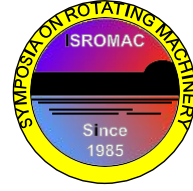


A Experimental Research On The Anti-erosion Material For Hydraulic Machinery

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Long Abstract

Introduction

Hydraulic machinery used in many fields was badly eroded, but it was found that not enough has been done on the erosion mechanism and the anti-erosion material. The problem of erosion in hydraulic machinery lead to the blades wear seriously and make the efficiency fallen. As a result, it shortens the repair cycle and increases the operating costs. Hence, it has a very important significance to society and economy through the technology to avoid and weaken the erosion of the hydraulic machinery. In this paper, a testbed for the influence of rotating spray on material erosion was built , according to problem of hydraulic machinery. The testbed is mainly used to investigate the erosion mechanisms of hydraulic machinery and the influence factors of erosion.

1.Methods

Furthermore, four kinds of material have been tested with difference dynamics parameters. Surface morphology can be observed using the SEM(scanning electron microscope), and the weight loss can be measured by electronic scale. Finally, some reference results are obtained from this test. Firstly, the area of the erosion mainly arises in the rear of the cavitation holes. Wear scar starts from cavitation holes while it follows the flow direction from deep to shallow. Interactive wear includes micro cutting furrow and honeycomb etch pits but the failure behavior of material is determined by the elastic-plastic deformation degree. Secondly, the erosion resistance properties of the material have been obtained in the similar test conditions. Thirdly, the interaction between cavitation and wear is the biggest when the incidence angle is 32 degrees so that cavitation and wear could damage the materials surface. Hence, the erosion damage of material reaches the maximum.



Figure 1. Testbed Of Erosion

Subsequently, some tasks will be conducted in the future about the erosion. On the one

hand, to study the influences of the sand particle size on the erosion, according to the weight loss of material, LSCM (laser scanning confocal microscope) and SEM surface morphology analyze, the single variable will be set and the four kinds of material will be tested in the conditions of cavitation and different sand particle size. On the other hand, to study the effects of the four kinds coating at the same material, the materials microstructure which has been changed after heating treatment will be researched using the Metallographic Analysis. Meanwhile, the material surface coating was observed by SEM, and the best coating of erosion resistance in the test was obtained directly according to weight loss of the material. [1][2]

References

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