Dear reviewer,

thank you for your comments and suggestions for improving our manuscript. Based on your recommendations, we've edited the manuscript as follows:

Dear Author(s), the manuscript 'Dilatation of new progressive hybrid sand and its effect on surface structure, roughness and veining creation within grey cast iron', Manuscript ID: materials-2222792, have some crucial weakness that must be revised suitably.

Please find below some, of the most significant issues:

1. The sentence 'The effect of the composition of a hybrid mixture of silica and artificial sand on reducing dilation and increasing the resistance to surface defects was demonstrated in an experiment. It was found that the use of 50% Cerabeads sand of the same granulometry as the initial silica sand is the key factor, which leads to a reduction in the incidence of veining by up to 52.9% without the use of a protective coating.' Lines 16-20, should be reflected according to the results presented in the manuscript. In the current form, it looks like the proposal from the literature review than the newly applied.

   - - *Abstract has been modified according to suggestion.*

2. I would suggest adding some additional keywords, like surface structure, and surface roughness.

   - *Another keywords have been added as suggested*

3. The (main) aim of the work, mentioned comprehensively in lines 100-111, does not derive from the lack of the current state of knowledge. Straightly, there is a disproportion between the whole 'Introduction' section and the aim of the work.

   - *The aim of the work has been rewritten.*

4. The motivation of the work is not highlighted in the 'Introduction' section as well. All this makes this section, even suitably presented and well-written, weak and the improvement reasonably required.

   - - *The motivation of the work has been rewritten together with previous suggestion.*

5. The novelty should be received from the critical review of the literature, respectively, this second does not exist. From that matter, the identification of the novelty requirement is not obtained from the 'Introduction' section, unfortunately.

   - *The aim, motivation and novelty of the work has been rewritten as suggested.*

6. Section no.2, including three subsections, is presented comprehensively with the methods applied, nevertheless, I suggest adding some, even general, graphs with a presentation of the procedure including all of the experiments tested. Currently, the reader feels lost.

- *Schema of sequence of individual measurements has been added into chapter 2 as Figure 1.*

7. Referencing the sentence '*The roughness of the cast surface was measured on the specimens thus prepared, the roughness values always being read from the centre of the surface.*', lines 218-220, some more words on the '*centre of the surface*' should be provided. Respectively, why the edge-area were not studied? It must be justified.

   - *The roughness was measured if possible in the areas near defects and in the center of the surface. The center of the casting was chosen with regard to the possible presence of impurities in the upper and lower parts of the casting and also because of the possible increased occurrence of baked-on sand near the detected defects.*

   The information has been added into the text – chapter 2.4.

8. According to the sentence '*Thus, 4 values were obtained from each cavity along the core. In case a veining was present in the selected location for measurement, the roughness measurement was performed on the nearest surface next to the veining. Measurements were performed on a VHX-6000 digital optical microscope (Keyence) at 500x magnification.*' lines 220-224, including some response on the surface roughness measurement, the Author(s) must refer to both measurement uncertainty (repeatability) and measurement noise (errors), like:

   (1) https://doi.org/10.1088/2051-672X/3/3/035004

   (2) https://doi.org/10.3390/s22030791

   (3) https://doi.org/10.1016/j.cirp.2014.03.086

   - *On each surface were performed 5 separate measurements. In total 20 separate measurements were done for each cavity (4 surfaces x 5 measurements*. The results *were then averaged. In case of error measurement, the comparative measurement was done. Information has been added into the text of chapter 2.4.*

9. Concerning section 3, for each of the subsections (3.1, 3.2 and 3.3) some, even 2-3 sentences, concluding the main (general) results, for each of the subsections, should be presented at the end of each of those sections parts. Currently, it is difficult to receive one, general result purpose from those subsections separately.

   - *Summaries of individual chapters have been added to the text as suggested.*

10. Some critical discussion in section 4 must be provided, respectively, the Author(s) should divide this section into two separate subsections to highlight both the advantages and disadvantages of the proposals. Currently, it looks like it is a perfect solution. Scientists should always provide some criticism of the work, especially presented by themselves.

    - *Discussion has been improved with references as suggested.*

11. Improve the ‘Conclusions’ section, the Author(s) should add some sentences for future prospects. In the current form, it looks like all of the results are completed. It, probably, is received by the lack of critical review in all of the sections (subsections), especially in the ‘Discussion’ one.

    Moreover, two additional (editorial) modifications are required as well:

    - *Conclusion has been improved with references as suggested.*

12. What is the e-mail address in line 7, respectively, ‘e-mail@e-mail.com’?

    - *Correct e-mails have been added.*

13. Sentences in lines 39, ‘*Veining are most often found…*’, and 41, ‘*Veining are most commonly…*’, should be re-written to avoid the repetition or, respectively, similarity.

    - *The text has been corrected according to suggestion.*

14. The shortcut of the ‘Biała Góra’ (BG27) should be referenced, if exist previously.

    - *The shortcut of the „Biała Góra“ the BG27 is the designation given by the supplier for the Czech market (SAND TEAM). A reference to an earlier study where this shortcut was used (in accordance to supplier´s approval) has been added to the text.*

15. The quality of Figures 2, 3 and 6 should be improved.

    - *The Figures 2, 3 and 6 have been improved.*

16. The ‘References’ should be provided with full DOI links, not only short forms, if exist.

    - *DOI´s have been added where possible.*

    From the above, the reviewed manuscript must be improved significantly before any further processing, if allowed by the Editor.

We hope that you will find our edits to be a step towards improving the submitted paper.

Kind regards

Martina Bašistová