

Colloquium Thermo- and Fluid Dynamics

Integrated Development of Low-Carbon Energy Systems (IDLES): The Role of Heating and Storage within a Whole-System National Strategy

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IDLES is a 5-year, £7M (€8M) programme whose overall aim is to provide the evidence needed to facilitate a cost-effective and secure transition to a low-carbon future for the UK. This goal is being pursued by developing a multiscale, whole-energy-systems tool that can identify optimal, integrated systems, while coordinating the complex developments and interactions within the wider energy domain. The IDLES programme comprises six projects, focussing on high temporal and spatial resolution multi-carrier and cross-sectorial energy system modelling, existing and next-generation technology characterisation, data-driven modelling and decentralised control, resilience and risk management of smart whole-energy systems, incremental versus strategic future energy system development, and market design for better alignment of investor, customer and societal objectives.

In this talk, we will review ongoing research within the IDLES programme, and proceed to discuss activities related to the value of select technologies within whole-system assessments. Trade-offs between the performance and cost of existing technologies but also of emerging, disruptive solutions will be discussed, with a focus on heating decarbonisation and the role of energy storage as part of energy transition pathways.

Christos Markides is Professor of Clean Energy Technologies at Imperial College London, Head of the Clean Energy Processes Laboratory, and Leader of the Energy & Environmental Engineering Research Theme. He is a Founder and Director of Imperial spin-out company Solar Flow (www.solar-flow.co.uk). He is the Editor-in-Chief of Applied Thermal Engineering, a member of the UK National Heat Transfer Committee, and on the Scientific Board of the UK Energy Storage SUPERGEN Hub. He specializes in applied thermodynamics, fluid flow, heat and mass transfer processes as applied to high-performance devices, technologies and systems for recovery, utilization, conversion or storage. He has published >300 journal papers on these topics. He has won multiple awards, including IChemE's Global Award (2018) and the President's Awards for Teaching (2016) and for Research Excellence (2017).



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Time: 16:15 - 17:15h

Place: ETH Zurich, ML F 36

Host: Prof. Aldo Steinfeld, PREC