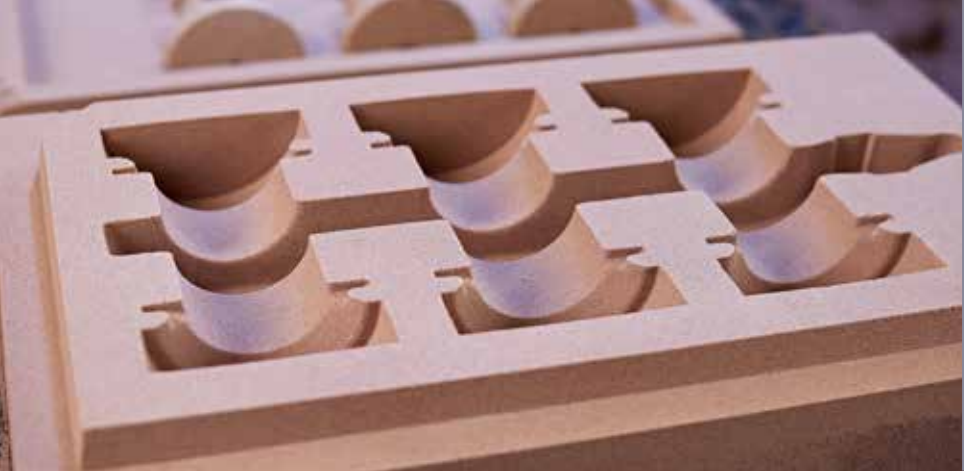




**A Single
Source Solution
for Precision Cast
and Machined
Components**





Experts in Sand, Die and Investment Casting

NovaCast provides precision cast and machined components across a wide spectrum of markets. These include Oil & Gas, Petrochemicals, Transportation and Architectural Metalwork. We have particular expertise in the production of pressure-tight valve and industrial pump components, complex non-ferrous castings, safety-critical components for harsh environments and a wide range of precision castings for many engineering applications.

Metals cast include alloys of Carbon and Stainless Steel, Copper, Aluminium, Iron and many others. You can find detailed alloy specification sheets on our [website](#). We also have a full range of testing, machining, surface treatment and finishing options available.



Where tradition meets technology

NovaCast combines high levels of hands-on technical expertise in sand casting, investment casting and gravity die casting of both ferrous and non-ferrous alloys with an approachable, customer-focused attitude. We help our customers achieve their metal casting and machining objectives by advising on technical issues, casting processes, metallurgy and supply chain optimisation.

The business is built around a core of time-served and highly skilled craftsmen with decades of foundry experience. The management team has added to this expertise by constantly investing in the latest technology such as casting simulation and 3D modelling software as well as state-of-the-art quality control and measuring equipment. When combined with rapid prototyping using 3D printing technology, costs are tightly controlled and lead times are shorter than ever before.





An international supply chain

NovaCast is a business with a global outlook. With customers across the UK, in the USA, Canada, the Middle East and throughout the EU, we recognised many years ago that to compete globally and to be able to offer our customers the best quality at the lowest prices we needed to set up relationships with foundries in the Far East. Doing this allowed us to offer highly competitive solutions across a much wider range of casting processes and alloys.

Today, NovaCast thrives in highly competitive markets, such as cast stainless steel, where we are now able to provide outstanding quality and long production runs. Our customers take advantage of lower production costs in the Far East while having the peace of mind that dealing with a trusted UK foundry provides.

Our fully risk-managed supply chain encompasses some of the best foundry and machining facilities in the Far East. The total supply chain is controlled from the UK and all castings pass through our ISO9001:2008 accredited UK foundry for quality assurance and testing.



Markets

Offshore/Onshore Energy (Oil & Gas, Petro-Chem, Nuclear, Shipping/Marine): Harsh environment and safety-critical castings ranging from safety relief valves and explosion-proof enclosures to fracking pumps and safety couplings in Bronze and Aluminium.

Transport: Safety-critical cast components for rail applications including cast braking and signalling system components as well as a wide variety of compressor and valve parts. Many castings are subjected to pressure and mechanical testing as well as NTD to ensure their integrity.

