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SUNRISE SUMMER SCHOOL

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

Second Edition

Tuesday 8th – Friday 11th July 2025, University of Belgrade, School of Electrical Engineering, Belgrade, Serbia

Agenda

Monday 7th July 2025		
Welcome Reception		
Tuesday 8th July 2025		
Protection testing in HIL		
Time slot	Lecture	Lecturer
9:00-10:00	Opening Session	SUNRISE team
10:00-10:30	Coffee Break	
10:30-11:30	Typhoon HIL Solutions for Academia	Aleksandar Kavagic, Typhoon HIL
11:30-12:30	Testing protection relays with real-time simulators in distribution systems	Unai Villena, Assistant Professor UPV/EHU
12:30-13:30	Lunch	
13:30-14:30	Simulation and testing of overcurrent relays in distribution systems (Part 1)	Marene Larruskain, Associate Professor UPV/EHU and UPV/EHU team
14:30-15:30	Real-Time Hardware-in-the-Loop testing for overcurrent relays (Part 2)	Pablo Eguia, Associate Professor UPV/EHU and UPV/EHU team
15:30-16:00	Coffee Break	
16:00-17:00	Testing protection relays with real-time simulators in transmission systems	Marene Larruskain, Associate, Professor UPV/EHU
Wednesday 9th July 2025		
Protections and renewable generation		
Time slot	Lecture	Lecturer
9:00-10:00	Enhancing distance relay testing with Hardware-in-the-Loop	Pablo Eguia, Associate Professor UPV/EHU and UPV/EHU team
10:00-10:30	Coffee Break	
10:30-12:30	Renewable generation and its effects on protection systems: a case study	Pablo Eguia, Associate Professor UPV/EHU and UPV/EHU team
12:30-13:30	Lunch	
13:30-14:30	Automating Substation Protection Testing: Unleashing the Power of Model-Based, Whole-System-Validation Approach	Dusan Kostic and Ognjen Petrovic, Typhoon HIL



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14:30-15:15	Integrated Simulation Environment: Streamlining the Development Cycle from Offline to Real-Time HIL Simulation	Caio Osorio and Ognjen Petrovic, Typhoon HIL
15:15-15:45	Coffee Break	
15:45-16:30	Integrated Simulation Environment: Streamlining the Development Cycle from Offline to Real-Time HIL Simulation	Caio Osorio and Ognjen Petrovic, Typhoon HIL
16:30-17:30	Modeling, Control and Simulation of grid-following VSCs: Part I	José María Maza Ortega, Full Professor USE
Thursday 10th July 2025		
Modelling and Control of Voltage Source Converters		
Time slot	Lecture	Lecturer
9:00-10:00	Modeling, Control and Simulation of grid-following VSCs: Part II	José María Maza Ortega, Full Professor USE
10:00-10:30	Coffee Break	
10:30-11:30	Modeling, Control and Simulation of grid-following VSCs: Part II	Manuel Barragán Villarejo, Associate Professor USE
11:30-12:30	Modeling, Control and Simulation of grid-forming VSCs.	Juan Manuel Mauricio, Associate Professor USE
12:30-13:30	Lunch	
13:30-14:30	Modeling, Control and Simulation of grid-forming VSCs.	Juan Manuel Mauricio, Associate Professor USE
14:30-15:30	Control Hardware in the Loop of grid-following VSCs using Typhoon HIL	Francisco Jesús Matas-Díaz, Assistant Professor USE, and USE team
15:30-16:00	Coffee Break	
16:00-17:00	Control Hardware in the Loop of grid-following VSCs using Typhoon HIL	Francisco Jesús Matas-Díaz, Assistant Professor USE, and USE team
20:00-23:00	Joint Gala Dinner	
Friday 11th July 2025		
HIL and prototyping of Voltage Source Converters		
Time slot	Lecture	Lecturer
10:30-11:30	Control Hardware in the Loop of grid-following VSCs using Typhoon HIL	Francisco Jesús Matas-Díaz, Assistant Professor USE, and USE team
11:30-12:30	Control Hardware in the Loop of grid-forming VSCs using Typhoon HIL	Manuel Barragán Villarejo, Associate Professor USE, and USE team
12:30-13:30	Lunch	
13:30-15:30	Experimental validation of VSC-controller in the SUNRISE prototype	ETF team and USE team