



MANUFACTURING CAPABILITY

Sand Casting

A flexible casting route for larger, heavier and core-intensive industrial components with CNC finishing and inspection support

WHAT THIS PDF COVERS

Large / heavy cast components

Core-intensive internal passages

Broad alloy options

Casting + CNC machining

01 / PROCESS FIT

When sand casting is a practical choice

Sand casting is commonly considered for larger castings, complex internal passages and projects that need a practical balance between tooling, volume and finished-part requirements.

PROCESS FIT

Useful when part size, geometry, material flexibility and tooling economics matter...

- Large or heavy cast components
- Core-intensive internal geometry
- Prototype to repeat production volumes
- Casting plus CNC finished components

01**Large Components**

Suitable for many larger and heavier cast components.

02**Flexible Shapes**

Supports broad geometry and internal passages through suitable cores.

03**Broad Alloys**

Ferrous and selected non-ferrous alloys can be reviewed by project.

04**Practical Volumes**

Flexible for prototypes, lower volume and repeat industrial production.

BUYER DECISION POINTS

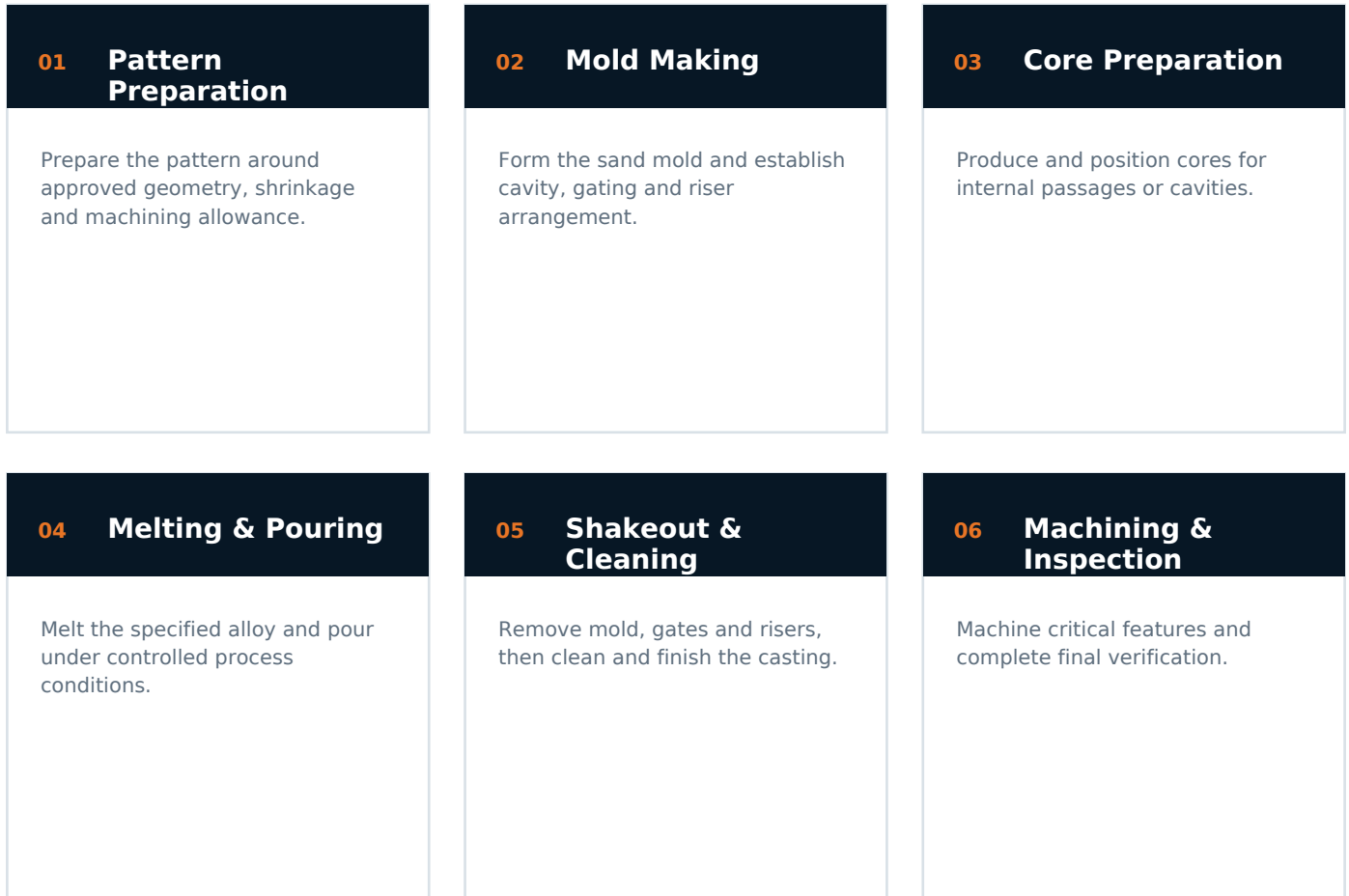
What should be clear before process selection

