically Protected Subsea Structure

Charalambos A. Charalambous¹, Andreas Dimitriou¹, A. Lazari¹, D. Buxton², P. Ernst²

¹PSM Lab, Dep. of ECE, University of Cyprus, Cyprus; ²Intertek UK, Manchester, UK

P-EM-2: The Electrostatic Field between Parallel Asymmetric Cylindrical Conductors

Antonios Moronis

University of West Attica, Greece

P-EM-3: The Effect of Insulation Defects on Electric Field Distribution of Power Cables

Cihat Cagdas Uydur¹, Oktay Arian², Ozcan Kalenderli³

¹Trakya University, Turkey; ²Yildiz Technical University, Turkey; ³Istanbul Technical University, Turkey

P-EM-4: Simulation Analysis on Influence of Combustion Particles on the Gap Electric Field under DC Voltage

Ziheng Pu¹, Yuyao Xiong¹, Tian Wu¹, Zejun Lu², Chunhua Fang¹

¹College of Electrical Engineering and New Energy, China Three Gorges University, Yichang, China; ²Wuhan NARI Limited Company, State Grid Electric Power Research Institute, Wuhan, China

P-EM-5: Digital Filter Based on Chaos Theory Used for Removing Narrow-Frequency-Band Noise in PD Signals

Tianyan Jiang^{1,2}, Shouhua Cheng¹, Xi Chen¹, Maoqiang Bi¹, Xiafei Yang³

¹Chongqing University of Technology, People's Republic of China; ²State Key Laboratory of Power Equipment & System Security and New Technology, Department of High Voltage and Insulation Engineering, School of Electrical Engineering, Chongqing University; ³China Nuclear Power Engineering Co., Ltd.

P-EM-6: Survey of Electromagnetic Interference of ± 1100 kV HVDC Project on Communication Network for DC Filter Necessity Research

Yiming Ji¹, Jin Zhang², Pengjiao Zhang³, Bo Yue¹, Yiming Yang¹, Fangjie Wu¹

¹State Grid Economic and Technological Research Institute Co., LTD, People's Republic of China; ²State Grid Co., LTD, People's Republic of China; ³Northwest Electric Power Design Institute Co., Ltd, People's Republic of China

P-EM-7: Simulation Calculation of Electric Field Protection for Live Working on UHV Transmission Line

Li Zhi¹, YU JIAO ZHANG¹, Xiong Feng Huang¹, Yanjun Shen¹, Jiansheng Yuan²

¹China Three Gorges University, People's Republic of China; ²Tsinghua University People's Republic of China

P-EM-8: Electric Field Distribution and Optimization of Different Shielding Device for Composite Insulators in ± 1100 kV Indoor DC Yard

Bo Yue², Shuo Wang¹, Jialong Wang¹, Wei Qi Li¹, Chenyu Zhao¹, Zongren Peng¹

¹State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China; ²State Power Economic Research Institute, Beijing, 102209, China

P-EM-9: Voltage Distribution Design of a Novel 363kV Vacuum Circuit Breaker**Ai Shaogui¹, Yu Xiao², Huang Yongning¹, Yang Fan², Fan Yiping¹, Li Xing²**¹Electric Power Research Institute of Ningxia Electric Power Company of State Grid Corporation of China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, School of Electrical Engineering, Chongqing University**P-EM-10: Electric Field Analysis of ± 1100 kV Resin Impregnated Paper UHVDC Wall Bushing under Different Voltage Forms****Chenyu Zhao¹, Zongren Peng¹, Peng Liu¹, Shiling Zhang², Naiyi Li³, Yunhao Mo¹**¹Xi'an Jiaotong University State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China; ²State Grid Chongqing Electric Power Company Chongqing Electric Power Research Institute; ³State Grid Zhejiang Electric Power Company Zhejiang Electric Power Research Institute**P-EM-11: Research on the Measuring System for IGBT Current Distribution****Xianwei Ma, Mengyue Hu, Heli Meng, Yangchun Cheng, Jun Zhang**

North China Electric Power University, People's Republic of China

P-EM-12: 3D Electric Field Simulation of Converter Transformer with Real Insulation Materials Utilized in HVDC Systems**Weidong Sun¹, Lijun Yang¹, Jian Hao¹, Firuz Zare²**¹Chongqing University, People's Republic of China; ²The University of Queensland, Australia**P-EM-13: Design of Termination for an AC Disruptive Voltage Test on a 35 kV Cable****Arthur Francisco Andrade, Edson Guedes Costa, Filipe Lucena Medeiros Andrade, Clarice Sofia Henrique Soares, George Rossany Soares Lira**

Federal University of Campina Grande, Brazil

P-PA: Poster session for Power and Industrial Applications

Time: Wednesday, 12/Sep/2018: 9:00am - 12:30pm, Location: Poster Area

Session Chair: Eleftheria Pyrgioti

P-PA-1: Numerical and Experimental Analysis of the Aging Impact on the Cooling Capacity of a Natural Ester-Based Oil Used in Power Transformers**Alfredo Ortiz, Fernando Delgado, Félix Ortiz, Inmaculada Fernández, Agustín Santisteban**

University of Cantabria, Spain

P-PA-2: Investigation of Lightning Strike Effects on Wind Turbine Critical Components**Sokratis Pastromas, Konstantinos Sandros, Konstantinos Koutras, Eleftheria Pyrgioti**

High Voltage Laboratory, University of Patras, Greece, Greece

P-PA-3: Research on the Key Technical Parameters of the 10kV Disconnecter on Surge Arrester**Muliang Cai¹, Tao Zhang², Yeqiang Deng², Changqing Liu², Huayun Wang¹, Shuijiang Zheng¹, Zhixiang Deng¹, Bei Liu¹, Yu Wang²**¹Jiangxi Electric Power Design Institute, People's Republic of China; ²Wuhan University, People's Republic of China**P-PA-4: Electric Field Analysis and Structure Design of the Baffle of Bird Guard Used in 220 kV Transmission Line****Yanjun Kuang¹, Yanglin Li¹, Yongqing Deng², Daochun Huang², Zhibin Qiu², Yiming Xie²**¹State Grid Jiangxi Electric Power Research Institute, Nanchang 330096, China; ²School of Electrical Engineering, Wuhan University, Wuhan 430072, China**P-PA-5: The Influence of Water and Straw Powders Contaminants on Shell DIAL B Transformer Oil****Moch Dhofir, Rini Nur Hasanah, Hadi Suyono, Hesti Vini Widiastuti, Lestari Ayuningsih, Hery Purnomo**

Faculty of Engineering - Brawijaya University, Indonesia

P-PA-6: Equivalent Circuit Parameters of Power Tap-Off from Insulated Shield Wires of High Voltage Transmission Lines at Different Rated Voltages**Guowei Qi¹, Yuesheng Zheng¹, Kai Xia¹, Wenbin Wu², Fuwang Liao², Shengwen Shu²**¹Fuzhou University, People's Republic of China; ²Electric Power Research Institute State Grid Fujian Electric Power Co. Ltd., People's Republic of China

P-PA-7: Partial Discharges Activity within an Internal Void at AC Voltage Disturbed by High Frequency Components

Radek Prochazka, Ondrej Sefl, Martin Knenicky

Czech Technical University in Prague, Faculty of Electrical Engineering, Czech Republic

P-PA-8: Negative Sequence Current Control of Offshore Wind Farm Based on Diode Rectifier HVDC

Sang Heon Chae, Jin Hong Ahn, Min Hyeok Kang, Gi Hoon Kim, Seungmoo Yang, Ho Min Kim, Eel-Hwan Kim

Jeju National University, Republic of Korea, (South Korea)

P-PA-9: A Study on the Operation Method of Hybrid Energy Storage System Connected with Wind Turbine

Min Hyeok Kang, Sang Heon Chae, Jin Hong Ahn, Gi Hoon Kim, Seong Hoon Lee, Seungmoo Yang, Ho Min Kim, Eel-Hwan Kim

Jeju National University, Republic of Korea, (South Korea)

P-PA-10: Multi-objective Control of Active Distribution Systems Incorporating Various Types of Distributed Energy Resources

Dimitrios Siagkas, Panagiotis Karafotis, Pavlos Georgilakis

National Technical University of Athens, Greece

P-PA-11: Multi-Objective Distribution Network Reconfiguration Based on Deep Learning Algorithm

Xingang CHEN, Hao TAN, Bing YU, Changxin Li, Xiaoqing CHEN

Chongqing University of Technology, People's Republic of China

P-PA-12: Investigating the Effect of Convection, Radiation and Solar Radiation Heat Loss on the Rating of Buried Power Cables using Finite Element Simulations

Jerry Walker, Taryn Becker

Vaal University of Technology, South Africa

P-PA-13: Key Technology and Engineering Application of the Disassembly-transported UHV AC Transformer

Hui-hao Guo, Min-feng Shao, Sheng-wei Cai, Jing Yin, Hui Li, Jiang-bo Chen, Cheng Chen

