



Case Study

Fabrication to Casting

Need

A customer in the Material Handling market wanted to replace a 4-piece steel fabrication with a ductile iron casting. The new design needed to be weight-neutral to the current fabrication to maintain proper weight distribution. Additionally, the casting needed to perform as well as the fabrication when subjected to stresses via FEA simulation. Finally, the new design had to provide piece-price cost savings with minimal tooling investment.

Actions

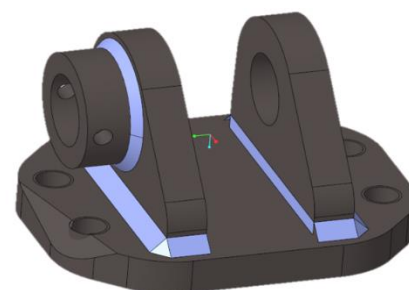
Through collaboration with the customer, a 65-45-12 ductile iron casting design was developed using DFM principles to ensure compliance with green sand molding principles. This included the elimination of a core in order to minimize tooling costs as well as piece price.

FEA was also performed to ensure the D65 casting would meet the customer's design requirements.

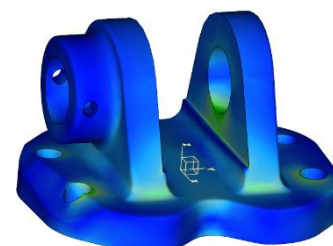
Additionally, casting simulations were conducted utilizing Magma software to ensure high casting quality.

Results

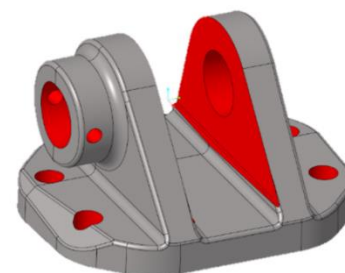
- 20% reduction in cost compared to the steel fabrication
- No-core design
- Weight-neutral to fabrication



Weldment



FEA result



Machined Casting