AIRCRAFT PROGRAMMES | BOMBARDIER CSERIES

CLOSER TO HOME

Situated close to Bombardier Aerospace Belfast, toolmaker and subcontract machinist, Crossen Engineering is increasing its aerospace business by forming a new division called Crossen Aerospace.

Tier two subcontractor Crossen Engineering serves the civil and military aerospace sector and holds AS9100 quality management approval, completing the Revision C audit last June. Maintenance repair overhaul and parts manufacturing authority (PMA) work account for the majority of aerospace production at its Belfast factory, whilst original equipment manufacture of pressed components is also undertaken.

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

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

Often, just the tool is supplied to contract moulders and to customers that want to produce their own components. For example, Bombardier Aerospace utilises press tooling made by Crossen Aerospace.

A Hurco VMX64t with an X-axis of over 1.6m: The most recent CNC machining centre to be installed at Crossen's Belfast factory

"We provide specialised press tooling for Bombardier Aerospace's hydraulic fluid cell press or 'bag' press, which it uses to form some of the aluminium details for its new CSeries jet airliner," begins Crossen Engineering's managing director, Paul Crossen. "Being situated locally to Bombardier means that if there are any issues with the design that need to be discussed with their team, we can be onsite quickly to provide a rapid turnaround solution."

Neat with sheet

Crossen Aerospace also specialises in the manufacture of pressed, high temperature alloy components for aero engines.

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 roll forming.

Another application is the manufacture of engine nacelle trailing-edge lip skin extensions and repair sections from sheet metal. Crossen Aerospace's method of forming eliminates the need for subsequent heat treatment, reducing manufacturing cost and lead-times.

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

Design and manufacture and assembly of plastic injection mould tools followed by prototyping and volume production of parts in the mould shop are further services provided. The mould shop comprises the latest, digitally-controlled machines rated from 50 to 650 tonnes. Parts can weigh from 5 to 2,100 grams.

Crossen's next major investment is likely to be a much larger hydraulic press than is currently operated, probably with a 4m² bed and rated between 3,000 and 4,000 tonnes force. This will allow in-house production of even larger lip skins and other components for the aerospace industry. Alongside this will be the purchase of a larger machining centre, probably of gantry construction for producing larger moulds.

www.crossenengineering.co.uk