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Journal Name:	Physical Science International Journal
Manuscript Number:	2014_PSIJ_12624
Title of the Manuscript:	Dry Sliding Wear Behaviour of Plasma Sprayed Fly Ash Added Red Mud Coatings
Type of the Article	Original Research Article

General guideline for Peer Review process:

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)
Compulsory REVISION comments	<p>This paper is interesting however needs compulsory revision.</p> <p>Line 6: Abstract should contain results of carried out investigations. Details of tests should be deleted.</p> <p>Line 18: "Significant wear resistance being visible with 19 the addition of fly ash due to increase in bond strength and dense film at Interface" – Authors do not provide any evidences for such statement.</p> <p>Line 32: "carbides of ceramic and tungsten" – This formulation is improper</p> <p>Line 60: "The present investigation is an attempt in a direction to evaluate the wear behaviour of varying percentage of fly ash with pure red mud.." – Authors should justify application of fly ash.</p> <p>Line 70: "raw materials as red mud and fly ash powders" – Authors should provide information about phase composition and properties of applied powders and thoroughly justified addition of fly ash.</p> <p>Line 105: Table 2 Operating parameters during coating deposition: "Arc Length Range (mm)" – This parameter should be deleted.</p> <p>Line 126: "The characterization of red mud powder involved taking microstructures by the help of Scanning electron microscope</p>	<ol style="list-style-type: none"> 1. Changed accordingly. 2. Addition of fly ash increases the bond strength up to a mark, which was experimentally verified as a reduction in wear rate. 3. The statement has been removed. 4. Fly ash is a waste generated during iron manufacturing. We are converting this waste to wealth as a coating material. It has many uses e.g. Cement manufacturing. 5. We are sorry to inform that XRD phase analysis has been omitted in this paper and now we are working on it and will present it in another paper. We hope the work up to this



