

## **An ANOVA Approach for the Process Parameters Optimization of Al-Si Alloy Sand Casting**

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**Abstract :** This research paper aims to propose a novel approach using ANOVA technique for the strategic investigation of process parameters and their effects on the mechanical properties of Aluminium alloy cast. The two process parameters considered here were permeability of sand and pouring temperature of aluminium alloy. ANOVA has been employed for the first time to determine the effects of these selected parameters on the impact strength of alloy. The experimental results show that this proposed technique has great potential for analyzing sand casting process. Using this approach we have determined the treatment mean square, response mean square and mean square of error as 8.54, 8.255 and 0.435 respectively. The research concluded that at the 5% level of significance, permeability of sand is the more significant parameter influencing the impact strength of cast alloy.

**Keywords :** aluminium alloy, pouring temperature, permeability of sand, impact strength, ANOVA

**Conference Title :** ICMAME 2015 : International Conference on Materials, Automotive and Mechanical Engineering

**Conference Location :** London, United Kingdom

**Conference Dates :** January 19-20, 2015