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## CAST IRON CASTING SIMULATION: LIVE

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### ABSTRACT

For Casting process widely spread use of casting simulation in industry, the software programs have to be easy-to-use, Development Lead time reducing, economical, reliable. This has been made possible by combining mothering, solid modeling (of risers and gating), simulation, and optimization in program called MAGMA Software. The solidification computation engine is based on a hybrid technique combining Vector Element Method and Finite Difference Method, enabling accurate prediction of shrinkage porosity for even complex castings in a few minutes. By incorporating algorithms for intelligent design of feeders and gating, and their automated solid modeling, the learning curve for the software has been reduced to a few hours. It has been used for live troubleshooting and optimization of hundreds of castings in the presence of method engineers. The user-friendliness of the software also facilitates improve the casting design for ease of manufacture, leading to significant reduction in defects, costs, and lead-time. In this paper casting of MWHAK 4 Cylinder Block is analyzed and studied to solve the problem of lower casting yield due to over designed gating system components. To overcome this problem gating system is redesigned based on gating rules, gating design procedure, theoretical knowledge, casting simulation and practical considerations. The various gating systems are designed for the casting and 3D CAD models of this designs are made and simulated using casting simulation program MAGMA flow plus. After analyzing the simulation results, if desired results are not obtained, then the changes are made in the design and 3D CAD model and simulated again, the procedure is repeated until the desired results are obtained so as it will give the sound quality casting with the higher casting yield, profit and productivity.