



SDI Review Form 1.6

Journal Name:	Advances in Research
Manuscript Number:	2015_AIR_18480
Title of the Manuscript:	A MODEL FOR CALCULATING THE MACHINING TIME OF A LASER CUTTING MACHINE
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments	<p>Line 89: The calculation is wrong. When pi is 3.14159, the profile length should be 125.66. Hence, re-calculations and revisions are needed in all the mathematical formulas after line 93.</p> <p>Is the content of this article applied only when the HG LCY 300 and the CNC 2000 are used? As a scientific technical paper, general versatile description is desired.</p> <p>Conclusion: The contents of the conclusion are the description of results and discussions about the validation of the model formula. These contents should be stated in the section of "Validation of the model formula." (More detail analysis of the results in Table 2 is also needed.) In the conclusion, author is required to write down a summary of this study in the conclusion.</p>	<p>Pi was taken as 3.142, which resulted to 125.68 for the profile length but it is now taken as 3.14159 as suggested. All results relating to pi have been re-calculated.</p> <p>The LCY 300 laser cutting machine was used to perform experiments which were reported. Other research efforts with broader similar objectives may integrate our results to produce more versatile conclusions</p> <p>Changes have been made to the subsection 'validation of the model formula' as suggested to include the description of results and discussions. Conclusion and recommendations have been re-drafted. Pls provide calculation steps for one complete entry in Table 2. Put this in the main manuscript.</p>
<u>Minor</u> REVISION comments	<p>Introduction: Why the model for calculating the machining time of the laser cutting machine should be developed? Author should explain the direct reason in the introduction.</p> <p>Line 72: Author states "their actual machining times were recorded". In this study, although the measurement accuracy of the actual machining times is important, its measuring procedure is not explained. Need to explain.</p>	<p>The reason why the machining time of the laser machine should be developed has been stated in the introduction.</p> <p>Measurement procedure of the actual machining time has been explained.</p>



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	<p>Line 80: “If a cutting speed is selected to cut a particular profile, using work piece of different thicknesses, the machining time will be the same.” is ambiguous. Need to rework.</p> <p>Table 1, Line 116, 119, 121, 124, Table 2: What “Speed” does it mean? Revolution speed of the stepper motor? Cutting speed? Author should distinguish clearly.</p> <p>Table 2: Selected speeds are different between each profile number. For example, while 50, 100, 150, 200 rev/min are selected in profile No. 1, 60, 80, 120, 200 rev/min are selected in No. 4. Why?</p> <p>Table 2: With speed of 150 rev/min in profile No. 2 and No. 3, difference between actual and calculated machining time is larger than that in any other conditions. Why?</p> <p>Conclusion: ‘Round up’ should be ‘round off’.</p>	<p>A 2 mm and 3 mm mild steel plate can be cut at the same speed of 60 rev/min by changing the beam parameters (current, frequency and pulse width). This has been experimented on the HG LCY 300 laser machine. So, if same speed is selected for different thicknesses, the machining time would be the same for the same profile.</p> <p>The laser beam passes through a fixed nozzle and worktable movement is done by the stepper motors in x and y directions. So, the revolution speed of the stepper motor is the same as the cutting speed.</p> <p>The speeds are selected this way so that all possible cutting speed could be taken into consideration in the model calculation in comparison with the actual cutting speed.</p> <p>As stated in the results discussion, the machine we have displays the cutting time in whole numbers; it is possible that what we actually have is between 9.0 and 9.9 rev/min, and also, 15.0 and 15.9 rev/min in both cases. This has been corrected.</p>
<u>Optional/General</u> comments		