

ANALYSIS OF STABILITY ISSUES IN ON-GRID ROOFTOP SOLAR INTEGRATION

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Abstract

Solar power is a readily available natural power resource in Sri Lanka and is widely used within many residential and industrial organizations as an energy source. The number of solar integration systems are not increasing rapidly, since on grid system's inherent stability issues cause difficulty in obtaining approvals for national grid integrations and also the energy losses results in wastage in possible revenue. The study explored the instability property and identified possible remedies to convert excess power into possible profitable output so that the grid integration issue and energy wastage is minimized. Approaches such as utilizing excess power to pump water, charging electric vehicles in the domestic context and the storage options like Pumped hydro, compressed air method and as most common method battery options for the industrial context were explored. A detailed comparison of the pros and cons for each suggestion is presented as the final result of the study.

Keywords: Rooftop solar integration; on-grid System; Stability issues and utility concerns; Storage options;