Examining technical and non-technical challenges on performance and longevity of batteries for micro and nano-grids [Abstract]

Examining Technical and Non-Technical Challenges on Performance and Longevity of Batteries for Micro and Nano-Grids

Conference Presentation at the UK-INDIA JOINT VIRTUAL CLEAN ENERGY CENTRE CONFERENCE on 21-22 September 2020 ONLINE

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Abstract

Energy access is still reported to be low in developing countries affecting development initiatives in these countries. As a result of this low energy access, Renewable Energy Systems largely off-grid, remain to be proven solutions reaching out to the last mile with no fundamental hope for getting grid access in the near future.

Empirical evidence shows battery storage, which is used to contain the inherent intermittence problem associated with renewable energy sources, is the weakest link in a large proportion of failed systems. While technology keeps advancing in development of better and long-lasting battery technologies, it remains important to examine the impacts of both technical and non-technical operating environments on battery longevity.

This work moves away from the traditional cell to battery packs laboratory characterising of different chemistries for a particular application. The chemistries of interest are the Lead Acid, Lead Carbon, Lithium Iron Phosphate and a novel Sodium Nickel Chloride battery. The work also involves field assessment of real installations focusing on both technical and non-technical factors which will help in the development of an energy storage delivery model that is expected to ensure batteries to last as expected from the manufacture's specification.

Presented in this paper, are preliminary results on acceptance test for Lead Acid and Lithium Iron Phosphate batteries, field experience in Malawi and India as well as collaborative activities between UK and India. Moving forward, presented in here are ongoing activities in the laboratory as well as planned field installation of the novel FZSoNiCk battey in India.

Key words: Energy Access, Renewable Energy, Intermittence, Energy Storage, Novel