

# Workshop

## Advanced topics of HV and EHV underground cables

9<sup>th</sup> and 10<sup>th</sup> of September 2021 at the Karlsruhe University of Applied Sciences

### Thursday 9<sup>th</sup> September 2021

- 09:00 Uhr **Opening words and introduction to the workshop**  
M. Palic
- 09:05 Uhr **Fundamentals of HV and EHV Underground Cable Technology**  
M. Palic  
Layout – Properties – Field grading – Cross-bonding – Applications
- 10:30 Uhr **Coffee break**
- 11:00 Uhr **Accessories for Underground Cables**  
A. Kuchler  
Application of field grading methods – Sealing ends and joints – AC and DC accessories – Design – Examples – Installation – Testing – Ageing and failure mechanisms – Diagnostics
- 12:30 Uhr **Lunch (for the in-person participants)**
- 14:00 Uhr **HV Tests of DC Cables of High Power Capacity**  
R. Pietsch  
Test methods – Factory and on-site tests
- 15:30 Uhr **Coffee break**
- 16:00 Uhr **Cable Temperature Monitoring - Methods, Software, Operation**  
U. Glombitza  
Monitoring methods and systems, IEC formulas and models for load analysis, Load forecast software, Applications
- 17:30 Uhr **End of presentations of first day**
- 19:00 Uhr **Dinner for the live event participants – Meet'n greet with colleagues and friends**

### Friday 10<sup>th</sup> September 2021

- 09:00 Uhr **Thermal and hydraulic processes induced by underground cables in the soil**  
S. Bauer  
Water movement and heat transport in the unsaturated soil - Heat effects and temperature distribution around cables - Models for the prediction of temperature effects
- 10:30 Uhr **Coffee break**
- 11:00 Uhr **DC Converter Technologies**  
G. Schultz  
Comparison of DC technologies – DC-connections to the AC grid – Comparison AC vs. DC – Power losses
- 12:30 Uhr **Issue of certificates for the live event participants - the online participants will receive these by mail**
- End of the workshop, lunch for the live event participants**

**Tutors:**



Dipl.- Ing. **Markus Palic**, former CEO NEW Netz, Geilenkirchen / CEO Tagungsgesellschaft Energie mbH, Karlsruhe

After his master's degree in electrical power systems, Markus spent more than 30 years in various positions in power utilities. He was CEO of a regional utility, being mainly involved with power system economics, grid expansion and construction projects. Throughout this period, he was teaching classes on "Power system economics in liberalized markets" at the University of Applied Sciences Aachen, Jülich campus.



Prof. Dr.-Ing. **Andreas Küchler**, University of Applied Sciences Würzburg-Schweinfurt

After his engineering studies and PhD Andreas has worked as design for HSP Hochspannungsgeräte Porz GmbH, Köln. He has founded at his University in Schweinfurt the institute for High Voltage Engineering and Electrical Power, IEHT with focus on bushings, transformers, cable accessories, DC-insulation and diagnostics. He is a member of IEEE (SM), CIGRE, VDE, ETG, VDI and is active in various national and international working groups. He is the author of the major reference book „High Voltage Engineering.“



Dr. rer. nat. **Ralf Pietsch**, Head of High-Voltage Technology, Highvolt Prüftechnik Dresden GmbH

After his engineering studies and his Ph.D. degree Ralf is engaged since more than 20 years in CIGRE and in other international associations in the field of electric power and has published numerous papers. In addition he is regularly holding lectures in Universities and other educational institutions at home and abroad on High Voltage engineering and related test methods. At HIGHVOLT he is leader of the „High voltage engineering“ team.



Prof. Dr.-Ing. **Ulrich Glombitza**, CEO OSSCAD GmbH & Co. KG Bergisch- Gladbach

After his engineering studies and PhD degree at the Technical University (TU) Hamburg Harburg, Ulrich has worked for F&G Energietechnik Köln as design manager for fiber optic cables. Since 2005 he is Professor for Electrical Engineering at the University of Applied Sciences in Cologne. In 2007 he founded the OSSCAD GmbH & Co. KG, which main business is the design and sales of turn-key products in the areas of cable duct refurbishment and RTTR cable monitoring.



Prof. Dr. **Sebastian Bauer**, Institute of Geosciences, Christian-Albrechts-University, Kiel

After his studies in Physics and his Ph.D. and subsequent habilitation at the faculty of Geosciences in Tübingen, Sebastian has been working since 2007 at the institute for Geosciences at Kiel University. Topics are groundwater, pollutant transport, subsurface energy storage and geothermal energy, for which coupled process models are developed and applied on lab and field scale. He is one of the founders of the "Kompetenzzentrum Geo-Energie" at Kiel University.



Prof. Dipl.-Ing. **Guntram Schultz**, Karlsruhe University of Applied Sciences

After his master's degree in electrical power Guntram has been working in the department of network development of a major TSO in Karlsruhe. In 1981 he has been appointed full professor in the Karlsruhe University of Applied Sciences for „Planning and Operation of Electrical Power Systems, Protection and Renewable Energies“. He is also active in the training and continuing education of young engineers.

**Who should attend?**

The workshop provides the fundamentals of HV electrical power systems and is as such suited for newcomers in this field but also for experienced engineers who are looking for an update. It includes the "best of" lectures of previous seminars and provides the participants with a sound overview but also with detailed knowledge of the main issues of high voltage transmission. Participants typically work for a power utility, an overhead line contractor or an equipment manufacturer. The seminar will take place as live event in German language and also as online seminar. The latter can be booked in German or in English (simultaneous translation by K.O. Papailiou.)

**Registration fee:**

980.- Euro (in English only online)

## online workshop

- Event format: The workshop will take place as a **hybrid event** in a live and online version in German. The online version is **offered also in English**.
- Presentations: The presentations are given by the speakers live, by being physically present in the auditorium and will be streamed live.
- Online event: English participants will be able to follow the event via live-stream remotely using an access code, which is strictly personal since if a participant is online using this code, further access with this code is not possible! The presentations will be synchronously translated from German into English. The presentation slides are bilingual. Questions and comments can be asked or made in writing via a chat. These will be introduced into the live event by the moderator and answered or explained by the speakers. In this way, online participants can take part in the lectures without any restrictions.