

## Dr. Ken Varner



With a PhD in Electrical Engineering, Dr. Varner brings to the Koolbridge Solar Board of Advisors a wealth of hands-on experience in business development and technical consulting in the fields of solar project development, energy management, and energy data software development. Presently he is Co-Founder and Operating Manager for vaireco GmbH of Konstanz, Germany. The Company focuses on aerial inspection technology, unmanned aerial vehicle (UAV) operations in Germany and Switzerland, 3D business development of calibration survey systems, development of AI-driven thermal cameras for automated UAV applications, UAV data analysis services in Germany, Switzerland, USA and Holland; and, a UAV pilot trainer for fly-to

measure -techniques. Dr. Varner was also a start-up consultant for one of Europe's largest utility innovation hubs.

Prior to moving to Germany in 2016, Dr. Varner was the Co-Founder and Operating Manager for Viridis.iQ LLC based in Wilmington, NC. At Viridis, Dr. Varner's responsibilities included software development for automated proposal-to-execution pipeline, installation of web-based multiple load monitoring systems, sales, design, and project management of commercial grid-tied PV in USA, 3D drawings, engineering, and permitting documents for PV projects. He also lead negotiations with local utilities in the USA for grid-tied PV projects and design and installation of residential grid-tied PV & battery systems.

Dr. Varner was an Energy Data Analyst and Consultant for Cape Fear Solar Systems in Wilmington, NCs USA from Feb 2013 – Dec 2015. In this position he developed intelligence solutions for streamlining operations, sales, engineering and designs of solar installations. He developed calibrated kWh production models based on 30-years of weather data with >99 % accuracy for use in financial guarantees. He integrated models into proposal tools for rapid customer acquisition with scientific precision and automated engineering documents for utility and local permitting authorities. Dr. Varner trained Project Managers, Solar Engineers, Designers, and the Cape Fear Solar sales team. He was project manager for commercial PV projects and oversaw monitoring and troubleshooting for operations and setup PV monitoring systems.

Dr. Varner has certifications for OSHA 10, Outback Power, and is a LabVIEW Associate Developer. He is highly proficient as an R&D Engineer in the area of characterization and simulation programs including: Centrotherm photovoltaics, turnkey equipment product development in the global PV market, and was responsible for TCAD numerical simulations. He is highly proficient working with the calibration of measurement systems, including spectral response, minority carrier lifetime, I-V curve testing and PECVD layer characterization. Additionally, Dr. Varner spearheaded the PV / thermal hybrid module concept, DOE and measurement methodology planning, customer site characterization ramp-up, and was on the research team investigating cutting edge advancements in solar cell technology and development of silicon solar cells and the design and development of custom semiconductor measurement systems.

In addition to being an Eagle Scout, he has extensive education credentials with a BS Physics and Astronomy at the University of North Carolina Chapel Hill, USA, from 1999 – 2004 and attended the Instituto de Technology Microelectrónica Bilbao, Spain, September 2004 – Nov 2009. Dr. Varner was the first person at the institute to develop back contact solar cells, and he has a PHD in Electrical Engineering from the Universidad del País Vasco Bilbao, Spain 2009.

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