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Energy storage and solar power plants for a sustainable energy future

A sustainable energy future could be secured by the use of a mixture of renewable and conventional energy sources. The timeline for achieving such a secure and sustainable energy future is difficult to project, however, in the mix of these energies, solar power plants with energy storage will certainly play a very significant role. In this presentation, a brief overview of Photovoltaic (PV) and Concentrated Solar Thermal (CSP) power plants as well as energy storage will be given. A number of factors will determine the widespread utilization of solar power, such as available solar radiation (location) and cost. Electrochemical and thermal energy storage will play a big role in the process of mitigating the problem of solar energy intermittency. The present technologies, costs and projected costs of PV and CSP power plants and energy storage will be presented.

Biography

Elias (Lee) Stefanakos is presently working as Professor of Electrical Engineering and Director of the Clean Energy Research Center (CERC), University of South Florida (USF), in Tampa, Florida. Up to August 2003 and for 13 years he was Chairman of the Department of Electrical Engineering at USF. He is Chief Editor of the *Journal of Power and Energy Engineering* (JPEE) and Associate Editor of the *Journal of Solar Energy (Photovoltaics)*. He is co-editor of two handbooks (*Solar Radiation and Hydrogen Energy*), has published over 200 research papers in refereed journals and international conferences and has 15 patents in the areas of smart materials, renewable energy components and systems, hydrogen and fuel cells, and electric vehicles. He has been a consultant to a number of companies and international organizations. CERC is an interdisciplinary center whose mission is the development of smart materials and clean energy systems with emphasis on technology development and technology transfer (http://cerc.eng.usf.edu/).

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