

Turbine Housing

Cast Iron, Green Sand Casting

This CI turbine housing casting of overall size 170 mm x 150 mm x 100 mm weighing 3.2 kg was in production in a leading foundry, but suffered from frequent rejections due to internal porosity.

Wall thickness analysis shows a heavy section with 26 mm thickness (inscribed sphere diameter).

Side feeder used in the foundry (35 mm bottom diameter, 60 mm height) is correctly connected to the thickest section in casting.

Solidification simulation shows feeder is slightly undersize. There is a clear isolated hot spot inside casting, matching with the shrinkage porosity found in actual casting. This is primarily due to the Y-junction in the casting design.

An insulating sleeve of thickness 8-10 mm, along with a chill (25 mm cube) below the defect zone, eliminates the hot spot and improves feeding.