

Reply to the Reviewer 4

I would like to thank you for careful review of the article and highlighting the weaknesses of the work. The article was corrected in accordance with the recommendations of all Reviewers. Some of the comments were overlapping with the other reviews. I tried my best to fulfil all comments as good as possible.

Comments and Suggestions for Authors

1. The abstract of the paper is meaningful. I would suggest shortening the title if the author found it suitable.

The title of the article has been changed

2. The introduction is logic and presents a completed overview of the research domain.

Thank you very much

3. The scientific novelty of the work is highlighted as the new fatigue life estimation model that has a few particular features related to the different angles of critical plane orientation for six aluminum alloys.

Thank you very much

4. Lines 147-153 are not correctly placed. It is better to place them before the problem statement as it is more related to the general information, or at the beginning of section 2.

The lines refer to the description of Table 3, which contains the regression coefficients. These coefficients are used to describe the fatigue life parameters of the analyzed materials. Table 3 completes the description of materials with fatigue life parameters and thus completes the material characteristics.

Therefore, equations 10 and 11 are necessary for the reader to fully understand the contents of Table 3. Their location before Table 3 facilitates the analysis of the data contained in Table 3

5. "the author was a co-executor of the tests." - I would suggest mentioning among the authors all co-authors that took part in this research. This phrase is not suitable for the article.

This sentence was removed from the article.

6. Figure 1a, if the picture of the machine can be found on the internet, there is no necessity to publish it. Moreover, this photo does not bring new data related to the research. I would suggest removing it or replacing it with a principal scheme of the machine.

Figure 1 has been changed.

7. All the equipment should be mentioned with a producer, city, and country of origin.

The machine MZGS100 was designed and produced in Opole University of Technology by dr Achtelik. Suitable information was added to the article.

8. All the formulas should be mentioned with the source of origin.

Most of the formulas used in the paper are well known in theory of mechanics and in my opinion there is no need to use citation here. On the other hand I checked and completed sources of origin for more important formulas and models.

9. The geometry of samples can be combined in one figure.

After the revision only one specimen geometry left in the article.

10. The chemical composition and mechanical properties should be mentioned with the source of origin if these data were not obtained during current research.

All the materials data used in this paper have source of origin indicated in the tables.

11. Lines 241-242, "In the methodology assumed in this book, adopted for the analysis of experimental research results" - this paper is a scientific article to be published or a book?

I was referring to ASTM norm book. The sentence was rewritten to be more clear for the reader.

12. "ASTM," I would suggest reducing the number of acronyms in the paper or avoid them. Moreover, I did find these formulas there.

Thank you, I was thinking about ASTM International (earlier American Society for Testing and Materials)

13. Lines 287-288, it repeats the previously mentioned sentence in section 1.

The sentence has been changed.

14. Lines 279-280, Line 297, it should be supported by references.

The expression (32) is a new relationship, the graphs are also published for the first time.

15. Figure 4, page 9. Is it a result figure of the research, or was it analytically calculated based on literature data?

Parameter B was analytically calculated based on literature data.

16. Eq. 32, "*dla*" - what is it?

It was a mistake and has been corrected.

17. I would suggest placing everything related to known data on methods and materials in Section 2 when everything that was proposed in Section 3 with the results. Section 3 should have as well subsections and be more completed.

Thank you for the suggestion.

I rearranged the discussion section as suggested.

My guess is that the comments 18-26 apply to line 300 not 600.

18. Lines 609-610, it is not a discussion. You should not conduct research to say this phrase.

19. Lines 610-614, it has no relation to the discussion of the results and repeats section 2.

20. Line 617-620, description of the results, there is no discussion.

21. Lines 621-625, there is a description of methods, after a short note on the results, but no discussion.

22. Lines 629-623, there is no discussion, plans for section 2.

23. Lines 662, from this line, the discussion starts.

24. Lines 669-678, there is no discussion, but plans for section 2.

25. Lines 678-686, there is the discussion.

26. Line 696, book?

27. "This is important for the analysis of materials with non-parallel characteristics" - it is a weak conclusion. It can not be just important. I would suggest making conclusions 1) more countable, 2) less oriented on the personality of the author, 3) more meaningful and fundamental. The first conclusions should be related to the developed model, and the second to the practical significance of the work. I would suggest finishing this article with some proposals on how the results of this study can influence the state of the Industry.

Some of the conclusions are reformatted.

28. Fig. 12 need to be revised. 1) All the axis should have titles. 2) I would suggest changing the type of diagram if the author found this suggestion suitable.

Done