

Pulley

Ductile Iron, Green Sand Casting

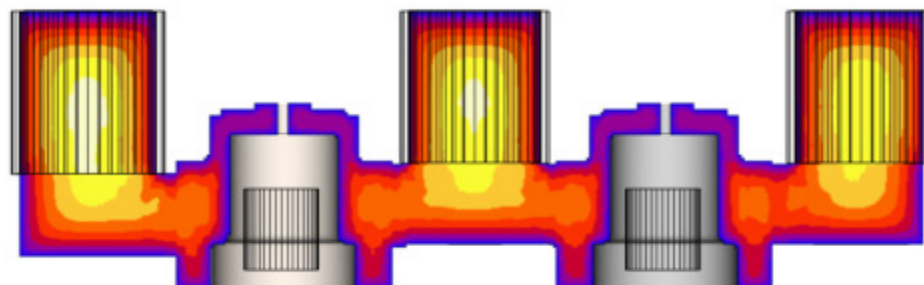
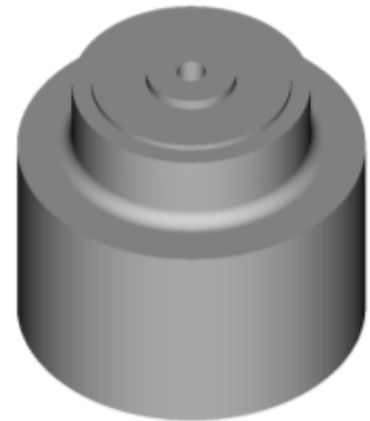
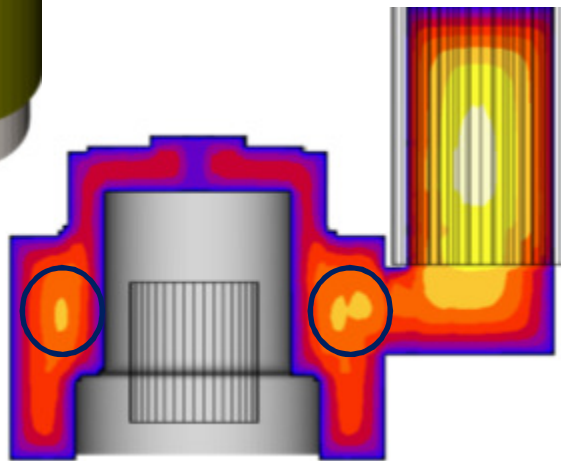
The ductile iron pulley casting of overall size 250 mm x 250 mm x 180 mm weighing 35 kg is produced in a ferrous foundry. After fettling and machining the circumferential face, it exhibited a small shrinkage cavity just beside the riser.



Thickness contour analysis of the part shows a thick region all around, equivalent to an inscribed sphere diameter of 60 mm.

The current methoding of the casting included a cylindrical feeder of 90 mm diameter and 200 mm height with a insulating sleeve of 10 mm. A round chill of 80 mm diameter was also inserted inside the sand core.

Solidification analysis of the casting indicates isolated hotspot due to undersized neck, which freezes early and prevents feeding. The hot spot exactly matches the defect observed in the actual casting.



The methods design was modified by connecting two castings to 3 feeders as shown, and with increased neck size, allowing directional solidification. The solidification analysis indicates a defect-free casting.