

Improved Direct Pour System for Casting of Ductile Iron and Aluminum

An improved direct pour gating system with floating ceramic foam filter has been developed for aluminum and ductile iron casting. This project investigated the design parameters of the system, filter material requirements, filter flow rate, filter plugging behavior, and the system effectiveness to remove the inclusions. Trapped nonmetallic inclusions have been identified by the Scanning Electron Microscope (SEM) analysis.

Uses of new filtration systems will improve the mechanical properties and quality of castings because it removes non-metallic inclusions thus producing clean, inclusion-free ferrous and non-ferrous castings. As a result of improved surface quality, machining allowances can be reduced and, as machinability is improved, tool life will be increased. This gating system could be incorporated into a wide range of casting processes including conventional green sand molds, no-bake molds, and permanent molds and can be used without an insert sleeve.

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