

**A**  
**DISSERTATION REPORT**  
**ON**  
**“ENHANCEMENT OF PLC AND HMI AUTOMATION**  
**QUALITY FOR THE PARALLELING SYSTEMS”**

**BY**  
**“Mr. MANSING BALASO CHAVAN”**  
**AS A PARTIAL FULFILLMENT OF M. TECH.**  
**ELECTRONICS AND TELECOMMUNICATION ENGINEERING DEGREE OF**  
**SHIVAJI UNIVERSITY, KOLHAPUR**  
**UNDER THE GUIDANCE OF**  
**“PROF. DR. MRS. S. V. SANKPAL”**



**D Y PATIL**  
COLLEGE *of*  
ENGINEERING & TECHNOLOGY  
(AN AUTONOMOUS INSTITUTE)  

---

KASABA BAWADA, KOLHAPUR

**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING**  
**D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY,**  
**KASABA BAWADA, KOLHAPUR-416006, MAHARASHTRA, INDIA.**  
**(AN AUTONOMOUS INSTITUTE)**

**2021 – 2022**

**“ENHANCEMENT OF PLC AND HMI AUTOMATION  
QUALITY FOR THE PARALLELING SYSTEMS”**

A Dissertation submitted to

**D. Y. PATIL COLLEGE OF ENGINEERING AND TECHNOLOGY**

In partial fulfilment of the requirement for the award of Degree

**MASTER OF TECHNOLOGY**

in

**ELECTRONICS AND TELECOMMUNICATION ENGINEERING**

by

**“MR. MANSING BALASO CHAVAN”**

Under the guidance of

**“PROF. DR. MRS. S. V. SANKPAL”**



**D Y PATIL**  
COLLEGE *of*  
ENGINEERING & TECHNOLOGY  
(AN AUTONOMOUS INSTITUTE)  
KASABA BAWADA, KOLHAPUR

**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING**

**D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY,**

**KASABA BAWADA, KOLHAPUR-416006, MAHARASHTRA, INDIA.**

**(AN AUTONOMOUS INSTITUTE)**

**2021 – 2022**



**D Y PATIL**  
COLLEGE *of*  
ENGINEERING & TECHNOLOGY  
(AN AUTONOMOUS INSTITUTE)  
KASABA BAWADA, KOLHAPUR

**D. Y. PATIL COLLEGE OF ENGINEERING AND TECHNOLOGY,  
KASABA BAWADA, KOLHAPUR.**

## **CERTIFICATE**

This is to certify that **Mr. Mansing Balaso Chavan** has successfully carried out the dissertation work on, “**Enhancement of PLC and HMI Automation Quality for the Paralleling Systems**”, under my guidance in a satisfactory manner during the period 2021-2022 for the partial fulfilment of **M.Tech. in Electronics and Telecommunication Engineering**, as per the rules and regulations of the institute and **Shivaji University**, Kolhapur. This report represents the Bonafide work of the student.

**Prof. Dr. Mrs. S. V. Sankpal**

**Guide**

**Prof. Dr. T. B. Mohite-Patil**

**H.O.D**

**Prof. Dr. S. D. Chede**

**Principal**

The Dissertation Entitled: on **“Enhancement of PLC and HMI Automation Quality  
for the Paralleling Systems”**

By  
**Mr. Mansing Balaso Chavan**

is approved for the degree of Master of Technology in

**ELECTRONICS AND TELECOMMUNICATION ENGINEERING OF**

**Shivaji University, Kolhapur**

Examiners:

1. \_\_\_\_\_

2. \_\_\_\_\_

Date:

Place: DYPCET, Kolhapur

## ACKNOWLEDGEMENT

I take this opportunity with much pleasure to express my deep sense of gratitude to my guide, **Prof. Dr. Mrs. S. V. Sankpal** for her excellent guidance, encouragement, support and useful suggestions throughout the period of my master's degree.

Words are inadequate in offering my thanks to our Head of Department **Prof. Dr. Mrs. S. V. Sankpal**, and our Principal **Prof. Dr. S. D. Chede** for their encouragement, cooperation and for providing all necessary facilities to carry out the project work.

I am thankful to the founder and president of D. Y. Patil group of **Institutions Padmashri Dr. D. Y. Patil, Hon. Sanjay D. Patil, President**, Dr. D. Y. Patil Pratisthan, Kolhapur, **Hon. Satej D. Patil**, Vice president, Dr. D. Y. Patil Pratisthan, Kolhapur, for giving me the opportunity to carry out my dissertation work.

I sincerely thank all PG teaching staff for constant encouragement and valuable advice. My work could not have been completed without the support of teaching as well as non-teaching staff members of the Electronics and Telecommunication Engineering Department.

I would like to express my sincere gratitude to my Organization **Cummins Inc.**, for supporting me throughout my Master's degree. I wish to express my sincere gratitude to my Manager **Mr. Amol Joshi**, and my Peer **Mr. Amit Shendye**, for their enthusiasm, patience, insightful comments, helpful information, practical advice, and unceasing ideas that have always helped me tremendously in my project, research successfully.

Finally, I dedicate this work to my **Family**. I take a moment to bow in front of my parents. My deepest thanks and appreciation are reserved for wife, all my family members and friends, whose blessings have been my inspiration to complete this work.

Student Name

## TABLE OF CONTENTS

CERTIFICATE.....	iii
ACKNOWLEDGEMENT.....	v
TABLE OF CONTENTS.....	vii
LIST OF FIGURES.....	viii
LIST OF TABLES.....	ix
ABSTRACT.....	x
SYNOPSIS.....	