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Edward C. Kern, Jr., Ph.D.



Dr. Kern has thirty-three years experience working with photovoltaic systems and their interconnection to electric power systems. Presently he is President of Irradiance, Inc. a consulting firm supporting the PV system development and installations. He is a founder, past president and director of the Solar Energy Business Association of New England. From July 2002 through June 2004, Dr. Kern lectured in wind and solar energy as part of MIT's subject 10.319j "Sustainable Energy" and guided MIT's Solar Power Initiative. Until April 2002 he was Director of Engineering for Schott Applied Power Corporation, formerly Ascension Technology.

Dr. Kern has participated in photovoltaic system research, development, and engineering projects across the United States and internationally since the mid-1970s. He worked with an electric utility in the Philippines and the International Finance Corporation to design and install the first megawatt-scale PV system to

support clean electric power development in developing countries. He also advised a construction company building a 200 kW advanced, thin-film building integrated PV roof for New York City Transit. He has worked with the United Nations Environment Program and electric utilities in Mexico, El Salvador, Costa Rica, Peru, India, Thailand and the Philippines on planning megawatt-scale PV installations. Recently, he worked with the Tata Power Company in India developing a megawatt-scale PV installation in collaboration with Morse Associates and the U.S. Department of State's Asian-Pacific Partnership on Clean Development and Climate. He also serves as a consultant to the International Finance Corporation, World Bank Group, in the area of sustainable energy.

Dr. Kern is also active in the field of solar energy resources assessment, system design, and system performance modeling. Irradiance manufactures a Rotating Shadowband Radiometer, a field survey instrument for measuring and recording global, direct and diffuse solar radiation that he invented in the early 1990s. Since 2006 Irradiance has provided second-generation instruments (RSR2's) to customers in Spain, Australia, Mexico, Israel, Jordan, India, China, Peru, Italy, Greece, Indonesia, the Philippines, Canada and the United States, including the National Renewable Energy Laboratory's Solar Radiation Research Laboratory. Irradiance and NREL have an ongoing

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Cooperative Research and Development Agreement for continued development and improvement of rotating shadowband radiometers.

As founder and president of Ascension Technology (1987-1999) he oversaw the installation of over 200 grid-connected photovoltaic systems, in over 20 U.S. states and internationally, totaling over two megawatts. These projects ranged in size from a 300-watt "AC-modules" to a 100-kW system installed for a wind farm developer in Tamil Nadu State, India and at the Pentagon in Washington, DC. The earliest of these projects were co-funded by the EPA, EPRI and electric utilities across the United States to demonstrate the feasibility of grid-connected systems and to determine the air emission offsets derived from clean PV power. In these and many subsequent projects, system-monitoring and solar energy resource monitoring equipment was developed under the supervision of Dr. Kern and supplied to Ascension Technology projects and other system integrators. As part of the UPVG-Team UP program, Dr. Kern oversaw the design and installation of photovoltaic systems across the United States from Hawaii to Massachusetts.

Before founding Ascension Technology in 1987, Dr. Kern was a member of the Massachusetts Institute of Technology faculty and research staff. He joined the MIT Lincoln Laboratory Photovoltaic Field-Test and Applications Project in 1977 and was promoted to Assistant Group Leader in 1980. In 1979 he planned and then managed the U.S. Department of Energy's Residential Rooftop Photovoltaic Systems Project. From 1982 until 1987 he continued this photovoltaic systems development activity at the MIT Energy Laboratory.

Before entering the solar photovoltaic power field in 1977, Dr. Kern's professional activities were in the field of Ocean Engineering, particularly studying the dynamics of floating ocean structures for the control of oil spills. During the mid-1970s he was an Assistant Professor at MIT's Department of Ocean Engineering.

A Senior Member of the IEEE, Dr. Kern served as a member of the IEEE Standards Coordinating Committee on Dispersed Storage and Generation. During the early 1980s this committee developed the seminal *IEEE Guide for Interfacing Dispersed Storage and Generation with Utility Systems*. He has been a consultant to the Electric Power Research Institute on photovoltaic applications and has served on the Science and Technology Review Committee for the National Renewable Energy Laboratory's Solar Radiation Resource Assessment Project. He served as a Peer Reviewer for the U.S. Department of Energy's Solar Program for Evaluation, Validation and Analysis activities. In 2005 he was elected a Fellow of the American Solar Energy Society.

Dr. Kern is a graduate of Dartmouth College and the Thayer School of Engineering at Dartmouth College. His Ph.D. is in the field of hydrodynamics (applied mathematics) from the Massachusetts Institute of Technology.