

Journal: Water

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Manuscript Title: **Experimental study on surface erosion of Grade-A marine steel 2 by ultra-high pressure water jet**

Manuscript ID: water-1740682

I have gone through the manuscript. It is quite interesting, but few clarifications and improvements are to be incorporated to enhance the quality of the paper.

1. Refer Line Number: 19-20

Please change the statement: “The simulation results are in good agreement with the 19 simulation results.”

2. The manuscript will be more interesting if the authors include a figure to describe the high speed water jets depicting the regions close to the nozzle, water mist zone, and diffused droplet region etc.

3. Characteristics of ultra-high pressure water jet is repeated twice in the abstract: 200 MPa, 40L/min

4. <http://hdl.handle.net/10210/425958>, this paper proved that the jet pressure is the factor that has the greatest impact on the surface quality, and the material surface quality is the best when the pressure is 350 MPa.

Why did you choose the characteristics of water jet as: 200 MPa, 40L/min?

Please mention if there is some literature/industrial basis.

5. Could you able to forecast the influence of nozzle diameter on the surface erosion due to high-pressure water jet technology?

6. How did you investigate the changes in properties of surface layers due to high-pressure water jet technology?

7. Explain the influence of the angle of impingement, water jet velocity, standoff distance, and erodent discharge on the surface erosion rate high-pressure water jet technology.

8. Elaborate the physics behind the microhardness, propagation of microcracks and fractures in the material caused by high-pressure water jet.

9. Please cite this article: <https://doi.org/10.3390/coatings12040482> as it investigates the water jet erosion performance.

10. In Figure 11 authors depicted the SEM images of sample surface impacted by jet at 200MPa pressure when the impact time is 40 s and 50 s respectively.

Could you trace the cavitation erosion pit and intergranular crack when the impact time is 50 seconds?

11. The manuscript did not explain the governing equations and solution methodology: this is very important as a multiphase model has to be chosen to account air-water phases involved due to the high-speed water jets.

What modification should be done in the governing equations to simulate the air entrainment process in the high-speed water jets?
