



ICEPE-ST2017

4th International Conference on Electric Power Equipment- Switching Technology

Oct. 22nd~25th, 2017 Xi'an, China



Organized By:



西安交通大学
XI'AN JIAOTONG UNIVERSITY



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WELCOME MESSAGE FROM THE CHAIRMAN



各位代表，大家好！

我以本次会议主席的名义热忱的欢迎大家来到古城西安，参加第四届ICEPE-ST会议。本会议于2011年秋天在西安第一次召开，其后分别在日本和韩国依次召开了第二和第三届会议，经过六年之后会议召开地点又一次来到西安，西安交通大学和电力设备电气绝缘国家重点实验室作为本次会议的组织单位和东道主感到非常高兴和愉快，我们期待着与老朋友的见面，同时希望结识更多的新朋友。

随着经济、社会的发展和科学技术的蒸蒸日上，对于电气装备工程领域也提出了许多新的要求，高压直流开断技术、真空开断技术、环境友好气体成为大家研究的新热点，本次会议将会结合这些热点问题展示大家的研究成果和进行学术交流，进一步启发大家的思路，开拓新的研究方向和路线。我们十分期待本次会议即将展现的热烈讨论和交流的场面。

本次会议的会场选择在具有历史感的西安古城墙脚下，这里曾是中国的首都，也是古丝绸之路的起点，2000年前中国的先贤们就从这里出发，走向中亚、走向欧洲、走向世界各地，通过他们坚韧不拔的开拓，实现了人类文明的交融和互相促进。今天，我们迎来的全球化的新时代，更多的挑战摆在我们面前，需要我们进一步加强合作与交流，共同促进文化与科技的发展。

我预祝大会圆满成功，祝愿全体代表在西安期间健康、愉快！

A handwritten signature in black ink, consisting of the characters '王建华' (Wang Jianhua) in a stylized, cursive script.

王建华

第四届ICEPE-ST 大会主席

西安交通大学教授, 电力设备电气绝缘国家重点实验室主任

WELCOME MESSAGE FROM THE CHAIRMAN



Hello, delegates!

In the name of the chairman of 4th ICEPE-ST conference, I warmly welcome you to the ancient city of Xi'an to attend this conference. This conference was initiated in the 2011 in Xi'an, then successively held in Japan and Korea, after six years the meeting place once again came to Xi'an. As the host and organizer of 4th ICEPE-ST, Xi'an Jiaotong University and State Key Laboratory of Electrical Insulation and Power Equipment, we feel very happy and look forward to meeting many old friends, and also get to know more new friends.

With the development of economy and society and the upgrade of science and technology, in the field of power switching technologies there has also put forward many new requirements, H.V.D.C. interruption technology, vacuum interrupter technology and eco-friendly gas applications et.al. This meeting will be combined with these hot spots, and shows all of the research results and academic exchanges, to further enlighten the ideas, explore new research direction and route. We are looking forward to the lively discussions and exchanges that will soon be revealed at this meeting.

The meeting venue was specially put on the foot of Xi'an city wall with a sense of history, this was the capital of china and the starting point of the ancient Silk Road, 2000 years ago Chinese sages from here travel to Central Asia, to Europe, to the world, through their firm and indomitable development, realize the integration of human civilization and promote each other. Today, as we usher in a new era of globalization, more challenges lie ahead of us, and we need to further strengthen cooperation and exchanges, and jointly promote the development of culture and science and technology.

I wish the conference a complete success and wish all the delegates health and happiness during the stay in Xi'an!.

A handwritten signature in black ink, reading 'Wang Jianhua' in a cursive, flowing style.

Wang Jianhua

Chairman of 4th ICEPE-ST

Professor of Xi'an Jiaotong University

Director of State Key Laboratory of Electrical Insulation and Power Equipment

CONFERENCE COMMITTEES

International Scientific Committee

Chairman	Satoru Yanabu	Xi'an Jiaotong University, Japan
Vice Chairman	Jianhua Wang	Xi'an Jiaotong University, China
	Young-Geun Kim	LS Industrial Systems, Korea
	Eiji Kaneko	University of the Ryukyus, Japan
	Yingsan Geng	Xi'an Jiaotong University, China
	Mingzhe Rong	Xi'an Jiaotong University, China
	Lee Bang-Wook	Hanyang University, Korea
	Rene Smeets	DNV GL KEMA Laboratories, The Netherlands
	Mietek Glinkowski	Schneider, USA
	H. Oohashi	Research Institute for Applied Sciences, Japan
	Leslie T Falkingham	Vacuum Interrupters Limited, UK
Secretary	Zhiyuan Liu	Xi'an Jiaotong University, China

Local Organizing Committee

General Chairman	Jianhua Wang	Xi'an Jiaotong University, China
Executive Chairman	Mingzhe Rong	Xi'an Jiaotong University, China
Vice Chairman	Wenqiang Zhao	State Grid Pinggao Group Co. LTD., China
Chair of LOC	Yingsan Geng	Xi'an Jiaotong University, China
Secretary General	Zhiyuan Liu	Xi'an Jiaotong University, China
	Yi Wu	Xi'an Jiaotong University, China
	Qinxiao Fan	State Grid Pinggao Group Co. LTD., China
	Youpeng Zhang	State Grid Pinggao Group Co. LTD., China
	Junhui Wu	State Grid Pinggao Group Co. LTD., China
	Yahui Zhang	State Grid Pinggao Group Co. LTD., China
	Guiquan Han	State Grid Pinggao Group Co. LTD., China
	Chunping Niu	Xi'an Jiaotong University, China
	Zhenxing Wang	Xi'an Jiaotong University, China
Secretary	Liqiong Sun	Xi'an Jiaotong University, China
	Qiang Zhang	Xi'an Jiaotong University, China

LOCATION

The ICEPE-ST2017 will be held at Xi'an Grand Park Hotel in Xi'an City, Shaanxi Province, China. Xi'an, as a capital of 13 dynasties in Chinese history, has numerous interesting places. We are sure that your stay in the city will be a very enjoyable one.

Conference Location: Xi'an Grand Park Hotel

Hotel: Xi'an Grand Park Hotel (Chinese Name: 西安君乐城堡酒店)

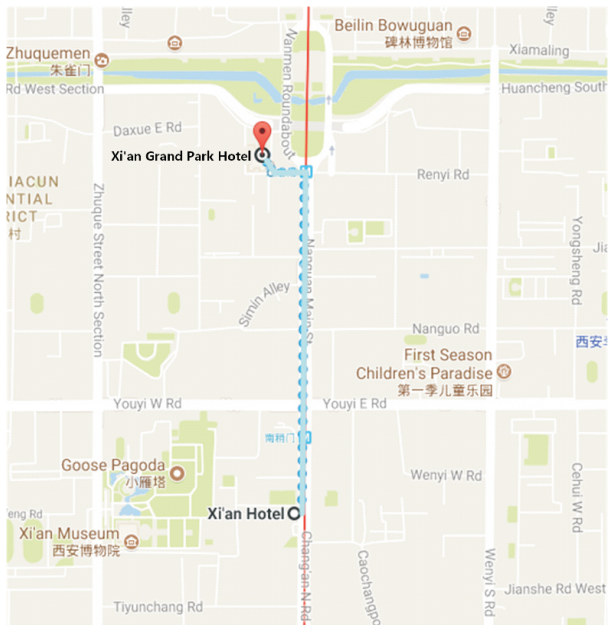
Address: 12 Xi Duan, Huan Cheng South Road, 710068, Xi'an, China

西安市碑林区环城南路西段12号 (地铁2号线永宁门站A2口, 紧邻城墙、南门广场、王府井百货) Tel: +86-29-87608888.

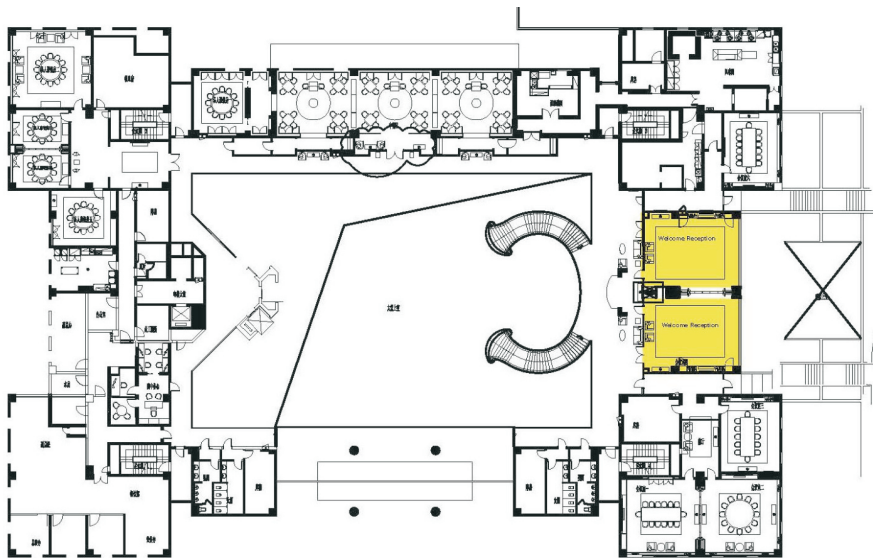
To Xi'an Grand Park Hotel:

1) From Xi'an Xianyang International Airport: the hotel is 40 kilometers away from the airport. It takes 60 minutes to reach the hotel by a taxi; or take an airport shuttle bus to Xi'an Hotel (西安宾馆). Xi'an Hotel is 1.6 kilometers away from Xi'an Grand Park Hotel. Shuttle buses between these two hotels have been arranged by the conference on October 22nd, 2017. You also can take a taxi about 10 RMB to the conference hotel from Xi'an Hotel or you can take a subway No. 2 and drop at Yongningmen(永宁门), then go out from A2 exit.

2) From Xi'an North Railway Station: the hotel is 16 kilometers away from the North Railway station. You can take a subway No. 2 and drop at Yongningmen(永宁门), then go out from A2 exit.



VENUE LAYOUT



2F



1F

CONFERENCE INFORMATION

Official Language

The official language of the conference is English, which will be used for all presentations and printed materials.

Name Badges and On-site Registration

Participants are required to wear name badges at all times in order to enter the conference area and to participate social activities. Participants can still make on-site registration at the registration desk located in the lobby of Xi'an Grand Park Hotel (1F). Service hours of registration desk are as below.

Sunday	October 22, 2017	10:00–20:00
Monday	October 23, 2017	08:30–12:00

Categories	On-site registration fee	Registration fee covers
IEEE/CES Members	USD650/RMB4400	-Conference Material
Student	USD450/RMB3000	-Admission to Session
Others	USD700/RMB4800	-Welcome Reception -Lunch & Dinner -Banquet -Technical Tour
Accompanying Person	USD250/RMB1500	-Welcome Reception -Lunch & Dinner -Banquet -Conference Tour

Lunch & Dinner

Lunch & Dinner will be provided during the conference. All participants and registered accompanying persons can have lunch and dinner at Xi'an Grand Park Hotel in the 1st floor with your meal coupons in the bag. Banquet and dinner on October 25th are arranged outside of the hotel.

Wi-Fi Access

Wireless Internet will be available in Xi'an Grand Park Hotel.

Message and Announcement Boards

Message and Announcement Boards will be set up in the registration areas so that participants can get useful information from the secretariat or other participants.

Guidelines for Oral Presentation Presenters

Please bring your presentations as a PDF file on USB Flash Memory if you do not have any video clips, with all fonts embedded so that all the mathematical symbols and

equations will project properly. This generally avoids the problem of incompatible PPT editors. A laser pointer and microphone will be provided for your use. Any additional technical equipment should be requested at least one month in advance of the presentation.

Each paper in an oral session is allocated **15 minutes**. This includes time required for introduction of the speaker, as well as time for questions from the audience. Therefore, authors are advised to prepare a 10-minutes talk and leave 5 minutes for questions at the end.

Please arrive at your session at least 10 minutes before the start of your session to load up your file into the laptop in the room. If you choose to bring PPT slides with video clips on USB, you can bring your material in a couple of different PPT versions and try out prior to the presentation. Only PowerPoint® files (.ppt or .pptx) with version of 2013 or earlier are supported for oral presentation.

If you need additional audio/visual equipment, please notify us by email icepe2017@mail.xjtu.edu.cn before 15th October. If your presentation includes videos or animations, it is strongly recommended to convert them into .gif format before insert them into the PowerPoint® document because special video format might not be displayed on the computer. Each invited talk is allocated **30 minutes**, including 25 minutes of presentation and 5 minutes of Q&A.

If you have to be absent from the ICEPE-ST2017 for some irresistible reasons, please inform us in advance via icepe2017@mail.xjtu.edu.cn.

Guidelines for Poster Presenters

The dimension of the post board is 100cm in width by 248cm in height. Poster presentation should include following items in addition to the main contents.

- Title of the presentation
- Authors' names and their organizations
- Introduction
- Conclusion

The poster boards are marked with the sequence No. of corresponding paper. Please do not cover the numbers. A poster information desk with fixing materials will be available.

Please put up your poster prior to the start of the poster session and remove it shortly after the session.

OFFICIAL & SOCIAL EVENTS

Welcome Reception

You are invited to join us at the Welcome Reception to welcome colleagues.

Date & Time: 18:00 – 20:00, October 22nd(Sunday)

Location: Xi'an Grand Park Hotel (2F)

Opening Ceremony and Plenary Session

Date & Time: 08:30 – 12:00, October 23rd(Monday)

Location: Room B&C (Yongning Ball Room 永宁殿)
Xi'an Grand Park Hotel (1F)

Banquet (Award & Closing Ceremony)

Date & Time: 11:30 – 13:00, October 25 (Wednesday)

Location : Famen Temple

CONFERENCE TOUR

Conference tour is planned to make your conference experience even more interesting and enjoyable. Please confirm your joining in at the registration desk by Sunday, October 22nd.

Date & Time	09:00 – 18:00, October 25 th (Wednesday)
Itinerary	Xi'an Grand Park Hotel - Famen Temple
Assembly Point	Lobby of Main Entrance (1F), Xi'an Grand Park Hotel

Famen Temple was built in China's Eastern Han Dynasty, about 1,700 years ago. It enjoyed the reputation of being the 'forefather of pagodas and temples in Central Shaanxi'.

The original name of temple was Asoka Stupa, and it was renamed as Famen Temple in 625AD in the Tang Dynasty. Famen means the initial approach to become a Buddhist believer. In the Tang Dynasty it was the royal temple and it covered over 165 acres, but now there is only one-24th of the original.

In 1986 our Shaanxi government decided to rebuild this pagoda, they discovered the underground palace with many Buddhist statues and scriptures when were cleaning the foundation. The discovery of the underground palace made the Remains of Sakyamuni appear in this world again and the temple into a holy-temple of Buddhism all over the world. Here we found 3 pieces of 'Shadow bones' and a piece of real bone of Sakyamuni which called Buddha's relics (sarira). All of them are looked as the holy thing of Buddhism.

