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A WEBINAR PRESENTED BY THE WATERLOO INSTITUTE FOR SUSTAINABLE ENERGY

Friday December 2, 2022
11:00 am – 12:30 pm (EST)

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BATTERY FUNDAMENTALS & APPLICATIONS AS ELECTRICAL VEHICLES: STATE-OF-THE-ART AND FUTURE TRENDS

Dr. Eng. Mohamed M. Elkadragy, Battery & Storage Expert
PhD, Battery Technical Center [BATEC, ETI] Karlsruhe Institute
of Technology (KIT)

Batteries are the backbone of today's Energy Storage and our Electrification future. Li-ion batteries play a major role in the energy storage scope as one of the leading battery technologies. In this seminar, we will focus on li-ion battery technical aspects covering the different structures, Chemistries, and cell formats for such technology, besides other technical important topic as battery manufacturing. As Li-ion battery safety is a major topic, we will also highlight the thermal runaway process and the design corrective measures taken to enhance battery safety over its lifetime including highlighting the major important Aging mechanisms and root causes.

At the end of our talk, we will share the future trends of battery storage development beyond li-ion batteries, highlighting key future technologies such as Sodium-ion batteries, and other hybrid battery system technologies. As a closure, we will cover an overall comparison between battery vs Hydrogen storage. currently undergoing an ambitious coal phase-out process, including the analysis of a scenario that leads to a completely renewable generation mix. The results show that highly renewable generation mixes are feasible but rely on an effective balance of the key flexibility attributes.

Biography



Battery & Storage Expert with ten years of industrial and applied research professional experience. Technical Manager for Battery & Energy Storage at one of the leading German Renewable Energy companies. He worked on his Ph.D. at the Battery Technical Center [BATEC-ETI], Karlsruhe Institute of Technology (KIT) in Germany. In cooperation with Waterloo Institute of Sustainable Energy (WISE), University of Waterloo (UW) in Canada. Holding an M.Sc.-Eng. degree in renewable energy and B.Sc.-Eng. degree in electrical engineering. Main career focus and expertise in battery storage (Li-ion) (hybrid batteries), hybrid renewable energy systems (off-grid and decentralized), and Electro-Mobility.

ALL ARE WELCOME!

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