



Britain's AMRC to start up largest Titanium Casting in Europe

Britain's AMRC Castings, part of the Advanced Manufacturing Research Centre with Boeing at the University of Sheffield, reports it soon will start up the largest titanium melting and casting operation in Europe, one capable of producing 500-kg (1,100-lb.) castings, described as some of the world's largest aerospace titanium castings. "We plan to create a world-class titanium casting capability in the UK, developing the skills base necessary to enable companies to reap the rewards of carrying out a process that is very, very challenging," according to AMRC Castings' commercial manager Richard Gould.

AMRC Castings' new furnace is part of a significant research and development effort to raise UK companies' expertise for supplying large-scale titanium aerospace engine and structural programmes. It is funded by the UK's Aerospace Technology Initiative (ATI), Innovate UK, and the High Value Manufacturing Catapult.

The goal is to ensure and maintain Britain's retains its standing near the top of the global aerospace industry, and the largest in Europe. The U.S. has the only other foundry operations capable of casting near-net-shape titanium parts weighing up to 500 kg, according to AMRC.

In 2013, the Advanced Manufacturing Research Centre purchased Castings Technology International and its affiliate Titanium Castings UK Ltd., a research organization with members that include metalcasters, casting industry suppliers, and casting customers, with capabilities in casting design, material development and selection, manufacturing technologies, quality control, and testing and performance.

Both CTI and AMRC are located in a research campus in Rotherham, which allowed AMRC to add casting technology to the range of its industrial research portfolio.

The new titanium melting operation includes two large-scale power supply units to provide energy for a new Retech consumable-electrode casting furnace. The furnace's melting capacity is 1000 kg, which allows it to pour up to 500 kg. With three interchangeable bodies, it is able to produce a variety of components for aerospace applications, some that portend finished weights that are 60 kg or more lighter than the established design.

Closed-loop cooling prevents the furnace



structure from overheating. Hydraulic and pneumatic systems remove air from the furnace and casting chambers, which is critical to safe handling of molten titanium.

The furnace rotates to pour molten titanium into ceramic molds in the casting chamber below, which features a turntable that spins the mold at up to 300 revolutions

per minute (i.e., centrifugal casting.)

Separately, a new plant is being installed to make ceramic mold shells up to two meters in diameter and 2.5 meters long, for finished parts weighing over 2.5 metric tons and suitable for the largest variants of aero engine intercases and other aerospace structures.

Furnace construction, followed by training and cold commissioning, will be completed this month. Hot commissioning and the first test melts are expected to be completed in December.

Initial casts will be poured into a static metal mold, followed by trials using static ceramic molds from the new shell-mold plant.

Metalodlew SA to cast largest bell in the world

In Polish foundry Metalodlew SA preparations are underway to cast the largest swinging bell in the world.

The bell will weigh 50 tonnes and will be hung in the new tower of the, famous for miracles, Sanctuary of the Divine Eternal Father in Trindade, in Brazil. The manufacturing of the bell 'VoxPatris' has been prepared by Jan Felczynski's Bell Foundry from Przemysl in co-operation with the Cracow foundry Metalodlew SA.

The bell will become the record-holder - currently the largest swinging bell in the world is the Gotenba Bell from Japan, which weighs 36 tonnes. VoxPatris will be 4.5m in diameter and more than 4m high, counting the crown.

Currently, the mould of the bell is being finalised. The core is prepared and the so-called 'false bell' has been fixed on it. This construction is placed in the large casting hole (7.5m width and a depth of 5.5m) in one of the foundry bays at Metalodlew SA. Specialists from Jan Felczynski's Bell Foundry have placed various images, themes and motifs made from the special bell-foundry wax on the bell. These pictures represent the whole story of the basilica in the Brazilian Trindade from the beginning in 1840, when a farmer dug out the medallion,



which became famous for miracles and healings, followed by the construction of the sanctuary, and the new basilica today.

Pouring of the bronze bell is scheduled to take place this month. Then, the bell will remain buried in the ground for the whole of winter to cool down evenly and slowly. After cooling, the bell will be cleaned and prepared for its mammoth journey to South America.

VoxPatris will be shipped to Brazil and then transported to the Sanctuary of the Divine Eternal Father in Trindade, in Goyas, about 200km from Brasilia, the capital of Brazil, where the new basilica is being built. The Polish bell will await the newly built 100m tower.

After the completion of the entire project in 2020, VoxPatris will reverberate in the Sanctuary of God the Eternal Father which is visited by millions of pilgrims every year.