Beside of this, we also discovered Bodhisattva for the holding the Remains of Sakyamuni, the gold gilded monk's cane, the incense burner and so on.



GENERAL INFORMATION

Local Time

GMT +8 hours (Beijing Time)

Climate and Weather

Xi'an is located in the central Guanzhong Plain, and nestled between rivers and mountains. The usual temperature in October is 10°C -19°C.

Business Hours

Government office hours are usually from 9:00 to 17:00 on weekdays and closed on weekends. Banks are open from 9:00 to 16:00 on weekdays and from 10:00 to 15:00 on weekends. Major stores are open day from 10:00 to 21:00.

Useful Phone Numbers

-Police 110 / Fire 119 / Ambulance 120

-Secretaries:

Liqiong Sun +86-136-3680-6801 (Mobile)

PLENARY SPEAKERS



René Peter Paul Smeets

DNV GL's KEMA Laboratories, Netherlands

Title of the Talk: Developments and Trends in European
T&D Switching Technology

René Peter Paul Smeets, IEEE Fellow, received the M.Sc. degree in physics from the Eindhoven Univ. of Technology, the Netherlands in 1981 and a Ph.D degree for research work on switchgear. He is with DNV GL's KEMA Laboratories, as a service area leader. In 2001 he was appointed part-time professor at Eindhoven University. He received six international awards. In 2013 he became adjunct professor at Xi'an Jiaotong University, China. Dr. Smeets is convener and member of working groups and study/advisory committees of CIGRE in the field of emerging high-voltage equipment such as high-voltage vacuum - and HVDC switchgear. He is convener of two maintenance teams in IEC on high-voltage switchgear. He published and edited three books and authored over 250 international papers on testing and switching in power systems.



Yasunori Tanaka

Kanazawa University, Japan

Title of the Talk: Fundamental Studies on Switching Arcs
-Experimental and Numerical Approaches -

Yasunori Tanaka received B.S., M.S., and Ph.D. degrees in electrical engineering from Nagoya University, Japan, in 1993, 1995 and 1998, respectively. In April 1998, he was appointed a Research Associate at Kanazawa University, Japan. From August 2002 to March 2010, he was Associated Professor. Presently, he has been working as Professor since April 2010 at that university. His research interests include arc interruption phenomena in circuit breakers, and fundamentals and applications of arcs/thermal plasmas: numerical simulation of thermal plasmas, nanopowder synthesis, plasma arc cutting, surface modification, etc.

PLENARY SPEAKERS



Bang-Wook Lee

Hanyang University, South Korea

Title of the Talk: HVDC Circuit Breaker – Design Considerations and Application Issues

Prof. Bang-Wook Lee is a Professor, School of Electrical engineering of Hanyang university Korea. He received B.S, M.S. and PH.D degree from Hanyang university, Seoul, Korea in 1991, 1993, 1998. Before he joined Hanyang university, he worked for LS Industrial Systems as a senior researcher for 10 years in the research field of high voltage electric equipment. After joining Hanyang university as a professor since 2008. His main research interests include HVDC insulation design, HVDC protection systems, transient phenomena analysis and the development of electrical equipment for HVDC system. He is now the member of CIGRE SC D1 representing Korea. And he also actively works for several working groups in CIGRE.



Jianying Zhong

State Grid Pinggao Group Co. LTD., China

Title of the Talk: Introduction on the Switchgear of DC Transmission System

Zhong Jianying, Ph.D., professorate senior engineer, doctoral supervisor, deputy to the twelfth National People's Congress, was born in 1975. She is currently the general manager assistant of State Grid Pinggao Group Co., Ltd., China. Her research focuses on the power transmission and transformation equipment. She has led and accomplished 36 national and provincial key scientific and technological projects, and obtained 35 national, provincial (or ministerial), municipal scientific and technological achievements. She has won 4 first prizes and 15 second prizes at provincial and ministerial level, and 3 national outstanding patent awards. She has published 42 technical papers including 15 indexed by SCI or EI, and edited 2 books. She has been awarded many honorary titles, such as China Power Excellent Young Engineer Award, Henan Province Outstanding Science and Technology Talent, Henan Province Top Ten Outstanding Science and Technology Female, Pingdingshan Science and Technology Hero, State Grid Corporation of China's Outstanding Expert, etc.

INVITED SPEAKERS

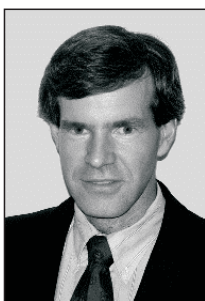


Satoru Yanabu

Xi'an Jiaotong University, China

Title of the Talk: DC Current Interruption of CO₂ and SF₆ Based on Self-Excited Oscillation Under Transverse Magnetic Field

Satoru Yanabu, received the B.Sc. degree in electrical engineering from The University of Tokyo, Tokyo, Japan, in 1964, and the Ph.D. degree from the University of Liverpool, Liverpool, U.K., in 1971. After graduation from The University of Tokyo, he was with Toshiba. Since 2000, he has been with Tokyo Denki University. He is currently Professor of Xi'an Jiaotong University from 2012. Dr. Yanabu is a Fellow of the IEE, U.K., and a member of the Institute of Electrical Engineers of Japan. He is also a member of the Japan Engineering Academy and the Current Zero Club and is a Fellow Engineer of the Royal Academy of Engineering, U.K., and a member of various international societies. His research interests are vacuum arcs and post arc phenomena, the axial magnetic field vacuum circuit breaker and SF₆ puffer breaker, gas-insulated substation (GIS), DC circuit breaker and superconducting current limiting technology.



John Shea

Schneider-Electric, USA

Title of the Talk: Low Voltage Power Distribution Level DC Circuit Breaking

He received the Ph.D. degree in electrical engineering from the State University of New York at Buffalo in 1989. He is currently the Scientific Advisor for Schneider-Electric, based in Raleigh, North Carolina where he is involved in advanced distribution circuit protection technology and distributed energy systems. He is the chairman of the Raleigh IEEE Power Electronics Society chapter, associate editor for IEEE Electronics and Packaging Society and a longtime member of the IEEE Holm conference steering, operating and technical committees. He was awarded the 2008 Holm Scientific Awardee for electrical contact erosion mechanisms, four prize papers, the Ralph Armington award for service to the electric contact community, and the E.O Forester service award for long time contributions to the IEEE DEIS magazine. He presently holds 72 patents and written 30 journal articles and has made 30 conference presentations on various arc interruption power distribution component topics.

INVITED SPEAKERS



Riccardo Bini

ABB Corporate Research, Switzerland

Title of the Talk: DC Interruption Technologies for HVDC
Transmission: State-of-Art and Outlook

Riccardo Bini received his MSc (2001) and PhD (2006) in Mechanical Engineering from Politecnico di Milano with a numerical and experimental study of welding arcs. He joined ABB Corporate Research in 2006 as scientist, focusing his activities on switching arcs and high voltage circuit breakers development. From 2010 to 2012 he led the Gas Circuit Breakers group at the Swiss Corporate Lab and since 2013 he is managing globally the Corporate Research portfolio on AC and DC switching technologies for the entire voltage range. He is author or co-author of more than twenty international journal or conference papers and four patents.



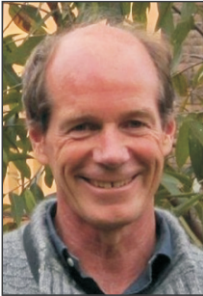
Hiroki Kojima

Nagoya University, Japan

Title of the Talk: Surface Flashover Mechanism and Its Application
to Diagnosis in Vacuum Interrupter

Hiroki KOJIMA was born on 7 December 1975. He received his B.E. degree in electrical engineering in 1998, and his M.Eng. and Ph.D. degrees in energy engineering and science in 2000 and in 2004, respectively, from Nagoya University, Japan. He was a Research Fellow with the Japan Society for the Promotion of Science from 2000 to 2003. Since 2004, he has been at Nagoya University and presently he is an Associate Professor at Nagoya University in the Department of Electrical Engineering. His research interests are high voltage engineering, discharge physics, electrical insulation and diagnosis engineering in power apparatus, and superconducting power technology. He attempts developing the environment-friendly efficient energy system. Dr. Kojima is a member of IEEE DEIS and IEEJ.

INVITED SPEAKERS



Anthony B. Murphy

CSIRO Materials Science and Engineering, Australia

Title of the Talk: Multicomponent diffusion in arc plasmas – examples from arc welding, and implications for circuit breaker

Tony Murphy is a Chief Research Scientist with CSIRO, Australia's main government research organisation. He leads the Materials and Process Modelling Team in CSIRO's Manufacturing division. His main research area is thermal plasma processes. He was a member of the team that developed the PLASCON waste destruction process, and he has led large plasma modelling projects with companies including General Motors and Boeing. He has over 220 refereed journal publications and over 5000 citations in the Web of Science, and has been awarded medals by the Institute of Physics (UK), Australian Academy of Science, Australian Institute of Physics and the Royal Society of NSW. He is Editor-in-Chief of 'Plasma Chemistry and Plasma Processing', and a member of the Editorial Boards of 'Journal of Physics D: Applied Physics', 'Scientific Reports' and 'Reviews of Modern Plasma Physics'.



Huimin Liang

Harbin Institute of Technology, China

Title of the Talk: The Experimental Study on the Influence of Debugging Parameters of DC Contactor on Contact Breaking Velocity and Rebound

LIANG Huimin, Ph.D, IEEE Member, Doctoral supervisor, was born in 1972. She received her B.S. degrees from the Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China in 1993 and Ph.D. degree from Harbin Institute of Technology, Harbin, China, in 1999. She is currently a Professor in the Department of Electrical Engineering, Harbin Institute of Technology. She is now the leader of HIT & Rockwell Automation Lab and the vice president of the Institute of electrical apparatus and electronic reliability. Her main research interests include electrical contacts theory, the reliability of electrical apparatus and the numerical method for electrical apparatus.

INVITED SPEAKERS



Gang Li

Xi'an High Voltage Apparatus Research Institute Co. LTD., China

Title of the Talk: Discussion on the Problem about Capacitive Current Switching of EHV and UHV AC Circuit Breaker

Li gang, born in 1982, master of engineering, senior engineer, deputy director of High Power Laboratory of Xi'an High Voltage Apparatus Research Institute Co., LTD (XIHARI), and is now serving as the secretary of technical committee of China High Power Testing Liaison (CHPTL), and the member of UHV AC Transmission Standardization Technical Committee. He is mainly engaged in the test of high-voltage apparatus and the development of oscillating circuit and synthetic test. He has been responsible for a number of research projects related to synthetic and UHV test technology, and has published more than 10 papers. He has also been responsible for formulating one industry standard and revising one national standard.



Zhiyuan Liu

Xi'an Jiaotong University, China

Title of the Talk: Formation of Anode Spots in Transmission Voltage Vacuum Circuit Breakers

Zhiyuan Liu is a professor in Xi'an Jiaotong University, Xi'an, China. He received the Ph.D. degree in electrical engineering from Xi'an Jiaotong University, Xi'an, China, in 2001. From 2001 to 2002, he was a senior engineer in the General Electric Company Research and Development Center (Shanghai), Shanghai, China. Since 2003, he has been working in Xi'an Jiaotong University, Xi'an, China. He is primarily involved with research and development of high voltage vacuum circuit breakers. He has published more than 200 technical papers. He hold more than 40 Chinese patents and 1 US patent. He was an IEEE member from 2001 and he became an IEEE senior member from 2014. Dr. Liu is a member of current zero club. He was a member of CIGRE working group WG A3.27 and he was a member of CIGRE working group JWG A3/B4.34 . Now he is a member of CIGRE working group WG A3.38.

INVITED SPEAKERS



Leslie T Falkingham

VIL, UK

Title of the Talk: The Future of Vacuum Switchgear

Leslie T Falkingham, IEEE Fellow, IEE Fellow, and IMechE Fellow. He is a Chartered Engineer in the UK (C.Eng) and is also a European Engineer (Eur. Ing). He is presently a part time Professor at Aston University and also an Adjunct Professor at Xi'an Jiaotong University in China. He is a member of the Permanent International Scientific Committees of two IEEE Sponsored conferences; ISDEIV(Chair), and ICEPE-ST. He is also Chairman of the Vacuum Inner Circle of the Current Zero Club, and an individual member of CIGRE. He has been active in the writing and development of international standards in the field of switchgear for many years. He has spent most of his working life involved in the research, design, development, and manufacture of vacuum interrupters and switches for vacuum switchgear, and has so far created three generations of devices. In 2011 he also received the IEC 1906 Award for his personal contribution to the development of international standards in switchgear and electrical engineering.



Yosushi Yamano

Saitama University, Japan

Title of the Talk: Research on Vacuum Breakdown and Discharge
Related to Electrode Gap of Vacuum Interrupter

Yasushi Yamano received B.E. degree and M.E. degree in electrical and information engineering from Nagoya Institute of Technology, Japan in 1994, 1996 respectively and Ph.D. degrees in electrical engineering from Nagoya University, Japan in 2000. From 2000, He has been at Saitama University and presently he is an Associate Professor at Saitama University in the Department of Electrical and Electronic Systems. His research interests are high voltage engineering, electrical insulation in vacuum, vacuum discharge physics, and fuse technology. Dr. Yamano is a member of IEEE DEIS and IEEEJ.

INVITED SPEAKERS



Min-Jee Kim

LSIS, South Korea

Title of the Talk: Application of a First Peak Non-Limiting Type FCL

Min Jee Kim received the Master degree and the Ph.D. degree in mechanical engineering from Hongik University, South Korea in 2007 and 2011 respectively. She has been working at Electrotechnology R&D center of LSIS in South Korea since 2011. From 2005 to 2010, she developed the cryogenic cooling system for superconducting fault current limiter (SFCL) through DAPAS program-one of the 21st frontier projects in South Korea. Since she joined the fault current limiting technology team of LSIS in 2011, she mainly has researched and developed the various types of FCLs with the ratings 24kV/5,000A for the large scale distribution line of POSCO and 22.9kV/630A for the underground distribution line of KEPCO. And also she has the experience of the pilot project to evaluate the real application performance of 22.9kV SFCL at the substation. Currently, she concentrates on development and application of 22.9kV/1,250A SFCL for bus tie of the power system.



Akira Daibo

Toshiba, Japan

Title of the Talk: High-Speed Current Interruption Performance of Hybrid DCCB for HVDC Transmission System

Akira Daibo was born in Iwate Prefecture, Japan on July 24, 1989. He received his B.S. and M.S. degrees in Nuclear Engineering in Tohoku University in 2012 and 2014, respectively. He has been working at the Power and Industrial System R&D Center in Toshiba Corporation since 2014. He has been engaged in research and development of vacuum interrupter and vacuum circuit breaker in the medium voltage switchgear. His research interests include high current interruption, high-speed interruption, electrical insulation, and controlling on arc behavior in vacuum by magnetic field phenomena. Presently, he is developing the DCCB of the multi-terminal HVDC transmission system.

