

Modelling a Distribution Network with a Hybrid Solar-Hydro Power Plant in Rural Cameroon

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Abstract : In the rural and remote areas of Cameroon, access to electricity is very limited since most of the population is not connected to the main utility grid. Throughout the country, efforts are underway to not only expand the utility grid to these regions but also to provide reliable off-grid access to electricity. The Cameroonian company Solahydrowatt is currently working on the design and planning of one of the first hybrid solar-hydropower plants of Cameroon in Fotetsa, in the western region of the country, to provide the population with reliable access to electricity. This paper models and proposes a design for the low-voltage network with a hybrid solar-hydropower plant in Fotetsa. The modelling takes into consideration the voltage compliance of the distribution network, the maximum load of operating equipment, and most importantly, the ability for the network to operate as an off-grid system. The resulting modelled distribution network does not only comply with the Cameroonian voltage deviation standard, but it is also capable of being operated as a stand-alone network independent of the main utility grid.

Keywords : Cameroon, rural electrification, hybrid solar-hydro, off-grid electricity supply, network simulation

Conference Title : ICEPETA 2022 : International Conference on Electrical Power Engineering, Technologies and Applications

Conference Location : London, United Kingdom

Conference Dates : November 18-19, 2022