



TUTORIALS PROGRAM

August 25-28, 2020 - Online

Safety Through Proper System Grounding and Ground Fault Protection

Abstract: This tutorial is intended for the practicing electric power engineer, recent graduate or “seasoned” engineer. It will begin with a brief discussion on electrical safety and ground faults. The fundamentals of system grounding will be covered which will include solidly, ungrounded and impedance grounded systems. The use of symmetrical components will be presented to better understand ground fault currents and ground fault protection. The special case of generator and motor protection will be covered, as well as the complex HIZ (High Impedance) fault detection. Finally, a brief discussion will be held concerning the application of surge arresters and power cables based on the type of system grounding used.

Lecturer: **John P. Nelson** holds a B.S.E.E., University of Illinois (1970), and a M.S.E.E., University of Colorado Boulder (1975). He held positions with the Public Service Company of Colorado, 1969-1979, Power Line Models, 1979-1984 and NEI Electric Power Engineering, 1984-2014. He retired from NEI as CEO and principal engineer, which he had founded in 1984. Mr. Nelson has been active in the IAS Petroleum and Chemical Industry Committee, and received the Russel W. Mills award. Mr. Nelson is an IEEE Fellow and the recipient of the IEEE Harold Kaufman award.



Mr. Nelson was recently appointed Chair, IEEE Smart Village – Next Generation (ISVx).

Register at:

**ieee-
powerafrica
.org/**

Viewable
online from
anywhere,
any time,
for a month

Fundamentals of Off-Grid Electricity Access

Abstract: This three-hour tutorial covers the contextual, technical, and practical implementation aspects of off-grid electrical systems in developing countries. These include mini-grids, micro-grids, energy kiosks, solar home systems and solar lanterns. System architectures and components, including small-scale solar, wind, hydro, biomass and conventional generation sets, batteries and converters are covered. The micro-grid design process is discussed, as are pre-implementation best practices, including site assessment and considerations for business development. The instructor draws upon his firsthand experience as well as contemporary research.

Lecturer: **Dr. Henry Louie** received a B.S.E.E. from Kettering University (2002), M.S. from the University of Illinois (2004) and PhD from the University of Washington (2008). He is a Professor of Electrical Engineering at Seattle University. In 2015 Dr. Louie was Fulbright Scholar to Copperbelt University in Kitwe, Zambia. He is the President and Co-founder of KiloWatts for Humanity, a non-profit organization providing off-grid electricity and business opportunities in sub-Saharan Africa. Dr. Louie is an Associate Editor for Energy for Sustainable Development and a founding member of the IEEE PES Working Group on Sustainable Energy Systems for Developing Communities. Dr. Louie is an IEEE Distinguished Lecturer and Chair of the PowerAfrica Steering Committee.





Abstract and Presenters:

- The Tutorial Entrepreneurship Workshop is a 1 ½ hour overview of the various aspects of starting and developing a business, particularly one based on technology. This is a brief, but enlightening summary of in-depth workshops held around the world, and planned for PowerAfrica 2021 in person in Nairobi, Kenya | Dr. Surya Raghu & Ken Stauffer
- Intellectual Property in East Africa | Mercy K. Kainobwiso
- ..How to Bootstrap a Company | Samantha Snabes
- Intro to Business Models | Dr. Surya Ragh

Lecturers:

Dr. Surya Raghu is Founder & President, Advanced Fluidics, LLC and Founding Partner and Co-Director of a non-profit company, ET Cube International, Inc.. He obtained his Ph.D. in mechanical engineering from Yale University. His earlier affiliations were with Yale University, Technical University, Berlin, SUNY Stony Brook, and Bowles Fluidics Corporation.



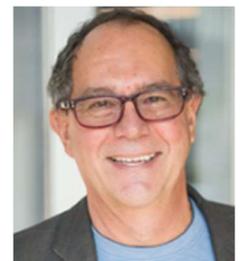
Ms. Mercy Kyomugasho Kainobwiso is Director of Intellectual Property, High Court of Uganda. Kainobwiso holds a Master of Laws in Intellectual Property (LLM) from University of Turin, Italy; and an MBA from Makerere University, Uganda. She has extensive experience in business, company and intellectual property laws, has practiced in Uganda and has participated in the development and reviewing of laws relating to intellectual property, business registration, and company incorporation.



Ms. Samantha Snabes is Co-Founder and Catalyst, re:3D®, and past Chair of IEEE Entrepreneurship. re:3D® Inc.'s mission is to drastically reduce the cost of 3D printing, and is now enabling 3D printing directly from reclaimed plastic pellets or flake. Ms. Snabes holds a BS in Biology, BA degrees in International Relations and Hispanic Studies, as well as an MBA. Previously, she served as the Social Entrepreneur in Residence at NASA and Deputy Strategist at the NASA Johnson Space Center's Space Life Sciences Directorate, after selling a start-up making tissue culture devices.



Mr. Ken Stauffer is 2020 Chair, IEEE Entrepreneurship. Ken Stauffer has spent 30+ years in the telecommunications industry. He began his career at AT&T Bell Laboratories in Holmdel, NJ after receiving a B.S.E.E from Pratt and an M.S.E.E from Polytechnic University in New York City. Ken left AT&T in 2000 to co-found EPIK Communications and served as EPIK's Senior Vice President of Operations and Chief Technology Officer. He went on to found Cypress Equipment (2003), Technology Assurance Labs (2010) and co-founded the IEEE Entrepreneurship Initiative (2015). Ken was born and raised in Tanzania.



Related Offerings at PowerAfrica:

Panel discussions:

- Technical panel with electrical safety and standard experts on: **“Electrical Safety and Standards”**
- **Panel for young professionals:** “Youths Providing Hope to Power the Future of Africa”
- **Panel for “Women in Power (Engineering)”:** “Women in Power as Drivers of Social and Economic Transformation”

Keynote speeches from noted leaders in Africa and the United States, on many issues related to electric power and development.

African Executive Forum, with discussions on “Financing Transmission in Africa” and “Energy Transition in Africa”. IEEE events, especially from **IEEE Humanitarian Activities Committee**, with speakers from various countries.