INVITED SPEAKERS



Joseph D Yan

The University of Liverpool, UK

Title of the Talk: Cooling of turbulent nozzle arc in different gases

Dr. Joseph D Yan received the BEng and MEng degrees from Tsinghua University in 1986 and 1988, respectively, before he joined Xi'an High Voltage Research Institute (XIHARI) engaged in spectroscopic diagnosis of switching arcs and prediction of the dielectric strength of non-equilibrium residue plasma following current zero. He joined the University of Liverpool in 1994 for his PhD studies and became a research fellow in 1998. He is currently Reader at the University of Liverpool with research interests in intelligent and low carbon switching technology, discharges in HVDC insulation systems and the application of power electronics in high voltage systems. Dr. Yan is member of IEEE, IET and the Current Zero Club. He has published over 150 refereed papers. He sits on the Scientific Committee of the International Conference on Gas Discharges and Their Applications, and the International Symposium on Physics of Switching Arcs. He is also an overseas member of the editorial board of High Voltage Apparatus.



Xin Lin

Shenyang University of Technology, China

Title of the Talk: Studies on the Discharge Characteristics of $\text{SF}_6\text{-N}_2$ and $\text{SF}_6\text{-CF}_4$ Gas Mixtures and the Interruption Performance in Circuit Breaker

She received the M.S. degree and the Ph.D. degree in electrical engineering from Xi'an Jiaotong University in 1985 and 1989, respectively. Now she is a professor at Shenyang University of Technology in China. She is member of Chinese Society for Electrical Engineering (CSEE) and member of CIGRE A3 representing China, etc. During her career she has published two books and authored more than 300 articles in the field of high voltage switchgear breaking. As the first inventor, she holds over 20 invention patents. Her researches include insulation characteristics of high voltage switchgear, discharge mechanism of SF_6 and its substitute gas, and the arc breaking performance in circuit breakers, etc. Most of her research results have been applied directly to the design, manufacture and operation of extra and ultra high voltage circuit breakers in China.

INVITED SPEAKERS



Guomin Zhang

Institute of Electrical Engineering Chinese Academy of Science, China

Title of the Talk: Progress in High Temperature Superconducting Power Technology

Zhang GuoMin, Hundred talents program professor of Institute of Electrical Engineering, Chinese Academy of Sciences. He is now an international expert of IEC/TC90, the deputy director of National Superconductivity Standardization Technical Committees of P. R. China (SAC/TC265), the deputy director and Secretary General of Applied Superconductivity Committee of China Electrotechnical Society (CES), and the Secretary General of Applied Superconductivity and New Material committee of Chinese Society for Electrical Engineering (CSEE), etc. He research interests include the foundational research on applied superconductivity and the key technologies He presided over and accomplish 2 national superconducting standards, and participate in the completion of 2 international superconducting standards. He won "The IEC 1906 Award" and the National Excellent Doctoral Dissertation of China award. He published more than 100 articles, and won 10 national invention patents.



Yi Wu

Xi'an Jiaotong University, China

Title of the Talk: Research on DC Switching Technology

Dr. Wu is a Professor of Xi'an Jiaotong University. His research has been centered on the Electric arc plasma and short current interruption mechanism in the electrical power system. He has 56 peer-reviewed papers published in SCI journals including, J. Phys. D: Appl. Phys., IEEE Trans. on Plasma Sci., etc., including 32 first/ corresponding-author papers (1 ESI paper of these). He is also the editorial board member of Plasma Science and Technology, Scientific Committee member of GD Conference and member of CIGRE Working Group on DC switch technology. He has given 5 invited talks at international conferences organized by GD, EMD, CZ Club., APCPST and 8 invited talks at seminars on the arc plasma or DC interruption to industries. He was awarded "The Second Prize of National Technical Invention", "First Prize of Natural Science of China's Ministry of Education", "The Excellent Talents of the New Century of the China's MOE" and "First prize of technical invention in Shaanxi Province".

INVITED SPEAKERS



Fei Yang

Xi'an Jiaotong University, China

Title of the Talk: Arc Plasma Characteristics and Analysis in Gas Discharge

Dr. Fei Yang is an associate professor lecturer in Xi'an Jiaotong University. He was a Visiting Scholar in department of Material Science and Engineering in Massachusetts Institute of Technology (MIT), MA, USA from 2016 to 2017. His current research interests include physics in electrical contact and plasma, DC breaking technology. He has published more than 40 peer reviewed SCI papers, hold US patents and 26 Chinese patents. Dr. Yang has been invited as a session co-chair of the 2016 International Conference on Electricity Distribution (CICED) and as a peer reviewer for important international journals such as Journal of Physics D: Applied Physics, IEEE Tran on Power electronics, Plasma Chemistry and Plasma Processing, IEEE Trans on plasma science. He is a Member of Electric Contact and Plasma Science Committee of Chinese Society of Electrical Engineering (CSEE) and a Member of IEEE.



Zhenxing Wang

Xi'an Jiaotong University, China

Title of the Talk: The Thermodynamic Processes Before and After CZ in a high-current Vacuum Arc Interruption

Zhenxing Wang received the B.E. degree and the Ph.D. degree in electrical engineering from Xi'an Jiaotong University, China, in 2006 and 2013, respectively. He was a visiting scholar in the department of physics, at University of Helsinki, Finland, in 2015. Since 2013, he has been working in State key laboratory of electrical insulation and power equipment, department of electrical engineering, Xi'an Jiaotong University, Xi'an, China. Presently he is an associate professor in Xi'an Jiaotong University. His research interests are vacuum arc, vacuum insulation, plasma simulation, plasma diagnostics, permanent magnetic actuator.

INVITED SPEAKERS



J. W. Spencer

University of Liverpool, UK

Title of the Talk: Condition Monitoring of Tap Changer Transformers

J W Spencer is a Professor of Electrical Engineering in the Department of Electrical Engineering and Electronics at the University of Liverpool. He is a Fellow of the Institute of Engineering and Technology and a Chartered Engineer. Academic lead for the University of Liverpool impact, improving innovation in SMEs through accelerator and incubation programmes and for developing graduate entrepreneurs in sensor technologies.

He is also Director for the Centre on Intelligent Monitoring Systems. This centre translates the sensor and monitoring technology research into demonstration systems with industrial partners. And also a member of the Current Zero Club. The current zero club is a select group of internationally renowned academics, industrialists and consultants in the power/energy technology area. Membership is strictly by invitation and limited to 25. And member of the International Academic Committee of the State Key Laboratory of Electrical Insulation and Power Equipment at Xian Jiaotong University.



Yasunobu Yokomizu

Nagaya University, Japan

Title of the talk: Application of Wide-Bandgap Power Semiconductor to Low-Voltage Direct-Current Interruption

Yasunobu Yokomizu (Member) received the Ph.D. degree from Nagoya University, Japan. He is currently a Professor with Department of Electrical Engineering, Nagoya University. He was a Visiting Fellow at the University of Liverpool, UK. His research interests include physical properties of high temperature gases, high-current equipment such as circuit breakers, and application technology of semiconductors to electric power equipment.



Lorenz Bort

ETH Zurich, Switzerland

Title of the Talk: Technical Requirements and Specifications of State-of-the-Art HVDC Switching Equipment

Lorenz Bort studied Physics at ETH Zurich, Switzerland and received his Master degree in 2013. Since 2014, he is a doctoral student at the High Voltage Laboratory at ETH Zurich in the Group of Prof. Christian Franck. His research focusses on the fundamentals of switching arcs and their characterization, especially for the application of mechanical gas circuit breakers in HVDC switchgear.

TECHNICAL PROGRAM

October 22-25, 2017

Program at a Glance

Date	Time	Room A(1F)	Room B(1F)	Room C(1F)
Oct.22 (Sun)	10:00-20:00	Registration at the lobby of Xi'an Grand Park Hotel (1F)		
	18:00-20:00	Welcome Reception in the Xi'an Grand Park Hotel (2F)		
Oct.23 (Mon)	08:30-12:00	Plenary Session (Opening Ceremony + 4 Plenary Lectures) Room B&C		
	13:30-15:30	Oral 1:Switching Phenomena in SF ₆ Gas	Oral 2: Switching Phenomena in Vacuum 1	Oral 3: Testing Technologies in Switchgears
	15:30-16:30	Poster Session I & Coffee Break		
	16:30-18:30	Oral 4: Eco-Friendly SF ₆ Alternative Gas	Oral 5: Switching Phenomena in Vacuum 2	Oral 6: Testing Technologies in Switchgears
	08:30-10:30	Oral 7: Fundamental Physics and Electrical Insulation in Switchgears 1	Oral 8: Simulation Technologies in Switchgears 1	Oral 9: DC Switching Technologies 1
	10:30-11:30	Poster Session II & Coffee Break		
	13:00-15:00	Oral 10: Fundamental Physics and Electrical Insulation in Switchgears 2	Oral 11: Simulation Technologies in Switchgears 2	Oral 12: DC Switching Technologies 2
Oct.24 (Tue)	15:00-16:00	Poster Session III & Coffee Break		
	16:00-17:00	Oral 13: Low-voltage Circuit Breakers Technologies	Oral 14: Fault Current Limiting Technologies	Tutorial on HVDC Switchgear, by R.P.P.Smeets on behalf of CIGRE JWG A3 B4.34
	17:00-18:00			Oral 15: DC Switching Technologies 3
	19:00-19:40	Poster Session for "Wang Jimei Best Young Investigator Paper Award"		
Oct.25 (Wed)	09:00-18:00	Conference Tour + Closing Ceremony + Award Ceremony		
	18:00-21:00	Dinner and Tang Dynasty Dance Performance		

ORAL SESSIONS

Monday, October 23rd, 2017

Opening Ceremony & Plenary Lecture

Monday, October 23rd, 08:30-10:00

Chair: Prof. Mingzhe Rong

Venue: Room B&C

08:30-08:50 Opening Ceremony

08:50-10:10 Plenary Lectures

PL-1 Introduction on the Switchgear of DC Transmission System

Jianying Zhong (State Grid Pinggao Group Co. LTD., Pingdingshan, China)

PL-2 Fundamental Studies on Switching Arcs - Experimental and Numerical Approaches-

Yasunori Tanaka, Tomoyuki Nakano (Kanazawa University, Japan), Sun Hao (Kanazawa University, Japan; Xi'an Jiaotong University, China), Kentaro Tomita (Kyushu University, Kasuga, Japan), Yuki Inada (Saitama University, Saitama, Japan), Akiko Kumada, Kunihiro Hidaka (The University of Tokyo, Tokyo, Japan), Takayasu Fujino (University of Tsukuba, Ibaraki, Japan), Katsumi Suzuki (Tokyo Denki University, Adachi, Japan), Takeshi Shinkai (Tokyo University of Technology, Hachioji, Japan)

10:10-10:40 Coffee Break & Group Photo

10:40-12:00 Plenary Lectures

PL-3 HVDC Circuit Breaker - Design Considerations and Application Issues

Bang-Wook LEE (Hanyang University, South Korea)

PL-4 Developments and Trends in European T&D Switching Technology

René Peter Paul Smeets (KEMA Laboratories DNV GL Arnhem, the Netherlands)

Monday, October 23rd, 13:30-15:30

Oral 1: A1- Switching Phenomena in SF₆ Gas

Chair: Prof. Yasunori Tanaka

Venue: Room A

A1-I-1 Arc Plasma Characteristics and Analysis in Gas Discharge

(Invited) Fei Yang (Xi'an Jiaotong University, Xi'an, China)

A1-O-1 Test Analysis of Dielectric Recovery Characteristic in High Voltage SF₆ Circuit Breaker (No. 752958) (Award Candidate)

Wang Feiming , Zhang Bin, Tian Yong, Lang Fucheng (Electric Power Research Institute of State Grid Liaoning Electric Power Supply Co., Ltd., Shenyang, China), Lin Xin, Xia Yalong (Shenyang University of Technology, Shenyang, China)

A1-O-2 Influence of the different power frequency on interruption simulation for a Self-blast Type 252kV SF₆ circuit breaker (No. 753019) (Award Candidate)

Jin Guo, Xu Jiang, Bing Chen, Wen Gao, Rui Cao (XI'AN high voltage apparatus research institute co.,ltd, Xi'an ,China)

A1-O-3 Universal Approach to Gas Flow and Pressure Rise Calculation in HV Circuit Breaker Chambers (No. 753276)

Amer Smajkic (University of Sarajevo, Sarajevo, Bosnia and Herzegovina; EnergoBos ILJIN d.o.o, Sarajevo, Bosnia and Herzegovina), Armin Hajdarovic, Belma Bosovic (EnergoBos ILJIN d.o.o, Sarajevo, Bosnia and Herzegovina), Mirsad Kapetanovic (University of Sarajevo, Sarajevo, Bosnia and Herzegovina; EnergoBos ILJIN d.o.o, Sarajevo, Bosnia and Herzegovina), Kyong-Hoe Kim, Myoung-Hoo Kim (ILJIN Electric Co., Ltd., Gyeonggi-do, Republic of Korea)

A1-O-4 Numerical Calculation and Experimental Study on Breaking Characteristics for High Voltage SF₆ Circuit Breaker (No. 753383) (Award Candidate)

Yu SONG, Xin LIN (Shenyang University of Technology, Shenyang, China), Jianying ZHONG, Yujing GUO (Pinggao Electric Co.,Ltd., Pingdingshan, China), Wei LI, Jianyuan XU, Yalong XIA, Feiming WANG (Shenyang University of Technology, Shenyang, China)

A1-O-5 Research on the Key Technology of 1100 kV SF₆ Gas-Insulated Metal-Enclosed Transmission Line (No. 753220)

Zhong Jianying, Guo Yujing, Jin Guangyao, Du Liping (Pinggao Group Co., Ltd., Pingdingshan, Henan, China)

A1-O-6 Influence of Straight Line Length of Nozzle Throat on the Breaking Performance of Ultra - high Voltage SF₆ Circuit Breaker (No. 753217)

GUO Yujing, ZHANG Hao, YAO Yongqi, WANG Zhijun, ZHANG Bo, HAO Xiangyu, WANG Guan (Pinggao Group Co., Ltd., Pingdingshan, China)

Monday, October 23rd, 13:30-15:30

Oral 2: A2-Switching Phenomena in Vacuum 1

Chair: Prof. Lijun Wang

Venue: Room B

A2-I-1 The Future of Vacuum Switchgear

(Invited) Leslie T Falkingham (VIL, UK)

A2-I-2 Formation of Anode Spots in Transmission Voltage Vacuum Circuit Breakers
(Invited) **Zhiyuan Liu** (Xi'an Jiaotong University, Xi'an, China)

