



**ENERGY STORAGE UTILIZATION IN A STAND
ALONE DC AND AC MICROGRID USING
RENEWABLE ENERGY**

A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree

of

BACELOR OF ENGINEERING

in

ELECTRICAL AND ELECTRONICS ENGINEERING

T.J.S. ENGINEERING COLLEGE, PERUVOYAL

ANNA UNIVERSITY : CHENNAI 600 025

JUNE 2022

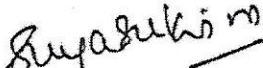
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BONAFIDE CERTIFICATE

Certified that this project report "ENERGY STORAGE UTILIZATION IN A STAND ALONE DC AND AC MICROGRID USING RENEWABLE ENERGY" the bonafide work of the following students.

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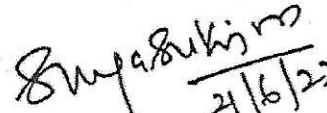
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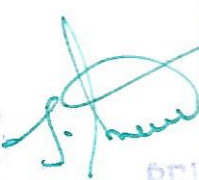
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Submitted for viva voice held on 21/6/22 at T.J.S. Engineering College,
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INTERNAL EXAMINER


EXTERNAL EXAMINER



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ABSTRACT

DC microgrids (dc MGs) are gaining popularity for photovoltaic (PV) applications as the demand for PV generation continues to grow exponentially. A hybrid control strategy for a PV and battery energy storage system (BESS) in a stand-alone dc MG is proposed in this project.

In contrast to the conventional control strategies that regulate the dc-link voltage only with the BESS, the proposed control strategy exploits both the PV system and the BESS to regulate the dc-link voltage.

The PV acts as the primary dc voltage regulator allowing for the battery to remain standby as a secondary dc voltage regulating resource. As a result, the proposed control strategy minimizes the utilization of the BESS in order to prolong its lifetime while maintaining the state-of-charge (SoC) of the battery within a desired range. To achieve that, the flexible power point tracking (FPPT) concept is applied to the PV system. To enhance the dynamic performance of the dcMG by adaptively adjusting the PV output power according to the load profile.



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