Productive SolidCAM

Bromford Industries raises productivity with SolidCAM

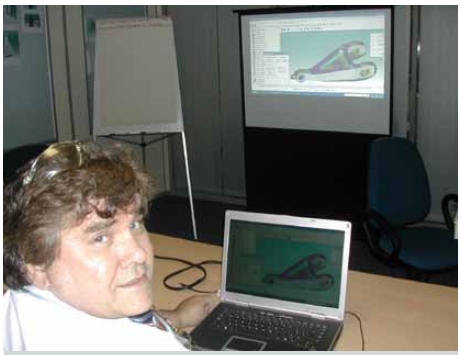
Leading supplier of engine components expands its SolidCAM application

Specialising in the power generation and aerospace industries, and making complex components including gas turbine and landing gear parts, Bromford Industries has its head office in Birmingham and has acquired a further five companies in the same sector, with the aim of becoming a major high technology supplier to the industry. Working in collaboration with its customers, it has a wide range of quality approvals and extensive machining capabilities, enabling it to operate worldwide and provide whole life support for the products it supplies.

Bromford Industries factory in Birmingham

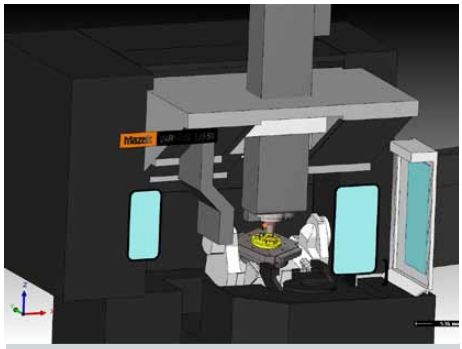
To achieve the demands of its customers and to improve efficiency, Bromford Industries needed to re-examine how it was managing the programming of its CNC machine tools. The company was already using SolidCAM, and coinciding with the acquisitions, it decided to expand the use of the system by programming all its parts in the software in order to raise productivity on the shop floor and improve quality levels. Danny Close, Engineering Director, says "We needed to get parts right first time as, with low volumes of, for example, five components, and expensive materials there was no room for error. Also, the parts we supply are critical to the safety of the aircraft, so we cannot afford to make mistakes." The company has two seats of SolidWorks and SolidCAM, in Birmingham, supplied by SolidCAM UK, and additional licences in its Alcester and Leicester factories. Now, designs presented as 2D drawings are modelled in 3D in SolidWorks or, where 3D models already exist, imported directly into the software. The various machining operations can then be programmed in SolidCAM and the toolpaths simulated offline. A complete job pack is then passed to the shop floor, consisting of postprocessed CNC code and setting and tooling information, thereby ensuring that the actual machining operations are right first time. Danny Close adds, "Previously, each machinist was reinterpreting the drawing to perform the operations allocated to him. This was prone to error, duplicated effort and resulted in long prove out times. Producing a complete job pack ready for our machining centres and coordinate measuring machines has shortened development time, significantly increased productivity, and given us a much greater chance of making parts right first time."

To minimise setting times and be able to economically manufacture small batches of parts, Bromford Industries has a flexible manufacturing system (FMS) with a 5-axis MAZAK Variaxis 630 machining centre. SolidCAM supports the enhanced functionalities of the MAZAK machines, thus giving top efficiency and flexibility in production. A benefit of running MAZAK machines with SolidCAM is full machine verification where all the complex machining can be inspected before it runs on the machine, including removal of stock material by turning and milling tools. The combined solution "SolidWorks+SolidCAM" enables Bromford industries to design the fixturing for this machine and all the other CNC equipment it has directly from the component model. The tombstone arrangements the company uses enable it to machine several different parts simultaneously, or cut the different stages of a single component in one operation, producing a finished part in one step, thereby minimising handling and reducing setups. Carlton Chamarette, Senior Manufacturing Engineer, says, "The solid simulation and collision detection is very powerful in SolidCAM, giving an accurate view of what will happen on the machine. For the 5-axis operations we perform it gives us absolute confidence in the results, warning us if tools are too short or if there is a rapid move into the part. Being able to prove out programmes reliably offline significantly reduces the time required to produce the first component, making our machines far more productive."



Carlton Chamorette, Senior Manufacturing Engineer: "The solid simulation and collision detection is very powerful in SolidCAM "

Bromford´s flexible manufacturing system (FMS) is built around a 5-axis MAZAK Variaxis 630 machining center



Simulation of a MAZAK Variaxis Machining center with SolidCAM

Programming in SolidCAM is easy and the quality of its postprocessors produces reliable CNC code. John Rowland, CNC operator, adds: "SolidCAM is the fastest and easiest CAM system I have ever used. The interface ensures that you have not missed anything, and the simulation allows you to compare the finished part with the model, ensuring that the component has been completely machined. The postprocessor is also highly configurable, producing canned cycles and 100% reliable G codes." The company machines a wide range of materials including aluminium, titanium, inconel, stainless steel and cast iron forgings. Accurate time calculations within SolidCAM help the company to estimate the cost of manufacture, and the tool library helps to consolidate the range of tools used. Carlton Chamarette says, "Simulation and collision detection consider the complete tool and its holder and we can include feeds and speeds optimised for the different materials we cut. The cycle times we get from SolidCAM have proved to be very reliable and we use them to help us calculate the cost of manufacture."

SolidCAM has demonstrated its value to the engineering department at Bromford Industries, helping it to raise productivity levels and shorten delivery times. Gordon Drysdale, Managing Director of SolidCAM UK, says, "We have had a 6 year relationship with Bromford that has seen changes in personnel and new acquisitions by the group. One thing that has not changed is the need for Bromford to work with consistent manufacturing tools that meet the needs of their customers; which is what SolidCAM delivers. SolidCAM UK has much more to offer than simply supplying CAD/CAM software and plans to take the users to the next level with structured training and a consistent approach to manufacturing across the group."

Components of a turbine engine, manufactured by Bromford Industries

John Rowland, CNC operator at Bromford: „The cycle times we get from SolidCAM have proved to be very reliable..."

Danny Close concludes, "We plan to expand the use of SolidCAM at all our sites and carry out further in house training to increase our expertise. The software has significantly increased our productivity."

http://www.bromfordindustries.co.uk/

SolidCAM UK

SolidCAM UK was formed in January 2002 by the current directors to sell and support SolidCAM in the United Kingdom and Ireland. Since then, SolidCAM has been on a rapid growth path with annual growth rates more than 30%. SolidCAM UK is based in Barnsley, South Yorkshire, where a fully equipped training facility can be found for training and support purposes. All the people at SolidCAM UK are from engineering backgrounds, essential for the smooth operation, knowledge of the customer's requirements and levels of support.

SolidCAM

Founded in 1984 by its Managing Director Dr. Emil Somekh, SolidCAM provides manufacturing customers with a full powerful suite of CAM software modules for 2.5D Milling, 3D Milling, High-Speed Machining, Multi-sided Indexial 4/5 axes Milling, Simultaneous 5 axes Milling, Turning, Turn-Mill up to 5-axes and Wire-EDM. SolidCAM is the leader in integrated CAM and provides the highest level of CAD integration, with seamless, single-window integration and full associativity to the CAD model. The integration ensures the automatic update of tool paths for CAD revisions. SolidCAM has today more than 14,500 seats installed. The company has been on a very rapid growth path since it implemented its CAD integration strategy. SolidCAM is sold by a worldwide reseller network in 46 countries.

www.solidcam.com

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