China Electric Power Research Institute, People's Republic of China

P-PA-14: Numerical Calculation of Static Temperature Distribution of Transformer Bushings and Analysis of Influential Factors

Zehua Wu¹, Huidong Tian¹, Haoran Wang^{1,2}, Shiyi Zhou¹, Ran Shi¹, Liu Peng¹, Zongren Peng¹

¹Xi'an Jiaotong University, People's Republic of China; ²China Electric Power Research Institute, People's Republic of China

P-PA-15: Thermal Simulation Analysis of Temperature Distribution Characteristics in 220kV GIS

Shanyuan Sun¹, Liang Zhang¹, Junhao Li¹, Xutao Wu², Xiuguang Li², Bo Ma², Pei Ding²

¹School of Electrical Engineering, Xi'an Jiaotong University; ²State Grid Electric Power Company LTD. Electric Power Research Institute

P-PA-16: Design and Construction of a Sensitive Electronic Control System for the Injection of Fast Transient Pulses into a Current Measurement System

Nicolaas Oosthuysen¹, Jerry Walker²

¹Vaal University Of Technology, South Africa; ²Vaal University of Technology, South Africa

P-PA-17: Experimental Study on Thermal Shock Damage Characteristics of Pantograph Strip

Yijuan Song, Wenfu Wei, Zefeng Yang, Ming Lu, Guoqiang Gao, Guangning Wu

School of Electrical Engineering, Southwest Jiaotong University, People's Republic of China

P-PA-18: A New Method on Calculation of Lightning Trip Rate of 35 kV or under Overhead Distribution Lines in Ungrounded Neutral Point System

Mulianq Cai¹, Jian Wang², Yeqiang Deng², Huayun Wang¹, Ziqiang Wei³, Yu Zhang¹, Yu Wang², Xishan Wen², Yi An¹, Zhixiang Deng¹

¹Jiangxi Electric Power Design Institute, People's Republic of China; ²School of Electrical Engineering, Wuhan University, People's Republic of China; ³Guangzhou Power Supply Bureau Co. Ltd., People's Republic of China

P-PA-19: GIS Implementation for Small Hydraulic Power Plants Placement

Konstantin Nikishin¹, Ekaterina Tolstikhina², Eugeny Golovan³, Anton Pletyonkin³

¹NovaWind, Russian Federation; ²SO UPS, Russian Federation; ³Siberian Federal University, Russian Federation

P-PA-20: A Fast, High-Voltage, Pulse Power Driving Circuit for Copper-Halide Lasers

Basilios S. Tsikimis, Tomas Ch. Chardalias, Athanasios K. Ftoulis, John M. Koutsoubis, Christos X. Manasis

Technological Educational Institute of Sterea Ellada, Greece

P-PA-21: Study on Fault Current Suppression and Commutation Failure in Inverter Side of ± 1100 kV DC System

Ziyuan REN, Jiangtao LI, Jiaxin HE, Yi SUN, Yuhao LIU

Xi'an Jiaotong University, People's Republic of China

P-PA-22: Application of a Linear Transformer Driver (LTD) to Dielectric Barrier Discharge

Xin Feng¹, Haiyun Luo², Jiangtao Li¹, Chenjie Li¹, Yifeng Wang¹

¹Xi'an Jiao Tong University, People's Republic of China; ²Tsinghua University, China

P-PA-23: Application of Elman Neural Network in Top Oil Temperature Prediction of Transformer

Xiaoping Su¹, Chong Pan¹, Jingxin Zou², Xiaolei Yang¹

¹State Grid Chengdu Power Supply Company, Chengdu 610041, China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University, Chongqing 400044, China

O-AM2: Oral session for Aging, Space Charge, and Maintenance

Time: Wednesday, 12/Sep/2018: 11:00am - 12:30pm, Location: Vergina

Session Chair: Michael Danikas, Joni Kluss

O-AM2-1: Long-Term Performance of Switch Blade Restraint for Safe Operation during Maintenance

Joni Kluss, David Wallace, Zeeshan Ahmed

Mississippi State University, United States of America

O-AM2-2: Electrical Treeing Initiation in Polypropylene under Low Temperature with Different Power Frequencies

Lewei Zhu, Boxue Du, Tao Han, Jingang Su, Zhonglei Li, Jin Li

School of Electrical and Information Engineering, Tianjin University, People's Republic of China

O-AM2-3: Accumulation Characteristics of Surface Charge on a Cone-type Model Insulator under DC Voltage

Boya Zhang^{1,2}, Zhe Qi², Wenqiang Gao², Guixin Zhang²

¹State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Shaanxi 710049, China; ²Department of Electrical Engineering, Tsinghua University, Beijing 100084, China

O-AM2-4: Rubber Bladder Puncture - A case Study

Issouf Fofana¹, Eduardo Briosso²

¹UQAC, Canada; ²Salto Grande, Uruguay

O-AM2-5: Mapping of Discharge Clusters in Void based on Surface Resistivity

Marek Florkowski¹, Barbara Florkowska², Maciej Kuniewski², Paweł Zydron²

¹ABB Corporate Research, Kraków, Poland; ²AGH University of Science and Technology, Kraków, Poland

O-AM2-6: Impact of Thickness on Space Charge and Breakdown Field of XLPE Insulation

Zhipeng Ma, Lijun Yang, Yuan Yuan, Haoran Bian, Muhammad Shoaib Bhutta

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China

O-IS4: Oral session for High Voltage Insulation Systems

Time: Wednesday, 12/Sep/2018: 11:00am - 12:30pm, Location: Olympia A

Session Chair: Konstantin Papailiou, Rainer Patsch

O-IS4-1: Modelling and Measurement of the Dielectric Behavior of Mineral Oil

Hans-Peter Oeftering¹, Patrick Rumpelt², Andreas Küchler¹, Frank Jenau², Ronny Fritsche³

¹FHWS University of Applied Sciences Wuerzburg-Schweinfurt, Germany; ²TU Dortmund, Germany; ³Siemens AG, Germany

O-IS4-2: A Comparative Study of Natural Ester and Synthetic Ester based Nanofluids with TiO₂ Nanoparticles

Vassilios Charalampakos¹, Theodoros Fanariotis², Eleytheria Pyrgioti², Georgios Peppas³, Argiris Kolokithas⁴

¹Technological Educational Institute of Western Greece, Department of Electrical Engineering, Greece; ²University of Patras, Department of Electrical and Computer Engineering, Greece; ³Raycap S.A., Greece; ⁴University of Patras, Department of Material Science, Greece

O-IS4-3: AC Breakdown Characteristics of a Novel Three-Element Mixed Insulation Oil for Power Transformer

Dawei Feng¹, Jian Hao¹, Qian Wang², Xiong Liu², Ruijin Liao¹, Lijun Yang¹

¹Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China; ²State Grid Chongqing Electric Power CO. LTD. Chongqing Electric Power Research Institute

O-IS4-4: Experimental Study on Eliminating Corrosive Sulfide in Mineral Insulating Oil of Transformers by Sodium Reagent

Yunca Lu¹, Dong Ding², Chao Wei¹, Jiang Zhang², Lijun Yang²

¹Electric Power Research Institute of State Grid Jiangsu Power Grid Co., Ltd., People's Republic of China China; ²Chongqing University, People's Republic of China China

O-IS4-5: Positive Streamer Initiation and Propagation in a Synthetic Ester Liquid under Lightning Impulse in Semi-uniform Field

Shuhang Shen, Qiang Liu, Zhongdong Wang

School of Electrical & Electronic Engineering, The University of Manchester, United Kingdom

O-IS4-6: Comparative Study on the AC Breakdown Voltage of Transformer Mineral Oil with Transformer Oil-based Al₂O₃ Nanofluids

Usama Khaled¹, Abderrahmane Beroual²

¹King Saud University, College of Engineering, Department of Electrical Engineering, Saudi Arabia; ²University of Lyon, Ecole Centrale de Lyon, AMPERE Lab CNRS UMR 5005, France

O-TM6: Oral session for High Voltage Testing and Measurement

Time: Wednesday, 12/Sep/2018: 11:00am - 12:30pm, Location: Olympia B

Session Chair: Jerry Walker, Panagiotis Svarnas

O-TM6-1: PD measurement at Large Capacitors Using a Modified HFCT

Andrei Marinescu¹, Ionel Dumbrava¹, Lucian Mandache²

¹ICMET, R&D Institute Craiova Romania; ²University of Craiova Romania

O-TM6-2: Current Step Generation and Measurement with Nanosecond Rise Time using Coaxial Cable Generator

Muhammad Ziaur Rehman¹, Jari Hällström², Jussi Havunen²

¹Aalto University, Finland; ²VTT Mikes, Finland

O-TM6-3: Characterization and Verification of Suitability of a Digitizer for Lightning Impulses

Tim Christoph Schlüterbusch¹, Stephan Passon¹, Johann Meisner¹, Zhaozhi Long²

¹Physikalisch-Technische Bundesanstalt, Germany; ²CEPRI China Electric Power Research Institute

