OPTIMISATION OF SAND CASTING PROCESS FOR IMPELLER USING TAGUCHI METHODOLOGY

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Abstract:
This paper presents the study to investigate the effects of binder ratio, in-gate length and pouring height on hardness, surface roughness and casting defects of sand casting process. Taguchi methodology with $L_9$ orthogonal array was employed to design the experimentation. Sand casting of six blade impeller using A356 alloy was performed and empirical models for all the above response measures were formulated. Confirmatory tests and analysis of variance results confirmed the accuracy of the model. Binder ratio was found to be the most significant parameter affecting casting surface defects and surface roughness. This was followed by pouring height and in-gate length.

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