

An introduction to Digital Real-Time Simulation (DRTS) for Advanced Energy System Testing

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With Guest Lecturer Mr. Thomas Kirk

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Mr. Thomas Kirk

Abstract:

This lecture will explore the Digital Real-Time Simulation (DRTS) of power systems and power electronics, along with applications: Hardware-in-the-Loop (HIL) testing, Rapid Control Prototyping (RCP), Software-in-the-Loop (SIL) and Power Hardware-in-the-Loop (PHIL). These applications focus on testing real equipment (e.g. controllers, protective relays) and software within an accurate and safe environment to accelerate R&D, production line and certification testing. The challenges and limitations faced with such applications will be explained along with the algorithms and technical innovation used to overcome them. The presentation will also explore state-of-the-art user examples with focus on microgrids, shipboard power systems and aircraft power systems. Emerging areas, such as Cyber-Physical Simulation (CPS) and Cybersecurity, and how they can be incorporated, will also be covered in brief.

Biography:

Thomas Kirk is a solutions engineer with OPAL-RT Technologies based out of Vancouver, BC. Since 2015, he has worked with leaders within the energy, aerospace, defense and academic sectors to deliver real-time testing solutions for R&D, production and certification purposes. Prior to OPAL-RT, he worked at Bechtel Corporation at the Aluminum Center of Excellence (ACE) in Montreal, on simulating the performance and safety of mining facilities during the design phase. He has his Master's in Applied Science from the University of Waterloo (2014) and his Bachelors in Engineering from McGill University in Montreal (2010).



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