O-TM6-4: Intercomparison of Reference Measuring Systems for Lightning Impulses between Three National Metrology Institutes**Johann Meisner¹, Alf-Peter Elg², Jari Hällström³, Stephan Passon¹, Jussi Havunen³, Anders Bergman², Mathias Nordlund²**¹Physikalisch-Technische Bundesanstalt, Germany; ²RISE – Research Institutes of Sweden; ³VTT Technical Research Centre of Finland Ltd, Centre for Metrology MIKES**O-TM6-5: New Modular Test System for Testing Super Long Cables****Thomas Steiner, Bilinski Enrico, Siebert Günther**
HIGHVOLT Prüftechnik Dresden GmbH, Germany**O-TM6-6: Superimposed Impulse Voltage Test for DC-Cables****Andreas Voss**
Haefely Test AG, Switzerland**O-AM3: Oral session for Aging, Space Charge, and Maintenance***Time: Wednesday, 12/Sep/2018: 2:00pm - 3:30pm, Location: Vergina**Session Chair: Issouf Fofana, Boxue Du***O-AM3-1: CFD Investigation of Temperature Distributions by Non-uniform Heat Losses inside Windings****Saeed Khandan Siar, Stefan Tenbohlen**
University of Stuttgart, Germany**O-AM3-2: Effect of Different Curing Parameters on UV Aging Resistance of Silicone Rubber****Ying Lin¹, Liming Wang¹, Fanghui Yin¹, Masoud Farzaneh², Siming Gao¹**¹Graduate School at Shenzhen, Tsinghua University, People's Republic of China; ²Université du Québec à Chicoutimi, Canada**O-AM3-3: Effect of Thermal Aging on DC Conductivity of Nano-CB/XLPE Insulating Composites****Changyou Suo, Yao Qin, Zhonghua Li**
Harbin University of Science and Technology, People's Republic of China**O-AM3-4: Aging Degradation of Insulation Paper in Power Transformers by XRD Method****Lei Peng, Qiang Fu, Musong Lin, yihua Qian, Wangyan Lv**
Electric Power Research Institute, Guangdong Power Grid Co., Ltd., People's Republic of China**O-AM3-5: Short Time Breakdown and Long Time Electrical Aging of Nano and Micro Particles/Epoxy Composites****Zhe Li, Gehao Sheng, Xiucheng Jiang**
Shanghai Jiao Tong University, China**O-AM3-6: Study on the Mechanism of Thermal Aging Performance of Insulation Paper under the Effect of Multiple Corrosive Sulfides****Minhao Zhang¹, Haoxi Cong¹, Xiang Shu¹, Shiyue Du¹, Qingmin Li¹, Hu Jin²**¹North China Electric Power University, People's Republic of China; ²Electric Power Research Institute, China Southern Power Grid**O-IS5: Oral session for High Voltage Insulation Systems***Time: Wednesday, 12/Sep/2018: 2:00pm - 3:30pm, Location: Olympia A**Session Chair: Manu Haddad, Bo Zhang***O-IS5-1: Contamination Characteristics of Suspension Composite Insulators in Wind Tunnel under Energized Condition****Xinhan Qiao, Zhijin Zhang, Xingliang Jiang, Lichun Shu, Jianlin Hu, Qin Hu**
Chongqing University, People's Republic of China**O-IS5-2: A Predictive Dynamic Model of Creeping Discharge along Solid Insulator in Air at Atmospheric Pressure****Mohammed El Amine Slama¹, Abderrahmane Beroual², Abderrahmane Haddad¹**
¹University of Cardiff, United Kingdom; ²Ecole Centrale de Lyon, France

O-IS5-3: A New Model for Polluted Insulators Flashover under HVDC
Tarek Chihani¹, Abdelouahab Mekhaldi¹, Abderrahmane Beroual², Madjid Tegar¹
¹Ecole Nationale Polytechnique, Algeria; ²Ecole Centrale de Lyon, France

O-IS5-4: Study on the Icing Accretion Characterization of Porcelain and Glass Insulator
Tian Liang, Zhijin Zhang, Xingliang Jiang, Lichun Shu, Jianlin Hu, Qin Hu
 Chongqing University, People's Republic of China

O-IS5-5: A Study on Artificial-Natural Snow Accretion and Flashover Characteristics of 110kV Post Insulators
Jianlin Hu, Wei Meng, Hongchun Yang, Ke Ke, Xingliang Jiang, Lichun Shu
 College of Electrical and Electronic Engineering, Chongqing University, People's Republic of China

O-IS5-6: The Influence of Kraft Papers and Mica Insertion on the Insulator Leakage Current of Coaxial Electrodes
Hadi Suyono, Moch Dhofir, Rini Nur Hasanah, Rifka Agustina, Sinta Dwiferna
 Faculty of Engineering - Brawijaya University, Indonesia

O-TM7: Oral session for High Voltage Testing and Measurement

Time: Wednesday, 12/Sep/2018: 2:00pm - 3:30pm, Location: Olympia B
Session Chair: Davide Fabiani, Vassilios Panagiotis Charalampakos

O-TM7-1: Partial Discharges and Breakdown of Protrusion in GIS under Oscillating Lightning Impulses

Liang Zhang, Xutao Han, Cong He, Junhao Li
 Xi'an Jiaotong University, State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China

O-TM7-2: Background Noise of Partial Discharge Detection and Its Suppression in Complex Electromagnetic Environment

Chenxi Ma, Han Li, Wenjun Zhou, Jianhui Yu, Lingzhi Wang, Shuai Yang, Shizhuo Hu
 School of Electrical Engineering, Wuhan University, People's Republic of China

O-TM7-3: Streamer Mode Effect on Impulse Breakdown Characteristics in Mineral Oil Gap

Tao Zhao^{1,2}, Xiangrui Cheng^{1,2}, Yunpeng Liu^{1,2}, Fochi Wang^{1,2}, Fangcheng Lv^{1,2}, Nijie Chao^{1,2}
¹Hebei Provincial Key Laboratory of Power Transmission Equipment Security Defense; ²North China Electric Power University, People's Republic of China;

O-TM7-4: Effect of Fluorination and Isothermal Crystallization on Polypropylene Electret Fiber Films for Transformer-oil Filtration

Feipeng Wang, Chunxiang Wan, Jian Li, Zhengyong Huang, Fan Fan, Gang Wen
 Chongqing University, People's Republic of China

O-TM7-5: Study on Interference of Partial Discharge Test of 750kV Shunt Reactor in Substation

Jiaxin He, Jiangtao Li, Ziyuan Ren, Yi Sun, Yuhao Liu
 Xi'an Jiao Tong University, People's Republic of China

P-MD: Poster session for Monitoring and Diagnostics

Time: Wednesday, 12/Sep/2018: 2:00pm - 5:30pm, Location: Poster Area
Session Chair: Feipeng Wang

P-MD-1: Experimental Study of Double Partial Discharge Source Location in oil Based on Conformal Ultrasonic Array Sensor

Chengliang Wang¹, Han Wu², Si Li³, Xubi Liu¹, Xianqiang Yue¹, Jiantao Zhang²
¹Jiangsu Frontier Electric Technology co., Ltd, Nanjing 211102, Jiangsu Province, China; ²Hebei Provincial Key Laboratory of Power Transmission Equipment Security Defense, North China Electric Power University, Baoding 071003, China; ³State Grid Beijing Electric Power Company Information & Telecommunication Branch, Beijing 100070, China

P-MD-2: Detection of Furfural in Oil Based on Surface Enhanced Raman Spectroscopy

Haiyang Shi, Weigen Chen, Xiaobo Li, Fu Wan, Shuhua Zhang, Pinyi Wang, **Jianxin Wang**, Weiran Zhou
Chongqing University, People's Republic of China

P-MD-3: Dissolved Gas Diffusion Coefficients and Properties in Camellia Insulating Oil

Jianfeng He¹, Jian Li¹, Jinghan Zhou¹, Gaolin Wu², Qian Wang², Yong Li², Yongfu Li², Qiang Wang³, Li Han⁴,
Xinting Wu⁴

¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing 400044, China; ²State Grid Chongqing Electric Power Co. Electric Power Research Institute, Chongqing 401123, China; ³State Grid Shanxi Electric Power Company, Shanxi 030001, China; ⁴Jinzhong Power Supply Company of State Grid Shanxi Electric Power Company, Shanxi 030600, China

P-MD-4: Research on Defect Pattern Recognition of GIS Equipment Based on X-ray Digital Imaging Technology

Xianhai Pang¹, Yanxun Qi², Xiaofeng Li¹, Han Wu², Jing Hao¹, Qing Xie²

¹State Grid Hebei Electric Power Research Institute, State Grid Hebei Electric Power Supply Co., Ltd., Shijiazhuang 050000, Hebei province, China; ²Hebei Provincial Key Laboratory of Power Transmission Equipment Security Defense, North China Electric Power University, Baoding 071003, China

