U.S. Department of Energy
HelioCon
Heliostat Consortium for Concentrating Solar-Thermal Power

Heliostat Consortium Seminar Series

Brought to you by the Resource, Training, and Education (RTE) topic area

Dr. Michel Izygon
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Host: Dr. Rebecca Mitchell

Title: Digital Twin and Industry 4.0 in Support of Heliostat Technology Advancement

When: February 21st 1-2 PM MST

Zoom:

Abstract:

This project is aimed at applying multiple technologies from Industry 4.0 to the heliostat design, manufacturing, deployment and operations in order to realize the cost reduction seen by other industries which have adopted these technologies. Using Digital Twin (DT) and Model Based System Engineering (MBSE) methodology, the complexity of heliostats and overall solar fields can be designed, analyzed, optimized, and verified over the entire lifecycle of the system. In the seminar we will present the technologies, their benefits and show how we have applied them to the Heliostat domain. Various prototypes will be demonstrated to illustrate their usefulness for the industry.

Bio:

Dr. Michel Izygon has been involved in the design and performance assessment of central receiver solar plants since the 1980s—on projects such as Themis in France, Solar One and Solar Two in the United States. For the past 12 years, Dr. Izygon has been part of the Independent Engineering Team for the Ivanpah project, responsible for monitoring the control system. Similarly, he is part of the Lenders Technical Advisory team for two CSP plants in Ashalim, Israel, also responsible for the control system. He has been part of the Independent Engineering team that worked to resolve multiple issues at the Crescent Dunes project, focusing on the solar field and control software.

Dr. Izygon has spearheaded the development of TieSOL, a suite of software that leverages the power of GPUs for Ray Tracing based computation of all the optical losses associated with the operation of solar tower power plants. Dr. Izygon has also been working in collaboration with NREL on the innovative Non-Intrusive Optical (NIO) method for characterization of heliostats.

As part of Tietronix' advanced software services, Dr. Izygon has been involved in the infusion of Digital Twin and MBSE technologies to NASA/Johnson Space Center.