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	<p>(JEOL; JSM-6480 LV). The micro structural images captured by SEM (Scanning electron microscope) and EDS (energy dispersive spectroscopy) analysis of pure red mud powder” – This part should be moved to section 2. Materials and Methods of Experimentations.</p> <p>Line 129: “...were being illustrated in Figure 2.” – EDS analysis of red mud powder do not provide ant valuable information and should be deleted. Is the chemical composition of each grain of powder the same? The quality of Fig. 2 is poor. Size range of red mud powder is 80-100 µm what is not consistent with Fig. 2a.</p> <p>Line 132: “..to be iron with its oxides.” – This conclusion is not consistent with data provided in [15].</p> <p>Line 135: “In addition, the analogous elemental analysis relating Figure-3 was reported in Table.4,” EDS analysis of red mud with</p> <p>20% fly ash coating does not provide ant valuable information. Is the chemical composition of each point of coating the same? Additional picture of investigated coating microstructure with analyzed area must be attached. Additional phase composition is necessary.</p> <p>Line 151: “Image..” to Line 158: “...authors.” - – This part should be moved to section 2. Materials and Methods of Experimentations.</p> <p>Line 161: “...shown in Figure 4.” – The quality of Fig. 2 is very poor and cannot be the base</p>	<p>extent may fulfil the criteria to accept. We expect Arc length range is required for readers.</p> <p>6. The SEM image of red mud and its EDS analysis is our analytical result, so we have included it in results and discussion section. Hope it would make sense.</p> <p>7. The EDS analysis of Red Mud represents the elemental composition. We hope it is quite important to include it in the manuscript. The composition is same throughout the grain powder.</p> <p>8. Red Mud comprises mainly iron and in iron oxide form concluded from its EDS analysis.</p> <p>9. The EDS analysis of red mud and 20 % fly ash is taken considering the whole coating area. XRD analysis is omitted.</p> <p>10. Moving Line 151 to line 158 to</p>
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	<p>to draw any measurements and Conclusions. Figures with higher magnification of red mud and composite coatings microstructure should attach and analyzed.</p> <p>Line 168: "Approximately 8-13% porosity range...." Figures of coatings microstructures and standard deviation of porosity measurements should be attached.</p> <p>Line 168: "(Table-3)" - Should be "(Table-5)"</p> <p>Line 181: "The polished.." to Line 185: "...all samples." - - This part should be moved to section 2. Materials and Methods of Experimentations.</p> <p>Line 182: "different phases namely dull, white and spotted." This phases and theirs phase composition should be shown in separate Pictures.</p> <p>Line 185: " The three structurally different phases of red mud coatings bear three different ranges of hardness values varying From 488 to 588 HV." - Please, attach more details about methodology of hardness measurements in separate phases: dull, white and spotted and number of measurements? Standard deviations of hardness measurements should be attached.</p> <p>Line 187: "Hardness values were found to be enhanced for the composite coatings belonging mixture of red mud and fly ash." - What was the thickness of coatings? In which part of coatings the measurements of hardness were carried out?</p>	<p>materials and methods section will not be appropriate.</p> <p>11. The figure-4 represents the FESEM image of coating Cross section of pure red mud at 9 kW. The figure contrast has been changed for better visibility to the readers.</p> <p>12. We don't think so.</p> <p>13. Wear test of coating samples has completed and no more specimens are there for showing the phases again.</p> <p>14. We appreciate for reviewers comment for this point, but it is not possible now.</p> <p>15. The coating hardness is taken on the coating cross section. 5 readings are taken and the value is averaged.</p>
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	<p>Line 194: "3.4 Wear test study " - Discussion in this section should be related to phase composition of tested coatings too. Line 194: "Prior to .." to Line 218: "...time interval." - This part should be moved to section 2. Materials and Methods of Experimentations. Line 220: "Figure 5 illustrates the variation of wear rates..." In many cases of tests obtained results are very close. How many samples were tested at one set of parameters? Standard deviations of wear measurements should be attached. Line 226: "The plateau in wear rate value may be attributed due to the variation of coating layer property." - Authors do not provide any evidences for such statement. Line 227: "This is one fact indicating the more hardness of denser surface of top layer than that of bulk layer." - Authors do not provide any evidences for such statement. Line 228: The change of coating property just after 6 minutes of sliding may be due to the coating property variations bearing less hardness of bulk layer."- Authors do not provide any evidences for such statement. Line 238: "The wear rate is resulted attributing to the porosity and hardness." - Authors do not provide any evidences for such statement. Line 241: "This might be due to the improper particle to particle bonding and poor stacking to the substrate, which in turn lowered the hardness as well as density due to poor interfacial bond strength." - Authors do not provide any evidences for such</p>	<p>16. We omitted the phase compositional analysis.</p> <p>17. The evidence of all statements is from our experimental observations only. Hope it makes sense.</p> <p>18. Thank you for reviewing our manuscript and putting effort and time for this paper. We are obliged to the respected reviewer.</p>
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	<p>statement.</p> <p>Line 243: "Figure 7 shows" – Standard deviation should be added.</p> <p>Line 251: "..the variation of frictional forces.." – The variation of friction coefficient would be more interesting. Standard deviation should be added.</p> <p>Line 260: "with 10% fly ash" – What about the other coatings?</p> <p>Line 266: "Figure 10 represents" - The quality of Fig. 10 is poor and should be replaced by higher magnification. Is really the roughness of surface of polished coating below 0.1 μm (Line 197)?</p> <p>Line 269: "pitting and eventually crack formation." Please, show these phenomena at higher magnification of Fig. 10.</p> <p>Line 270: "Wear scars, debris formed and cracked sections..." - Please, show these phenomena at higher magnification of Fig. 10.</p> <p>Line 272: "Figure 11 shows" - The quality of Fig. 11 is poor and should be replaced by higher magnification. Is really the roughness of surface of polished coating below 0.1 μm (Line 197)?</p> <p>Line 276: "the variation of hardness of coating inter-layers" - Authors do not provide any evidences for such statement.</p> <p>Line 281: "..Adhesion and abrasive mechanism ..." - Please, show these phenomena at higher magnification of Fig. 11.</p> <p>Line 282: "After the "break in" phase..." - This formulation is little light.</p> <p>Line 334: "4. Conclusions" – Conclusions</p>	
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	<p>should contain the most important results of carried out experiments. Line 336: "... eminently coat ..." - Authors do not provide any evidences for such conclusion. Line 337: "...excellent wear resistance." - Authors do not provide any evidences for such conclusion. Line 337: "...coating mechanism.." - This formulation is little light. Line 344: "...optimum value ..." - This formulation is little light. Line 346: "Thermal stability...." to the end. This part should be removed.</p>	
<u>Minor</u> REVISION comments	If there have competing interest issues please clarify.	No competing issue for publishing this paper.
<u>Optional/General</u> comments		