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Sustainable Power Network

SEMINARS

Ensuring Safety and Integrity in Energy Corridors with Coexisting Power Systems and Fuel transportation Pipelines

The coexistence of power systems and critical fuel transportation infrastructure (e.g. gas/oil pipelines), in common energy corridors, is not a distant prospect—it is a reality we must be aware of. Whether today's fuel transportation infrastructure serves natural gas or shifts to hydrogen in the future, understanding how power systems' normal operations and fault conditions impact the integrity of this infrastructure calls for our attention. Safety should remain our top priority, to drive the development of risk-informed engineering solutions.

This presentation explores the challenges of coexisting DC and AC power systems with critical pipeline infrastructure, emphasizing complexities from operations, earthing practices, and atmospheric discharges like lightning. In fact, this talk serves as an example of the need to bridge high-level system analysis with the real-world behavior of power system components. After all, we cannot credibly discuss “smart” grids without first understanding the physical realities of the components that support them.

To enhance engagement, we will present examples from international projects that, while not directly impacting Cyprus today, could hold significant relevance in the near future. These include HVDC interconnections, PV & storage energy communities, and catastrophic failures on buried pipelines from lightning discharges. Additionally, as this is a CIGRE meeting, we will emphasize the relevance of CIGRE technical documents throughout the presentation, illustrating how they have influenced international best practices and contributed to the formulation of ISO technical standards in particular.

Speaker Bio

C.A. Charalambous obtained a 1st class Honors degree in EEE from UMIST, UK (2002) and a PhD degree in Electrical Engineering from the University of Manchester (2006). Currently, he is a Professor at the ECE department of the University of Cyprus. In 2013, he has founded the Power Systems Modelling Laboratory (PSM) that operates independently under the auspices of the ECE department. As Principal Investigator (PI), he has secured and managed over 2 million euros of funding from competitive research and international industrial sources. His work is widely recognized and has shaped industry practices. He contributed to the ISO Standard 21857:2021 and ISO CD 24695 as a working group member, with his research shaping guidelines on Photovoltaic Interference and dc/ac interference from modern power systems on critical pipeline systems. He has published more than 100 research papers in selected top Scientific Journals (mainly IEEE Transactions & IET Research Journals) and in peer-reviewed conference proceedings. Finally, he has offered consulting services in the area of dc and ac interference for leading international companies and complex projects across the world. Charalambos is a registered Chartered Engineer (C.Eng.) in the UK and Fellow of the IET (FIET).

Information

Date

Tuesday, February 11th, 2025

16:00-17:00 | Cyprus Timezone

Location

ELECTRON room, Central Electricity Authority of Cyprus offices, Amfipolis 11, Nicosia 2025.

Speaker

Prof. C.A. Charalambous

Professor at the ECE department of the University of Cyprus