

**DESIGN AND IMPLEMENTATION OF FIRE PROTECTION  
SYSTEMS FOR POWER POLE TRANSFORMERS**

**THESIS**



**Submitted to Comply with Terms of Study Completion in Mechanical  
Engineering Production and Maintenance Study Program Mechanical  
Engineering Department**

**By Muhamad Habib Abizar 062140212280**

**STATE POLYTECHNIC OF SRIWIJAYA  
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2025**

APPROVAL SHEET

**DESIGN AND IMPLEMENTATION OF FIRE PROTECTION  
SYSTEMS FOR POWER POLE TRANSFORMERS**



FINAL PROJECT

**Approved by the Final Project Supervisor Lecturer Applied Bachelor Study  
Program of Mechanical Engineering Production and Maintenance**

**Main Supervisor,**

**Muhammad Asyraf bin Zulkipli**  
Employee No. S012017120005

**Co-Supervisor,**

**Ir. Fenoria Putri, S.T., M.T.**  
NIP. 197202201998022001

**Knowing,  
Head of Mechanical Engineering Department**

**Ir. Fenoria Putri, S.T., M.T.**  
**NIP. 197202201998022001**

## STATEMENT OF INTEGRITY

The undersigned :

Name : Muhamad Habib Abizar  
Student ID : 062140212280  
Study Program : Bachelor of Applied Mechanical Engineering Production and  
Maintenance  
Project Title : **Design and Implementation of Fire Protection  
Systems for Power Pole Transformers**

I declare that my final project is my own work and is accompanied by a team of supervisors and is not the result of plagiarism. If in the future elements of plagiarism are found in my final project, I am willing to accept academic sanctions from Sriwijaya State Polytechnic.

Thus, I make this statement in a state of consciousness and not forced.



Palembang, Desember 2025

Muhamad H  
NIM. 062



## MOTTO AND DEDICATION

### MOTTO

**“O you who believe, make your patience and prayer your helper, indeed Allah is with those who are patient”**

(Al-Baqarah: 153)

*“Once you embark on a journey, never give up until you reach it. Be confident in your efforts and persevere. Success requires a long process. It's not just about wanting the end result and knowing it's done, but also about always keeping on progress. Even if there are many obstacles and you're often stressed, believe that there's no other way to achieve success than through the process.” (Armeliani)*

### DEDICATION

*This thesis is dedicated to my beloved parents, my father and mother, for their sincere and unceasing prayers and invaluable encouragement, and to my closest and dearest friends, and to my proud light blue almamater.*

### ACKNOWLEDGMENT

I give all my praise and gratitude to God Almighty for his mercy and grace, so that I can finish this thesis well. This thesis entitled "Design and Implementation of Fire Protection Systems for Power Pole Transformers "

I realize that the completion of this thesis cannot be separated from the support and assistance from various parties. Therefore, with all due respect, allow me to express my sincere thanks to:

- Muhammad Asyraf bin Zulkipli as the main supervisor who has provided invaluable guidance, direction, motivation, input, criticism and constructive suggestions. Thank you for your patience and time spent guiding me at every stage of preparing this thesis.
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- A big thank you to my parents, who always provide endless support, encouragement, prayers and love.

Finally, I realize that this thesis is still far from perfect. Therefore, I am very open to constructive criticism and suggestions for future improvements. Hopefully this thesis can provide benefits for readers and all interested parties.

**ABSTRACT**

**DESIGN AND IMPLEMENTATION OF FIRE PROTECTION SYSTEMS FOR POWER POLE TRANSFORMERS**

**Muhamad Habib Abizar (2025: xii + 40 pp., 20 Figures, 3 Tables, 1 Appendix)**

Power pole transformers, essential components in electricity distribution, face significant fire risks due to high electrical loads, short circuits, and environmental factors. Developing effective fire protection systems for these transformers is critical to preventing power outages and minimizing fire hazards. This study explores the design and implementation of advanced fire protection strategies, including the use of fire-resistant materials, automated fire detection, and suppression systems. It also emphasizes the importance of regular maintenance and real-time monitoring to identify early signs of overheating or failure. By integrating these systems, the risk of transformer fires can be significantly reduced, ensuring greater reliability and safety in power distribution networks. This research further evaluates the economic and environmental impacts of implementing such systems, advocating for enhanced safety standards in utility infrastructure.

Keywords : *Power Pole Transformers, Protection Systems, Design, System Analysis*

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