

# 2nd SUNRISE SUMMER SCHOOL

## Accelerating Renewable Energy Integration: From Real-Time Simulation to Final Real- World Implementation

July 7–11, 2025 in Belgrade

The **2nd SUNRISE Summer School** offers a **four-day intensive program** designed to provide participants with knowledge and practical skills in **real-time applications for integrating renewable energy sources**. Led by **renowned experts and researchers**, this program provides a unique opportunity to engage in both **theoretical learning and hands-on prototyping**.






### Program highlights

- ✓ **Hands-on experience** with real-time simulations and experimental validation
- ✓ **Key topics** including protection relay testing, voltage source converter (VSC) control, and smart grid digitalization
- ✓ **Lectures and interactive workshops** led by leading academics and industry professionals
- ✓ **Networking opportunities** with fellow students and professionals in the field
- ✓ **Welcome reception and gala dinner**, offering a taste of Belgrade's vibrant nightlife

### Who should apply?

This program is open to **MS and PhD students, postdoctoral researchers, and industry professionals** interested in **power systems, renewable energy integration and smart grids**.

### Key Details

-  **Venue:** Palace of Science, Belgrade, Serbia
-  **Dates:** July 7–11, 2025
-  **Cost:** No course fee, meals and accommodation included (participants cover travel costs)
-  **Registration Deadline:** March 30, 2025
-  **Notification of Acceptance:** April 15, 2025

 [Register Now](#)

## # Summer School Topics

- Protection relay testing using real-time simulators
- Distribution and transmission system protection
- Influence of renewable generation in protection systems
- Automating substation protection testing
- Integrated simulation environment
- Modeling, control and simulation of voltage source converters: grid-following and grid-forming
- Higher-level controllers in renewable energy systems: virtual inertia, primary frequency response, or voltage support
- Control Hardware in the Loop simulations through Typhoon-HIL
- Experimental validation of a VSC controller in the SUNRISE prototype



Typhoon HIL provides support and expertise to this summer school.



This project has received funding from the European Union's HORIZON-WIDERA-2021-ACCESS-03 under Grant Agreement No. 101079200.



This summer school is organized and sponsored by **SUNRISE project**. **SUNRISE** aims to leverage the scientific excellence and research and administrative capacity of the University of Belgrade through knowledge transfer and the exchange of best practices with well-established research institutions.

## PARTNERS

School of Electrical Engineering,  
University of Belgrade



Technische Universiteit Delft,  
Faculty of Electrical Engineering,  
Mathematics and Computer Science



University of Seville



University of the Basque Country,  
Faculty of Engineering in Bilbao



UPV EHU

## LECTURERS

**Prof. Dr. Aleksandar Kavgic** has been with Typhoon HIL since 2015, initially in the capacity of a project manager in charge of running Horizon 2020 and Horizon Europe, as well as forming new consortia and project proposal, mostly in the domain of grid modernization and smart control of large portfolios of inverter-based DERs for demand response and community energy systems. He is currently the head of EAA (Europe Asia and Africa) academic outreach team.



**Dr. Caio Osório** earned his M.Sc. and PhD in electrical engineering from the Federal University of Santa Maria (UFSM), Brazil, having also joined the University of Oviedo, Spain, as visiting PhD researcher, and the Fraunhofer IZM, Berlin, in a practical internship. In 2021, Caio joined Typhoon HIL as an Applications Engineer, working in the development of high-fidelity model-based testing solutions for industrial and academic partners worldwide. Currently, as the Global Manager of Academia Programs, he is committed to advancing environmentally sustainable power technologies by supporting research, teaching, and training initiatives, leveraging Hardware-in-the-Loop technology and real-time simulations. Caio has collaborated on numerous research projects and co-authored over 50 papers and three book chapters in areas including real-time simulation technology, robust control applied to power converters, integration of renewable energy sources, and control of electrical machines.



**Dušan Kostić** is a Power Systems Engineer who has been contributing to the field since 2018. He joined Typhoon HIL, Inc. as an Application Engineer, focusing on their ultra-high-fidelity Hardware-in-the-Loop (HIL) real-time emulators for power electronics. In his role, Dusan has been involved in developing and testing advanced protection schemes for real-world applications, studying power system behaviour under various operating conditions and disturbances, and exploring the potential of artificial intelligence for grid monitoring, fault detection, and predictive maintenance. He has also worked on integrating new technologies like digital relays and renewable energy sources into the power grid.



**Pablo Eguia Lopez** is associate professor in power systems engineering at the University of the Basque Country since 2013. He is principal researcher of GISEL research group and the University of the Basque Country coordinator of the interuniversity PhD program in “Electrical Energy Systems”. He is Spanish member of the group of EU SET Plan on HVDC and DC Technologies. He has been principal researcher of several industrial and scientific projects in the area of integration of renewable energy into power systems, HVDC and FACTS and power system protection. He works as consultant for different manufacturing companies of power converters and protection relays. He has authored more than 200 journals and conferences papers.



