Success Story

Productivity Takes Off for Irish Subcontractor

When JW Kane Precision Engineering Ltd invested in new staff and new machine tools that included DMG and Unisign 5-axis machining centres, the tier 1 aerospace supplier wanted to optimise its investment and exploit its...

...5-axis machining capability with a suitable CAM vendor. The extensive experience of the CAD/CAM staff at JW Kane and the type of complex aerospace parts produced led to a natural selection of OPEN MIND Technologies *hyper*MILL® CAM software.

When the Portadown, Northern Ireland based company employed Ryan McClure as the Engineering Team Leader, his primary remit was to develop the company's 5-axis machining capability and the CAM software for producing such parts. At the time of Ryan's employment, the SC21 Bronze awarded company already had a seat of *hyper*MILL® and a seat of a competitors software that were not being fully utilised. As Mr McClure recalls: "When I arrived at JW Kane the company was using a number of CAM packages and with my extensive experience of most CAM packages, it was my position to maximise the company's 5-axis potential. At the time I had little experience with *hyper*MILL® but its ease of use and intuitive and time saving features now see 95% of our parts programmed with *hyper*MILL®."

Machining highly complex components for customers such as Bombardier, Airbus, Thales and additional globally renowned aerospace manufacturers, impeccable component quality, time and price pressure are all factors that the 43 employee company has to overcome. To this end, *hyper*MILL® has proven a resounding success by reducing programming times and cycle times by over 50% on most components. As Mr McClure continues: "*hyper*MILL® has a number of features that are not provided by alternate CAM suppliers, and it is these features that have made a considerable difference to our productivity levels."

Stock Model and Linking Cycle features

Two *hyper*MILL® features that have made a contribution is the Stock Model and the Linking Cycle features that have recently saved 51% on an airframe structure part for Bombardier. Using a Heidenhain 3-axis control, the component previously had a stage 1 operation time of 10 minutes with a second stage cycle time of 42 minutes. By utilising *hyper*MILL®, this 52 minute time was reduced to 28 minutes with stage one and two respectively taking 8 and 20 minutes to machine.

As Mr McClure states: "I attribute this time saving to the ability of the software to calculate the 'Rest' material or residual stock during roughing and to only cut exactly where the 'Rest' material is with consecutive cutters during rest milling and finishing operations."

JW KANE
PRECISION ENGINEERING LTD

About JW Kane Precision Engineering

Kane Precision Engineering offer a fully integrated solution for all CNC Milling requirements. They are specialize in serving the Aerospace Industry.
The Kane "Value Chain" from enquiry to product delivery is a proven methodology achieving world class delivery, quality and customer service expectations at competitive prices.

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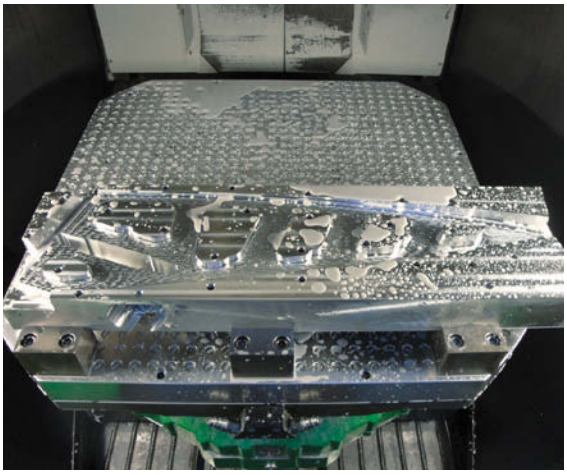
"*hyper*MILL® has a number of features that are not provided by alternate CAM suppliers."

Ryan McClure, Engineering Team Leader



"The linking of toolpaths within the work area removes the number of rapids the machine requires during positioning. This reduces air time and keeps the tools doing what they are best at – cutting. Its the air time that costs us money. The ability of the Linking Cycles to move the tool around the work piece to the next approach position is a bonus, this move is collision checked and checked against the stock when used in production mode and this ensures the shortest possible tool path."

