Mark S. Mehos, M.S.

Principal Engineer Emeritus
National Renewable Energy Laboratory (NREL)
mark.mehos@gmail.com

Education and Training

M.S., Mechanical Engineering, University of California-Berkeley, 1986
B.S., Mechanical Engineering, University of Colorado-Boulder, 1984

Professional Experience

2001 – 2022 **Program Manager – Concentrating Solar Power, NREL**, Responsibilities included:

- Managing NREL's DOE-sponsored program related to the application of concentrating solar technologies for electric power generation and high-temperature thermal processes.
- Interacting closely with industry and DOE clients, developing and presenting annual and long-term strategic plans.
- Supporting analysis of near- and long-term markets for CSP technologies, providing technical guidance to a team of engineers and scientists, and communicating progress to NREL senior management.
- Working with domestic and international research organizations, policy makers, and government institutions to promote and assess the relevance of CSP and CST technologies throughout the world.

2013 - 2022 **Group Manager – Thermal Energy Systems R&D Group, National Renewable Energy Laboratory (NREL)**, Responsibilities included:

- Managing work, resources and projects in accordance with the goals and objectives of the Center and the DOE.
- Providing input on development of strategic plans, and lead implementation of strategic plans affecting the Group.
- Managing and leading the Thermal Energy Systems Group staff, budget, and planning activities. Recruiting, developing, and retaining staff necessary to meet the mission of the Laboratory.
- Proactively developing and maintaining the technical capabilities required to meet current and future research goals.

1996 – 1999 **Technology Manager – Solar Buildings, NREL**, Responsibilities included:

- Managed newly formed Department of Energy program focused on developing solar thermal and photovoltaic technologies as they apply to residential, commercial, and industrial buildings.

1994 – 2001 **Senior Mechanical Engineer, NREL**, Responsibilities included:

- Combustion Research for Hybrid Receivers – Responsible for design and analysis of an innovative inward burning metal matrix combustor for use in a hybrid heat pipe receiver. The effort included bench testing of a 1/6-scale pilot unit followed by the design of a full-scale system. Performed detailed analysis using computation fluid dynamic modeling of a reacting high-temperature premixed air/methane mixture in order to minimize potential for preignition. The analysis resulted in the successful implementation of an integrated burner/ recuperator assembly.

- Dish/Stirling Commercial Venture Project - Responsible for technical oversight and support of highly visible commercial venture project focused on industry development and commercialization of advanced dish/Stirling technologies.

- Advanced Optical Materials R&D - Led a team of scientists responsible for developing advanced reflector and absorber materials for application to concentrating solar technologies

1991 – 1993 **Staff Mechanical Engineer, NREL**, Responsibilities included:

- Solar Photocatalytic Oxidation – Led a multi-disciplined team of mechanical engineers, chemical engineers, and chemists in the development of a novel application using ultraviolet radiation available in sunlight to decompose volatile organic compounds in water and in air. A pilot-scale study of the process resulted in the prestigious R&D 100 award. The annual award recognizes the years 100 most important, unique and useful innovations.

- Developed computer models for analyzing radiative transport in absorbing, emitting, and scattering media.

1986 - 1990 **Associate Mechanical Engineer, NREL**, Responsibilities included:

- Developed computer models for analyzing radiative transport in absorbing, emitting, and scattering media. The models were used to analyze radiative transport and chemical reactions in solar receiver/reactors.

High-Impact Publications

1. Osorio, J. D., Mehos, M., Hamilton, W., Martinek, J., Imponenti, L., Kelly, B., ... & Ni, C. (2024). Addressing Failures in Molten Salt Thermal Energy Storage Tank for Central Receiver Concentrating Solar Power Plants, NREL/PR-5700-90714, National Renewable Energy Laboratory (NREL), Golden, CO, United States.
2. Mehos, M., Price, H., Cable, B., Kearney, D., Kelly, B., Kolb, G., Morse, F. (2020), Concentrating Solar Power Best Practices Study, NREL/TP-5500-75763, NREL, Golden, CO, United States
3. Martinek, J., Jorgensen, J., Mehos, M., Denholm, P. (2018). A comparison of price-taker and production cost models for determining system value, revenue, and scheduling of concentrating solar power plant, Applied Energy.
4. Mehos, M., Turchi, C., Vidal, J., Wagner, M., Ma, Z., Ho, C., ... & Kruizenga, A. (2017). Concentrating Solar Power Gen3 Demonstration Roadmap, NREL/TP-5500-67464, National Renewable Energy Laboratory, Golden, CO, United States.

5. Mehos, M., Turchi, C., Jorgenson, J., Denholm, P., Ho, C., & Armijo, K. (2016). On the Path to SunShot. Advancing Concentrating Solar Power Technology, Performance, and Dispatchability, NREL/TP--5500-65688, National Renewable Energy Lab, Golden, CO, United States.
6. Mehos, M.; Jorgenson, J; Denholm, P.; Turchi, C (2014). "An Assessment of the Net Value of CSP Systems Integrated with Thermal Energy Storage". Energy Procedia 69, 2060-2071.
7. Jorgenson, J.; Denholm, P.; Mehos, M. (2014). "Estimating the Value of Utility-Scale Solar Technologies in California Under a 40% Renewable Portfolio Standard". NREL Report No. TP-6A20-61685
8. Jorgenson, J.; Denholm, P.; Mehos, M.; Turchi, C. (2013). "Estimating the Performance and Economic Value of Multiple Concentrating Solar Power Technologies in a Production Cost Model". NREL Report No. TP-6A20-58645.
9. Denholm, P.; Wan, Y. H.; Hummon, M.; Mehos, M. (2013). "Analysis of Concentrating Solar Power with Thermal Energy Storage in a California 33% Renewable Scenario". NREL Report No. TP-6A20-58186.
10. Denholm, P., Mehos, M. (2011). "Enabling Greater Penetration of Solar Power via the Use of CSP with Thermal Energy Storage". NREL Report No. TP-6A20-52978.
11. Mehos, M., Wagner, M., Kearney, D. (2011). "Acceptance Performance Test Guideline for Utility Scale Parabolic Trough and Other CSP Solar Thermal Systems". SolarPACES 2011, Granada, Spain, September 20-23, 2011.
12. Wagner, M.; Mehos, M., Kearney, D., McMahan, A. (2011). "Modeling of a Parabolic Trough Solar Field for Acceptance Testing: A Case Study". Proceedings of ASME 2011 5th International Conference on Energy Sustainability & 9th Fuel Cell Science, Engineering and Technology Conference (ESFuelCell2011), 7-10 August 2011, Washington, D.C.
13. Turchi, C., Mehos, M., Ho, C., Kolb, G. (2010) "Current and Future Costs for Parabolic Trough and Power Tower Systems in the US Market." SolarPACES 2010, Perpignan, France, September 21-24, 2010.

Relevant Synergistic Activities

- Operating Agent for IEA SolarPACES Implementing Agreement Task I on STE Systems.
- Member of Technical Advisor Group for World Bank Middle East and North Africa CSP Knowledge and Information Program (CSP-KIP).
- Member of Solar Task Force for the Western Governors' Association Clean and Diversified Energy Initiative
- Member of New Mexico Governor Bill Richardson's Concentrating Solar Power Task Force