A2-O-1 Chromium Vapor Density Measurement by Optical Absorption Spectroscopy of Diffuse Vacuum Arcs in Vacuum Interrupters (No. 752980) (Award Candidate)

Haoran Wang, Zhenxing Wang, Jiankun Liu, Yingsan Geng, Zhiyuan Liu and Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

A2-O-2 Research on speed control method of motor operated mechanism of 126kV vacuum circuit breaker (No. 753329) (Award Candidate)

Kai QU, Jian-yuan XU, Guan-nan WU (Shenyang University of Technology, Shenyang, China), Xin JIN (State Grid Liaoning Electric Power Supply Co., Ltd, Shenyang, China)

A2-O-3 Interruption property of vacuum interrupter with four different contact materials (No. 752981)

Min Li, Dacheng Shi, Xiaoqin, Wang, Congjun Xue (Pinggao Group Co., Ltd., Pingdingshan, China)

A2-O-4 Design of a 126 kV Double-break Fast Vacuum Circuit Breaker for Controlled Switching (Award Candidate)(No. 753250)

Bojian Zhang (Xi'an Jiaotong University, Xi'an, China), Shaogui Ai (Ningxia Electric Power Research Institute, Ningxia, China), Wei Du (State Grid Electric Power Research Institute Wuhan NARI Limited Liability Company, Wuhan, China), Xiaofei Yao, Ran Zhang, Jianhua Wang, Zhiyuan Liu, Yingsan Geng, Satoru Yanabu (Xi'an Jiaotong University, Xi'an, China)

Monday, October 23rd, 13:30-15:30

Oral 3: F - Testing Technologies in Switchgears

Chair: Prof. Rene P. P. Smeets

Venue: Room C

F-I-1 Discussion on the Problem about Capacitive Current Switching of EHV and (Invited) UHV AC Circuit Breaker

Shili Yao, Gang Li, Peiren Wang, Duifeng Yan, Xiangxiang Gao, Yuan Yao (Xi'an High Voltage Apparatus Research Institute Co., LTD (XIHARI), Xi'an, China)

F-O-1 Insulating Void Defect Analysis of Onsite 252kV GIS by Employing Partial Discharge UHF Diagnosis and Industry CT (No. 752434) (Award Candidate)

Yifan He, Xianjun Shao, Shao'an Wang, Feiran Li (Research Institute of State Grid Zhejiang Electric Power Company, Hangzhou, CHINA)

F-O-2 Highly Sensitive Partial Discharge Detection by TEV Method under Severe Noise Conditions (No. 753301) (Award Candidate)

Yuuki Fujii, Hiroaki Cho, Yusuke Nakamura (Toshiba Corporation, Fuchu-shi, Tokyo, Japan)

F-O-3 Study on Transient Enclosure Voltage Generated by GIS Operation and Its Suppression Method (No. 753261) (Award Candidate)

Wenpeng ZHAI, Xin LIN, Sha HAO, Jianyuan XU, Boyao LIU (Shenyang University of Technology, Shenyang, China)

F-O-4 Discharge Location Technology in Handover Test of UHV GIS (No. 752644)

Tianhui Li, Boyan Jia, Chaomin Gu, Xiaofeng Li, Da Zhang, Gengsen Wang, Chi Dong, Xianhai Pang, Jin Pan (State Grid Hebei Electric Power Research Institute, Shijiazhuang, China)

F-O-5 Preliminary Experiment on Development of Non-Contact Measuring Method of Arc Potential -Simultaneous Measurement of Potential and Radius- (No. 753255)

S. Minami, Y. Yokomizu, T. Matsumura (Nagoya University, Nagoya, Japan) , A. Majima, T. Uchii (Toshiba Corporation, Kawasaki, Japan), K. Suzuki (Tokyo Denki University, Adachi, Japan)

F-O-6 The Design of Post Arc Current Measurement System with High Precision on Multi-break Vacuum Circuit Breakers (No. 753360)

Minfu Liao, Hao Zhang, Xiongying Duan (Dalian University of Technology, Dalian, China), Guowei Ge (Zhengzhou University, Zhengzhou, China), Jiyan Zou, Enyuan Dong (Dalian University of Technology, Dalian, China)

Monday, October 23rd, 16:30-18:30

Oral 4: A4 - Eco-Friendly SF₆ Alternative Gas

Chair: Prof. Joseph D. Yan

Venue: Room A

A4-I-1 Studies on the Discharge Characteristics of SF₆-N₂ and SF₆-CF₄ Gas Mixtures (Invited) and the Interruption Performance in Circuit Breaker

Xin Lin (Shenyang University of Technology, Shenyang, China)

A4-O-1 Research on the Microscopic State Parameters of SF₆/N₂ and SF₆/CO₂ Circuit Breaker in Arc Formation Process (No. 753211) (Award Candidate)

Li Jing, Zheng Hao, Cao Yundong, Liu Shuxin (Shenyang University of Technology, Shenyang, China), Yu Longbin (Northeast China Electric Power Research Institute, Shenyang, China)

A4-O-2 Research on Insulation Characteristics and Decomposition Products of c-C₄F₈/N₂ mixtures in Slightly Non-uniform Electric Field (No. 752949)

DENG Xian-qin (State Grid Shanghai Electric Power Research Institute, Shanghai, China), XUE Peng, ZHAO Su, ZHANG Hui (Shanghai Jiao Tong University, Shanghai, China)

A4-O-3 Thermophysical Properties Calculation of C_4F_7N/CO_2 mixture Based on Computational Chemistry—A Theoretical Study of SF6 Alternative (No. 753314) (Award Candidate)

Wang Chunlin, Wu Yi, Sun Hao, Duan Jiawei, Niu Chunping, Yang Fei (Xi'an Jiaotong University, Xi'an, China)

A4-O-4 Key Properties of Eco-friendly Mixed Gases and Its Ratio Distribution with Height (No. 753008)

Yan Xianglian, Gao Keli, Li Zhibing, He Jie (China Electric Power Research Institute, Beijing, China), Zheng Yu, Hu Shizhuo, Zhou Wenjun (Wuhan University, Wuhan, China)

A4-O-5 Fundamental Study on Re-ignition Process for CO_2 -blast Arcs in a Model Circuit Breaker Using Synthetic Tests Highly Controlled by Power Semiconductors (No. 752965)

Tomoyuki Nakano, Yu Tabata, Yasunori Tanaka, Yoshihiko Uesugi, Tatsuo Ishijima (Kanazawa University, Kakuma, Kanazawa, Japan), Kentaro Tomita (Kyushu University, Kasuga, Japan), Yuki Inada (Saitama University, Saitama, Japan), Katsumi Suzuki (Tokyo Denki University, Senjuasahi, Adachi, Japan), Takeshi Shinkai (Tokyo University of Technology, Katakura, Hachioji, Japan)

A4-O-6 Arc Motion Characteristics of H_2-N_2 Mixed Gas Switch with Magnetic Field (No. 753234)

Jia Bowen, Wu Jianwen (Beihang University, Beijing, China), Kong Guowei, Wei Jie (Beijing SOJO Electric Co., Ltd, Beijing, China), Liu Guangyong (Yishui Campus, Linyi University, Linyi, China)

Monday, October 23rd, 16:30-18:30

Oral 5: A2 - Switching Phenomena in Vacuum 2

Chair: Prof. Leslie T Falkingham

Venue: Room B

A2-I-3 Research on Vacuum Breakdown and Discharge Related to Electrode Gap of (Invited)Vacuum Interrupter

Yosushi Yamano (Saitama University, Japan)

A2-O-5 Vacuum Circuit Breakers – Promising Switching Technology for Pumped Storage Power Plants up to 450 MVA (No. 754756) (Award Candidate)

Hong Urbanek, Karthik Reddy Venna, Nils Anger (SIEMENS AG, Berlin, Germany)

A2-O-6 Mechanism of Dynamic Voltage Distribution in Series-connected vacuum interrupters (No. 753257) (Award Candidate)

Guowei Ge (Zhengzhou University, Zhengzhou, China; Dalian University of Technology, Dalian, China), Xian Cheng (Zhengzhou University, Zhengzhou, China), Minfu Liao (Dalian University of Technology, Dalian, China), Qinkuan Xue (Zhengzhou University, Zhengzhou, China), Jiyan Zou (Dalian University of Technology, Dalian, China)

A2-O-7 Evaluation of Back to Back Capacitive Current Switching performance of 36kV VCB (No. 753258)

Byoung-Chul Kim, Woo-Jin Park, Kil-young Ahn, Young-Geun Kim (LS industrial systems, Cheongju, Republic of Korea)

A2-O-8 Interruption Characteristics on the Sintering for Cu-Cr Contact Material (No. 753455)

J.H. Yoon, C.Y. Bae, J.S. Ryu, J.U. Choi, Y.G. Kim (LSIS Co., Ltd., Cheongju-si, Chungcheongbuk-do, Korea)

A2-O-9 Experimental Investigation of Triggered Vacuum Arc Behavior under Different TMF-AMF Composite Contacts (No. 753088)

Weixin Shi, Lijun Wang, Renjie Lin, Jie Deng, Shenli Jia (Xi'an Jiaotong University, Xi'an, China)

A2-O-10 Fractal Features of Contact Surface Ruptured from Arc Welding by High Frequency Inrush Current in Vacuum Interrupters (No. 753203)

Guoqin Li, Yongxiang Yu, Yingsan Geng, Zhiyuan Liu, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

Monday, October 23rd, 16:30-18:15

Oral 6: F - Testing Technologies in Switchgears + H - Others

Chair: Prof. Satoru Yanabu

Venue: Room C

F-I-2 Condition Monitoring of Tap Changer Transformer

(Invited) Joseph Williams Spencer (University of Liverpool, UK)

F-O-7 Novel and Necessary Assessment Procedure Ensuring UHF Partial Discharge On-line Supervision System Effective for GIS/GIL (No. 754202) (Award Candidate)

Yang LIU, Weidong QI, Jingfeng WU, Lu PU, Bin DING, Chuankai YANG (State Grid shaanxi electric power research institute, Xi'an, China), Ziqi ZHANG, Siyu CHEN (State Grid xi'an electric power supply company, Xi'an, China)

F-O-8 Study on Lightning Overvoltage Protection Methods for UHV GIS Substation with Different Lightning (No. 753228) (Award Candidate)

Lu WANG, Jianyuan XU, Sha HAO, Haoran CHEN, Shuo MA, Wenpeng ZHAI (Shenyang University of Technology, Shenyang, China)

F-O-9 Development of synthetic test methods for high-voltage circuit breakers 145 – 1200 kV (No. 753130)

René Peter Paul Smeets, Adriaan Hofstee, Marten Dekker (KEMA Laboratories DNV GL Arnhem, the Netherlands)

H-O-1 Arc Flash Mitigation Initiatives in Data Centers Electrical Substations: A Case Study (No. 752543) (Award Candidate)

Abdullah AL-Harbi, Abdulaziz Al-Mutairi (Saudi Aramco, Dhahran, Saudi Arabia)

H-O-2 Simulation of Controlled Switching of Reactive Power Compensation Line in 35kV System (No. 753011)

Duan Xiongying, Lv Guanxiong, Liao Minfu, Guo Yan, Zou Jiyan (Dalian University of Technology, Dalian, China)

Tuesday, October 24th, 2017

Tuesday, October 24th, 08:30-10:30

Oral 7: D - Fundamental Physics and Electrical Insulation in Switchgears 1

Chair: Dr. John Shea

Venue: Room A

D-I-1 Multicomponent Diffusion in Arc Plasmas – Examples from Arc Welding, and (Invited) Implications for Circuit Breaker

Anthony B. Murphy (CSIRO Materials Science and Engineering, Australia)

D-O-1 Interruption Process and Droplets Emission in Vacuum Arc for Aviation Intermediate-frequency Power Supply System (No. 752922) (Award Candidate)

Jiang Yuan, Wu Jianwen, Huo Wenlei, Jia Bowen (Beihang University, Beijing, China)

D-O-2 Study on the Development Process of Ejected Plasma Used as a Trigger Method in Gas Spark Switch (No. 753051) (Award Candidate)

Xi Shen, Xuandong Liu, Shanhong Liu, Lei Feng, Qiaogen Zhang (Xi'an Jiaotong University, Xi'an, China)

D-O-3 Ion Current Measurements in SF₆ and Vacuum under High Voltage DC Application (No. 752812)

Valeria Teppati, Philipp Simka (ABB Switzerland Ltd, Baden-Dättwil, Switzerland)

D-O-4 Electric Field Enhancement of Vacuum Gap Electrodes Based on Fractal Modeling and Random Surface (No. 753241) (Award Candidate)

Yingyao Zhang, Xinye Xu, Shaojie Chen (Tongji University, Shanghai, China), Xiaojun Wang (Shaanxi Sirui Advanced Material Co., Ltd, Xi'an, China)

D-O-5 Dielectric Recovery Property Measurements of CO₂ and Air Arcs under Free Recovery Condition using Power Semiconductors (No. 754560)

Yu Tabata, Tomoyuki Nakano, Yuuki Demura, Yasunori Tanaka, Yoshihiko Uesugi, Tatsuo Ishijima (Kanazawa University, Kakuma, Kanazawa, Ishikawa, Japan), Katsumi Suzuki (Tokyo Denki University, Tokyo, Japan), Takeshi Shinkai (Tokyo University of Technology, Tokyo, Japan)

D-O-6 Electrical Aging Experiment of Epoxy Resin Insulation Equipment and Research on the Influence of Electrical Field Uniformity (No. 753248)

Wang Haiyan (Pinggao Group Co. Ltd, Pingdingshan, China) Gu Yunjie, Cheng Xian (Zhengzhou University, Zhengzhou, China)

Tuesday, October 24th, 08:30-10:30

Oral 8: E - Simulation Technologies in Switchgears 1

Chair: Dr. Young-Geun Kim

Venue: Room B

E-I-1 Cooling of turbulent nozzle arc in different gases

(Invited) Joseph D Yan (*The University of Liverpool, UK*)

E-O-1 Research on Main Circuit Design of a New Three-phase Disc Rotation Vacuum Interrupter (No. 753202) (Award Candidate)

Shuxin Liu, Peng Wang, Yundong Cao, Peng Sun (Shenyang University of Technology, Shenyang, China)

E-O-2 Fatigue Life Simulation of Vacuum Interrupter Bellows Subjected to High Gas Pressure and High Operating Velocity (No. 753053)

Lixin Hong (Xi'an Jiaotong University, Xi'an, China), Shaogui Ai (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China), Haibin Xie (State Grid Ningxia Electric Power Company, Yinchuan, China), Wei Du (NARI Group Corporation, Nanjing, China), Xiaofei Yao, Bojian Zhang, Pei Liu, Zhiyuan Liu, Jianhua Wang, Yingsan Geng (Xi'an Jiaotong University, Xi'an, China), Siqin Li (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China), Zhonghua Xiang (State Grid Ningxia Electric Power Company, Yinchuan, China)

