UC Berkeley Tech Talk

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Concentrating Solar Power and Overview of Sandia National Laboratories

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Abstract

The purpose of this presentation is to educate students, faculty, and community members on Concentrating Solar Power (CSP). An overview of Sandia National Laboratories and career opportunities will also be presented.

Concentrating solar power (CSP) uses a large array of mirrors to focus sunlight onto a receiver containing a heat-transfer fluid, which absorbs the high heat flux (~100 – 1000 times the sun's irradiance). A heat engine (e.g., Rankine cycle, Stirling cycle) then converts the heat to mechanical work to generate electricity. CSP systems can produce utility-scale power (hundreds of megawatts) and can store excess thermal energy for energy production at night or when the sun is not shining. The ability to store large amounts of energy cheaply and reliably gives CSP a significant advantage over other intermittent renewable energy sources such as wind and photovoltaics. This presentation will provide an overview of CSP and the primary technologies that are used to implement it: parabolic troughs, power towers, and dish engines. Areas of needed research to improve the performance and economics of CSP technologies will be discussed.

Dr. Cliff Ho is a Distinguished Member of the Technical Staff at Sandia National Laboratories, where he has worked since 1993 on projects involving nuclear waste management, environmental remediation, microchemical sensors for environmental monitoring, water treatment and distribution, and concentrating solar power. Cliff received his Ph.D. and Master's degrees in Mechanical Engineering from the University of California at Berkeley in 1993 and 1990, and his B.S. in Mechanical Engineering from the University of Wisconsin–Madison in 1989.

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