



Shop floor programming with WorkNC CAM software at Patterson Mold & Tool boosts productivity



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Roy Thomas, CNC Supervisor,
Patterson Mold & Tool

Highlights

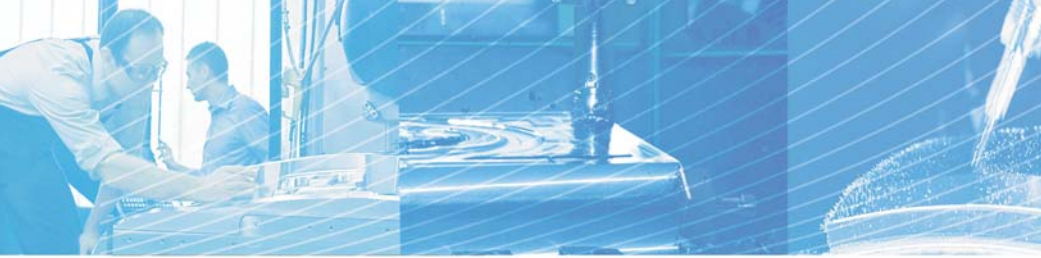
- By installing WorkNC CAM software, Patterson Mold & Tool has been able to redeploy the programmers to other engineering roles and carry out all of its CNC programming on the shop floor
- Auto 5, WorkNC's 5-axis CNC programming module, has helped the company to reduce the number of set ups, fixtures and EDM operations required, enabling it to cut more of the part while reducing machine down time.
- The company operates a three shift system, with low personnel levels on two of them, and depends heavily on the reliability of WorkNC's toolpaths for unattended operation.

■ From tools to aerospace parts

The six seats of WorkNC CAM software that Patterson Mold & Tool (<http://www.pattersonmold.com>), uses on its shop floor have improved productivity by 30%. The company, based in St Charles, Missouri, U.S. has been producing tooling for the die cast industry for over 30 years and is now part of Pace Industries (<http://www.paceind.com>), one of the largest die casting companies in the world. The main markets for its products are tools for its parent company used in the domestic appliance, lawn and garden, electrical, small motor, lighting, and telecommunications sectors. It now also produces parts for the aerospace industry, machining components such as pylons and struts, supported by AS9100 and ISO 9001 quality certification.

■ Move to shop floor programming

Before installing WorkNC, Patterson Mold & Tool had six full time CNC programmers, so machinists were relying on their skill, and had to wait when any changes had to be made to the CNC program. Roy Thomas, CNC Supervisor, says, *"The machine operators had little idea of the machining methods chosen for them, which resulted in cautious feeds and speeds being used in the interests of safety."* By installing WorkNC, the company has been able to redeploy the programmers to other engineering roles and carry out all its CNC programming on the shop floor. One lead programmer provides in house training and administers the WorkNC system so that the 10 machine operators can program their machines themselves.



Roy Thomas adds, *"The operators understand their tooling, machines and the metal cutting process significantly better than our offline programmers did. Productivity has gone up by 30% with better toolpaths and much less time wasted making changes. In particular, roughing operations take half the time to program and run 70% faster."*

■ Easy to use 5-axis CNC programming

As well as its 15 CNC machines, Patterson Mold & Tool has two 5-axis CNC machining centers, a DMG DMU 80 P and a DMG DMU 100 P. These machines were installed to reduce the number of EDM tools required for each job by making it possible to machine more of the tool directly. Now that the company is making aerospace parts, these machines have become an essential part of its production capability.

Roy Thomas says, *"We use WorkNC's Auto 5 module exclusively for our 5-axis CNC programming and we have found it so easy to use that we did not need any training. Now around 25% of our work requires 5-axis machining and our 10 machinists use it every day."* WorkNC Auto 5 changes 3-axis toolpaths into 5-axis toolpaths automatically. Collision

avoidance takes account of the tool and its holder as well as the limitations of the machine itself. Algorithms in the CAM software ensure you can utilize the shortest tool lengths and also intelligently use the machine axis limits data to introduce unwind and flip movements automatically.

■ Reliability enables low manning levels

Patterson Mold & Tool uses Unigraphics, CATIA and Pro/Engineer for its design, so tooling and aerospace models are all manipulated in these CAD systems prior to manufacture. The designers set the origins and put the parts in the right orientation ready for the machine operators to apply the toolpaths. Data goes straight into WorkNC, and pre defined macros automatically speed up the programming process. The company operates a three shift system, with low personnel levels on two of them, and depends heavily on the reliability of the software's toolpaths, as parts can take up to 65 hours to machine. Roy Thomas says, *"The quality of WorkNC's toolpaths are excellent. The Spiral Core Roughing is extremely good and gives us a great improvement in tool life."*

The six floating licenses of WorkNC give the company flexibility, enabling the majority of the operators to be programming simultaneously while keeping capital investment to a minimum. Roy Thomas adds, *"WorkNC is extremely important to us, and has resulted in some major improvements to our productivity, thanks to its automated cycles, reliability and ease of use. It is our only way of programming 5-axis parts, which is a large part of our business, helping us to reduce the number of set ups and fixtures we require and enabling us to cut more of the part in one hit."*

