MECHANICAL ENGINEERING DEPARTMENT
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Solar Thermal Electric Power: Technology and Market Development

by

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Wednesday, February 7, 2007
3:15 pm — Room 401 Walter DTC — Coffee & Cookies
3:30 pm — Room 402 Walter DTC — Graduate Seminar

ABSTRACT — Concentrating Solar Power (CSP), formerly known as solar-thermal electric power, comprises a suite of three solar technologies that includes trough-electric, power tower, and dish Stirling power generation. While the dish Stirling systems are modular and can be deployed in small-scale power systems, today all three technologies are either being deployed or considered for utility-scale applications. In response to the Public Utility Regulatory Policy Act (PURPA) of 1978, power producers started installing renewable power systems, including more than 350 MW of trough-electric systems in the Southern California desert. Unfortunately, cost recovery under PURPA became uncertain during the 1990s. This was followed in the late 1990s by the restructuring of the electric utility industry, which reduced or eliminated much of the vertical integration that existed at the time. The direct result of these two unrelated events was a reduced demand for renewable power at above-market prices. Recent renewed interest in solar power generation by states in the southwest U. S. and countries in Europe, especially Spain, has resulted in increased incentives for electricity produced from solar energy. This is starting to "open the window" for the construction of new solar power plants around the world.

In his presentation, Dr. Mancini will describe the three CSP technologies and discuss some of the research and development needs for increased performance and reduced cost of electricity from these systems. He will also discuss some of the market drivers, markets, and projects that are being developed worldwide.

BIO —**Dr. Thomas Mancini** is the Concentrating Solar Power Program Manager at Sandia National Laboratories in Albuquerque, NM. He has a distinguished 30-year career in solar energy R&D and has published more than 100 technical papers and reports. As a Professor of Mechanical Engineering at New Mexico State University (1975 - 1985), he performed research in such broad topic areas as passive solar cooling, active heating and cooling, and solar power and taught undergraduate and graduate courses in energy-related areas, heat transfer and fluid mechanics. Since joining the staff of Sandia National Laboratories in 1985, Tom has been a Senior and Distinguished Member of the Technical Staff working on concentrating solar power. Tom has also been active in American Society of Mechanical Engineers (ASME), as Chair of the Solar Energy Division, Member of the Energy Resources Board, and Chair of the ASME Energy Committee. He is a Fellow of the ASME. He is currently Chair of the International Energy Agency's Solar Power and Chemical Energy Systems (SolarPACES) Working Group.

Tom received his Bachelors, Masters, and Ph. D. degrees in Mechanical Engineering from Colorado State University.

Informal Faculty Luncheon: Wednesday, February 7, 2007, 12:00 noon. Meet in 1100 ME and walk to lunch with other faculty. Prof. Thomas Mancini will be able to attend.