

INCREASING PRODUCTION RATE AND LINE EFFICIENCY USING LINE BALANCING IN A TOBACCO COMPANY

A THESIS

**Submitted in partial fulfilment of the requirements
for the degree of Bachelor of International Industrial Engineering**



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2025

IDENTIFICATION PAGE

Final Project Titled
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BALANCING IN A TOBACCO COMPANY

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Julian Kurnianto

DECLARATION PAGE

To my parents,
for their unwavering love, endless support, and constant encouragement
throughout every step of my academic journey.

To Mr. Jin Ai, my supervisor,
for his invaluable guidance, wisdom, and patience in helping me complete
this project.

To my partner,
For your spirit, support, understanding, and care that made me always push
forward ahead

To my friends,
For their companionship, motivation, and the unforgettable memories we've
shared along the way.

ACKNOWLEDGEMENT

All praise and gratitude are directed to God for His grace and blessings, which have made it possible to complete this thesis entitled “Increasing Production Rate and Line Efficiency Using Line Balancing in A Tobacco Company” This research represents the final project in the Industrial Engineering program at the Faculty of Industrial Technology, Atma Jaya University Yogyakarta. It has been prepared as both a contribution to the field and a requirement for obtaining a bachelor’s degree in industrial engineering.

The completion of this thesis would not have been possible without the support of many individuals and institutions. Therefore, the author would like to express heartfelt appreciation and gratitude to:

1. God Almighty, for granting me the gift of life and for His constant blessings and guidance throughout my academic journey and the completion of this final project.
2. Ir. Indah Sepwina Putri, S.T., M.Sc. and Mikha Meilinda C., S.Si., M.Sc. as the Academic Advisors throughout my studies at Atma Jaya University Yogyakarta
3. Prof. Dr. Eng. Ir. The Jin Ai., S.T., M.T., IPM as the First Supervisor, for her guidance in completing this research from beginning to end.
4. Ir. Yosef Daryanto, S.T., M.Sc., Ph.D. as the First Examiner, for his constructive feedback and support in completing this thesis successfully.
5. Mikha Meilinda C., S.Si., M.Sc. as the Second Examiner, for his evaluation and insights that contributed to the successful completion of this research.
6. Mr. R (initials), the owner of the company for granting access to conduct research at PT XYZ.
7. All individuals who have contributed, whether directly or indirectly, to the author's personal and academic growth during their time at Universitas Atma Jaya Yogyakarta.

The author sincerely hopes that this project will provide value to both readers and society. Acknowledging that there may still be shortcomings in this report, any constructive feedback and suggestions for future improvement are warmly welcomed.

Yogyakarta, 06 July 2025

The author

Julian Kurnianto

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ABSTRACT

PT XYZ is a manufacturing company operating in the tobacco industry, producing goods to meet the demand of PT HM Sampoerna. Several operational issues have been identified, particularly within the production process, including the need for overtime work on Sundays to meet weekly targets, substandard product quality, inadequate worker skill levels, and limited production capacity. This research specifically focuses on the issue of overtime work on Sundays, which is attributed to the inconsistency in actual daily production.

The study employs cycle time data and utilizes time study and work measurement techniques to calculate standard time. Subsequently, current line efficiency is analysed, and the Largest Candidate Rule (LCR) method is applied to develop a new workstation arrangement. Based on these findings, a redesigned production line is proposed and implemented to evaluate its performance.

The results demonstrate a significant improvement, with line efficiency increasing by 8.32%, from an initial value of 27.68% to 36%. Furthermore, the production capacity of Zb, the pre-finished product following the packing process, increased by an average of 25%. This enhancement contributes positively to addressing production inconsistencies and effectively eliminates the need for Sunday overtime work, supporting the potential for long-term operational improvement.

Keywords: overtime work, line balancing, Largest Candidate Rule (LCR), line efficiency,