- Overall size, wall sections and casting weight
- Specified alloy and mechanical requirements
- Parting, draft, cores and internal passages
- Machining allowance on critical surfaces
- Prototype, low-volume or repeat production

02 / PROCESS FLOW

From pattern to finished component

The casting route is planned around geometry, material, cores, machining allowances and final inspection requirements.

**BEFORE WE START**

Drawing review connects the process to the finished part.

Define casting weight, core strategy, machining datums, allowance and required testing before pattern and process planning.

03 / MATERIALS & ENGINEERING

Sand casting materials for industrial components

The final material should follow the drawing, performance requirements, casting conditions and application environment.

Gray & Ductile Iron

Common for housings, machinery and structural cast components.

Carbon & Alloy Steels

Used where strength, toughness and demanding service matter.

Stainless Steels

Corrosion-resistant cast components for selected applications.

Aluminum Alloys

Lower-density components where weight matters.

Copper Alloys

Selected conductivity, corrosion or alloy-specific applications.

Specified Grades

Other standards can be reviewed from the project drawing.

ENGINEERING REVIEW

What we review before pattern and molding

Requirement	What We Review	Manufacturing Impact
Part Size	Overall dimensions, wall sections and casting weight	Influences pattern, mold, handling and pouring requirements.
Material	Specified alloy and required mechanical properties	Determines melting, pouring and process controls.
Geometry	Parting lines, internal passages, wall sections and draft	Influences pattern, core and mold design.
Allowance	Critical finished dimensions, datums and machined surfaces	Defines stock allowance and CNC operations.
Volume	Prototype, low-volume or repeat production	Influences tooling and production planning.

04 / REPRESENTATIVE COMPONENTS

Representative sand-cast component geometry

Larger housings, structural castings and core-intensive parts are common candidates for sand casting.



01

Pump casing / volute housing

Representative geometry. Final manufacturing route is confirmed from drawing, alloy and quantity.



02

Pump & valve housing

Representative geometry. Final manufacturing route is confirmed from drawing, alloy and quantity.



03

Round machinery housing

Representative geometry. Final manufacturing route is confirmed from drawing, alloy and quantity.



04

Structural link housing

Representative geometry. Final manufacturing route is confirmed from drawing, alloy and quantity.



05

Exhaust manifold / pipe casting

Representative geometry. Final manufacturing route is confirmed from drawing, alloy and quantity.



06

Heavy structural bracket

Representative geometry. Final manufacturing route is confirmed from drawing, alloy and quantity.

INTEGRATED MANUFACTURING

Sand cast blanks can be combined with CNC machining, heat treatment, surface finishing and inspection to deliver a finished OEM component.

05 / QUALITY CONTROL

Inspection is integrated into the manufacturing route

Quality checkpoints should be matched to casting condition, critical machined features and any functional testing requirements.



QUALITY CHECKPOINTS

01 Drawing Review

Identify critical dimensions, material, cores and machined interfaces.

02 Casting Control

Plan molding, pouring, cleaning and visual checkpoints.

03 Machining Control

Verify bores, flange faces, holes and datums after CNC machining.

INSPECTION & DOCUMENTATION

Casting inspection and finished-part verification work

- Casting dimension and visual condition checks
- Material verification when specified
- Critical machined interface inspection
- Surface roughness measurement on specified features
- Air-tightness or leakage testing where required

06 / PROJECT PROOF

Cast Iron Metering Pump Housing

Sand casting combined with precision machining and air-tightness testing. A key challenge is a deep phi 19H7 bore with 230 mm depth and Ra 0.4 surface finish.



NEXT STEP

Send your drawing for manufacturing review

Send the drawing, CAD model, sample or technical requirements so casting route, machining scope and inspection requirements can be reviewed together.

01 2D drawing or 3D model

02 Material grade / alloy

03 Estimated quantity / annual demand

04 Critical dimensions and tolerances

05 Surface, heat treatment or coating requirements

06 Inspection / documentation requirements

DOWNLOAD + REVIEW + RFQ

Use this capability PDF together with your drawing when discussing a new project.

www.thcastings.com