P-MD-5: Analysis of Correlation between Internal Discharge in GIS and SF₆ Decomposition Products

Xianhai Pang¹, Han Wu², Jin Pan¹, Yanxun Qi², Xiaofeng Li¹, Jiantao Zhang², Qing Xie²

¹State Grid Hebei Electric Power Research Institute, State Grid Hebei Electric Power Supply Co., Ltd., Shijiazhuang 050000, Hebei province, China; ²Hebei Provincial Key Laboratory of Power Transmission Equipment Security Defense, North China Electric Power University, Baoding 071003, China

P-MD-6: Comparison of FRA Data Measured by Different Instruments with Different Frequency Resolution

Satoru Miyazaki¹, Yoshinobu Mizutani¹, Mehran Tahir², Stefan Tenbhlen²

¹Central Research Institute of Electric Power Industry, Japan; ²University of Stuttgart, Germany

P-MD-7: Partial Discharge Characteristics of Surface Defect in SF₆ under Oscillating Impulse Voltage

Xutao Han, Peichuan Pang, Liang Zhang, Qian Zhang, Junhao Li

Xi'an Jiaotong University, People's Republic of China

P-MD-8: High Frequency Alternating Current (AC) Tangent Delta Measurement Technique for Underground Power Cable System

Ahmad Basri A. Ghani¹, Chandan Kumar Chakrabarty², Agileswari K Ramasamy², Avinash Ashwin Raj¹,
Huzainie Shafi A. Halim¹, Navitharshaani Permal², Michael G Danikas³

¹TNB Research, Malaysia; ²Universiti Tenaga Nasional, Malaysia; ³Democritus University of Thrace, Xanthi, Greece

P-MD-9: The Simulation Study of the Influence of the Conformal Array Vector Curvature on the Direction-finding Precision of the PD Source

Junpeng Ma¹, Yanxun Qi², Zixuan Zhang³, Xianbiao Yang¹, Xubi Liu¹, Jiantao Zhang²

¹Jiangsu Frontier Electric Technology co., Ltd, Nanjing 211102, Jiangsu province, China; ²Hebei Provincial Key Laboratory of Power Transmission Equipment Security Defense, North China Electric Power University, Baoding 071003, China; ³Hengshui High School of Hebei, Hengshui 053000, Hebei province, China

P-MD-10: Condition Assessment of XLPE Cable based on HV Lightning Impulse

Wei Zhao¹, You Fang¹, Yongsheng Duan¹, Tao Zhou¹, Minmin Wei¹, Jiamin Kong², Kai Zhou², Shilin Zhao²

¹Kunming Power Supply Bureau in Yunnan Electric Power Grid Co., Ltd.; Kunming, 650200, China; ²School of Electrical Engineering and Information, Sichuan University, Chengdu, 610065 China

P-MD-11: Study on Vibration Distribution Characteristics of a Three-Phase Three-Limb Transformer Core

Chunhui Gu¹, Wenxiong Mo¹, Weifeng Lu², Lin Gan¹, Yuquan Liu¹, Yong Wang¹

¹Guangzhou Power Supply Co. Ltd., China Southern Power Grid Co. Ltd. Guangzhou, China; ²State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University Xi'an, China

P-MD-12: Transient Characteristic Parameters Monitoring and Diagnosis of the Hybrid HVDC Circuit Breaker

Han Yan¹, Lin Du¹, Yaxiong Tan¹, Xueguang Wu²

¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, School of Electrical Engineering, Chongqing University, People's Republic of China; ²Global Energy Interconnection Research Institute

P-MD-13: On-site Detecting Method for the Loss Characteristic in 110kV Power Transformer

Ronglun Zhang, Shuai Wang, Haibao Mu, Guanjun Zhang, Song Huang

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, People's Republic of China

P-MD-14: Partial Discharge Measurements and Techniques for Pattern Recognition and Life Prediction of Medium Voltage XLPE Cables

Zeeshan Ahmed, Joni Klüss, David Wallace

Mississippi State University, USA

P-MD-15: IoT Application in Transformer Fault Prognosis Using Vibration Signal

M. Bagheri², V. Nurmanova², A. Zollanvari², S. Nezhivenko², B.T. Phung¹

¹University of New South Wales, Australia; ²Nazarbayev University, Astana, Kazakhstan

P-MD-16: High Impedance Fault Detection by Convolutional Deep Neural Network

Tharmakulasingham Sirojan, Shibo Lu, B.T. Phung, Daming Zhang, Eliathamby Ambikairajah

University of New South Wales, Australia

P-MD-17: Mechanical Features Extraction of On-Load Tap-Changer Based on Multi-Wavelet Transform

Xiujin Li¹, Tuoyu Gao¹, Zhixian Zhang², Jing Zhang¹

¹State Grid Jiangsu Electric Power Maintenance Branch Company, Nanjing, China; ²State Key Laboratory of Power Transmission Equipment and System Security and New Technology, Chongqing, China

P-MD-18: The Influence of Sample Configuration on PD Frequency at DC Voltage

Cheng Pan, Wenbin Song, Ju Tang, Yi Luo, Xinyu Luo

Wuhan University, People's Republic of China

P-MD-19: Simulation Study on the Vibration Characteristics and Vibration Fault Propagation of Insulated Metal-Enclosed Switchgear (GIS) Busbar

Qian Wang², Xiping Jiang², Jianwen Tan¹, Jian Hao¹, Zheng Liao¹, Gaolin Wu²

¹The State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University; ²State Grid Chongqing Electric Power CO. Chongqing Electric Power Research Institute

P-MD-20: Experimental Investigation on the Propagation Characteristics of UHF Signals in an Actual 110kV Power Transformer

Jinchao Du^{1,2}, Chengzhi Zhu³, Weigen Chen¹, Zhixian Zhang¹, Stefan Tenbohlen²

¹Chongqing University, China; ²University of Stuttgart, Germany; ³State Grid Zhejiang Power Company, China

P-MD-21: Correlation Characteristics Between Partial Discharge Quantity and SF₆ Decomposition Component Under Negative DC

Yulong Miao¹, Dong Yang², Fuping Zeng², Ju Tang²

¹Chongqing Electric Power Company Electric Power Research Institute; ²School of Electrical Engineering, Wuhan University

P-MD-22: Condition Assessment of 230 kV Cables at a Power Plant. Study of Remaining Life and Life Extension

Aitor Kortajarena¹, Imanol Loureiro¹, Mikel Saralegi¹, Sebastian Moreno²

¹TECNALIA, Spain; ²INFISAT, Spain

P-MD-23: Return Voltage Measurements - a Promising Tool for the Diagnosis of the Insulation Condition of Power Transformers

Rainer Patsch

University of Siegen, Germany

P-MD-24: Design and Application of an UHF Microstrip Circular Antenna for Partial Discharges Detection in Power Transformers

George Victor Rocha Xavier, Edson Guedes da Costa, Alexandre Jean René Serres, Herbert Filipe Santos Sousa, Adriano Costa de Oliveira, Luiz Augusto Medeiros Martins Nóbrega
Federal University of Campina Grande, Brazil

P-MD-25: Instrumental Inspection Methodology to Evaluate Corrosion in Transmission Line Glass Insulator Metallic Pins

Ricardo Bezerra¹, Edemir Luiz Kowalski², Fernando Wilson Concecao¹, Jose Maria Teixeira Jr¹, Oswaldo Santos Filho¹
¹Eletrobras Eletronorte, Brazil; ²Institutos LACETEC, Brazil

P-MD-26: A Structure for Automatically Extracting and Identifying Internal Overvoltage Measured in Distribution Networks Based on FSWT-SSAE

Xun Zhang¹, Han Zhang², Rongbin Xie¹, Zhengzheng Fu², Lijin Zhao¹, Huarong Zeng¹, Yi Wen¹, Wenxia Sima²
¹Electric Power Research Institute of Guizhou Power Grid Co. Ltd; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University

P-MD-27: Fault Diagnosis Methods for Vegetable Oil Transformers

Shiyue Du, Haoxi Cong, Qingmin Li
North China Electric Power University, People's Republic of China

P-MD-28: Study on Residual Life Prediction Method of Basin-type Insulator Based on Activation Energy

Peng Ren¹, Haoxi Cong¹, Qingmin Li¹, Hu Jin², Ruihai Li²
¹North China Electric Power University, People's Republic of China; ²Electric Power Research Institute, China Southern Power Grid, Guangzhou 510663, China

P-MD-29: Polarisation mechanisms and their effects in cable joints

Theresa Joubert, Jerry Walker
Vaal University of Technology, South Africa

P-MD-30: Application of Raman Spectroscopy for the Analysis of Methyl Acetate Dissolved In Transformer Oil

