Uganda energy storage applications

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Uganda"s Vision 2040 aims at building a green economy and clean environment where the ecosystem is sustainably managed, and the livability of the urban systems greatly improved. This calls for building a modern energy sector that creates economic opportunities and enhances access to green energy at affordable price which can be achieved by bridging the gap between industry and the academia, and commercialization of research and development.

Network expansion and the development of decentralized energy solutions are urgently needed in Uganda to meet electrification needs. The integration of electricity from intermittent renewable energy sources requires the use of energy storage and a smart grid approach.

Uganda currently lacks a suitable research infrastructure for the development of new technologies. The aim of the German-funded project >>RenEn Uganda<< - involving the Fraunhofer Institute for Chemical Technology ICT, Karlsruhe University of Applied Sciences and Makerere University in Uganda"s capital Kampala - is to establish this research infrastructure. Makerere University is considered the best African university outside of South Africa.

The expected outcomes of >>RenEn Uganda<< is that Makerere University becomes a center of excellence for applied and contract research in Uganda and the region, developed around a sustainable business model.

This is the aim of the German-funded project >>RenEn Uganda<<. The two-year project will foster cooperation between industry and research, facilitate the associated innovation process and develop the necessary structures for joint research projects between Makerere University and industrial partners. The scientific-technological basis for this capacity development will be the simulation, modeling and design of micro-grids based on real scenarios in Uganda, the integration of renewable energy sources, especially from water, sun and wind, and the use of energy storage systems.

"We are very much looking forward to working together with the partners from Karlsruhe," says the lead scientist Dr. Roseline Akol from Makerere University. "This is a flagship project at the university, as well as for the government ministries concerned". The partners aim to form a long-term cooperation that will enable them to carry out economically successful application projects. In particular, local companies in Uganda will be strengthened or start-ups developed which can work together with Makerere University and German research and industrial partners in these projects.

Access to power is often a challenge for telecom operators with towers in rural areas where connecting to the grid is impossible. As towers often use generators that are larger than their real power needs, low loads can have a very negative effects on the engine, resulting in oil leakages or black fumes. To avoid this, the most sustainable alternative is using the combination of solar panels and a battery energy storage.

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As the world moves towards adopting renewable energy on a massive scale and discarding fossil fuels, many options are being investigated. A key factor in this transition to low-carbon energy is the adoption of

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