

**Departamento de Ingeniería Eléctrica Universidad de Chile**

**Charla**

# **Collaborative Distributed Control on Smart Micro-Grid Energy Management**

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**Viernes 8 de Septiembre, 11:45  
Auditorio Electrotecnologías  
Departamento de Ingeniería Eléctrica  
Universidad de Chile  
Av. Tupper 2007, Santiago**

The power grid has been at the core of national critical infrastructures and industrial control systems for decades. With the rapid advancement and use of renewable energy resources, Internet of Things (IoT), embedded systems, and wireless communication technologies, the legacy power grid is evolving into the micro/smart grids to provide a promising solution to the ever-increasing demands of power quality, efficiency, reliability, safety, economy, resilience/security, and environmental friendliness. The large-scale adoption of new devices and the presence of vast quantities of data have also created new challenges in the management and control of micro/smart grids. Thus, new opportunities have emerged for applying novel control schemes, optimization strategies, and big data technologies to make smart grids "smarter".

This presentation will provide a brief overview of the energy sector revolution from the legacy power grid, through micro/smart grids to smarter grids, including the motivations (Why?), challenges (What?) and enabling technologies (How?) of each stage in this inevitable transition. This seminar will highlight one technologies being developed in ADAC (Advanced Diagnosis, Automation and Control) Lab at North Carolina State University on the Cooperative distributed energy management to illustrate some current efforts in making micro/smart grids smarter. The presentation will conclude with an outlook of our future work to contribute to the "smarter grids".