BRAHMA3

HIGH-PRECISION CASTING & MACHINING

Near-net investment castings in stainless steel and high-nickel alloys, with advanced machining to finish

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How we turned a forged impeller into a near-net casting

A case story of indigenisation & cost engineering in converting a complex forged 15-5PH stainless steel impeller to investment casting, with as-cast vanes

The Problem

A complex high-speed impeller designed as a forging, with most of its cost in machining.

The Challenge

Casting large back-swept vanes in 15-5PH stainless steel to their final shape, so they need no machining, while holding the precision of the forged design.

Our Approach

We moved beyond the forged route, engineering a near-net investment casting through CAD and analysis.

Our Work

We delivered the complete route: a casting engineered for the part, tooling tuned for repeatable geometry, vanes finished by surface treatment alone, and a scan-based inspection standard for every unit.

Our Process

We re-engineered the forged design for casting, deciding where metal belongs and where it does not. Full 3D scanning of the first castings against the design intent turned every deviation into a measured correction, carried back into tooling until the as-cast vanes and the model agreed.

The Result

The vanes now come out of the mould in their final form, as cast, needing only surface finishing. The part has an efficient domestic manufacturing route, built for repeatable production.

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From forging to near-net casting

Shape is created in the mould, so the vanes come out as cast and need no machining.

Design for casting

Forged and machined-from-solid designs re-engineered for investment casting, with metal only where the part needs it.

Digital inspection

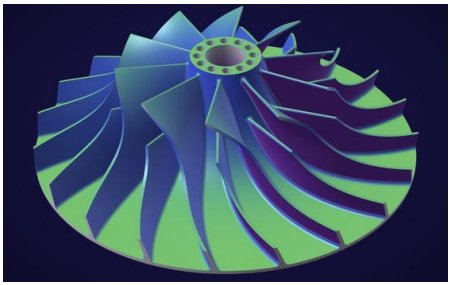
3D scanning against the design intent, so every casting is measured, not judged by eye.

Tooling and process control

Tooling and process tuned for repeatable geometry, from first article to volume production.

As-cast vanes

Vanes leave the mould in their final form and need only surface finishing.



Draft analysis of the casting design

As-cast vanes, finished and packed for dispatch

Reach out!

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info@brahma3.com

www.brahma3.com

+91 88610 64660 | +91 98867 25215