



**PENGARUH PARAMETER PEMOTONGAN MULTIPLEK
MENGUNAKAN CNC *ROUTER* TERHADAP KEKASARAN
PERMUKAAN DI CV TERRA MULTI DIMENSI**

TUGAS AKHIR

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UNIVERSITAS MUHAMMADIYAH GRESIK

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Diajukan sebagai salah satu syarat untuk memperoleh gelar Sarjana Teknik

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ABSTRAK

Pengaruh Parameter Pemotongan Multiplek Menggunakan CNC Router Terhadap Kekasaran Permukaan Di CV TERRA MULTI DIMENSI

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Penelitian ini membahas pengaruh parameter jenis pemotongan, *feed rate*, *number of flute*, dan suhu mata *router* pada mesin *Computer Numerical Control* (CNC) *router 3 axis* terhadap kekasaran permukaan multiplek. Karena tidak adanya parameter yang ditetapkan selama proses pemotongan multiplek, penelitian ini digunakan untuk memahami pengaruh jenis pemotongan, *feed rate*, *number of flute*, dan suhu mata *router* terhadap kekasaran permukaan. Hasil penelitian menunjukkan bahwa *number of flute* dan *feed rate* tidak signifikan mempengaruhi kekasaran permukaan. Karakteristik multiplek yang berserat mempengaruhi kestabilan kekasaran hasil pemotongan. Suhu mata *router* hanya naik 1°C dan tidak signifikan mempengaruhi kekasaran permukaan. Metode *image analysis* dengan *software* ImageJ berhasil digunakan untuk mengukur kekasaran permukaan. Jenis pemotongan *climb cut* dan *conventional cut* adalah parameter yang paling berpengaruh terhadap kekasaran permukaan. *Climb cut* menghasilkan permukaan yang lebih baik. Kombinasi *number of flute* dan *feed rate* tertentu menunjukkan perbedaan signifikan dalam kekasaran permukaan, namun secara terpisah, *feed rate* tidak menunjukkan pengaruh yang signifikan.

Kata Kunci: CNC *router cutting*, kekasaran permukaan, multiplek, *image analysis*.

ABSTRACT

The Effect of Multiplex Cutting Parameters Using CNC Router on Surface Roughness at CV TERRA MULTI DIMENSI

This study discusses the influence of cutting type parameters, feed rate, number of flute, and router eye temperature on the Computer Numerical Control (CNC) machine of a 3 axis router on the roughness of the multiplex surface. Due to the absence of parameters set during the multiplex cutting process, this study was used to understand the influence of the cutting type, feed rate, number of flute, and router eye temperature on surface roughness. The results showed that the number of flute and feed rate did not significantly affect the surface roughness. The characteristics of fibrous multiplexes affect the roughness stability of the cutting results. The temperature of the router's eyes only rises by 1°C and does not significantly affect the surface roughness. The image analysis method with ImageJ software was successfully used to measure surface roughness. The type of cut of climb cut and conventional cut is the parameter that most affects the roughness of the surface. Climb cuts result in a better surface. The combination of the number of flute and a certain feed rate showed a significant difference in surface roughness, but separately, the feed rate showed no significant effect.

Keywords: CNC router cutting, surface roughness, multiplexing, image analysis.