Valve & Pump Components: NovaCast is a specialist in the casting and machining of pump and valve components used in Offshore Oil & Gas, Petrochemicals, Automotive, Solids Handling, Agriculture, Railway, Marine, Nuclear and Commercial Heating. A particular specialism is in the investment casting, machining and balancing of Carbon and Stainless Steel impellers.



Markets

Agricultural Machinery: NovaCast specialises in converting complex fabrications and assemblies to single cast components. These are cheaper to produce, provide enhanced performance and are more aesthetically pleasing. NovaCast also provides slurry pump components, pulleys and many other cast parts into this market.

General Engineering: Contact us for advice and guidance on anything from foundry casting, component design and metallurgy to testing, machining and finishing options. On projects ranging from complex one-off castings to production requirements running into many thousands.

Architectural Castings: Expertise and craftsmanship, built up over many years, allows NovaCast to work closely with architects, designers, artists and sculptors to create a wide variety of creative and architectural castings.

Sand Casting

The production of complex, mainly non-ferrous sand castings is the core business of our UK Foundry. It is the simplest production method but has many advantages, particularly for short-run or complex castings with multiple cores or for larger castings. NovaCast is able to produce sand moulds by hand using Greensand for smaller quantities and Resin or Petro Bonded techniques using a semi-automated process for larger quantities. Up to 70% of sand used in the process is reclaimed and re-used so meeting our environmental objectives.



Sand casting benefits include:

- 1 Low tooling costs and fast set-up compared to investment or die casting.
- 2 Large casting sizes possible. NovaCast is able to cast Aluminium alloys up to 110kg and ferrous alloys up to 3000kg using sand casting methods.
- 3 Complex and intricate castings can be achieved with multiple internal cores.
- 4 It is possible to achieve low gas porosity for pressure tight castings.
- 5 Up to 70% of the sand used in the process is reclaimed.
- 6 Very versatile; many different kinds of metal alloy can be cast using this process.
- 7 Sand casting is best suited to low volume or complex non-ferrous castings or large ferrous castings.

Gravity Die Casting

NovaCast specialises in producing high quality Gravity Die Castings at its Melksham foundry. The facility is ideally suited to producing medium-run components from Aluminium and other non-ferrous alloys for applications across a wide range of industries. Gravity Die Casting is a permanent mould casting process that produces very high quality surface finishes with thin walls and cast-in inserts so intricate shapes can be cast rapidly and little subsequent machining is required.

Gravity die casting benefits include:

- 1 Excellent dimensional accuracy
- 2 Smooth cast surfaces
- 3 Thinner walls can be cast allowing intricate shapes
- 4 Inserts, such as threads, heating elements and high-strength surfaces can be cast-in
- 5 Secondary machining is reduced or eliminated
- 6 Production rates can be rapid making longer production runs possible
- 7 Tensile strength is higher than with sand casting



Investment Casting

NovaCast has built a reputation for manufacturing high quality, investment cast components, primarily in carbon and stainless steel. Castings include pressure tight valve and pump bodies, machined and balanced impellers and many other highly specified products. The investment casting process delivers high integrity castings that are dimensionally accurate, very versatile and have low repeat run costs. NovaCast has worked with several manufacturers to replace expensive fabrications with high quality investment cast components which are more cost effective, stronger and more aesthetically pleasing.

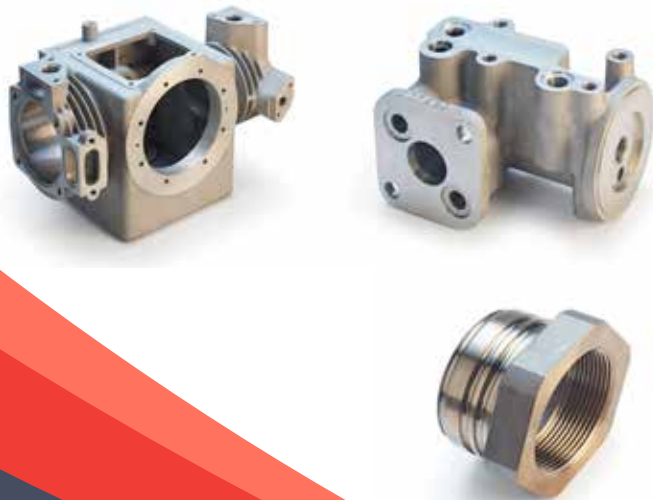
Investment casting benefits include:

