



TEXAS A&M
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ENERGY FLEXIBILITY: A TOOL FOR SUSTAINABILITY

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ABSTRACT:

The world is experiencing the highest penetration of renewable energy but, at the same time, there is an increasing electrification of the energy demand. These changes pose new challenges in terms of electrical systems management. On the end user side, the drastic variations in loads over the course of a day or the increased use of energy in the so-called peak periods poses more complex control problems requiring faster decision times and smaller error margins. Energy flexibility is being regarded as a valuable tool towards a more sustainable electrical system. This tool combined with new paradigms, such as the establishment and operation of energy communities, will provide flexibility, interconnectivity, bi-directionality and complementarity with advantages either to consumers either to the energy grid itself. This talk will address the use of energy flexibility as a tool to achieve a more sustainable electrical system.

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João Martins received his MSc in 1996 and his PhD in 2003 from Instituto Superior Técnico (IST), Technical University of Lisbon, Portugal. He is Associate Professor with Habilitation and Head of the Department of Electrical and Computer Engineering, NOVA School of Sciences and Technology, Universidade Nova de Lisboa, Portugal. Martins is senior researcher at UNINOVA-CTS, Portugal, where he coordinates the Energy Efficiency Group and integrates the Board of Directors. He is the co-author of more than 80 scientific articles in refereed journals and books and more than 180 articles in refereed conference proceedings. He is an active member in various program committees of scientific conferences and is an associate editor of IEEE IES Industrial Electronics Magazine, IET Power Electronics and MDPI Energies. He is/was a member and/or project coordinator in several national and international research projects. He is an evaluator of research proposals and projects for several national and European funding agencies. He is a senior member of IEEE, member of CIGRE, effective member of Engineers Association (Portugal) and founding member of the Portuguese Society for Education in Engineering (SPEE). His research interests are mainly in energy efficiency, alternative energies and power quality, intelligent and energy efficient buildings, heritage buildings, energy awareness, smart grid renewables integration.