

Review Form 3

Journal Name:	Journal of Engineering Research and Reports
Manuscript Number:	Ms_JERR_130321
Title of the Manuscript:	Investigation of Refining Processes that Improve Liquid Metal Quality in Aluminum Production
Type of the Article	

PART 1: Comments

	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	It is a very nice work with good read that provides the information about the importance of melt cleanliness on the quality of the final product. It is worth publishing. The methods used were nicely selected. Evaluation was solid and the results are justified.	
Is the title of the article suitable? (If not please suggest an alternative title)	Yes	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	In the abstract, authors claim that "the effects of melting and refining processes" was evaluated. However, in the work, it was only refining process that was evaluated. When authors say "effect of melting", then the reader is expected to see a comparison of alternative melting methods such as: gas fired or electrical furnace.	
Is the manuscript scientifically, correct? Please write here.	Yes, the test methods, evaluations were ok and the conclusion is justified with the relevant analysis.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	Yes. Up-to-date and relevant referencing.	

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<p>Is the language/English quality of the article suitable for scholarly communications?</p>		
<p>Optional/General comments</p>	<p>In the second paragraph of introduction: authors indicate that the oxide compound has different density to that of aluminium. Actually, it is not correct. The density of Al₂O₃, MgO·Al₂O₃ or other spinel oxides have very similar density to the liquid aluminium. Therefore, it is not easy for them to settle to the bottom or float to the surface. They remain where they are introduced. Therefore, it is very critical to remove these oxides from the melt. In certain cases, when the aluminium oxide is converted into corundum (which requires more than 10 hours of incubation above 700C, then these type of oxides can sediment to the bottom of the furnace.</p> <p>Last paragraph of introduction. Nitrogen does not react with the flux. Actually, nitrogen bubbles are only physical carriers of oxides to the surface. This phenomena in casthouse applications was perfectly demonstrated by Yorulmaz (https://doi.org/10.1080/13640461.2019.1598684).</p> <p>A final sentence can be added to the end of introduction as to inform the readers what is about to come. A general comment like: in this work, effect of degassing and flux application was evaluated in terms of melt cleanliness. Etc.</p> <p>Materials and Method section should be very short and precise. Very similar to a cooking recipe. Anyone who wants to repeat the same work, should be able to achieve the same results. Thus, a detailed explanation of the methods and use of references in this section must be prohibited. Instead, these detailed explanations can be moved to Results and Discussion section. The materials and method should be simple: alloy, composition, temperature, RPT, flux, flow rate, etc. direct and short explanation of what material was used, what were the conditions, which tests are carried out.</p> <p>What do the authors mean by cleaning time of kg/min? what was the total duration of the cleaning process?</p> <p>Figure 4 should better be a bar chart. When the data is connected with lines, it is assumed that there is a correlation between the data, such that, it feels like the density was increased first, then decreased and stabilized. Actually, these are different melts, different trials. Thus, it should be a bar chart. Same goes for Figure 5 and 6.</p> <p>In section 3.2: microstructure. Is there a correlation between melt quality and grain size? Authors might want to discuss if there is. If not, why? Few discussion could make it valuable to read.</p>	

PART 2:

	<p>Reviewer's comment</p>	<p>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)</p>
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes. Kindly please write down the ethical issues here in details)</i></p>	

Reviewer Details:

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<p>Department, University & Country</p>	<p>Netherlands</p>