

SOLAR SEMINAR SERIES

SPRING 2013 PHOTOVOLTAIC SEMINAR SERIES

SURESH V. GARIMELLA

Birck Rm. 2001

March 7, Thurs., 3:30 p.m.

Energy Storage – Options and Opportunities



Brief Bio

Dr. Garimella is the Goodson Distinguished Professor of Mechanical Engineering at Purdue. He graduated with a BS from IIT-Madras in 1985, followed by an MS in Mechanical Engineering (ME) from Ohio State the next year. He completed an ME Ph.D. three years later at UC-Berkeley. His research interests lie in the fields of energy efficiency in computing and electronics, micro- and nano-scale transport phenomena, sustainable energy systems and policy, high-performance compact cooling technologies, and materials processing.

I will briefly review the drivers for renewable and clean energy technologies, and the challenges in the widespread use of renewables. In particular, I will focus on the need for inexpensive and reliable energy storage approaches if inherently intermittent and transient renewable sources are to gain broad acceptance. As a specific example, I will tell a story from our group related to thermal energy storage in Concentrating Solar Power (CSP) plants that can decouple solar collection from power production. I will describe in some detail thermocline tank design with molten salt as the storage medium, long-term stability of such systems, integration of storage models into system-level solar power plant simulations that enable investigation of the performance in response to year-long sunlight data and power block operation, and their influence on CSP plant levelized cost of electricity. During the discussion period, I would be glad to allude to policy realities and challenges related to clean energy options.

(Related papers from our work are available at:

<https://engineering.purdue.edu/CTRC/energy/research.html>

Refreshments & Networking Opportunities

Seminar Series Dates: March 7; April 4, 11, 18

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