E-O-3 A Numerical Model on Dynamic Behavior of Vapor from the Electrode in Low-Pressure Arcs using Moving Partical Method (No. 752963)

Yasunori Tanaka, Takuya Nakagawa, Yoshihiko Uesugi, Tatsuo Ishijima (Kanazawa University, Kakuma, Japan), Gaku Asanuma, Toshiyuki Onchi (Fuji Electric Co. Ltd, Minami, Kounosu, Japan)

E-O-4 Numerical Simulation of Low-Current Vacuum Arc in Strong Axial magnetic Field Taking into Account the Generation of Secondary Plasma (No. 753231)

Dmitry Shmelev, Igor Uimanov (Institute of Electrophysics, Ural Division of Russian Academy of Science, Ekaterinburg, Russia), Lijun Wang (Xi'an Jiaotong University, Xi'an, China)

E-O-5 An Investigation of Arc Root Motion by Dynamic Tracing Method (No. 753263)

Yufei Wu, Chunping Niu, Yi Wu, Mingliang Zhu, Fei Yang, Hao Sun (Xi'an Jiaotong University, Xi'an, China)

E-O-6 Simulation of Pressure Relief Valve Movement in the Compression Volume of a Self-blast Interrupter (No. 753325)

Kyong-Hoe Kim, Myoung-Hoo Kim, Min Cheol Kang (ILJIN Electric Co., Ltd., Hwaseong, Gyeonggi, Republic of Korea), Mahir Muratovic, Mirsad Kapetanović

Tuesday, October 24th, 08:30-10:30

Oral 9: B - DC Switching Technologies 1

Chair: Prof. Eiji Kaneko

Venue: Room C

B-I-1 Interruption Technologies for HVDC Transmission: State-of-Art and Outlook

(Invited) Riccardo Bini (ABB Corporate Research, Switzerland), Magnus Backman (ABB Corporate Research, Sweden), Arman Hassanpoor (ABB Power Grids Division, Sweden)

B-I-2 DC Current Interruption of CO₂ and SF₆ Based on Selfexcited Oscillation (Invited) Under Transverse Magnetic Field (No. 752987)

Bin Xiang (Xi'an Jiaotong University, Xi'an, China), Chuanchuan Wang, Zhenle Nan (Xi'an XD High Voltage Apparatus CO.,LTD, Xi'an, China), Kun Yang, Zhiyuan Liu, Yingsan Geng, Jianhua Wang, **Satoru Yanabu** (Xi'an Jiaotong University, Xi'an, China)

B-O-1 Investigation of Thermal Characteristics of Graphene Coated Contacts for Hybrid HVDC Circuit Breaker (No. 752953) (Award Candidate)

Manarelddeen A.H Ahmed, Yongjian Li (Hebei University of Technology, Tianjin, China), Erping Li (Zhejiang University, Hangzhou, China)

B-O-2 Research on the Influence Factors of Arc Characteristics in the Arc Extinguish Chamber in DC Contactor Breaking Process (No. 753187)

Cao Yundong, Liu Kai, Li Jing, Liu Shuxin, Liu Yang (Shenyang University of Technology, Shenyang, China)

B-O-3 Analysis of Action Process of ZnO Arrester in HVDC Vacuum Circuit Breakers (No. 753023)

Lixia Geng, Jiyan Zou, Xianpeng Li, Zeyu Bi (Dalian University of Technology, Dalian, China)

B-O-4 Passive DC neutral breaker for bipolar HVDC schemes (No. 753401)

Magnus Backman, Lars Liljestr nd (ABB AB, V ster s, Sweden), Farshad Rafatnia (ABB AB, Ludvika, Sweden), Rui Du (ABB Sifang Power Systems, Beijing, China)

Tuesday, October 24th, 13:00-15:00

Oral 10: D - Fundamental Physics and Electrical Insulation in Switchgears 2

Chair: Prof. J. W. McBride

Venue: Room A

D-I-2 Surface Flashover Mechanism and Its Application to Diagnosis in Vacuum Interrupter

(Invited) *Hiroki Kojima (Nagoya University, Japan)*

D-O-7 The Effect of Anode on the Initial Stage of a Vacuum Discharge (No. 753081) (Award Candidate)

Zhipeng Zhou, Yanjun Jiang, Zhiyuan Cao, Zhenxing Wang, Yingsan Geng, Zhiyuan Liu, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

D-O-8 Study on the Influence of Breaking Parameters and Load Characteristics on Arc Energy (No. 753198) (Award Candidate)

Li Jing, Chen Yang, Cao Yundong, Hou Chunguang, Liu Shuxin (Shenyang University of Technology, Shenyang, China)

D-O-9 Measurement of Charge Distributions inside of Cylindrical Alumina Insulator with Shield Rings after Repeating AC Voltage Application (No. 753312) (Award Candidate)

Issei Fujita, Yasushi Yamano (Saitama University, Saitama, Japan), Hideaki Fukuda, Keita Ishikawa, Akira Sano (MEIDENSHA CORPORATION, Shizuoka, Japan), Osamu Yamamoto (Kyoto University, Kyoto, Japan)

D-O-10 Fundamental Investigation on DC Arc Formation and Extinction in Separation Process of Brush and Commutator Segment (No. 753300)

K. Oshima, Y. Yokomizu, T. Fukutsuka (Nagoya University, Nagoya, Japan)

D-O-11 Modeling of Cathode Spot Crater in Vacuum Arc (No. 753126)

Xiao Zhang, Lijun Wang, Shenli Jia (Xi'an Jiaotong University, Xi'an, China), D.L. Shmelev (Institute of Electrophysics, RAS, Ekaterinburg, Russia)

D-O-12 Study on the Heat Flux Density Delivered to the Anode at the Transition to Anode Spot Formation in High Current Vacuum Arcs (No. 753337)

Zaiqin Zhang, Hui Ma, Xiuli Yi, Zhiyuan Liu, Yingsan Geng and Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

Tuesday, October 24th, 13:00-15:00

Oral 11: E - Simulation Technologies in Switchgears 2

Chair: Prof. Joseph Williams Spencer

Venue: Room B

E-I-2 The Thermodynamic Processes before and after CZ in a high-current Vacuum (Invited) Arc Interruption

Zhenxing Wang (Xi'an Jiaotong University, Xi'an, China)

E-O-7 Calculation on the Composition Varying Characteristics of Decaying SF₆ Arc in the Presence of Trace Oxygen and Moisture (No. 752831) (Award Candidate)

Yuwei Fu, Xiaohua Wang, Qingqing Gao, Mingzhe Rong, Xi Li, Aijun Yang, Dingxin Liu (Xi'an Jiaotong University, Xi'an, China), Yuling Li, Chanqiong Wang (State Grid Shanxi Electric Power Company Changzhi Power Supply Company, Changzhi, China)

E-O-8 Research on A 252kV SF₆ Self-blast Circuit Breaker Re-ignition based on CFD Simulation (No. 753393) (Award Candidate)

Hao Xiangyu, Guo Yujing, Zhang Hao, Wang Zhijun (Pinggao Electric Co., Ltd., Pingdingshan, China)

E-O-9 A New Electro Magnetic Force Actuator for 126kV Vacuum Circuit Breaker (No. 753001)

Jiayuan Xu (State Grid Pinggao Group Co., Ltd., Pingdingshan, China), Peng Zhang (Dalian University of Technology, Dalian, China), Yuan Deng (State Grid Pinggao Group Co., Ltd., Pingdingshan, China), Enyuan Dong, Yu Tian (Dalian University of Technology, Dalian, China), Yu Cong (State Grid Dalian Power Supply Company, Dalian, China), Kexin Tian (State Grid Pinggao Group Co., Ltd., Pingdingshan, China)

E-O-10 Self-loosening Process Simulation of Bolted Joints in 12kV Vacuum Circuit Breakers under Vibration (No. 753092)

Guangwei Liu, Lijun Wang, Shenli Jia (Xi'an Jiaotong University, Xi'an, China), Ren Yang (Shaanxi Electric Power Research Institute, State Grid Shaanxi Electric Power Company, Xi'an, China)

E-O-11 Simulation Study on Estimating PD Current by Analyzing Emitted EM Waves (No. 753012)

Li Wang (Xi'an Jiaotong University, Xi'an, China; Tokushima University, Tokushima, Japan), Masatake KAWADA (Tokushima University, Tokushima, Japan), Ming DONG (Xi'an Jiaotong University, Xi'an, China)

E-O-12 Numerical Analysis of DC arc Evolution Process of Two Parallel Contacts Model (No. 753094)

Haoyong Song (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Jianning Yin (Xi'an Jiaotong University, Xi'an, China), Qian Wang (Xi'an University of Technology, Xi'an, China), Wei Wang, Qingdan Huang, Wenxiong Mo (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Xingwen Li (Xi'an Jiaotong University, Xi'an, China)

Tuesday, October 24th, 13:00-15:00

Oral 12: B - DC Switching Technologies 2

Chair: Dr. Riccardo Bini

Venue: Room C

B-I-3 Research on DC Switching Technology

(Invited) Yi Wu (Xi'an Jiaotong University, Xi'an, China)

B-I-4 Technical Requirements and Specifications of State-of-the-Art HVDC Switching (Invited) Equipment

Lorenz Bort (Swiss Federal Institute of Technology (ETH), Switzerland)

B-O-5 Investigation on the Interrupting Test of Mechanical HVDC Vacuum Circuit Breaker (No. 753149)

Yongxing Wang, Zeyu Bi, Jiyan Zou, Zhihui Huang, Wenliang Dong (Dalian University of Technology, Dalian, China)

B-O-6 Impact of Topology and Fault Current on Dimensioning and Performance of HVDC Circuit Breakers (No. 754447)

Viktor Lenz, Tim Schultz, Christian M. Franck (ETH Zurich, Zurich, Switzerland)

B-O-7 Vibration Monitoring of Converter Transformer On-load Tap-Changer Using Phase Space Reconstruction and Poincare Section (No. 753242) (Award Candidate)

Yiming Zheng, Wenlin He (Zhejiang Electric Power Research Institute, Hangzhou, China), Fenghua Wang, Shushi Li (Shanghai Jiaotong University, Shanghai, China)

B-O-8 Research on a Novel Bidirectional Direct Current Circuit Breaker (No. 753320) (Award Candidate)

Yifei Wu, Yang Su (Xi'an Jiaotong University, Xi'an, China), Guiquan Han (State Grid Pinggao Group Co., LTD., Pingdingshan, China), Yi Wu, Qiang Yi, Guanshu Sun (Xi'an Jiaotong University, Xi'an, China), Die Wang (State Grid Pinggao Group Co., LTD., Pingdingshan, China)

Tuesday, October 24th, 16:00-18:00

Oral 13: A3 - Low-voltage Circuit Breakers Technologies

Chair: Prof. Anthony B. Murphy

Venue: Room A

A3-I-1 Low Voltage Power Distribution Level DC Circuit Breaking (No. 754762)

(Invited) John J. Shea (Schneider-Electric, Knightdale, USA)

A3-I-2 The Experimental Study on the Influence of Debugging Parameters of DC (Invited) Contactor on Contact Breaking Velocity and Rebound

Huimin Liang, Xue Zhou, Qingnan Li, Delong Liu (Harbin Institute of Technology, Harbin, China)

A3-O-1 Time-resolved Radiation Measurement and Energy Balance of Air Arcs (No. 753326)

Shaodi Fan, Hantian Zhang, Chunping Niu (Xi'an Jiaotong University, Xi'an, China), Ting Chen (Jiangsu Suyi Electronic Appliances CO. LTD., Huai'an, China), Yi Wu, Jiawei Duan, Hao Sun (Xi'an Jiaotong University, Xi'an, China)

A3-O-2 Research on the Dynamic Behavior of the Arc between Contacts of DC Contactor (No. 753168) (Award Candidate)

Cao Yundong, Liu Kai, Li Jing, Hou Chunguang, Lai Changxue (Shenyang University of Technology, Shenyang, China)

A3-O-3 Design and Optimization of Energy-saving Wind Power Grid-connected Contactor Based on Nano Two-phase Composite Magnetic Materials (No. 753252) (Award Candidate)

Shen CHENG, Zhiyuan Cai (Shenyang University of Technology, Shenyang, China)

A3-O-4 Experimental Study on the Influence of Vent Aperture Size and Distribution on Arc Motion and Interruption in Low-Voltage Switching Devices (No. 754417)

Dongkyu Shin, Igor O. Golosnoy (University of Southampton, Southampton, U.K.), Thomas G. Bull (TaiCaan Technologies Ltd., Southampton, U.K.), John W. McBride (University of Southampton, Southampton, U.K.; University of Southampton Malaysia Campus, Nusajaya, Johor, Malaysia)

Tuesday, October 24th, 16:00-18:00

Oral 14: C - Fault Current Limiting Technologies

Chair: Prof. Bang-Wook Lee

Venue: Room B

C-I-1 Progress in High Temperature Superconducting Power Technology

(Invited) Guomin Zhang (Institute of Electrical Engineering Chinese Academy of Science, China)

C-I-2 Application of a First Peak Non-Limiting Type FCL

(Invited) Min-Jee Kim, Chae Yoon Bae, Young-Geun Kim, Ok-Bae Hyun, Kwon Bae Park (LSIS, South Korea)

C-O-1 Insulation Design of Direct Current Resistive Type Superconducting Fault Current Limiter (No. 753003)

Kun Yang, Yi Li, Bin Xiang, Zhenxing Wang, Zhiyuan Liu, Yingsan Geng, Jianhua Wang, Satoru Yanabu (Xi'an Jiaotong University, Xi'an, China)

C-O-2 Application of controlled switching device for high voltage circuit breaker in KEPCO real power system (No. 753463)

Chul-Hee Cho, Jeong-Bok Lee, Byoung-Woon Min (HYUNDAI ELECTRIC & ENERGY SYSTEMS CO., LTD., Gyeonggi-do, Republic of Korea)

C-O-3 A New Intelligent Controlled Reactor with Controlled Moveable Magnetic-wedge for Fault Current Limiter (No. 752982)

Zhihui Huang, Qitao Zou, Jiyan Zou (Dalian University of Technology, Dalian, China), Lin Zou, Ruihai Li, Song Wang (Grid Technology Research Center, China Southern Power Grid Company Limited, Guangzhou, China)

C-O-4 Investigation of Liquid Metal Current Limiter Based on a Novel Topology (No. 753334)

*Zhuo Yang, Hailong He, Yi Wu, Peng Zhao (Xi'an Jiaotong University, Xi'an, China),
Zirui Liu, Qing Wan (State Grid Shaanxi Electric Power Research Institute, Xi'an,
China)*