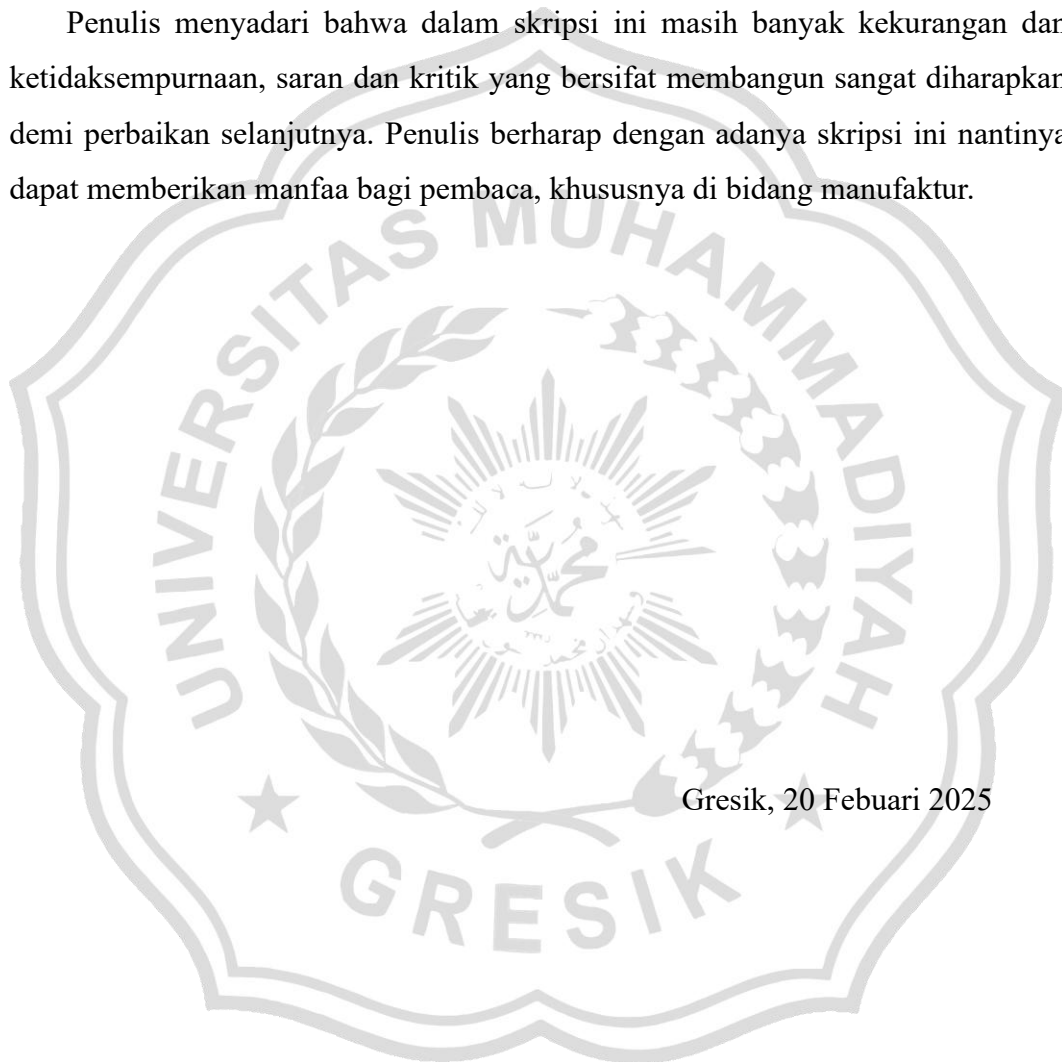
KATA PENGANTAR

Segala puji dan syukur kehadiran Allah SWT yang telah melimpahkan rahmat dan hidayahnya, sehingga dapat diselesaikan penulisan skripsi dengan judul “Pengaruh parameter pemotongan multiplek menggunakan CNC *router* terhadap kekasaran permukaan di CV TERRA MULTI DIMENSI” Skripsi ini disusun sebagai salah satu syarat untuk menyelesaikan program studi Teknik Mesin di Fakultas Teknik Universitas Muhammadiyah Gresik. Penyusunan proposal skripsi ini tidak terlepas dari bantuan, dukungan, dan bimbingan dari berbagai pihak. Oleh karena itu, penulis mengucapkan banyak terima kasih kepada:

1. Allah SWT yang telah memberikan kesehatan jasmani dan rohani.
2. Diri *sendiri*, Muhammad Bima Alamsyah mampu menyelesaikan skripsi hingga akhir meskipun banyak rintangan yang di lalui. Semoga dengan penelitian yang saya buat bisa berguna bagi pembaca.
3. Kedua orang tua dan saudara saya yang selalu memberikan doa dan dukungan kepada saya selama menjalani masa studi hingga selesainya skripsi ini.
4. Ibu Alviani Hesthi Permata Ningtyas, S.T., M.Sc., selaku Kaprodi Teknik Mesin Universitas Muhammadiyah Gresik.
5. Bapak Ilham Arifin Pahlawan, S.S.T., M.Sc., selaku dosen pembimbing yang telah banyak memberikan saran dan arahnya sehingga skripsi ini dapat terselesaikan.
6. Bapak Rilo Chandra Muhammadin, S.T., M.T., selaku dosen Teknik Mesin Universitas Muhammadiyah Gresik.
7. Bapak Dany Gunawan dan Bapak Michael Widodo, selaku pemilik CV Terra Multi Dimensi, yang telah memberikan kesempatan, dukungan, dan bantuan selama pelaksanaan eksperimen.
8. Laboratorium Teknik Mesin Universitas Muhammadiyah Gresik, atas bantuan fasilitas dan *pendamping* teknis selama pelaksanaan penelitian.
9. Teman saya Winastika Sawung Pandan Anjasmara yang telah banyak membantu dan memberikan dukungan kepada saya selama proses penyelesaian skripsi ini.

10. Teman saya Muhammad Rifqi fanani yang memberikan bantuan dan dukungan kepada saya selama proses penyusunan skripsi ini.
11. Teman-teman angkatan 2020/2021 Program Studi Teknik Mesin Universitas Muhammadiyah Gresik.
12. Semua pihak yang telah memberikan bantuan dan dukungannya dalam penyelesaian skripsi ini, yang tidak dapat saya sebutkan satu per satu.

Penulis menyadari bahwa dalam skripsi ini masih banyak kekurangan dan ketidaksempurnaan, saran dan kritik yang bersifat membangun sangat diharapkan demi perbaikan selanjutnya. Penulis berharap dengan adanya skripsi ini nantinya dapat memberikan manfaa bagi pembaca, khususnya di bidang manufaktur.



Gresik, 20 Febuari 2025

Muhammad Bima Alamsyah
NIM. 210608015

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