

**REDUCING INFANT INCUBATOR PRODUCT REJECTIONS AT PT. XYZ
THROUGH QUALITY IMPROVEMENT USING DMAIC METHODOLOGY:
A CASE STUDY**

By

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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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ABSTRACT

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The rejection rate of infant incubator products at Company XYZ has shown a marked and consistent increase since 2021, peaking in 2024. Temperature instability is a type of failure with the highest Risk Priority Number (RPN = 360), contributing 72% of total rejections. This research aims to reduce the rejection rate through the implementation of the DMAIC (Define, Measure, Analyze, Improve, Control) methodology. The analysis was conducted using a Pareto Chart and Failure Mode and Effects Analysis (FMEA). The Improve phase included the replacement of temperature sensors with high-accuracy components ($\pm 0.1^{\circ}\text{C}$) and the addition of a 48-hour Performance Test in the final Quality Control process. These interventions addressed the root cause of temperature instability. As a result, the monthly rejection rate dropped from 5 units in September 2024 to zero rejections by January 2025, sustained through June 2025. Customer satisfaction validation through surveys showed an average score of 4.8 out of 5, with significant improvement in temperature stability and overall product reliability. This research proves that the DMAIC approach effectively reduces product defects, enhances product quality, and increases customer satisfaction in the medical device manufacturing sector.

Keywords: Infant Incubator, Temperature Instability, DMAIC, FMEA, Quality Control, Customer Satisfaction.



DEDICATION

I dedicate this thesis to my beloved parents for their prayers, support, and unwavering love that have strengthened me. To my family and mentors, thank you for your trust and inspiration, which have encouraged me to continue learning and striving. And to the advancement of the Indonesian medical device industry, I hope this work can make a real contribution to better healthcare services in the future.



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This is the part where you express your gratitude to all parties involved in the success of your thesis work. However, keep it simple and short.

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