Tuesday, October 24th, 16:00-17:00

Venue: Room C

Tutorial on HVDC Switchgear, by R. P. P.S meets on behalf of CIGRE JWG A3 B4.34

Tuesday, October 24th, 17:00-18:30

Oral 15: B - DC Switching Technologies 3

Chair: Prof. Yi Wu

Venue: Room C

B-I-5 High-Speed Current Interruption Performance of Hybrid DCCB for HVDC (Invited) Transmission System (No. 753294) Interruption (Invited) Y. Yokomizu (Nogoya University, Japan)

Akira Daibo, Yoshimitsu Niwa, Naoki Asari, Wataru Sakaguchi, Kazuyasu Takimoto, Kazuhisa Kanaya and Takahiro Ishiguro (Toshiba Corporation, Fuchu-shi, Tokyo, Japan)

B-I-6 Application of Wide-Bandgap Power Semiconductor to Low-Voltage DC Interruption (Invited) Y. Yokomizu (Nogoya University, Japan)

B-O-9 Experiment research on Post-arc Current in DC Vacuum Circuit Breakers (NO. 752999)

Xianpeng Li, Jiyan Zou, Wenliang Dong, Deshi Liang (Dalian University of Technology, Dalian, China), Taotao Qin (Nanjing University of Science and Technology, Nanjing, China)

B-O-10 ARCING TIME ANALYSIS OF LIQUID NITROGEN WITH RESPECT TO ELECTRODES GEOMETRY (No. 753144) (Award Candidate)

Muhammad Junaid, Kun Yang, Hanming Ge, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

Wednesday, October 25th,

09:00-18:00 Conference Tour & Banquet (Closing Ceremony & Award Ceremony)

18:00-20:30 Dumpling Banquet & Dance Performance of Tang Dynasty

POSTER SESSIONS

Monday, October 23rd, 15:30-16:30

Poster Session I & Coffee Break:

Switching Phenomena in SF₆ Gas + Eco-friendly SF₆ Alternative Gas + Eco-friendly SF₆ Alternative Gas + Switching Phenomena in Vacuum + Switching Phenomena in Air (Low-voltage Circuit Breakers and Relays) + Others

Chair: Dr. Zhenxing Wang

Venue: Poster Area (1F)

A1: Switching Phenomena in SF₆ Gas

A1-P-1 Research on Impact of Opening Velocity in DRM Tests of SF₆ High Voltage Circuit Breakers (No. 753215)

Yakui Liu , Guogang Zhang , Yingsan Geng , Jianhua Wang (Xi'an Jiaotong University, Xi'an, China), Jinggang Yang , Ke Zhao (Jiangsu Electric Power Company Research Institute, State Grid Corporation of China, Nanjing, China)

A1-P-2 Study on the VFTO in 800kV GIS based on Mayr-Schwarz Arc Model (No. 753262)

*Gao Youhua , Du Hanwen, Song Jia (Shenyang University of Technology, Shenyang, China), Gao Youfeng
Li Yanbin, Li Jing (Benxi Power Supply Company, Benxi, China; Shenyang University of Technology, Shenyang, China)*

A1-P-3 The influence of energy separated nozzle on the gas flow parameters for SF₆ circuit breaker (No. 753428)

Li-Ying Li, Jia-Xiu Sun, Jun Wang (Shenyang University of Technology, Shenyang, China)

A1-P-4 Research on the EMI Mechanism and Suppressing Measures of TEV Disturbing the Electronic Transformer (No. 754540)

Wang hao, Zhang Hunqing, Sima Zhaojin, Pan Dazhang (Hu Bei electric power Maintenance Company of State Grid Corporation of China, Wuhan, China), Wu Xixiu (Wuhan University of Technology, Wuhan, China)

A1-P-5 Bezier Curve-based Shape Optimization of SF₆ Gas Circuit Breaker to Improve the Dielectric Withstanding Performance for both Medium and Maximum Arcing Time (No. 753441)

Chang-Seob Kwak, Hong-Kyu Kim (Korea Electrotechnology Research Institute, Changwon, Republic of Korea), Se-Hee Lee (Kyungpook National University, Daegu, Republic of Korea)

A1-P-6 Study on the Transient Characteristics of 1100kV VFTO (No. 754538)

Wu Xixiu (Wuhan University of Technology, Wuhan, China), Wu Shipu (China Electric Power Research Institute, Wuhan, China), Zhou Fan, Cheng Shimin, Reem A. Almenweer (Wuhan University of Technology, Wuhan, China)

A1-P-7 Simulation and Validation of Pressure Rise in a HV Circuit Breaker with SF₆ and Alternative Interrupting Media (No. 753289)

Belma Bosovic (EnergoBos ILJIN d.o.o, Sarajevo, Bosnia and Herzegovina), Amer Smajkic, Mahir Muratovic, Mirsad Kapetanovic (EnergoBos ILJIN d.o.o, Sarajevo, Bosnia and Herzegovina; University of Sarajevo, Sarajevo, Bosnia and Herzegovina), Myoung-Hoo Kim, Kyong-Hoe Kim (ILJIN Electric Co., Ltd., Gyeonggi-do, Republic of Korea)

A2: Switching Phenomena in Vacuum

A2-P-1 Prestrike Characteristics when Switching on Inrush Current in 40.5kV VIs with Axial Magnetic Field (No. 752824)

Haoqing Wang (Xi'an Jiaotong University, Xi'an, China; China Electric Power Research Institute, Beijing, China), Jinyang Lin, Xiangyang Li, Ning Liu (China Electric Power Research Institute, Beijing, China), Yingsan Geng, Zhiyuan Liu (Xi'an Jiaotong University, Xi'an, China)

A2-P-2 Development of an Indoor 40.5 kV Vacuum Circuit Breaker for Back-to-back Capacitor Bank Switching Duty (No. 752898)

Feng Zhao, Biao Hu (Xi'an Jiaotong University, Xi'an, China), He Yang (Electrical Sector APAC Eaton, Shanghai, China), Youyin Wang (State Grid Liaoning Electric Power Company Limited Economic Research Institute, Shenyang, China)

A2-P-3 Research on current breaking and carrying property of cup shaped and horseshoe axial magnetic electrode in vacuum interrupter (No. 752984)

Dongli Bi (Shaanxi Baoguang Vacuum Electric Device Co., Ltd., Baoji, China), Weigang Feng (Shaanxi Baoguang Vacuum Electric Device Co., Ltd., Baoji, China; Xi'an Jiaotong University, Xi'an, China), Quan Wang, Sen Li, Yali Zhang (Shaanxi Baoguang Vacuum Electric Device Co., Ltd., Baoji, China)

A2-P-4 Comparison of Mounted Angles Between a Pair of 2/3 Coil-type AMF Electrodes in a 126 kV Single-break Vacuum Interrupter (No. 752978)

Weigang Feng (Shaanxi Baoguang Vacuum Electric Device Co., Ltd., Baoji, China; Xi'an Jiaotong University, Xi'an, China), Dongli Bi, Quan Wang (Shaanxi Baoguang Vacuum Electric Device Co., Ltd., Baoji, China), Xiaofei Yao, Xiaoshe Zhai, Zhiyuan Liu (Xi'an Jiaotong University, Xi'an, China)

A2-P-5 Post-arc Current of Vacuum DC Interruption (No. 752976)

Taotao Qin (Nanjing University of Science and Technology, Nanjing, China), Deshi Liang, Enyuan Dong, Jiyan Zou (Dalian University of Technology, Dalian, China)

A2-P-6 Experimental Investigation of the Anode Current Radial Distribution in Vacuum Arcs (No. 753338)

Hui Ma, Zaiqin Zhang, Zhiyuan Liu, Yingsan Geng and Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

A2-P-7 Influence of the Pulsed AMF Arc Control on the Vacuum Arc and Post Arc Characteristic in Vacuum Interrupters (No. 753256)

Guowei Ge (Zhengzhou University, Zhengzhou, China; Dalian University of Technology, Dalian, China), Xian Cheng (Zhengzhou University, Zhengzhou, China), Minfu Liao (Dalian University of Technology, Dalian, China), Qinkuan Xue (Zhengzhou University, Zhengzhou, China), Jiyan Zou (Dalian University of Technology, Dalian, China)

A2-P-8 Influence of Contact Plate Slots on Inrush Current Prestrike Arc Behaviors of Vacuum Interrupters (No. 752995)

Yongxiang Yu, Guoqin Li, Yingsan Geng, Zhiyuan Liu, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

A2-P-9 Influence of Grading Capacitors on Breakdown Characteristics of a Double-Break Vacuum Interrupter (No. 753145)

Pei Liu (Xi'an Jiaotong University, Xi'an, China), Yiping Fan (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China), Kui Ma (State Grid Ningxia Institute of Ningxia Electric Power Company, Yinchuan, China), Wei Du (NARI Group Corporation, Nanjing, China), Xiaofei Yao, Bojian Zhang, Li Ren, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China), Jianzheng Fang, Zhenhua Yan (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China)

A2-P-10 Design Optimization of a 3/4 Coil-Type Axial Magnetic Field Contact for 126 kV Vacuum Interrupter (No. 753206)

Zihan Wang, Haomin Li (Xi'an Jiaotong University, Xi'an, China), Dacheng Shi, Junhui Wu, Congjun Xue (Pinggao Group Co., Ltd., Pingdingshan, China), Jianhua Wang, Zhiyuan Liu (Xi'an Jiaotong University, Xi'an, China)

A2-P-11 Minimum Arcing Interruption Performance of a 126 kV Single-break Vacuum Circuit Breaker with 3/4 Coil- type Axial Magnetic Field Contacts (No. 753208)

Haomin Li, Zihan Wang (Xi'an Jiaotong University, Xi'an, China), Guiquan Han, Yonglin Li, Yinghua Bi (Pinggao Group Co., Ltd., Pingdingshan, China), Yingsan Geng, Zhiyuan Liu (Xi'an Jiaotong University, Xi'an, China)

A2-P-12 Design and Multibody Dynamic Analysis of a Generator VCB with a High Breaking Capability (No. 752972)

Jun-Yeon Jo, Sung-tae Kim, Hong-Ik Yang, Woo-Jin Park, Kil-Young Ahn, Young-Geun Kim (LSIS Co., Ltd., Cheongju-si, Chungcheongbuk-do, Korea)

A2-P-13 Investigation on The Axial Magnetic Field of Cup Type Vacuum Interrupter Considering the Geometry of Contact Support (No. 753033)

Jin-Yong Na, Kyu-Hoon Park, Jae-Hong Koo, Bang-Wook Lee (Hanyang University, Ansan, Korea), Tae-Yong Shin, Chi-Wuk Gu, Heung-Jin Ju, Young-Kwang Cha (VITZROTECH CO., Ltd., Ansan, Korea)

A3: Switching Phenomena in Air (Low-voltage Circuit Breakers and Relays)

A3-P-1 The study of temperature rise in low voltage switchgear about cooling system (No. 752796)

MINSOO SON, HANYOUNG KANG, SEOKWON LEE, GILYOUNG AHN, YOUNGGEUN KIM (LSIS, Cheongju, Republic of Korea)

A3-P-2 Study of the Arc Motion Characteristics of Low-Voltage Circuit Breaker based on Magnetic Sensor Array (No. 752968)

Shuang Qie, Guogang Zhang, Youdang Xu, Zhiqiang Zhang, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

A3-P-3 Design of Polycyclic Gas Switch and its Performance Test (No. 753162)

Chuncheng Cao, Haitao Lin, Yongli Luo (Hulunbuir Power Supply Bureau, East Inner Mongolia Electric Power Limited Company, Hulunbuir, China), Junqi Wang, Xian Cheng (Zhengzhou University, Zhengzhou, China)

A3-P-4 Experiments on the Pre-ionization of Coaxial Gas Spark Switch (No. 753163)

Junqi Wang, Xian Cheng, Guowei Ge (Zhengzhou University, Zhengzhou, China), Xin Tu (University of Liverpool, Liverpool, England)

A3-P-5 Current Density Reconstruction in Low-voltage Circuit Breakers for the Stationary Configuration Based on Magnetic Inverse Problem Solution (No. 753169)

Jinlong Dong, Guogang Zhang, Zhiqiang Zhang, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

A3-P-6 Condition Evaluation of AC Contactor Based on The Grey Fuzzy Theory (No. 753188)

Shuxin Liu, Yuanyuan Wang, Zichun Liu, Yundong Cao, Shunhua Zhu (Shenyang University of Technology, Shenyang, China)

A3-P-7 Research on Intelligent Contactor of Distributed Wind Power System (No. 752947)

Shen Cheng, Zhiyuan Cai (Shenyang University of Technology, Shenyang, China)

A4: Eco-friendly SF₆ Alternative Gas

- A4-P-1 Application Experience of SF₆ –Free 72.5kV Hybrid-Gas-Insulated-Switchgears in China (No. 752660)**
Yitao Liu, He Hong, Xucheng Lu, Shuang Li (State Grid of Liaoning Electric Power Co. Ltd, Shenyang, China), Yaping Hou, Jun Zhang, Guangfu Liu, Jiaosuo Zhang (Shenyang Huade High Techn. Elec. Ltd.CO., Shenyang, China)
- A4-P-2 Research on the Discharge Behaviors of SCF N₂ (No. 752938)**
Liu Zhiyong (New Northeast Electric Group, Shenyang, China), Wei Hongqing (State Grid Zhejiang Electric Power Corporation, Jiaying Power Supply Company, Jiaying, China), Zhao Dawei, Chen Chuntian, Zheng Dianchun (Harbin University of Science and Technology, Harbin, China)
- A4-P-3 Insulation Characteristics of CF₃I/N₂ Gas Mixtures and Potential Application in C-GIS (No. 753227)**
Fanyi Cai, Baijie Zhou, Jian Xue, Zhou Bin (State grid Electric Power Research Institute, Nari Group Corporation, Nanjing, China), Dongxian Tan (Shanghai Jiao Tong University, Shanghai, China)
- A4-P-4 Research on Breaking Performance of CO₂ Rotating Arc Chamber (No. 753232)**
Xiangwen Xiao, Kun Zhang, Jing Yan, Yingsan Geng, Shishi Fan (Xi'an Jiaotong University, Xi'an, China)
- A4-P-5 Researches on Dielectric Recovery Characteristics of CO₂ Gas-Blast Arc Chamber Under No-Load Breaking (No. 753235)**
Shishi Fan, Kun Zhang, Jing Yan, Yingsan Geng, Xiangwen Xiao (Xi'an Jiaotong University, Xi'an, China)
- A4-P-6 Insulation Performance and Liquefaction Characteristic of C₅F₁₀O/CO₂ Gas Mixture (No. 753322)**
Jiaying Zhong (Pinggao Group Co., Ltd., Pingdingshan, China), Xiongxiang Fu, Aijun Yang (Xi'an Jiaotong University, Xi'an, China), Guquan Han (Pinggao Group Co., Ltd., Pingdingshan, China), Jialin Liu (Xi'an Jiaotong University, Xi'an, China), Yanhui Lu (Pinggao Group Co., Ltd., Pingdingshan, China), Xiaohua Wang, Mingzhe Rong (Xi'an Jiaotong University, Xi'an, China)
- A4-P-7 Experiment of Dielectric Strength of C₅F₁₀O Gas Mixture and Calculation of Stratification (No. 753357)**
Junhui Wu (State Grid Pinggao Group Co.,Ltd., Pingdingshan, China), Jialin Liu, Aijun Yang, Xiongxiang Fu (Xi'an Jiaotong University, Xi'an, China), Jiaying Zhong, Yonglin Li, Qing Liu (State Grid Pinggao Group Co.,Ltd., Pingdingshan, China), Xiaohua Wang, Mingzhe Rong (Xi'an Jiaotong University, Xi'an, China)
- A4-P-8 Numerical Calculation and Experimental Study on the Insulation Characteristics of SF₆-N₂ and SF₆-CF₄ Gas Mixtures (No. 753369)**
Xin LIN, Jia ZHANG, Xintao LI, Jianyuan XU, Zhenxin GENG, Luwei LI, Huili CHEN (Shenyang University of Technology, Shenyang, China)

