Northern Ireland subcontractor opens aerospace division

Toolmaker and subcontract machinist, Crossen Engineering increased its aerospace business last year to 20 percent of turnover and announced that it was aiming to expand it further to 75 percent by 2015. As part of that plan, the group has started a new division called Crossen Aerospace at its factory near Belfast and will take on additional, dedicated staff plus two apprentices during the course of 2012.

A tier 2 company serving the civil and military aerospace supply chains, Crossen holds AS 9100 quality management approval and completed the Revision C audit in June 2012. Customers include Bombardier-Shorts, Thales Air Defence, BE Aerospace and LenisAer in the UK, while in the US, air seal manufacturers Chromalloy and Seal Dynamics are ongoing users of Crossen products.

MRO (maintenance repair overhaul) and PMA (parts manufacturing authority) work accounts for a majority of aerospace production at Belfast factory, while OEM (original equipment manufacture) of pressed components from nickel alloys and aluminium alloys such as Al 2219 is also undertaken.

Crossen Aerospace specialises in the manufacture of pressed, high temperature alloy components for aero engines. The company is one of the very few in the UK and indeed in Europe able to undertake this exacting forming work to aerospace standards. Hastelloy X, RENE 41 and Inconel 600 are among the sheet and plate materials regularly processed. Volume production is carried out using 17 power presses rated from 35 to 500 tonnes force.

Pioneered several years ago, Crossen's

forming technique reduces the weight and cost of components such as engine air seals, compared with machining them from the solid or from castings. It also offers a more repeatable and accurate result than can be achieved by roll forming.

Another application is the manufacture of engine nacelle trailing-edge lip skin extensions and repair sections from sheet metal, currently aluminium but also titanium and stainless steel in the future. Due to the novel method of forming that Crossen Aerospace has developed, there is no need for subsequent heat treatment, reducing cost of manufacture and shortening lead times.

Sometimes, the subcontractor is called upon to assist with customers' R&D programmes. For example, it designed tooling and produced prototype parts and assemblies for launchers and battery trays for Thales Air Defence, which led to volume production of pressed parts.

Pressworking batch size is normally in the range 100- to 400-off. Second-operation metal cutting on pressed components is completed on multi-axis CNC machining centres with capacities up to 1,626 x 864 x 762 mm. Fixtures to assist in measurement and inspection of aircraft parts are also manufactured.

Crossen Aerospace, alongside the pre-existing Crossen Engineering division, designs tools and moulds for legacy, current and future parts based on customers' CAD models or drawings. Alternatively, it reverse engineers aerospace components on coordinate measuring machines using both touch-probe and laser-scanning data acquisition. The same metrology equipment, running under the industry-standard PC-DMIS operating system, verifies the tooling it makes against CAD files supplied by customers or generated on site.

Simulation software allows optimisation of tool design according to the material to be processed and ensures that any potential bugs are eliminated in the virtual environment before production starts. Machining of tools and moulds is completed in-house to exacting tolerances and surface finish, prior to component manufacture.

Sometimes, just the tool is supplied to contract moulders and to customers that want to produce their own components. For example, Bombardier-Shorts utilises press tooling made by Crossen Aerospace and it also manufactures vacuum form tooling for aircraft seat manufacturer, Kilkeel, a subsidiary of BE Aerospace.

Further services provided are the design and manufacture of plastic injection mould tools followed by prototyping and volume production of aircraft parts in the mould shop, plus assembly if necessary. So far, most work in this area has been for the marine and military sectors, such as mission-critical Eurofighter pilot life vest parts and components for ejector seats and parachutes.

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