

ACCELEROMETER-BASED SYSTEM TO EVALUATE THE WEAR OF
LATHE CUTTING TOOL AND THE CORRELATION TO SURFACE
QUALITY

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

ACCELEROMETER-BASED SYSTEM TO EVALUATE THE WEAR OF LATHE CUTTING TOOL AND THE CORRELATION TO SURFACE QUALITY

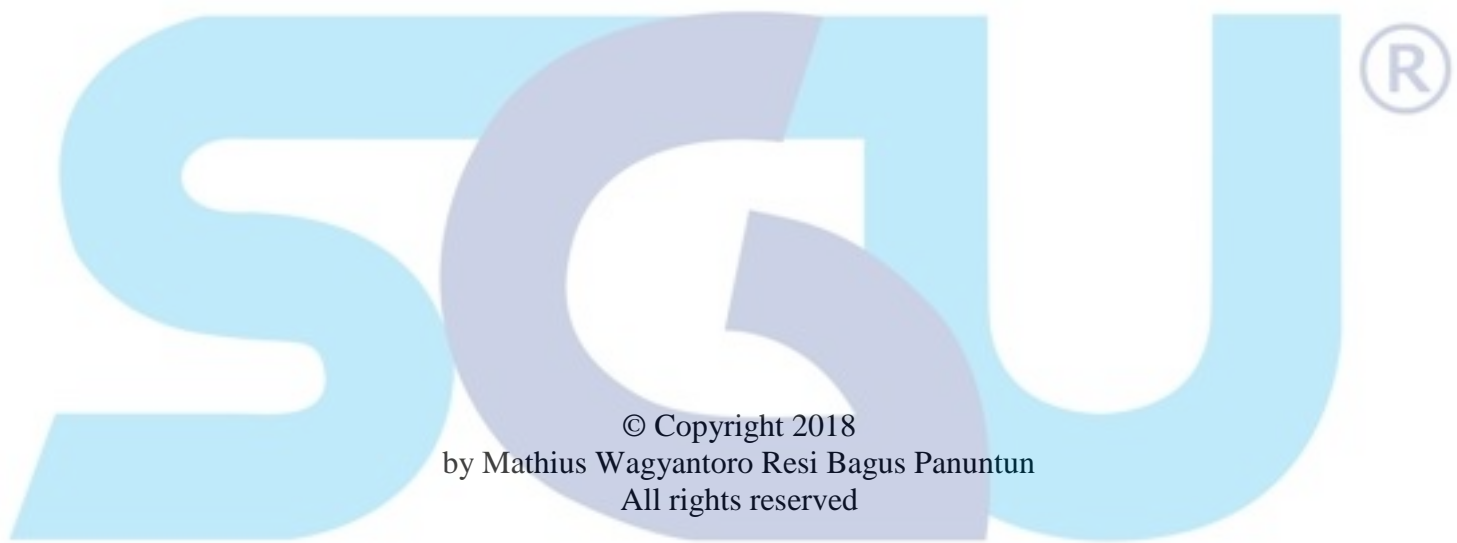
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Lathe machine is one of the rotary based motion machine which is purposed to cut and shape work piece which has cylindrical shape. It has a principal work where the work piece is rotated in a spindle then the cutting tool move linearly to cut the work piece. Lathe machine has a specific cutting tool to process the cylindrical work piece. Therefore, cutting tool condition is important to be considered more because the wear of a cutting tool is a critical phenomenon which influences the quality of the machined part. But for sensing and monitoring the wear of cutting tool, expensive sensor or equipment is required. Therefore, the author try to create a system to evaluate the wear of cutting tool, focused on lathe cutting tool, ISO 6. Digital Accelerometer ADXL345 has been chosen as the sensor, then for the microcontroller, Arduino Uno is used. The work principal of the system which created by author is evaluating the wear of lathe tool by sensing its vibration during the cutting process, record its vibration on SD Card, then do the vibration analysis. The goal is to find the correlation between vibration, tool wear, and surface quality of the work piece. Finally, author can find the correlation between those aspects by using the accelerometer-based system and do several experiment trials.

Keywords: ADXL345 Accelerometer, Vibration, Arduino, Tool Wear.



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DEDICATION

I dedicate this works for the better,
The smarter,
The greater,
ATMI Cikarang.

Ad Maiorem Dei Gloriam,
Deum In Omnibus



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Praise and thanks to my Lord, my Friend, almighty Jesus Christ for blessing my whole life so that this thesis titled “Accelerometer-Based System To Evaluate The Wear of Lathe Cutting Tool and The Correlation to Surface Quality” can be finished well. The author would like to say thank you very much with all the humility to all people who give their pray, support, aid, and guidance in finishing this thesis.

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