A4-P-9 Analysis and Experimental Study on Liquefaction Characteristics of SF₆ / CF₄ Mixture Gas (No. 754478)

Liu Wen Kui, Zhao Xiao Min (State Grid Pinggao Group Co.LTD., Pingdingshan, China), Liu Zong Jie (State Grid Shandong Electric Power Company, Jining, China), Yao Yong Qi, Sun Ke Ke (State Grid Pinggao Group Co.LTD., Pingdingshan, China), Wang Yan Liang (State Grid Shandong Electric Power Company, Jining, China), Gao Yu Hang (Chengde Power Supply Company, State Grid Jibei Electric Power Company, Chengde, China)

A4-P-10 Simulation of the decomposition pathways and products of Perfluoronitrile C₄F₇N (3M:Novac 4710) (No. 754546)

Mengyuan Xu, Jing Yan, Zhiyuan Liu, Yingsan Geng, ZhenXing Wang (Xi'an Jiaotong University, Xi'an, China)

A4-P-11 Effects of N₂ contents on the non-equilibrium composition in SF₆ decaying process (No. 753244)

Qingqing Gao, Xiaohua Wang, Mingzhe Rong, Xi Li, Yuwei Fu, Aijun Yang (Xi'an Jiaotong University, Xi'an, China), Yubin Xu, Lei Gao (Shanxi provincial power company Changzhi power supply company, Shanxi, China)

H: Others

H-P-1 Study on High-Frequency Transient Overvoltages Protection in Offshore Wind Farms Based on RC Snubbers (No. 752990)

Xiao Yang, Fang Chun-en, Chen Chuanjiang, Li Wei, Zhang Bi-de, Ren Xiao (Xihua University, Chengdu, China)

H-P-2 Study on Stray Gassing of Transformer Oil with Metal Deactivator under condition of coincident electric field and temperature (No. 752884)

Huijuan Wang, Shujie Ma, Huimin Yu, Qi Zhang, Peng Wang (PetroChina Lanzhou Lubricating Oil R&D Institute, Karamay, China)

H-P-3 Influence of System Transients on the Residual Flux of Three-phase Transformers (No. 753014)

Diao Tishuai, Zhang Bi-de, Fang Chun-en, Li Wei, Ren Xiao, Chen Chuanjiang (Xihua University, Chengdu, China)

H-P-4 Research on the Temperature Real-time Monitoring Technology of High Voltage Disconnectors (No. 753022)

Yanmiao HE, Zhibing LI (High Voltage Department, China Electric Power Research Institute, Beijing, China), Yujie LI, Jinggang YANG, Hongtao LI, Shan GAO (State Grid Jiangsu Electric Power Company Research Institute, Nanjing, China), Peng YANG (Shandong Zhiyang Electric Co., Ltd, Zibo, China)

H-P-5 Simulation of numerical calculation method for carrying capacity of urban underground cable group (No. 753111)

Yao Zhoufei, Li Honglei (State Grid Shanghai Electrical Power Research Institute, Shanghai, China), Fu Chenzhao, Hu Jialei (Shanghai Jiaotong University, Shanghai, China)

H-P-6 Fault Diagnosis for High Voltage Circuit Breaker Based on Hilbert-Huang Transform and Support Vector Machine (No. 753151)

Chunguang Hou, Maoyuan Jia, Ying Han, Yundong Cao (Shenyang University of Technology, Shenyang, china)

H-P-7 Fault Diagnosis Model for Circuit Breaker Based on Power Dispatching System (No. 752916)

Zewen Meng, Lian Chen (Xiamen University of Technology, Xiamen, China), Yimin You, Liangxian Xiao (Xiamen Huadian Switchgear Co., Ltd, Xiamen, China)

Tuesday, October 24th, 10:30-11:30

Poster Session II & Coffee Break:

DC Switching Technologies + Fault Current Limiting Technologies + Fundamental Physics and Electrical Insulation in Switchgears + Emerging Switching Technologies + Operating Mechanisms

Chair: Dr. Hao Sun

Venue: Poster Area (1F)

B: DC Switching Technologies

B-P-1 Investigation into Reliability Assessment of Power Semiconductor for Hybrid DC Switch Application (No. 752955)

Jingcun Liu, Guozhang Zhang, Qian Chen, Lu Qi, Zheng Qin, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

B-P-2 Experiment research on Current chopping on zero period of DC Vacuum Circuit Breaker breaking (No. 753000)

Xianpeng Li, Jiyan Zou, Lixia Geng, Zeyu Bi (Dalian University of Technology, Dalian, China)

B-P-3 A Quenching Recovery Time Test Method for Resistive Type Superconducting Fault Current Limiters Used in DC Circuit (No. 753005)

Hanming Ge, Kun Yang, Muhammad Junaid, Yaxiong Tan, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

B-P-4 Control Strategy for Photovoltaic Grid-connected Inverter with Harmonic Suppression (No. 753108)

Sen Ouyang, Qingpai Ke, Wenjie Ma (South China University of Technology, Guangzhou, China)

- B-P-5 The Comparison of DC Semiconductor Circuit Breaker and SF₆ Circuit Breaker with Transverse Magnetic Field for DC Transmission (No. 753156)**
Lei Gao, Bin Xiang, Kun Yang, Zhiyuan Liu, Yingsan Geng, Jianhua Wang, Satoru Yanabu (Xi'an Jiaotong University, Xi'an, China)
- B-P-6 Study on Factors Influencing the Characteristics of Arc in DC Contactors (No. 753190)**
Ying Han, Wenxiang Shang, Chunguang Hou, Aoxue Li, Yundong Cao (Shenyang University of Technology, Shenyang, China)
- B-P-7 Research on Integrated Design of Vacuum Switch Based on Permanent Magnetic Actuator for Hybrid DC Contactor (No. 753272)**
Lu Qi, Guogang Zhang, Jingcun Liu, Zheng Qin, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)
- B-P-8 Investigation of a Magnetic Induction Current Commutation Module for DC Circuit Breaker (No. 753286)**
Yi Wu, Yang Hu, Mingzhe Rong, Yifei Wu, Shehr Yar Aziz, Qiang Yi (Xi'an Jiaotong University, Xi'an, China)
- B-P-9 A New DC System Fault Detection Method Based on Improved Unbalanced Bridge (No. 753290)**
Mingang Tan, Han Cui (Southeast University, Nanjing, China), Bangcheng Wei (Nanjing Normal University, Nanjing, China), Chenlong Li, Yan Xu (Jiangsu Frontier Electric Technology Co, Ltd, Nanjing, China)
- B-P-10 DDL Algorithm Based Short Circuit Current Detection in DC Circuit Breaker (No. 753296)**
Shehr Yar Aziz, Yang Hu, Yi Wu, and Yifei Wu (Xi'an Jiaotong University, Xi'an, China)
- B-P-11 High-speed Switch Driving Circuit Analysis of DC Medium Voltage Breaker (No. 753343)**
PANG Sumin, HAN Guiquan, WU Junhui, Lin Guangke, Wang Die, Wang Mingfei (State Grid Pinggao Group Co.,Ltd., Pingdingshan, China), Wu Yifei (Xi'an Jiaotong University, Xi'an, China)
- B-P-12 Analysis of Structure Strength in Medium Voltage DC system High-Speed Repulsing Mechanism (No. 753352)**
Junhui Wu (State Grid Pinggao Group Co.,Ltd., Pingdingshan, China), Jiahao Guo, Yifei Wu, Yi Wu (Xi'an Jiaotong University, Xi'an, China), Guiquan Han, Die Wang (State Grid Pinggao Group Co.,Ltd., Pingdingshan, China)
- B-P-13 DC Vacuum Arc Lifetime of Contact Materials CuCr₅₀ and CuCr₂₅**

Jin Zhang (State Grid Corporation of China, Beijing, China), Linjing Chang, Guiquan Han (Pinggao Group Co.,Ltd. Pingdingshan, China), Shaohua He, Shimin Li (Xi'an Jiaotong University, Xi'an, China)

B-P-14 Research of Grading for Series-connected Thyristor Valves of Solid-state Transfer Switch (No. 753004)

Guan Pan, Fang Chun-en, Zeng Nanxun, Li Wei, Ren Xiao (Xihua University, Chengdu, China)

B-P-15 Researches on Interruption Characteristics of a Hybrid HVDC Circuit Breaker (No. 753018)

Li Li, Zhang Bi-de, Fang Chun-en, Li Wei, Ren Xiao, Diao Tishuai (Xihua University, Chengdu, China)

B-P-16 Design of Power Source System Used on Wireless Power Supply for High Voltage Direct Current Switch (No. 752985)

Zhihui Huang, Shukai Wang, Jiyan Zou (Dalian University of Technology, Dalian, China), Lin Zou, Ruihai Li (Grid Technology Research Center, China Southern Power Grid Company Limited, Guangzhou, China), Haidan Yu (State Grid Dalian Electric Power Supply Company, Dalian, China)

B-P-17 Research and Design of a Layout Structure Suitable for Active Loop Used in DC Circuit Breaker Based on Artificial Current Zero Technology (No. 752991)

Rui Cao, Wen Gao, Long Li, Xiyang Zhao (Xi'an XD Electric Research Institute Co., LTD, Xi'an, China)

B-P-18 Interruption Characteristics and Reignition Condition of Direct-Current Forced Current Zero (No. 753303)

Huo Wenlei, Wu Jianwen, Jin Xinchun, Deng Yun (Beihang University, Beijing, China), Xin Chao (Eaton Cooper Electronic Technologies Co., Ltd, Shanghai, China)

B-P-19 Assessment of Various Kinds of AC Black-Box Arc Models for DC Circuit Breaker (No. 753032)

Kyu-Hoon Park, Ho-Yun Lee, Mansoor Asif, Bang-Wook Lee (Hanyang University, Korea), Tae-Yong Shin, Chi-Wuk Gu (VITZROTECH CO., Ltd., Korea)

B-P-20 Voltage Sharing Between Mechanical Switch and IGBT in a Hybrid DC Circuit Breaker (No. 753260)

Wenlong Yan, Kun Yang, Zhenxing Wang, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

B-P-21 Study on Small DC Vacuum Arc Characteristic under Transverse Magnetic Field

Yuto Hachiman, Taishi Shiozuka, Eiji Kaneko (University of the Ryukyus, Oinawa, Japan)

B-P-22 Design and Experimental Investigation on Small Currents Magnetic Blow-out Equipment of Air DC Circuit Breaker (No. 752977)

Xiang Fei, Zhihao Zhu, Duanlei Yuan, Yunpeng Sha, Rui Yang, Hongtie Zhang (Pinggao Group Co., Ltd, State of Grid, Pingdingshan, China)

C: Fault Current Limiting Technologies + Emerging Switching Technologies

C-P-1 Simulation on the Overvoltage of 500 kV Fault Current Limiter Based on Fault Current Capture Technology (No. 752979)

Lin Zou, Song Wang, Ruihai Li (Grid Technology Research Center, China Southern Power Grid Company Limited, Guangzhou, P. R. China), Zhihui Huang, Jiyan Zou (Dalian University of Technology, Dalian, China)

C-P-2 Study on Fast Early Detecting and Rapid Accurate Fault Parameters Estimation Method for Short-circuit Fault (No. 753246)

Qian Chen, Guogang Zhang, Jingcun Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

C-P-3 Dynamic Behavior of Current-through Galinstan in Liquid Metal Current Limiter (No. 753336)

Hailong He, Siyu Lv (Xi'an Jiaotong University, Xi'an, China), Wei Liu, Zhenquan Sun (Shaanxi Regional Electric Power Group Company, Ltd., Xi'an, China), Xufeng Kang, Chunping Niu (Xi'an Jiaotong University, Xi'an, China)

C-P-4 A new Controlled Fault Limiting Algorithm for Vacuum Fault Current Limiter Based on Fault Current Zero-crossing Prediction Algorithm (No. 752983)

Yanxia Zhang, Zhihui Huang, Jiyan Zou (Dalian University of Technology, Dalian, China), Lin Zou, Ruihai Li, Song Wang (Grid Technology Research Center, China Southern Power Grid Company Limited, Guangzhou, China)

C-P-5 The Influence of M-effect Metal Arrangement on the overload current Pre-arcing time of DC current-limiting fuses (No. 754644)

Xinjian Huang, Shimin Li, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

C-P-6 Experimental Study on Controlled Unloaded Transformer Switching Considering Residual Flux (No. 752989)

Chen Chuanjiang, Fang Chun-en, Xiao Yang, Li Wei, Zhang Bi-de, Ren Xiao (Xihua University, Chengdu, China)

C-P-7 Experimental Investigation between Short Circuit Making Performance and Closing Speed of Direct Acting Earthing Switch (No. 753020)

Jiang Cheng-bo, Zhu Yan-qing, Yuan Duan-lei, Zhu Zhi-hao, Hu Jing-jing, Ma Ming-le (State Grid Pinggao Group Co., Ltd, Pingdingshan, China)