**Marene Larruskain** obtained her PhD in Industrial Engineering from the University of the Basque Country UPV/EHU in 2012. She worked at Siemens S.A. for over three years. Since 2003 she has been at the University of the Basque Country UPV/EHU, where she currently holds a position as associate professor in the Electrical Engineering Department. She is a member of GISEL research group. Her research activity has been focused on HVDC systems protection and distributed generation integration. She is a coauthor of around 40 scientific papers in specialized journals, two patents and over 50 contributions to conferences.



**Unai Villena** is a researcher with the Electric Power Systems Research Group (GISEL) at the University of the Basque Country (UPV/EHU). He holds a B.Sc. in Industrial Engineering, an M.A. in Globalisation and Development, and a Ph.D. in Development Studies, all from UPV/EHU. Since 2019, he has served as part of the Teaching and Research Staff in the Department of Electrical Engineering of the UPV/EHU, advancing to Assistant Professor in 2023. Previously, he worked as a project engineer in renewable energy and as a university research associate. His current research focuses on energy transition challenges and protecting electrical grids with a high penetration of renewable energy sources.



**Dr. Maza-Ortega** received an Industrial Engineering degree, major in Electrical Engineering, in 1996, and a Doctor Engineering and European Doctor degrees in 2001, both from the University of Seville, Spain. Currently he is Professor at the Department of Electrical Engineering of the University of Sevilla. His research focuses on power electronics applications and control algorithms for transmission and distribution networks. He has published more than 100 technical documents in journals and international



conferences (45 papers in journals indexed in the JCR). This research has been done under the umbrella of more than 60 research projects with public funds and technology transfer contracts with companies. He is co-author of 2 patents related to static tap changers for power transformers. He has co-founded the business initiative Ingelectus-Innovative Electrical Solutions ([www.ingelectus.com](http://www.ingelectus.com)). He serves as Associate Editor of Journal of Modern Power Systems and Clean Energy (MPCE), indexed in Q1 of the JCR, since 2018. Member of the Technical Program Committee of the Power System Computation Conference (PSCC) since 2018. He currently serves as Vice President of the Spanish Chapter of the IEEE Power and Energy Society (PES).

**Juan Manuel Mauricio** (Senior Member, IEEE) was born in Argentina, in 1977. He received the degree in electrical engineering from the National University of Comahue, Neuquén, Argentina, in 2003, and the master's and Dr. Eng. degrees from the University of Seville, Seville, Spain, in 2007 and 2009, respectively. Since 2004, he has been with the Department of Electrical Engineering, University of Seville, where he is currently an Assistant Professor. His primary research interests include power systems and electrical machine control, renewable generation, voltage source converters-based applications, and electrical vehicles.



**Dr. Manuel Barragán-Villarejo** is an Industrial Engineer (2008) and PhD in Electric Power Systems (2014) from the Universidad de Sevilla where he currently works as an Associate Professor attached to the Department of Electrical Engineering. His research career focuses since his beginnings within the TEP-196 group "Electrical Energy Systems" in the field of power electronics application to the distribution networks to favor the distributed energy resources integration, with a notable emphasis on the experimental validation and use of the real time simulators like OPAL-RT, SpeedGoat and Typhoon HIL. He has participated in more than 20 R&D projects with public funding and several private R&D contracts with companies in the electrical and industrial sectors, including several projects funded by the European Union. As an indicator of the quality of research activity, he has published more than 20 papers in international journals indexed in the JCR and 20 papers at international conferences. He has participated in training and summer school activities explaining the benefits of using C-HIL to accelerate the prototyping of VSCs.



**Francisco Jesús Matas-Díaz** received the B. S. degree in aerospace engineering, the Master degree in power systems, and the Ph.D. degree in electrical engineering from the University of Seville, Seville, Spain, in 2017, 2020, and 2024, respectively, where he is currently a temporary professor at the Department of Electrical Engineering. His research interests include hardware-in-the-loop (HIL) testing and control of power converters and provision of ancillary services mainly related to power quality and frequency support.



**Dr. Goran Dobrić**, born in 1986 in Sremska Mitrovica, Serbia, is a professor and researcher in electrical engineering. He earned his Ph.D. in Electrical Power Networks and Systems from the University of Belgrade in 2016. Currently, he serves as an Associate Professor at the School of Electrical Engineering, University of Belgrade, where he also leads the Smart Grid Laboratory. Dr. Dobrić's research primarily focuses on smart grids and microgrids, with particular emphasis on developing innovative solutions to enhance the efficiency, flexibility, and resilience of modern power systems. His work contributes significantly to advancing smart energy infrastructures, integrating renewable energy sources, and optimizing power network operations.



**Milovan Majstorović** received his bachelor's and master's degrees from the School of Electrical Engineering, University of Belgrade, in 2016 and 2018, respectively. From January to November 2016, he worked as an associate student at the Mihajlo Pupin Institute in Belgrade. Since May 2017, he has been employed at the School of Electrical Engineering, initially as a Teaching Associate and later as a Teaching and Research Assistant. From 2018, he has been pursuing a PhD at the same faculty. His research interests include power converter design and control, as well as modular multilevel converters.

