MONITORING& CONTROLLING OF MECHANICAL VIBRATION AND TEMPERATURE IN SMALL WIND TURBINES USING ZIGBEE WIRELESS NETWORK

A Project report submitted in partial fulfillment of the requirements for the award of degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted by

Y.RAMYA — **Regd.No.14811A0479**

R.VARA LAKSHMI — **Regd.No.15815A0424**

S.GANGADHAR — **Regd.No.15815A0428**

D.PREM KUMAR — **Regd.No.15815A0406**

Under the guidance of

Mr. R.ANEEL KUMAR., M.Tech

ASSISTANT PROFESSOR

DEPARTMENT OF

ELECTRONICS AND COMMUNICATION ENGINEERING

AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

(Accredited by NBA, Approved by AICTE, NAAC aggregation, Affiliated to J.N.T.U. KAKINADA)

TAMARAM (P.O), MAKAVARAPALEM (M.O), NARSIPATNAM (R.D)

VISAKHAPATNAM DISTRICT-531113

2014-2018

DEPARTMENT OF

ELECTRONICS AND COMMUNICATION ENGINEERING

AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

(Accredited by NBA, Approved by AICTE, NAAC aggregation, affiliated to J.N.T.U. KAKINADA)

Tamaram (P.O), Makavarapalem (M.O) , Narsipatnam (R.D) Visakhapatnam District-531113

CERTIFICATE

This is to certify that the project entitled "**MONITORING & CONTROLLING OF MECHANICAL VIBRATION AND TEMPERATURE IN SMALL WIND TURBINES USING ZIGBEE WIRELESS NETWORK**" in partial fulfillment for the of degree of **Bachelor of Technology** in ELECTRONICS AND COMMUNICATION ENGINEERING, at **AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY**,MAKAVARAPALEM, VISAKHAPATNAM is an bonafied work carried out by

Y.RAMYA(14811A0479),R.VARALAKSHMI(15815A0424),S.GANGADHAR(15815A0428), D.PREM KUMAR(15815A0406) under the guidance and supervision during 2016-2017.

PROJECT GUIDE

RANEEL KUMAR, M.Tech.

Assistant professor

HEAD OF DEPARTMENT

Mr. E.GOVINDA M.Tech.,(Ph.D.)

Associate professor

HEAD OF THE DEPARTMENT
DEPARTMENT OF ECE
Avanthi Institute of Engg.&Tech.
Makavarapalem, Visakhapatnam Dist-531 113.

EXTERNAL EXAMINER

ABSTRACT

The aim of our project is to monitor the mechanical vibration, temperature and other parameters in a wind turbine for efficient operation of wind turbine using ZigBee HC-12. The wind based power generation most popular among the renewable energy power systems. But there is some losses in wind turbines the main object of this project is propose a new diagnostic and protection tool through analysis and monitoring signals of vibrations and mostly avoids catastrophic failures. For this system will be composed of a vibration sensor to identify mechanical vibrations, and LM-35 to identify the temperatures at a critical points of wind turbines, microcontroller hardware which will make acquisition and processing of signals from sensor and finally a wireless transmission system using zigbee HC-12 technology obtaining reliable power from wind turbine generators, which are complex electromechanical systems, requires high performance monitoring systems. Analysis of wind farm maintenance costs has shown that up to 40% of the cost can be related to unexpected failures of wind turbine components that then lead to unscheduled corrective maintenance actions. Unscheduled corrective maintenance is the most costly type of maintenance, and it is always at high risk for consequential damages resulting in extensive downtimes. To avoid these problems, the focus of most wind farms is shifting to predictive maintenance. Predictive maintenance by condition-based monitoring of electrical machines is a scientific approach that is becoming the new strategy for maintenance management.