Zhaoliang Gu¹, Wenbing Zhu¹, Mengzhao Zhu¹, Di Wu², Jiabin Zhou¹, Jian Wang¹, Qingdong Zhu¹, Weigen Chen³
¹State Grid Shandong Electric Power Research Institute, People's Republic of China; ²Shandongzhongshiyitong Group Co.Ltd; ³State Key Laboratory of Power Transmission Equipment & System Security and New Technology (Chongqing University);

P-MD-31: Transformer Fault Diagnostics- Feature Selection for Classification (Artificial Intelligence Techniques)

Tamilalagan Natarajan
Curtin University, Australia

P-MD-32: A Temperature Monitoring System for SF6 Circuit Breaker Quenching Pot Based on Temperature Field Analysis

Chen Xingang, Li Changxin, Ma Jun
Chongqing University of Technology, People's Republic of China

P-MD-33: A generalized model for wind turbine anomaly identification using combination prediction approach and information entropy

Peng Sun, Xiaokuo Kou, Gang Fu
State Grid Company, People's Republic of China

P-MD-34: Transient Temperature Rise Characteristic of Oil Immersed Distribution Transformer

Hongbin Wang¹, Wenxiong Mo¹, Kuang Yin¹, Wei Cao², Yin Qin¹, Yadong Fan², Lin Gan¹, Jianguo Wang²
¹Power Test and Research Institute Guangzhou Power Supply Company, People's Republic of China; ²School of Electrical Engineering, Wuhan University

P-MD-35: Only Divide Data: Mechanical Fault Severity Diagnosis Method of High Voltage Circuit Breaker**Yuanwei Yang, Yonggang Guan**

Tsinghua University, People's Republic of China

P-MD-36: Research on SF₆ Sulfur-containing Decomposition Components by Different Metallic Wire-type Free Conducting Particles under Positive DC Partial Discharge**Zhengqin Cao¹, Ju Tang^{1,2}, Fuping Zeng²**¹Chongqing University, People's Republic of China; ²Wuhan University, People's Republic of China**P-MD-37: Laboratory Experimental Research on Circuit Breaker Extinguishing Performance****Wei Wang¹, Zhongzheng Ning¹, Bo Zhang², Dong Wang², Xingquan Huang², Wenyan Dong¹, Da Jiang¹**¹Beijing Key Laboratory of High Voltage & EMC, People's Republic of China; ²State Grid Henan Electric Power Company Electric Power Research Institute, People's Republic of China**P-MD-38: A Comparative Study on Infrared Detection and Ultrasonic Detection of Power Distribution Equipment****Qian Wang, Chenjie Ji, Jing Sun, Wen Sun**

Xi'an University of Technology, People's Republic of China

P-MD-39: Equivalence Analysis of Off-line Test and On-line Detection Technology Based on Data Accuracy**Rongbin Xie¹, Chunlei Ma¹, Jing Xue¹, Yu Chen², Youyuan Wang², Leifeng Huang²**¹Guiyang power supply bureau, China Southern Power Grid; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University**P-MD-40: Fiber Optic Fabry-Perot Sensor with Stabilization Technology for Acoustic Emission Detection of Partial Discharge****Wei-Chao ZHANG^{1,2}, Qi-Chao CHEN¹, Li-Yong ZHANG², Hong ZHAO¹**¹Harbin University of Science and Technology, Harbin, Heilongjiang Province, People's Republic of China; ²FuTong Group Co., Ltd., Hangzhou, Zhejiang Province, People's Republic of China**P-MD-41: Research of the vibration characteristics in GIS Disconnecter under different Contact State****Yong-yong Jia¹, Bang Wu², Shanyuan Sun², Jinggang Yang¹, Siqi Song¹, Junhao Li²**¹State Grid Jiangsu Electric Power Company Research Institute, People's Republic of China; ²State Key Laboratory of Electrical Insulation and Power Equipment in Xi'an Jiaotong University**P-MD-42: The Influence of Free Wire-type Conducting Particles on SF₆ Sulfur-containing Decomposition Components Under Positive DC Partial Discharge****Yongjian ZHOU¹, Fuping ZENG², Zhengqin CAO¹, Ju TANG^{1,2}, Qiang YAO³, Yulong MIAO³**¹Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, People's Republic of China; ²School of Electrical Engineering, Wuhan University, Wuhan 430072, China; ³Chongqing Power Company, Chongqing 401123, China**P-MD-43: Instrumentation for Monitoring and Analysis of Partial Discharges: Viewer and Report Generator****Helio Amorim, Vinicius Landeira, Andre Tomaz, Daniel Argolo**

Cepel – Electrical Energy Research Center, Brazil

P-MD-44: Power Transformer Fault Diagnosis Model Based on Association Rules Analysis**Rongbin Xie¹, Chunlei Ma¹, Jing Xue¹, Xuanhong Liang², YouYuan Wang², Houying Li²**¹Guiyang Power Supply Company, China Southern Power Grid, People's Republic of China; ²Chongqing University, People's Republic of China**P-MD-45: Generation of Reproducible Reference Insulation Defects in Experimental Tests Cells for Controlled PD monitoring****Fernando Alvarez¹, Fernando Garnacho², Ángel Ramírez², Eduardo Arcones¹, Pablo García¹, Carlos Alberto Vera¹**¹Universidad Politécnica de Madrid, Spain; ²LCOE-FFII, Spain

O-AM4: Oral session for Aging, Space Charge, and Maintenance

Time: Wednesday, 12/Sep/2018: 4:00pm - 5:30pm, Location: Vergina

Session Chair: Yasuhiro Tanaka, Apostolos Kyritsis

O-AM4-1: Effect of Low Molecular Weight Acids and Moisture on Space Charge of Oil Impregnated Paper Insulation

Zhou Mu, S.Y Matharage, Zhongdong Wang, Qiang Liu

The University of Manchester, United Kingdom

O-AM4-2: Empirical Conductivity Equation for the Simulation of Space Charges in Polymeric HVDC Cable Insulations

Christoph Joergens, Markus Clemens

University of Wuppertal, Germany

O-AM4-3: Influence of Field Strength and Temperature on the Space Charge Distribution in Epoxy under DC Stress

Thomas Wendel¹, Josef Kindersberger¹, Maria Hering²

¹Technical University of Munich - Chair of High Voltage Engineering and Switchgear Technology, Germany;

²Siemens AG, Energy Management Division, Germany

O-AM4-4: PEA Space Charge Performance of HTV Silicone Rubber in the Process of Water Permeation

Tingyu Jiang, Xidong Liang, Shaohua Li, Weining Bao, Qian Wang

Tsinghua University, People's Republic of China

O-AM4-5: High Repetition Rate Space Charge Measurement of Heat-treated Low-density Polyethylene at Prebreakdown

Ling Zhang^{1,2}, Zekai Lu³, Zixia Cheng³, Yuanxiang Zhou^{1,4}, Xiaoyang Cui⁵

¹State Key Laboratory of Control and Simulation of Power Systems and Generation Equipment, Department of Electrical Engineering, Tsinghua University, Beijing 100084, China; ²State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an 710049, China; ³School of Electrical Engineering, Zhengzhou University, Zhengzhou 450001, China; ⁴School of Electrical Engineering, Xinjiang University, Urumqi 830047, China;

⁵Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

O-AM4-6: Effect of Thermally Induced Self-assembly of β Nucleating Agents on Space Charge in Isotactic Polypropylene

Ling Zhang^{1,2}, Zhaowei Peng¹, Yuanxiang Zhou^{1,3}, Yonggang Guan¹

¹State Key Laboratory of Control and Simulation of Power Systems and Generation Equipment, Department of Electrical Engineering, Tsinghua University, Beijing 100084, China; ²State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an 710049, China; ³School of Electrical Engineering, Xinjiang University, Urumqi 830047, China

O-IS6: Oral session for High Voltage Insulation Systems

Time: Wednesday, 12/Sep/2018: 4:00pm - 5:30pm, Location: Olympia A

Session Chair: Masoud Farzaneh, Pawel Rozga

O-IS6-1: Effect of Nano- Al_2O_3 Doping Modification on AC/DC Superimposed Breakdown Characteristics of Insulating Paper

Chao Wei¹, Yang Mo², Yuncai Lu¹, Ruijin Liao², Lijun Yang², Yuan Yuan², Lihua He²

¹Electric Power Research Institute of State Grid Jiangsu Power Grid Co., Ltd., Nanjing, China; ²Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China

O-IS6-2: Dielectric Properties and 3D Printing Feasibility of UV Curable Polymer Composites

Wen-Dong Li, Li-Yuan Zhang, Chao Wang, Xiao-Ran Li, Man Xu, Guan-Jun Zhang

Xi'an Jiao tong University, People's Republic of China

O-IS6-3: Analysis of Morphology and Electrical Insulation of 3D Printing Parts

Xiaoran Li, Jia Guo, Wendong Li, Liyuan Zhang, Chao Wang, Baohong Guo, Guanjun Zhang

Xi'an Jiaotong University, State Key Laboratory of Electrical Insulation and Power Equipment, People's Republic of China

