



# J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY

Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

T.N. Palayam (Po), Gobi (Tk), Erode (Dt) – 638 506




DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## MASTER OF ENGINEERING

### POWER ELECTRONICS AND DRIVES

2021-2022

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### M.E.-POWER ELECTRONICS AND DRIVES

#### BATCH 2021-2022

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**WIND AND SOLAR INTEGRATION AND POWER  
SYSTEM RELIABILITY FOR AI BASED LOAD  
RESPONSE**

**A THESIS**

*Submitted by*

**VIJAYAPRABAKARAN S**

**(731220415001)**

*In partial fulfillment for the award of the*

*degree of*

**MASTER OF ENGINEERING**

**POWER ELECTRONICS AND DRIVES**



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## BONAFIDE CERTIFICATE

Certified that this project report "WIND AND SOLAR INTEGRATION AND POWER SYSTEM RELIABILITY AI BASED LOAD RESPONSE" is the bonafide work of VIJAYAPRABAKARAN.S (Reg. no: 731220415001) who carried out the Project work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate

  
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INTERNAL EXAMINER

  
05/09/22  
EXTERNAL EXAMINER

## ABSTRACT

The current and typical solution of smoothing renewable power generation fluctuations in power system. A BES based Solar and wind power systems had a suitable control strategy that can effectively utilize the Maximum Power Point Techniques (MPPT) output from the DC to DC converter. As like split battery the output Inverter also classified in to two ratings that is called as load response inverter.

Smart grid is considered as an attractive technology for monitoring and management of grid connected renewable energy plants due to its flexibility, network architecture and communication between providers and consumers. Smart grid has been deployed with renewable energy resources to be securely connected to the grid. Indeed, this technology aims to complement the demand for power generation and distributed storage. For this reason, a system powered by a photovoltaic (PV) has been chosen as an interesting solution due to its competitive cost and technical structure.

  
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## CHAPTER 7

### CONCLUSION

The proposed system has been analyzed in the steady and dynamic state with the performance of the micro-grid integrated hybrid solar system with has been analysed by considering variable load demand. The impact of SMES of operation of the hybrid solar system has carried out. To improve the system's operation, the proposed system is necessary to share the load supply with the battery especially when the wind speed or photovoltaic power drops or the load increases. Also, the battery selection for applications is highly important in order to overcome the problems of dynamic instability of the electrical network based on such an energy storage system. For the future works, a larger power network could be developed using same technologies. To get more flexible results, fuzzy logic rules could be modified. The capacity of the battery could be increased with respect to the network load demand.



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