

**PEMANFAATAN DEBU SISA PEMBAKARAN BATU BARA (*FLY ASH*)  
SEBAGAI CETAKAN PADA PENGECORAN Al-Si DENGAN VARIASI  
KOMPOSISI BAHAN CETAKAN TERHADAP UJI KEKERASAN DAN  
*BENDING* (*The Utilization Of Coal Combustion Residual Dust (Fly Ash) As  
Mold In Al-Si Casting With Variation Of Moldings Composition On Hardness  
Test And Bending*)**

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**ABSTRACT**

The coal fly ash and Lapindo mud are wastes that can cause water pollution, air pollution and soil pollution. Therefore the solution is needed so that the pollution caused can be minimized. In this research, fly ash and Lapindo mud are used as mold materials in metal casting in terms of the results of the compressive strength test of the mold. Variations in the composition of the mold used consisted of composition 1 (80,7% fly ash, 12,6% Lapindo mud and 11,4% water), composition 2 (73,61% fly ash, 17,5% Lapindo mud and 14,2% water), composition 3 (66,4% fly ash, 22,4% Lapindo mud and 17,1% water). Fly ash, Lapindo mud and mixed water were then tested for compressive strength as an indicator in this research. The results of the mold compressive strength test were: the average value of composition 1 was 52,27 kN/m<sup>2</sup>, composition 2 was 115,7 kN/m<sup>2</sup>, and composition 3 was 132 kN/m<sup>2</sup>. The results of the hardness test of Al-Si castings specimens in composition 1 the average value was 25,8 HRA, composition 2 was 16,4 HRA, and composition 3 was 30,9 HRA. The results of the bending test of Al-Si castings specimens in composition 1 had an average value of 273,75 MPa, composition 2 was 320,625 MPa, and composition 3 was 258,75 MPa. So it can be concluded that for each variation of the composition of the mold, there were differences in test values. In the specimen tested results from the castings of the composition of the 2nd mold, the specimens of the castings were ductile, while the specimens in the compositions of the molds 1 and 3 were brittle.

*Keywords* : *Sand Casting, Fly Ash, Lapindo Mud, Water, Al-Si Alloys, Variations in Mold Composition, Hardness Rockwell A, Bending Test, Sand Compressive Strength*