D: Fundamental Physics and Electrical Insulation in Switchgears

- D-P-1 Dependence of Field Enhancement Factor on Power Frequency Voltage in Vacuum (No. 752868)**
Shimin Li, Yingsan Geng, Zhiyuan Liu and Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)
- D-P-2 Experiment investigation on triggered vacuum arc under the different contact materials (No. 753069)**
Renjie Lin, Lijun Wang, Weixin Shi, Jie Deng, Zeyu Yan, Shenli Jia (Xi'an Jiaotong University, Xi'an, China)
- D-P-3 Vacuum arc behavior and its development process under micro-second scale (No. 753161)**
Zhenguo Li, Lijun Wang, Renjie Lin, Shenli Jia (Xi'an Jiaotong University, Xi'an, China)
- D-P-4 DC Vacuum Arc Voltage Characteristics Subjected to an External Transverse Rotating Magnetic Field (No. 753209)**
Xiuli Yi, Zaiqin Zhang, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)
- D-P-5 Composition and Thermodynamic Properties of Air Thermal Plasmas Mixed with Ablated Copper and Polytetrafluoroethylene Vapor (No. 752900)**
Hao Lin, Junmin Zhang (Beihang University, Beijing, China)
- D-P-6 Investigation on Arcing Behaviors in High-voltage Switchgear with a Rotary Interruption Technology (No. 753159)**
Fu Si, Cao Yundong, Liu Kai, Hou Chunguang, Li Jing (Shenyang University of Technology, Shenyang, China)
- D-P-7 Secondary arc of LEO spacecraft solar array (No. 753305)**
Zhu Liying, Liu Zhigang, Zhang Xiaofeng (Institute of Spacecraft System Engineering CAST, Beijing, China), Wu Jianwen, Huo Wenlei (Beihang University, Beijing, China)
- D-P-8 The Influence of Liquid Viscosities on Bubble Breakdown (No. 754556)**
Zhenxing Wang, Wenlong Yan, Kun Yang, Liqiong Sun, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China)

G: Operating Mechanism

- G-P-1 Design and research of permanent magnet direct-driven motor for high voltage circuit breaker (No. 752583)**

Yuan Deng, Jianying Zhong, Cheng Tang (PINGGAO GROUP CO., LTD., Pingdingshan, China), Yang Gao (Henan High Voltage Apparatus Research Institute, China), Yu Liu (PINGGAO GROUP CO., LTD., Pingdingshan, China)

G-P-2 Design and research of motor drive mechanism for high voltage circuit breaker (No. 752820)

Yuan Deng, Jianying Zhong, Yu Liu, Yang Gao, Cheng Tang, Baoying He (PINGGAO GROUP CO., LTD., Pingdingshan, China)

G-P-3 Research on the Vibration of CT20 Type Spring Operating Mechanism during Closing (No. 752993)

Wenxiong Mo, Junxiang Liu, Tianwei Xiao (Guangzhou Power Supply Co., Ltd., Guangzhou, China), Yu Liu, Hu Luo, Yu Wang, Le Wang (Xi'an High Voltage Apparatus Research Institute Co., Ltd., Xi'an, China)

G-P-4 Health Status Centered Mechanical Feature Extraction for High Voltage Circuit Breakers (No. 752997)

Gaoyang Li, Xiaohua Wang, Mingzhe Rong (Xi'an Jiaotong University, Xi'an, China), Jianying Zhong (Henan Pinggao Electric Co.,Ltd, Pingdingshan, China)

G-P-5 Comparison of Two Types of Electromagnetic Repulsive Force Actuators (No. 753002)

Zeng Nanxun, Fang Chun-en, Guan Pan, Li Wei, Zhang Bi-de, Ren Xiao (Xihua University, Chengdu, China)

G-P-6 Reliability Analysis of Permanent Magnetic Actuator Based on Performance Degradation Data (No. 753148)

Yongxing WANG, Xujing ZHAO, Enyuan DONG, Jiyan ZOU (Dalian University of Technology, Dalian, China), Haidan YU, Xin HUANG (Dalian Power Supply Company, State Grid Corporation of China, Dalian, China)

G-P-7 A Fast Current Zeroes Estimation Algorithm for Controlled Fault Interruption Based on an Improved BP Neural Network (No. 753201)

Jiangang Ding (Xi'an Jiaotong University, Xi'an, China), Shaogui Ai (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China), Wei Li (State Grid Ningxia Electric Power Company, Yinchuan, China), Bojian Zhang, Xiaofei Yao, Zhiyuan Liu, Haixia Zhang (Xi'an Jiaotong University, Xi'an, China), Chaoping Yang, Xiuguang Li (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China)

G-P-8 Development of an Electromagnetic Repulsion Mechanism for a 40.5kV Fast Vacuum Circuit Breaker (No. 753210)

Li Ren (Xi'an Jiaotong University, Xi'an, China), Yongning Huang (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China), Yongqiang Song (State Grid Ningxia Electric Power Company, Yinchuan, China.), Xiaofei Yao, Bojian Zhang, Lixin Hong, Yingsan Geng, Zhiyuan Liu, Jianhua Wang

(Xi'an Jiaotong University, Xi'an, China), Cunxin Bai, Xutao Li (Electric Power Research Institute of Ningxia Electric Power Company, Yinchuan, China)

G-P-9 Simulation of High-Speed Mechanical Switch on Multi-field Coupling (No. 753347)

Yu TIAN, Yu ZHU, Enyuan DONG (Dalian University of Technology, Dalian, CHINA), Yang tian, Zhibing Li (China Electric Power Research Institute, Beijing, CHINA)

G-P-10 Design and Test of Vacuum Circuit Breaker with Hybrid Fast Operating Mechanism (No. 753396)

Xu Xiaodong, Li Zhibing, Yan Xianlgian, Liu Beiyang, Tian Yang (China Electric Power Research Institute, Beijing, China)

G-P-11 An Improvement of A Contact Spring Pin of a 126 kV Vacuum Circuit Breaker by Orthogonal Experimental Design (No. 754738)

Haoqing Wang (China Electric Power Research Institute, Beijing, China; Xi'an Jiaotong University, Xi'an, China), Bojian Zhang (Xi'an Jiaotong University, Xi'an, China), Xiangyang Li (China Electric Power Research Institute, Beijing, China), Xiaofei Yao, Hao Zhang, Zhiyuan Liu, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China), Junqi Cheng, Haifang Yang (China Electric Power Research Institute, Beijing, China)

Tuesday, October 24th, 15:00-16:00

Poster Session III & Coffee Break:

Simulation Technologies in Switchgears + Testing Technologies in Switchgears + Others

Chair: Dr. Hui Ma

Venue: Poster Area (1F)

E: Simulation Technologies in Switchgears

E-P-1 Research on Alternating Current Series Arcing of in More Electric Aircraft System (No. 752648)

JIANG Jun, HONG Yinqiu, ZHAO Mingxin, WU Shuqun, ZHANG Chaohai (Nanjing University of Aeronautics and Astronautics, Nanjing, China), XU Wanli, FENG Yuan (Jiangsu Nari Hengchi Electrical Equipment CO.,LTD., Wuxi, China)

E-P-2 Multiple Re-Ignitions in Small Inductive Current interruption by Vacuum Circuit Breakers (No. 752816)

Feng Wang (Xi'an University of Science & Technology, Xi'an, China), Zhongyi Wang (Xi'an Jiaotong University, Xi'an, China), Mengmeng Hao (Siemens electric drive equipment co., ltd, Shanghai, China)

E-P-3 Electromagnetic force simulation of isolation knife switch (No. 752970)

Min Li, Nannan, Wang, Meifang Xie (Pinggao Group Co., Ltd., Pingdingshan, China), Jiansheng Yuan (Tsinghua University, Beijing, China)

E-P-4 Application of Computational Fluid Dynamics to Predict the Temperature-Rise of Gas Insulated Switchgears (No. 753090)

Haoyong Song (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Guobin Hou (Xi'an Jiaotong University, Xi'an, China), Wei Wang (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Xiaofeng Deng (Xi'an Jiaotong University, Xi'an, China), Qingdan Huang, Wenxiong Mo (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Makoto Hasegawa (Chitose Institute of Science and Technology, Chitose, Japan), Xingwen Li (Xi'an Jiaotong University, Xi'an, China)

E-P-5 Numerical Modeling of Contact Erosion Including both Vaporization and Sputter Erosion (No. 753091)

Yunfeng Wang (Xi'an Jiaotong University, China), Haoyong Song (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Yihong Wu (Xi'an Jiaotong University, China), Qian Wang (Xi'an University of Technology, Xi'an, China), Wei Wang, Qingdan Huang, Wenxing Mo (Test & Research Institute of Guangzhou Power Supply, Guangzhou, China), Xingwen Li (Xi'an Jiaotong University, China)

E-P-6 Research and Design of an Innovative Medium Voltage Removable Metal-enclosed Switchgear (No. 753103)

Zhi-hao Zhu, Duan-lei Yuan, Hai-yan Wang, Xiang Fei, Fang Yang, Mingle Ma (State Grid Pinggao Group Co., Ltd, Pingdingshan, China)

E-P-7 Thermal analysis of switchgear using FEM considering the heat from the main circuit (No. 753275)

Shuo Sun, Li-an Chen (Xiamen University of Technology, Xiamen, China), Yi-min You, Zong-xiong Ma (Xiamen Huadian Switchgear Co., Ltd, Xiamen, China)

E-P-8 Optimum Design Method of Shunt Release Based on Ansoft maxwell (No. 753184)

Zhu Tiansheng, Jia Shenli (Xi'an Jiaotong University, Xi'an, China), Liu Hongwu, Guan Ruiliang, Yin Nairui (Changshu switchgear Mfg.Co.,Ltd.(Former Changshu switchgear plant), Changshu, China)

E-P-9 Modeling and Simulation of Hydraulic Buffer in Circuit Breaker (No. 753192)

Liu Yu, Zhu Kelou, Han Guohui, Song Chao, Wang Lili, He Baoying, Du Liping (Pinggao Group Co., Ltd, State of Grid, Pingdingshan, China)

E-P-10 Research on Power Loss Calculation and Temperature Rise Simulation of AC High Voltage GIS Busbar (No. 753229)

Zhong Jianying, Zhang Bo, Guo Yujing, Yao Yongqi, Wang Zhijun, Zhang Hao (Pinggao Group Co., Ltd., Pingdingshan, China)

- E-P-11 Analysis and Optimization in Design of the Casting Enclosure in High Voltage Switchgear (No. 753239)**
Du Yingqian, Wang Saihao, Sun Yingjie, Zhang Youpeng, Zhan Xiaomeng, Chai Yinghui, Guo Liangchao, Hu Yantao (PINGGAO GROUP Co.,Ltd, Pingdingshan City, China)
- E-P-12 Research on Impact Dynamics Simulation of High-voltage Circuit Breaker's Transmission System (No. 753240)**
WANG Saihao, WANG Zhijun, ZHONG Jianying, DU Yingqian, JIANG Jinghua, DONG Xiangyuan (PINGGAO GROUP Co.,Ltd, Pingdingshan City, China), QIN Zhengmin (Henan Pingzhi High Voltage Switchgear Co., Ltd, Pingdingshan, China)
- E-P-13 Research on Short-circuit Electromagnetic Force of MV ES with Different Structural Arrangements of Ground Loop (No. 753267)**
Yanqing Zhu, Chengbo Jiang, Duanlei Yuan, Mingle Ma, Zhihao Zhu, Ming Pan (State Grid Pinggao Group Co., Ltd, Pingdingshan, China)
- E-P-14 Effect of Grounded Coating on Insulation Performance for Solid Insulation Ring Main Unit (No. 753335)**
Shilei Guan, Xuefeng Bai, Zhixin Bai, Baikui Li (China Electric Power Research Institute, Beijing, China), Pei Liu, Jing Yan, Zhiyuan Liu, Yingsan Geng (Xi'an Jiaotong University, Xi'an, China)
- E-P-15 Dynamic Simulation of Circuit Breaker (No. 753392)**
Wang Gang, Yao Yongqi, Wang Zhijun, Liu Yapei, Zhang Bo, Zhang hao, Hao xiangyu, Wang guan (Pinggao Electric Co.,Ltd., Pingdingshan, China), Li Jun (Maintenance of company of Qinghai Electric Company, Xining, China)
- E-P-16 A Reserach on Complex Network Model of Field Visibility of Electric Field in SF6 Circuit Breaker (No. 753425)**
Li-Ying Li, Hui Wang, Xiao-ming Liu (Shenyang University of Technology, Shenyang, China)
- E-P-17 Coupled Fluid-Mechanical Analysis Method in High-Voltage Circuit Breakers Design (No. 754291)**
M. Cui, C.Y. Bae, J.S. Ryu, J. Choi, Y.G. Kim (LSIS Co., Ltd., Cheongju-si, Chungcheongbuk-do, Korea)
- E-P-18 A Study on Dynamic Behavior of Multibody Dynamics Model on Ring Main Unit (No. 753445)**
Jin-Hyun PARK, Dong-Sik Lee, Hong-Ik Yang, Lyun Yu, Kil-Young Ahn, Young-Geun Kim (LSIS Co., Ltd., Cheongju-si, Chungcheongbuk-do, Korea)
- E-P-19 Numerical Analysis and Experiment of Corona Discharge due to Conductive Particle in High-Voltage System (No. 753458)**

Myung Ki Baek, and Hong Kyu Kim (Korea Electrotechnology Research Institute, Changwon-si, Gyeongsangnam-do, Korea)

E-P-20 Power Transformer Transient Modeling Considering the Effects of On-Load Tap Changer (No. 752996)

Asad Ahmad, Wanliang Fang, Jun Liu (Xi'an Jiaotong University, Xi'an, China)

F: Testing Technologies in Switchgears

F-P-1 Research of Shunt Reactor Switching Test for 1100kV UHV Circuit-breakers (No. 752887)

Gao Xiangxiang, Liu Haojun, Jia Zhuanzhuan, Jianfei Peng (XI'AN High Voltage Apparatus Research Institute, XI'AN, China)

F-P-2 Study on the Laser-induced Plasma Properties of Vacuum Interrupter Shield under Different Pressure (No. 752923)

Huan Yuan, Lidong Song, Xiaonan Wang, Xiaohua Wang, Zhr Ye, Dingxin Liu, Aijun Yang (Xi'an Jiaotong University, Xi'an, China), Wanting Wang (Hangzhou Heng Xin Electric Co., Ltd, Hangzhou, China)

F-P-3 Influence of Temperature Variation on the Accuracy of DC Voltage Measuring Device (No. 753031)

Xie Tingting Yang Zhongzhou, Feng Jianhua Wang Lu (XI'AN High Voltage Apparatus Research Institute, Xi'an China)

F-P-4 Measurement and Analysis Method of Electromagnetic Signals for DC Arcing Fault (No. 753101)

Zhao shuang (Hebei University of Technology, Tianjin, China; Tianjin University of Science and Technology, Tianjin, China), Zhang yanfeng, Zhao yuan, Wang yao, Li kui (Hebei University of Technology, Tianjin, China)

F-P-5 A New Method for Measuring the Speed Characteristics of High Voltage Circuit Breaker Based on Machine Vision Algorithm (No. 753123)

Jinqiu Deng, Guogang Zhang, Yingsan Geng, Jianhua Wang (Xi'an Jiaotong University, Xi'an, China), Jinggang Yang, Ke Zhao (State Grid Jiangsu Electric Power Company Research Institute, Nanjing, China)

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