



Left: CNC gantry saw with cutting portal of 3m x 3m and 7m travel
Main pic: Suite of 12" and 16" Super Duplex valve bodies



Heavy metal

Goodwin Steel Castings Ltd is an integrated manufacturing company whose high integrity steel and nickel alloy castings have been manufactured since 1883 in Stoke-on-Trent, UK. First established to service localised industry with basic cast iron it now exports to growth markets such as India, China and Korea. In recognition for over three years of exporting finished machined and pressure tested steel casting assemblies for steam turbines it received the Queen's Award for outstanding achievement in international trade.

Progress has led to the business today supplying casting solutions for critical duty applications in a range of alloys to nuclear class one quality standards as Europe's foremost foundry and machining facility. Equipped with EAF steel making and AOD refining facilities, production of single castings to 18,000kg is possible, with casting fabrications up to 50,000kg, serving primary sectors such as power

generation, petrochemical, nuclear, defence, civil structural, marine and offshore.

Involved in such a broad range of sectors for a number of years, the business has laid witness to a number of changes. Discussing market development Bernard Goodwin, production director, provides a brief analysis: "Given the global demand to reduce greenhouse emissions, OEM's within power generation sector strive to produce higher efficiency turbines, resulting in higher operating temperatures (7000C+) in which the conventional steel grades can no longer operate. Goodwin has participated in various international research programmes over the last ten years to become the market leader in the supply of heavy section nickel alloy based casting alloys. (Goodwin 130 participation strengthen nickel alloy for 7000C+ operation)

"Within the petrochemical sector the number of high profile material failures within recent years has seen customer material specification requirements increase and the level of third party



*Main pic: 5000kg kingpost castings for carousel on cable laying ship
Below: Top - 1 of 16 off chainstopper castings manufactured in Norsok M122; G420. Below: On site Norsok approved, 10 tonne, water quench heat treatment furnace*



witnessing increased significantly. Goodwin has addressed this with the introduction of an on site, independent laboratory, where material can be certified by a third party, saving time. Finally, as offshore projects pushed into colder waters the requirements for high impact materials has increased and as such we have utilised our AOD technology to produce proprietary ultra high strength grades of steel such as Goodwin 410+, which offers excellent yield and impact strengths whilst retaining weldability.”

European Heathyards

European Heathyards is well established in its 110,000sq ft workshop and storage facility in Brownhills. It has supported Goodwin Steel for over a decade offering expertise in casting upgrading and fabrication in all material grades. With facilities to work with castings from 10kg to 100,000kg it is able to support Goodwin Steel with all their fabrication requirements. European Heathyards offers welding processes such as TIG, MMA, FCAW, MIG/MAG and SAW bringing with it expertise gained from fabricating high integrity items such as boiler panels, burners, large land and marine water tube boilers, heat exchangers and ASME U Stamp pressure vessels.

Long-term relationships with tier one suppliers and large original equipment manufacturers, has historically secured work, but flexibility has been a key element to Goodwin’s success. “More recently, we have acted on opportunities to supply technically advanced castings to growing companies such as Maats Tech Limited and Monobuoy SRL who meet our corporate customer mandate of profitable companies seeking long-term relationships. Typically we supply large orders in the range of half a million to £20 million and have gained many years of experience in the supply of machined and fully assembled valves from two to 98 inch across the globe, as well as offshore and marine castings for a wide range of projects,” says Bernard. The buoyant energy market sector has allowed the organisation to invest in equipment at both Goodwin Steel Castings and Goodwin International Ltd.

Offering a ‘one stop’ solution, Goodwin excels in project based work in which there is tight integration between the foundry and its sister machine shop. Throughout the production process there is only one point of contact for the customer to interface with, which is unique given the complexity of larger project requirements. The business represents the most state-of-the-art and comprehensive machining company attached to any European foundry, meeting the requirements for proof and finish machining, fabrication, overlay and assembly requirements. The facility can handle assemblies and fabrications up to 100,000 kg with large scale five-axis machining and robotic welding facilities.

“Intercompany integration between the foundry and machine shop naturally achieves value-engineered products

1 of 256 off flotilla brackets made to Norsok M122: G420 for Hebron GBS

from the outset of any project,” explains Bernard. As the first European foundry to be accredited to ISO 9001, it has since attained environmental quality management, the new occupational health and safety management and accreditation as a material organisation for nuclear class one components. With the addition of the laboratory any in-process third party witness requirements are quickly addressed to ensure that the product conforms to customer specification or international standards such as ship class.

As part of recent a facility expansion which includes the laboratory, an apprentice school, pattern manufacturing facility, a large radiography facility and CNC gantry saw were installed. Currently under consideration is yet further investment in our melting and heat treatment facilities, which would not only increase the net weight of castings manufactured to 20,000Kg but would also offer the latest technology in terms of hydrogen, nitrogen and oxygen control within the steels and nickel alloys produced.”

The laboratory supporting the foundry and other third party customers in the testing and inspection of material using the latest CNC machining technology reduces the lead-time of specimen preparation. Commenting, Bernard says: “The gantry saw has optimised the process time and process risk of removing excess material from the net casting geometry. Without this facility Goodwin would not be able offer the range of advanced alloy grades or complex casting geometries.

Conducting large-scale pattern manufacture and dimensional inspection of patterns in-house, reduces the overall lead-time of new and modified pattern equipment required to produce the sand moulds. Round the clock operation through the facility ensures an efficient turn around of casting fabrications such as



ships ‘A’ brackets which make use of the new facilities.

Over 130 years experience manufacturing fabricated, finished machined, pressure tested and assembled castings, combined with a non-stop determination to attain cost reduction in the manufacturing techniques employed, ensures the business remains competitive, and enables the company to deliver superior products in a reduced time - on time. As an example, Bernard points out: “We recently completed two high value and demanding orders for use in offshore applications, with 230 Flotilla Brackets for use on the Hebron GBS project and 16 Chain Stoppers for an offshore mooring system. We also completed delivery of 40 large, heavy section Super Duplex valves for the petrochemical industry.”

Providing the next generation of highly skilled engineers, the apprentice school is considered to be an invaluable part of the organisation. A four-year formal training programme, with tuition at the bespoke training centre, and at various group facilities, has seen over 100 apprentices employed over the last four years. “We are mandated to grow in order to support the investment in new facilities, technologies and products. Moving forward it is necessary to employ the most cost effective technologies in order to maintain competitiveness in the global market place whilst meeting our customers requirement for higher quality and more complex castings,” concludes Bernard. ●

Goodwin Steel Castings Ltd

www.goodwinsteelcastings

- Part of Goodwin Group
- One of ten oldest companies listed on UK stock exchange
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Bury (Chemical Cleaning) - 0161 765 2648 - k.lowe@vecom.co.uk

E mail sales@vecom-marine.com Tel 0031 (0) 10 5930210

E Mail info@vecom-group.com

www.vecom-group.com/en