O-IS6-4: Pin-Pex Insulation for AAAC Conductor of a 20-kV Medium-Voltage Power Network System

Rini Nur Hasanah, Moch Dhoir, Hadi Suyono, Unggul Wibawa, Lunde Ardhenta, Rizki Adhi Priawan
Faculty of Engineering - Brawijaya University, Indonesia

O-IS6-5: Research on Dynamic Response of Power Transformer Windings under Short Circuit Condition

Shuang Wang, Shuhong Wang, Ting Zhu, Naming Zhang, Hailin Li, Hao Qiu
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, People's Republic of China

O-IS6-6: Micro Structural and Electrical properties of Liquid Silicone Rubber Used for External Insulation

Sijiao Wang¹, Zhimin Dang¹, Junwei Zha²
¹Tsinghua University, People's Republic of China; ²University of Science and Technology Beijing, People's Republic of China

O-EM1: Oral session for Electromagnetic Fields

Time: Thursday, 13/Sep/2018: 9:00am - 11:30am, Location: Vergina
Session Chair: Ioannis Stathopoulos, Aydogan Ozdemir

O-EM1-1: Application of Multiple Modelling Techniques for Analysis of Very Fast Transient Overvoltages in GIS

Jonathan James¹, Maurizio Albano¹, Manu Haddad¹, Dongsheng Guo²
¹Cardiff University; ²National Grid House

O-EM1-2: Conductive Interference Analysis in Photovoltaic Installations with Neighboring Pipelines

Theofilos Papadopoulos¹, Andreas Chrysoschos², Konstantinos Pavlou², George Georgallis², Katia Damianaki³, Ioannis Gonos³

¹Democritus University of Thrace, Greece; ²Cable Hellenic Cables S.A., Viohalco Group, Greece; ³National Technical University of Athens, Greece

O-EM1-3: Development of Nanosecond Pulse Generator Based on Dual-Driver

Jianhao MA, Shoulong DONG, Hongmei Liu LIU, Jianwen TAN, Chenguo YAO
State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University Chongqing 400044 China

O-EM1-4: Static Voltage Distribution of a Multi-Break Mechanical Switch for Hybrid HVDC Breaker

Daochun Huang, Xuezhong Wang, Zhibin Qiu, Jiangjun Ruan, Qiuyu Yang
School of Electrical Engineering, Wuhan University, People's Republic of China

O-EM1-5: Simulation Study on the Cause of Diameter Distribution of Contamination Particle on Porcelain Insulator Surface in High Voltage Electrostatic Field

Yunpeng Jiang¹, Lee Li¹, Rumeng Wang¹, Ming Lu², Yiwen Jiang¹, Zehui Liu²
¹State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science & Technology, People's Republic of China; ²State Grid Henan Electric Power Research Institute

O-EM1-6: A Static Field Equivalence Method for Simulation of Fitting Surface Electric Field of ± 500 kV DC Yards in Converter Stations

Yiming Xie¹, Shuo Jin¹, Zhiye Du¹, Yu Shi², Zhibin Qiu¹, Yongqing Deng¹, Sheng Zhou³
¹School of Electrical Engineering, Wuhan University, People's Republic of China; ²College of Electrical and Information Engineering, Anhui University of Science and Technology, Huainan, People's Republic of China; ³Technical Training Center of State Grid Hubei Electric Power Co., Ltd. Wuhan 430072, China

O-EM1-7: Design of Grading Ring for Composite Cross-arm in 500 kV Single-Circuit Transmission Tower

Penglong He¹, Zhenhua Yu², Qingzhou Yang², Bo Zhang¹
¹Tsinghua University, People's Republic of China; ²Hubei Electric Engineering Corporation, Wuhan, People's Republic of China

O-EM1-8: Optimization of Corona Radio Interference Levels in HVDC Transmission Lines**Carlos Tejada-Martinez¹, Fermin P. Espino-Cortes¹, Suat Ilhan², Aydogan Ozdemir²**¹Instituto Politécnico Nacional, Mexico; ²Istanbul Technical University, Turkey**O-EM1-9: Factors Affecting the Water Droplet Behavior on Mica Sheets under the Influence of Homogeneous Electric Fields****S. Maslougkas¹, Michael Danikas¹, R Sarathi², Ahmad Basri A. Ghani³**¹Democritus University of Thrace, Greece; ²IIT Madras; ³TNB Research Sdn. Bhd., 43000 Kajang, Selangor, Malaysia**O-EM1-10: Two-stage Cascaded EHD Air Pump Evaluation****Antonios Moronis, Emmanouil Fylladitakis, Ioannis Raptis**

University of West Attica, Greece

O-IS7: Oral session for High Voltage Insulation Systems

Time: Thursday, 13/Sep/2018: 9:00am - 11:30am, Location: Olympia A

Session Chair: Pantelis N. Mikropoulos, Yushun Zhao

O-IS7-1: Impregnation Efficiency of Selected Dielectric Liquids Assessed on the Basis of Capillary Effect**Pawel Rozga**

Lodz University of Technology, Institute of Electrical Power Engineering, Poland

O-IS7-2: Effects of Temperature on Partial Discharge and Breakdown Characteristics of an Ester Liquid under AC stress**Yiming Huang, Qiang Liu, Zhongdong Wang**

School of Electrical & Electronic Engineering The university of Manchester, United Kingdom

O-IS7-3: Sealed Vessel Tests of Plain Kraft to Determine Arrhenius Curve Parameters**Kevin James Rapp¹, Alan Sbravati¹, Patrick McShane¹, John Luksich²**¹Cargill, Inc, United States of America; ²Luksich - Consultant, United States of America**O-IS7-4: Outdoor Insulator Surface Condition Evaluation using Image Classification****Damira Pernebayeva, Diana Sadykova, Alex James, Mehdi Bagheri**

Nazarbayev University, Kazakhstan

O-IS7-5: Surface Electrical Performance of Epoxy Resin and Polytetrafluoroethylene under Arc Ablation**Ze Yin, Wenxia Sima, Potao Sun, Qianqiu Shao, Hang Xu**

Chongqing University, People's Republic of China

O-IS7-6: Electric Properties and Dielectric Spectra of Epoxy-based Nanocomposites**Marlene Stuefer, Josef Kindersberger**

Technical University Munich TUM, Germany

O-IS7-7: Study on Thermal and Electrical Properties of Epoxy Resin Chain extension for Basin-type Insulators**Kerong Yang¹, Yushun Zhao¹, Weijiang Chen², Xuepei Wang¹, Yuanhan He¹**¹Hefei university of technology, People's Republic of China; ²China Electric Power Research Institute, People's Republic of China**O-IS7-8: Study on Residual Stress of Epoxy Resin under Different Cooling Methods****Yushun Zhao, Tianqi Zheng, Kerong Yang, Xuepei Wang, Yuanhan He**

Hefei University of Technology, People's Republic of China

O-IS7-9: Influence of Electric Field Type and Its Intensity on Contamination Accumulation Characteristics of Glass Specimen**Hongwei Mei¹, Mingzhe Li¹, Liming Wang¹, Zhicheng Guan¹, Song Gao², Jie Chen²**¹Graduate School at Shenzhen, Tsinghua University, People's Republic of China; ²Jiangsu Electric Power Company Research Institute

O-TE1: Oral session for Transients and EMC

Time: Thursday, 13/Sep/2018: 9:00am - 11:30am, Location: Olympia B

Session Chair: Alexandre Piantini, Peter Wouters

O-TE1-1: Resistive Coupling Effect to Customer Premises Equipment (CPE) due to Non-equipotential Earthing System

Annuar Ramli, Norazlin Jamlus, Azmi Ibrahim, Fadzil Amiruddin
TELEKOM MALAYSIA, Malaysia

O-TE1-2: Effect of Concentrated Tower Grounding System Modeling on the Minimum Backflashover Current and BFR of 150 and 400 kV Overhead Transmission Lines

Zacharias G. Datsios, Pantelis N. Mikropoulos, Thomas E. Tsovilis, Sofia I. Angelakidou
High Voltage Laboratory, Aristotle University of Thessaloniki, Greece

O-TE1-3: Zero Missing Effect Transient Analysis on the 150 kV AC Interconnection between Crete and Peloponnese

Dimosthenis Spathis¹, Thekla Boutsika¹, John Prousalidis², Konstantinos Tsirekis³, John Kabouris³, Athanasios Georgopoulos³

¹PROTASIS, Greece; ² National Technical University of Athens, Greece; ³ADMIE, Greece

O-TE1-4: 220 kV Circuit Breaker Modeling and Its Parameter Determination Based KAMA Arc Model

Xun Zhang¹, Kai Dai², Lijin Zhao¹, Zhengzheng Fu², Huarong Zeng¹, Yi Wen¹, Rongbin Xie³, Xiaohong Ma¹, Wenxia Sima²

¹Electric Power Research Institute of Guizhou Power Grid Co. Ltd, Guiyang 550002, China; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing 400044, China; ³Guiyang Power Supply Bureau, Guiyang 550002, China

