

Optimal Energy Management Applied to a Real Smart Grid System

Webinar

by Dr Asma Achnib

Jointly organized by IEEE Power and Energy Society (PES) Singapore Chapter, Equality, Diversity and Inclusion (EDI) committee of Newcastle University in Singapore (NUIs), Singapore Institute of Technology (SIT) and National University of Singapore (NUS) IEEE PES Student Branch Chapters, and IEEE YP Singapore



Dr Asma Achnib

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Date: 14 March 2024 (Thursday)

Time: 4.00pm – 5.00pm (SGT)

Venue: Online Meeting (Zoom)
(Meeting link will be sent to the provided email upon registration)

Join us for an inspiring and empowering celebration of International Women's Day, featuring a technical webinar and an engaging interactive session. Delve into the insights of Dr Asma as she shares her journey and the excellent research she is leading in sustainable energy solutions as an engineer and professor, highlighting the significant contributions of women in engineering and academia.

Abstract: The electricity sector holds a considerable share of the responsibility for global carbon emissions. Under the pressure of policies aimed at reducing these emissions, Renewable Energy Sources (RES) are rapidly being integrated into the electrical grid. However, this transition to RES presents a major challenge to electrical grid operators, namely, maintaining the balance between production and demand, while evolving towards smart grids. This work focuses on optimal management energy in the smart grid using metaheuristic optimization. The objective is to design an optimal control algorithm that minimizes the energy exchanged cost between the smart grid and the grid supplier. This approach is implemented on the smart grid test bench recently installed at ESTP, France for real-time performance assessment.

Speaker: Asma Achnib received a degree in Electrical-Automatic Control Engineering from the National Engineering School of Gabès, Tunisia, in 2015, and a Ph.D. degree from the University of Bordeaux, France; Her Ph.D. research focused on the design of CRONE anticipative controllers for SISO and MIMO systems. Currently, she holds the position of Associate Professor at ESTP, France. From 2019 to 2021, she was affiliated with the Automatic Control Department at GIPSA-lab, where she served as a Postdoctoral Researcher at Grenoble Institute of Engineering. Her research interests encompass preview and robust digital control applied to automotive suspension systems, as well as optimal hierarchical control applied to power systems (MicroGrids, SmartGrids, etc.). Recently, Asma has also directed her focus towards energy storage systems, specifically the modeling, control, and estimation of the state of charge and state of health of lithium-ion batteries for smart grid applications. Asma was part of the organizing committee for the 2023 IEEE International Workshop on Mechatronic Systems Supervision (IW_MSS23). Additionally, she is a reviewer for various esteemed conferences and journals.



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