

ANALYZING FORCE, DELAMINATION, ROUGHNESS, AND CHIPS OF DRILLED CARBON FIBRE REINFORCED POLYMER (CFRP) COMPOSITE PLATE EXPERIMENT



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In fulfillment the requirement of
**One-year course in Mechanical Engineering Department
Wuxi Institute of Technology**

As part of Undergraduate Study in Mechanical Engineering
Department of Universitas Muhammadiyah Surakarta towards The
Bachelor of Mechanical Engineering Degree

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2019

VALIDATION SHEET

This Final Project Report has been checked, accepted and legalized by supervisor, knowing by Head of Mechanical Engineering Department Wuxi Institute of Technology and Head of Mechanical Engineering Department of Muhammadiyah Surakarta University.

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FOREWORD

My thanks to Allah SWT by His-grace and mercy, so I can accomplish this Graduation Project Report as the time scheduled. This writing was done to complete the undergraduate study in Mechanical Engineering Department of Muhammadiyah Surakarta University. The writer will not be able to finish this paper without support and guidance of some great people. Therefore, in this opportunity I would like to grateful for;

1. Ir. Subroto MT as the head of Mechanical Engineering Department of Muhammadiyah Surakarta University.
2. Mr. Zhang Zheng as Head of Mechanical Eng. Department Wuxi Institute of Technology.
3. Mr. Wijianto, ST., M.Eng., Sc. as my second supervisor and coordinator of the final project.
4. Mr. Tang LiPing and Mr. Qin Feng, Ph.D. as Supervisor of lecturers.
5. My whole family who always support my study and finance.
6. All of my friends who have accompanied me doing this writing.

The writer realizes that this writing may not be perfect, because of my lack of knowledge and ability. Therefore, I would like to get some advice to improve this writing. Finally, I hope this writing will be useful for everyone read it.

Wuxi, Jianguo June 29 2019

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ACKNOWLEDGEMENT

First and foremost, I have to give thanks to my research supervisors, Mr. Wijianto, vice dean and also lecturer in Mechanical Engineering Wuxi Institute of Technology along Dr. Qin Feng and also Mr. Tang LiPing. Without their assistance and dedicated involvement in every step throughout the process, this paper would have never been accomplished. I am really grateful to their support and understanding over this year. My gratitude to Head of Mechanical Engineering Department in Muhammadiyah Surakarta University, Ir. Subroto MT. He was one of inspiring lecture in my journey to become an engineer. His teaching-style and enthusiasm made a strong impression on me and always carry positive memories of his classes. I would also like to grateful for everything while I spend almost a year in China, my international students, Chinese, and also Indonesian friends. Last but not least, my deepest love to my parents and family. Their love strengthens me through each step of my study in China.

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ABSTRACT

Abstract: The attributes of carbon fiber reinforced polymer composite have expanded their utility from aerospace to domestic appliances and new possibilities for their usage emerge almost from time to time. So that it can be used in many possible applications, the laminate needs to be drilled for assembly purposes. Considering their compliance to high temperature process from drilling, various phenomena may occur during this process, e.g. delamination, which affect in both mechanical properties as well as occurrence of manufacturing damage of a treated material. The results compare drilling process in various machining parameters along with the analysis of force, delamination, roughness, and chip produced with expectations to extend the life cycle of these laminates as a consequence of enhanced reliability.

Keywords: carbon fibers reinforced; chips produced by drilling; composite material; delamination; drilling composite structures; drilling force; drilling parameters; drilling temperature; surface roughness