O-TE1-5: Calculation and Site Tests on Artificial Grounding Experiments of UHVDC Transmission Lines

Bing Luo, Jian Shi, Fuzheng Zhang, Fusheng Zhou, Wei Xiao, Yifan Liao, Lei Jia, Ruixian Li, Yi Zhang
Electric Power Research Institute, CSG, People's Republic of China

O-TE1-6: Lightning Induced Overvoltages in the Electric Network of a Ship

Eleni Nicolopoulou, Ioannis F. Gonos, Ioannis Stathopoulos
National Technical University of Athens

O-TE1-7: Research on DC Component Decay Time Constant of 1000 kV AC Filter Circuit Breakers in UHV Converter Station

Zhengqiang Li^{1,2}, Mian Fan^{1,2}, Zhipeng Zha^{1,2}, Peihong Zhou^{1,2}

¹State Key Laboratory of Power Grid Environmental Protection, People's Republic of China; ²China Electric Power Research Institute, People's Republic of China

O-TE1-8: Accuracy of Switching Transients Measurement with Open-air Capacitive Sensors near Overhead Lines

Peter Wouters¹, Fani Barakou¹, Shima Mousavi Gargari², Jacco Smit², Fred Steennis³

¹Eindhoven University of Technology, The Netherlands; ²TenneT TSO B.V., The Netherlands; ³DNV GL, The Netherlands

O-TE1-9: Measuring Transient and Steady State Electric Field Emissions of Space Equipment for EMC and Cleanliness Purposes

Christos D. Nikolopoulos, Anargyros T. Baklezos, Christos N. Capsalis
National Technical University of Athens, Greece

O-TE1-10: High Frequency Transients Suppression at Substation

Sergey Korobeynikov, Nikolay Ilyushov, Yury Lavrov, Stanislav Shevchenko, Valentin Loman
Novosibirsk State Technical University, Russian Federation

P-TM: Poster session for High Voltage Testing and Measurement

Time: Thursday, 13/Sep/2018: 9:00am - 12:00pm, Location: Poster Area
Session Chair: Panagiotis Svarnas

P-TM-1: Research of Grading Ring for High Altitude 500 kV Compact Transmission Line

Cao Jing¹, Quan Shanshan¹, Liang Jinxiang¹, Wu Xiong¹, Peng Zongren²

¹China electric power research institute; ²State Key Laboratory of Electrical Insulation and Power Equipment (Xi'an Jiaotong University) Xi'an 710049 China

P-TM-2: Determination of Estimated, Consumed and Remaining Lifetimes of Paper - Oil Transformers Insulation Based on Winding Insulation Resistance

Petru Notingher¹, Gabriel Tanasescu²

¹University POLITEHNICA of Bucharest, Romania; ²SIMTECH INTERNATIONAL Bucharest, Romania

P-TM-3: Numerical Modelling of Guarded Conductivity Measurement Setups: Identification of Fringing Influences and Design Recommendations

Claudius Freye, Lukas Höttecke, Frank Jenau

TU Dortmund University, Germany

P-TM-4: Effect of Surface Charges on the Surface-breakdown Characteristics of Polytetrafluoroethylene

Wenxia Sima, Hang Xu, Potao Sun, Qianqiu Shao, Ze Yin

Chongqing University, State Key Laboratory of Power Transmission Equipment & System Security and New, People's Republic of China

P-TM-5: An Online Monitoring Device for Pantograph Catenary Arc Temperature Detect Based on Atomic Emission Spectroscopy

Zheng Xu, Guoqiang Gao, Zefeng Yang, Wenfu Wei, Guangning Wu

Southwest Jiaotong University .Chengdu High-tech zone, Sichuan Province, China

P-TM-6: CaSO₄ Content in Contamination Influence on AC Pollution Flashover Characteristics of XWP2-160 Porcelain Insulator String

Daochun Huang, Wei Lu, Yongqing Deng, Jiangjun Ruan, Ziteng Xiong

School of Electrical Engineering, Wuhan University, People's Republic of China

P-TM-7: Simulation Study on Interturn Short Circuit of Rotor Windings in Generator by RSO Method

Tianhui Li¹, Boyan Jia¹, Bin Ding¹, Hui Fan¹, Ming Tang², Xiaofeng Li¹, Chi Dong¹, Tianran Li¹, Lu Sun¹, Zhen Liu¹, Ersong Chen¹

¹State Grid Hebei Electric Power Research Institute, People's Republic of China; ²CYG CONTRON CO., LTD, People's Republic of China

P-TM-8: Kelvin Probe for Surface Potential Measurements on Epoxy Insulator for HVDC Applications

Michael Schueller¹, Robin Gremaud², Matthias Bauer², Lorenz G. Herrmann², Jasmin Smajic¹

¹University of applied sciences Rapperswil / Institute of Energy Technology (IET), Switzerland; ²ABB Cooperate Research Ltd, Switzerland

P-TM-9: Experimental Study of Live Working Safety Distance on UHV DC Transmission Line by Helicopter Hanging Basket

Yujian Ding¹, Weidong Liu², Yi Wu², Xiuyuan Yao¹

¹CHINA ELECTRIC POWER RESEARCH INSTITUTE, People's Republic of China; ²State Grid General Aviation Company, People's Republic of China

P-TM-10: Investigation of MV Power Cable Lines Using DAC Method for Assessment of the Technical Conditions of the Lines

Slawomir Noske¹, Aleksandra Rakowska², Krzysztof Siodla²

¹Energa Operator S.A.; ²Poznan University of Technology, Poland

P-TM-11: Metrology for Very Fast Current Transients

Stephan Passon¹, Jussi Havunen², Johann Meisner¹, Michael Kurrat³

¹Physikalisch-Technische Bundesanstalt, Germany; ²VTT Technical Research Centre of Finland Ltd; ³TU-Braunschweig, elenia;

P-TM-12: Discussion and Overvoltage Analysis of NSDD in the Capacitive Current Switching Test of Vacuum Circuit-Breaker

Guangwei Fan, Haojun Liu, Yuqiang Shi

Xi'an High Voltage Apparatus Research Institute Co., Ltd., People's Republic of China

P-TM-13: Research on Calibration System for Electronic Transformer in Alpine region

Zhao Huan², Fei Ye^{1,5}, Chen Jiangbo¹, Mao Anlan¹, Wang Jingjing³, Yu Chunlai⁴, Chen Lei¹, Chen Zhiwei¹

¹China Electric Power Research Institute, People's Republic of China; ²China Southern Power Grid, People's Republic of China; ³State Grid Electric Power Research Institute, People's Republic of China; ⁴Heilongjiang Electric Power Research Institute, People's Republic of China; ⁵North China Electric Power University, People's Republic of China

P-TM-14: Research and Application of Performance Verification Platform and Evaluation System for Partial Discharge Detector

Jin Wang, Min Zhang, Lin Gan, Wenxiong Mo, Hongbin Wang, Yu Qin, Simin Luo

Guangzhou Power Supply Bureau, People's Republic of China

P-TM-15: A New model of Metal Oxide Arresters and the Recognition of Model Parameters

Lixiong Sun¹, Kun Qin¹, Daming Cui¹, Jiayu Tan², Lin Du²

¹Southern Power Grid Company Limited Baoshan Power Supply Bureau; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology

P-TM-16: A Study of Partial Discharge Behavior of Multiple Cavity Defects in Epoxy Insulation Material

Isaac Kwabena Kyere¹, Jerry Walker², Cuthbert Nyamupangedengu³

¹Vaal University of Technology, South Africa; ²Vaal University of Technology, South Africa; ³University of the Witwatersrand, Johannesburg, South Africa

P-TM-17: Effects of Airflow on Atmospheric Pressure Surface Dielectric Barrier Discharge

Wenfu Wei, Shuai He, Shuai Wang, Xin Yan, Guoqiang Gao

School of Electrical Engineering, Southwest Jiaotong University, People's Republic of China

P-TM-18: Procedure for Determining the Growth of Water Trees in Cable Samples during 500 Hz Accelerated Ageing

Adewumi Olujana Adeniyi¹, Jerry Walker², Cuthbert Nyamupangedengu³

¹Vaal University of Technology, South Africa; ²Vaal University of Technology, South Africa; ³University of the Witwatersrand, Johannesburg, South Africa

P-TM-19: Effect of Moisture on Breakdown Strength of Oil-paper Insulation under Different Voltage Types

Leifeng Huang¹, Youyuan Wang¹, Xi Li¹, Chao Wei², Yuncui Lu²

¹ChongQing University, People's Republic of China; ²Jiangsu Electric Power Company Research Institute, Nanjing, China

P-TM-20: Study on Time-Frequency Entropy Method to Make Feature Extraction for DC PD Pulse Waveshapes

Wenrong Si¹, Chenzhao FU¹, Lu CHEN¹, Shaojing WANG¹, Peng YUAN²

¹State Grid Shanghai Electrical Power Research Institute, People's Republic of China; ²Xi'an MaoRong Power Equipment Co., Ltd

