

**THESIS**  
**THE RELATIONSHIP BETWEEN NOISE EXPOSURE LEVEL**  
**AND THE LEVEL OF WORK FATIGUE IN PRINTING AND**  
**CONVECTION WORKERS OF DARUSSALAM GONTOR**  
**PONOROGO BUSINESS UNIT**



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I sincerely declare that the research contained in this thesis is my own work and does not belong to anyone else. This thesis has never been published before, except for some parts with original references.

If in the future it is found that this work is plagiarism, I am ready to be given administrative and academic sanctions.

Ponorogo, 11 January, 2025

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## THESIS DEFENSE

It is hereby stated that the thesis proposal with the title:

**" THE RELATIONSHIP BETWEEN NOISE INTENSITY AND WORK  
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DARUSSALAM GONTOR PONOROGO BUSINESS UNIT"**

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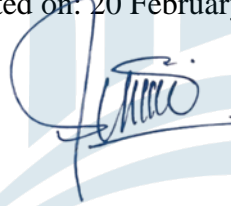
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It has been reviewed and recommended to meet scientific standards, in terms of  
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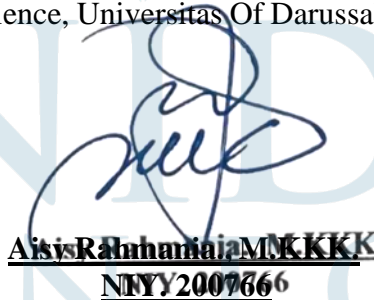
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## **ABSTRAK**

### **HUBUNGAN INTENSITAS KEBISINGAN DENGAN TINGKAT KELELAHAN KERJA PADA PEKERJA PERCETAKAN DAN KONVEKSI UNIT USAHA DARUSSALAM GONTOR PONOROGO**

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Implementasi teknologi yang semakin meluas mendorong peningkatan pemanfaatan mesin dalam berbagai proses industri. Penggunaan mesin secara intensif diharapkan dapat mengoptimalkan produktivitas dan efisiensi produksi secara konsisten. Paparan kebisingan mesin secara terus-menerus dapat memicu stres dan gangguan psikologis pada pekerja, yang pada akhirnya berimbas pada penurunan produktivitas dan menimbulkan kelelahan kerja. Pondok Modern Darussalam Gontor Ponorogo mengoperasikan sejumlah unit usaha untuk memenuhi permintaan produksi yang besar, sehingga proses produksi mesin dengan kecepatan tinggi guna mencapai target harian produksi, kecepatan ini meningkatkan getaran yang dapat menghasilkan tingkat kebisingan yang tinggi. Penelitian ini bertujuan untuk Menganalisis hubungan intensitas kebisingan dengan kelelahan kerja pada pekerja percetakan dan konveksi unit usaha Darussalam Gontor Ponorogo. Penelitian ini menggunakan pendekatan kuantitatif cross-sectional untuk mempelajari korelasi antara kebisingan dan kelelahan kerja pada 67 pekerja di Darussalam Press dan La-Tansa Konveksi unit usaha Darussalam Gontor, yang terpilih melalui teknik purposive sampling dari total populasi 131 pekerja. Penelitian yang dilaksanakan pada November 2024–Januari 2025 ini menemukan adanya hubungan signifikan antara kebisingan dan kelelahan kerja ( $p < 0,05$ ) dengan tingkat kebisingan di area percetakan melebihi NAB 85 dBA, sementara area lain di bawah NAB. Mayoritas responden (86%) mengalami kelelahan kerja ringan, diikuti 11% kelelahan sedang, dan 3% kelelahan berat. Oleh karena itu, disarankan untuk mengimplementasikan hirarki pengendalian berupa memberikan peredam pada mesin, memberikan Alat Pelindung Diri (APD) untuk mengurangi tingkat kelelahan kerja dan meningkatkan produktivitas serta kesejahteraan pekerja.

**Kata Kunci:** Intensitas Kebisingan, Kelelahan Kerja dan Unit Usaha Darussalam Gontor

**ABSTRACT**

**THE RELATIONSHIP BETWEEN NOISE INTENSITY AND WORK  
FATIGUE IN PRINTING AND CONVECTION WORKERS OF  
DARUSSALAM GONTOR PONOROGO BUSINESS UNIT**

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The widespread implementation of technology encourages the increase in the use of machines in various industrial processes. The intensive use of machines is expected to optimize productivity and production efficiency consistently. Continuous exposure to machine noise can trigger stress and psychological disorders in workers, which ultimately leads to decreased productivity and causes work fatigue. Darussalam Gontor modern islamic boarding school Ponorogo operates a number of business units to meet the large production demand, so that the production process of machines at a high speed to achieve the daily target of production, this speed increases vibration which can produce a high level of noise. This study aims to analyze the relationship between noise intensity and work fatigue in printing and convection workers of the Darussalam Gontor Ponorogo business unit. This study uses a cross-sectional quantitative approach to study the correlation between noise and work fatigue in 67 workers in Darussalam Press and La-Tansa Convection of the Darussalam Gontor business unit, which were selected through purposive sampling techniques from a total population of 131 workers. The study, which was conducted in November 2024- January 2025, found a significant relationship between noise and work fatigue ( $p < 0.05$ ) with noise levels in the printing area exceeding the NAV of 85 dBA, while other areas were below the NAV. The majority of respondents (86%) experienced mild work fatigue, followed by 11% moderate fatigue, and 3% severe fatigue. Therefore, it is recommended to implement a hierarchy of control in the form of providing dampers to machines, providing Personal Protective Equipment (PPE) to reduce work fatigue levels and increase productivity and worker welfare.

**Keywords:** Noise Intensity, Work Fatigue and Darussalam Gontor Business Unit

## FOREWORD

We offer all praise and gratitude to the presence of Allah SWT for His overflow of grace, gifts, and affection, which has enabled the author to complete a research proposal entitled "The Relationship Between Noise Exposure Level And The Level Of Work Fatigue In Printing And Convection Workers Of Darussalam Gontor Ponorogo Business Unit". May prayers and greetings always be poured out to our esteemed Prophet Muhammad SAW, who through his teachings has paved the way for us to enjoy a life filled with science and technology as it is today.

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The author also thanks all parties who have assisted the researcher in completing this thesis. The researcher hopes that this thesis can be useful for readers and can be used as a reference for development in a better direction.

Ponorogo, 11 January, 2025

Writer



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