

Thorium Blanket Verifier Tracking System at PT XYZ Indonesia

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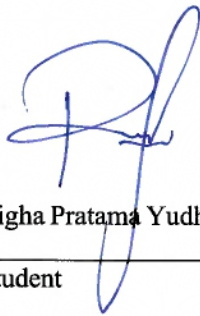


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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.



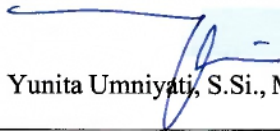
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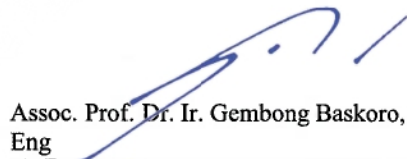


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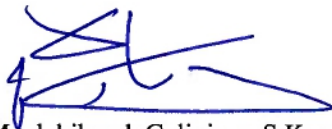


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ABSTRACT

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The manual monitoring of thorium blankets within the workshop environment presents operational challenges in maintaining equipment traceability, operational accountability, and monitoring efficiency due to the reliance on conventional inspection and manual record-keeping practices. To address these challenges, this research aims to design, develop, and evaluate a Thorium Blanket Verifier Tracking System capable of providing a systematic, reliable, and real-time monitoring solution for thorium blanket management. The proposed system integrates ultrasonic sensing technology, Arduino Mega microcontroller processing, ESP-01 wireless communication, and a web-based monitoring dashboard to enable automatic detection of thorium blanket availability, wireless data transmission, and centralized monitoring.

The system was developed and experimentally evaluated through functional testing, sensor calibration, statistical analysis, and real-time monitoring assessment to verify its operational performance and measurement reliability. The experimental results demonstrated satisfactory measurement accuracy, reliable calibration performance, consistent statistical characteristics, and effective real-time monitoring capability throughout the testing process. The developed system also successfully improved equipment traceability, operational accountability, and monitoring efficiency by providing systematic monitoring records and centralized visualization of thorium blanket availability.

Overall, the findings demonstrate that the proposed Thorium Blanket Verifier Tracking System provides a practical, reliable, and systematic monitoring solution for improving thorium blanket management within the workshop environment. This research contributes to strengthening equipment traceability, operational accountability, monitoring efficiency, and systematic documentation for Critical Focus Area (CFA) assets while providing a practical foundation for the future development of integrated monitoring systems in industrial environments.

Keywords: *Thorium Blanket, Tracking System, Internet of Things (IoT), Ultrasonic Sensor, Arduino Mega 2560, Critical Focus Area (CFA), Web-based Monitoring*





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DEDICATION

This work is dedicated to my beloved family for their continuous support and encouragement throughout my academic journey.



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I would like to express my deepest gratitude to myself for the perseverance, discipline, and commitment in completing this thesis properly and on time. This journey required consistency, responsibility, and continuous effort, and I am proud to have successfully accomplished it.

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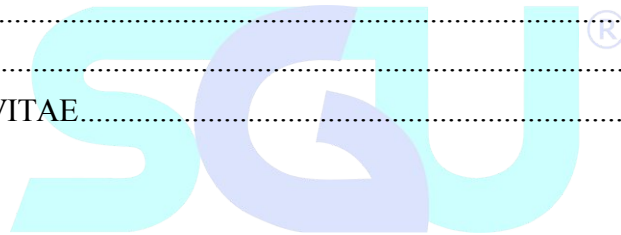
In addition, I would like to thank my friends who have supported and assisted me during the completion of this thesis. Their encouragement, discussions, and moral support have been truly meaningful throughout this academic journey.

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