P-TM-21: Partial Discharge Growth Characteristics of Transformer Insulation Board under AC-DC Compound Electric Field

Xinru Yu, Jianxin Guan, Huanchao Cheng, Pengfei Jia, Chao Wu

China Electric Power Research Institute, People's Republic of China

P-TM-22: Integration Wiring Design of Routine Tests for 1000 kV Power Transformers

Miao Yu¹, Mengzhou Zhu¹, Guang Chen¹, Jiansheng Li¹, Jun Jiang²

¹State Grid Jiangsu Electric Power Co. Ltd. Research Institute, Nanjing 211103, People's Republic of China; ²Nanjing University of Aeronautics and Astronautics, Nanjing 211106, People's Republic of China

P-TM-23: Analysis of Partial Discharge Signals from Generator Propagation in Excitation Transformer by EMTP

Tianyan Jiang^{1,2}, Xiang Liu¹, Maoqiang Bi¹, Xi Chen¹, You Wang³

¹Chongqing University of Technology, People's Republic of China; ²State Key Laboratory of Power Equipment & System Security and New Technology, Department of High Voltage and Insulation Engineering, School of Electrical Engineering, Chongqing University; ³Chongqing Vocational Institute of Engineering;

P-TM-24: Research on Moisture Content Evaluation Algorithm of Transformer Oil-Paper Insulation System

Mingze Zhang¹, Ji Liu¹, Pengshuai Qi¹, Qingguo Chen¹, Jialu Lv¹, Yufei Sun¹, Xin Chen²

¹Harbin University of Science and Technology, People's Republic of China; ²Heilongjiang Electric Power Research Institute, People's Republic of China

P-TM-25: Displaced Neutral on Woodpole Structures with a 300 kV BIL

Taryn Robin Becker, Jerry Walker

Vaal University Of Technology, South Africa

P-TM-26: Cable Condition Diagnosis Based on Cable Surface Temperature

Huajie Yi¹, Chengke Zhou¹, Martin Kearns², Graham Peers²

¹Glasgow Caledonian University, United Kingdom; ²EDF Energy, United Kingdom

P-TM-27: Leakage Current Patterns Observed in Polymeric Insulators Rotating Subjected to Wheel and Dip Test

Alok Ranjan Verma, Subba Reddy Basappa

Indian Institute of Science, Bangalore, India, India

P-TM-28: The Effect of an Electrostatic Probe on Measurement of the Surface Charge

Bo Chen, Tiebing Lu, Donglai Wang, Yuan Wang

North China Electric Power University, Beijing, China

P-TM-29: Multi frequency ultrasonic detection of water content in transformer oil with GA-BPNN

Zhuang Yang¹, Qu Zhou^{1,2}, Xiaodong Wu¹, Chao Tang^{1,2}, Jian Hao², Weigen Chen²

¹Southwest University, People's Republic of China; ²Chongqing University, People's Republic of China

P-TM-30: Research on the Multiple Status Parameter Detection Technology of the Substation Equipment

Chen Min¹, Wenlin He¹, Zheng Hong², Haojun Liu¹, Kai Wang³, Jun Jiang³

¹State Grid Zhejiang Electric Power Co. Ltd. Research Institute, People's Republic of China; ²Hangzhou Kelin Electric Power Equipment Co., Ltd; ³Nanjing University of Aeronautics and Astronautics

P-TM-31: Effect of Humidity on the Detection of Dissolved Gases in Transformer Oil for Tin Oxide Based Gas Sensor

Zikai Jiang¹, Weigen Chen¹, Lingfeng Jin¹, He Zhang¹, Fang Cui¹, Xiabo Li²

¹State Key laboratory of Power Transmission Equipment and System Security, Chongqing university, People's Republic of China; ²State Grid DeZhou Power Supply Company

P-TM-32: The On-site Measurement Research of Converter Transformer Harmonic Losses Based on Harmonic Power Source

Pengfei Jia, Shuqi Zhang, Xinru Yu, Chao Wu, Jianxin Guan

China Electric Power Research Institute, People's Republic of China

P-TM-33: De-noising of GIS Partial Discharge Signal Corrupted with Narrow-band Noise using Shannon Wavelet

Yulong Miao¹, Siyuan Zhou², Ju Tang², Xiaping Zhang², Fuping Zeng², Yin Zhang²

¹Electric Power Research Institute, State Grid Chongqing Electric Power Company, Chongqing 401123, China; ²wuhan university, People's Republic of China



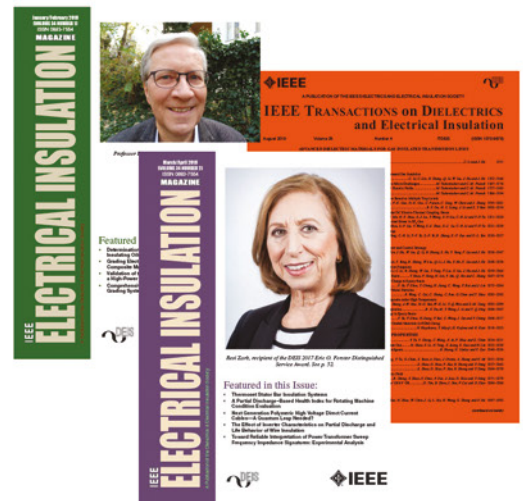
IEEE Dielectrics and Electrical Insulation Society

Who are we?

The Dielectrics and Electrical Insulation Society (DEIS) is the IEEE technical society that covers the study and application of dielectrics from the molecular level, through nano-structured materials, to insulation systems in industrial, commercial, and power system equipment, to emerging applications such as those at high power levels and in biological and other small-scale systems.

Why Join DEIS?

- DEIS helps you to remain technically current
- Free online access to the complete IEEE Transactions on Dielectrics and Electrical Insulation and printed copies at reduced cost
- IEEE Electrical Insulation Magazine: Free paper copies and free online access to the complete record of EIM articles
- Network with others in the profession and enhance your stature/gain recognition
- Enhance your career opportunities
- Receive discounted registration fees at all IEEE conferences
- Receive additional discounts at DEIS sponsored conferences
- Help build and give back to your technical profession
- Low DEIS membership fees (US\$26 for members, US\$13 for students)



DEIS Fully Sponsored Conferences

- Conference on Electrical Insulation and Dielectric Phenomena (CEIDP)
- Electrical Insulation Conference (EIC)
- International Conference on Dielectrics (ICD)
- International Conference on Dielectric Liquids (ICDL)
- International Conference on Electrical Materials and Power Equipment (ICEMPE)
- International Conference on High Voltage Engineering (ICHVE)
- International Conference on Properties and Applications of Dielectric Materials (ICPADM)
- International Power Modulator and High Voltage Conference (IPMHVC)
- International Symposium on Electrets (ISE)

Other Benefits of DEIS

- Fellowships for graduate students
- Student awards and student travel grants provided by DEIS sponsored conferences
- Two professional DEIS awards and several professional awards provided DEIS sponsored conferences
- Discounted subscription of the printed Transactions of DEIS
- Join DEIS technical committees and standards working groups
- Join DEIS chapters, IEEE Women in Engineering and IEEE Young Professionals
- DEIS supports members to reach higher IEEE membership grades of IEEE Senior Member and IEEE Fellow

Learn more about DEIS's activities and on how to become a member by visiting the DEIS website <https://ieeedeis.org/>

Access World-Class Power Engineering & Technology Research with IET Publishing

IET Journals' extensive portfolio of power engineering research titles allows you to keep up to date with the latest research and publish your work to a global audience.

Our specialist power engineering journals include:

- High Voltage
- IET Nanodielectrics – **new for 2018!**
- IET Electrical Power Applications
- IET Electrical Systems in Transportation
- IET Generation, Transmission & Distribution
- IET Power Electronics
- IET Renewable Power Generation
- IET Smart Grid

Quickly and easily accessible through SCI, SCI-E, IET Inspec, Scopus, Ei Compendex, and Google Scholar

**To view articles or submit your research paper
visit the IET Digital Library**

www.ietdl.org/journals

Open Access Opportunities

IET Publishing's Open Access programme showcases the best in engineering science. Covering the latest research topics, our fully Open Access journals offer you a place to publish your most innovative and novel work and make it accessible to anyone wishing to read it, cite it and re-use it. For further information email journals@theiet.org.

The Institution of Engineering and Technology (IET) is working to engineer a better world. We inspire, inform and influence the global engineering community, supporting technology innovation to meet the needs of society. The Institution of Engineering and Technology is registered as a Charity in England and Wales (No. 211014) and Scotland (No. SC038698).

E7F18005/ICHVE



**ON YOUR SITE
WHEREVER YOU ARE**

Recognized as a leading innovator with more than one hundred years of experience, we develop and manufacture high quality HV test and measuring systems. Whether at the factory or on-site, we are on your side. Because we want everything to be as simple as possible for you.