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## **Process optimization of water chamber based on numerical simulation**

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### **ABSTRACT**

In order to prevent the formation of inclusion and pores in the water-chamber casting, numerical simulation was used to determine an optimized casting process based on the characteristics of the water chamber. The structure of the water chamber was first analyzed and found to have complex structures with a large difference in wall thickness. The optimized casting process was designed after careful inspection of the defects within the original casting. A new gating system with incorporation of insulating risers, graphite chills, and ceramic filters was then used in the new casting process. The simulated results show no defect was produced using the new gating system, and the result is confirmed by ultrasonic inspection on the casting.

**KEYWORDS:** water chamber, structural analysis, defect analysis, numerical simulation