- 1 Great versatility; suitable for casting most metals
- 2 Allows very intricate castings to be produced
- 3 Smooth surface finishes are possible with no seam line so machining and finishing are reduced or eliminated
- 4 Allows un-machinable parts to be cast accurately instead
- 5 Excellent dimensional accuracy
- 6 High volume production can be achieved with low repeat costs
- 7 Can be used to prototype and prove designs prior to die casting tooling investment
- 8 Is ideally suited to smaller, intricate or complex designs although we can cast up to 250kg



Precision Machining

NovaCast can provide castings raw, with proof-machining or full precision machining as required, in both its UK machine shops or those operated by partner foundries in the Far East. Quality assurance and testing is provided in the UK. Options include turning, milling, grinding and drilling with final inspection once machining operations are complete and all machining is carried out in ISO9001:2008 accredited machine shops.



Metal Finishing and Surface Treatments

NovaCast routinely provides a wide range of metal finishing and surface treatments to its cast products in order to enhance their mechanical or aesthetic properties and to protect the metal's surface. All cast components undergo a fettling process which removes risers and excess material before the surface is further enhanced through finishing and shot-blasting or peening, as appropriate, to improve flatness and appearance.

We can then provide any form of surface treatment required including plating and sulphuric or chromic anodising, for enhanced durability and corrosion resistance. Alocrom, which is a chromate conversion coating, can be used where a less durable surface finish is required.

Castings can also be subjected to various heat treatment techniques that can be used to harden them, change the properties of the alloy or remove internal stresses. NovaCast is able to advise on the options and deliver castings that are optimised for their operating environment.

Castings can be finished according to customer specification, with wet painting and powder coating being the most common. The choice depending on whether aesthetics or durability and resistance to abrasion is the primary objective.



Quality shines through

It is no coincidence that NovaCast has a reputation for providing consistently high quality machined and finished castings. Quality assurance and testing is as much a core capability as metallurgy and casting expertise.

Commitment to Quality

Consistently delivering precisely what our customers need in terms of specification, integrity and resilience is made possible by the commitment of NovaCast's management to invest in essential skills and the latest technology. Whether manufacturing takes place in our UK foundry or in partner foundries in the Far East, NovaCast takes full responsibility for quality checks, testing and approval to ISO9001:2008 standards prior to delivery to our customer.



Testing Options

Dimensional Accuracy: Carried out using Mitutoyo and Faro Coordinate Measuring Machines (CMM) installed within a heat-controlled inspection facility in Melksham, Wiltshire. All castings are soaked for at least 24 hours prior to measuring.

Mechanical Properties Testing

Used to check that alloys and castings are within specification:

- 1 **Hardness Testing:** A non-destructive test giving a numerical value, which can be used to assess the machinability and wear resistance of an alloy.
- 2 **Tensile and Impact Testing:** Conducted on test specimens to measure ultimate tensile strength, yield strength, elongation and reduction of area data. Other tests can determine the ductility and strength of a sample by measuring the amount of energy absorbed during fracture.
- 3 **Service Load Tests:** Conducted on the entire casting to measure deflection when a load is applied. Hydraulic pressure tests can be carried out to destruction or a pre-determined proof load and spin tests can be used for rotating components.





Chemical Testing

This determines whether the chemical composition of an alloy, which can have a large impact on the properties of the casting, are within specification. A specially cast sample is analysed using spectrographic atomic absorption or x-ray fluorescence.

Casting Integrity: Non-Destructive Testing (NTD)

The integrity or soundness of a casting can obviously have a dramatic impact on the performance of a cast component but very often defects can be hidden within the structure of the casting. Various Non-destructive tests can be specified by customers and undertaken by NovaCast to prove the integrity of castings prior to delivery.

NDT options include:

- 1 Visual Inspection
- 2 Dye Penetration and Fluorescent Powder Testing
- 3 Magnetic Particle Inspection
- 4 Ultrasonic Testing
- 5 Radiographic Inspection
- 6 Eddy Current Inspection
- 7 Pressure Testing



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