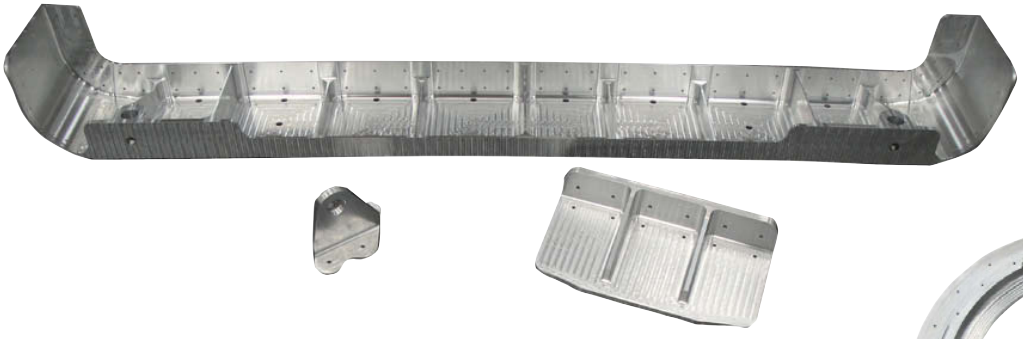
Comparing *hyper*MILL® to the competitor CAM package at JW Kane, the company reduced the cycle time of one aerospace part from 41 minutes to 17 minutes with *hyper*MILL®. This is a saving that Mr McClure attributes to OPEN MIND's Residual Stock Model feature that eliminates midair cutting with efficient tool paths.

Large diversity

Another major feature that *hyper*MILL® offers that competitor CAM packages do not is the Mirroring feature. This has slashed programming times for JW Kane as Mr McClure continues: "Mirroring is a real time saver for us. Aeroplanes by their nature are symmetrical with left and right hand components. Out of a standard batch of 40 aero parts that we are currently machining, each one has an opposite hand. Considering that the standard programming time per part using conventional software is 8 hours and an additional 4 hours for the opposite hand, OPEN MIND enables us to program the same parts in less than 5 hours. The mirrored part then takes anything from 10 to 30 minutes. This makes a mockery of other software that cannot mirror toolpaths, especially when it comes to multi axis parts that can be mirrored automatically and then the tool paths edited independently of the parent geometry."

The workload at JW Kane is extremely diverse with the company producing anything from prototypes to batches of 50 with jobs ranging from 50mm square parts up to 4.5m long structures from aluminium, titanium and stainless steel. This diversity can see machining times range from 5 minutes to 30 hours per part, so making such significant savings on programming times is a blessing for JW Kane.

The success of *hyper*MILL® at JW Kane noted the company acquiring a second seat in May and since this purchase, the company has continued to improve its production times. In addition to the 50% programming time savings created from Mirroring and the cycle time savings from the Arbitrary Stock Model and Linking Cycle features, JW Kane is continually looking for additional savings. To this end, the company is currently trialling OPEN MIND's *hyper*MILL® MAXX Machining roughing module that is an optional addition to *hyper*MILL®. Discussing



Kane Precision Engineering is specialize in serving the Aerospace Industry.

this point, Mr McClure concludes: “In the aerospace industry we say that the final part is most important and we must rough economically to achieve good cycle times, keep making a profit and make good quality.

I tend to look at it from another perspective, we are really in the business of making swarf at the most economical rate that we can, aerospace parts are generally machined from solid billets with up to 75% of the billet being machined away, so we must be in the business of making the swarf as fast as we can and then finishing the part to remarkable quality levels. We are testing the *hyper*MILL® MAXX Machining roughing module with different components to see what the results are, it requires a change in mentality and thought process that yes you can ‘Take that much off’. With one 6 by 4 inch part we have machined with this extremely efficient roughing strategies, we cut the cycle time from 6 minutes 37seconds to 4 minutes. This saving of over 30% to the machining time is creating real excitement about the potential when it comes to machining large parts that are currently taking over 20 hours.” ■

About OPEN MIND Technologies AG

OPEN MIND is one of the world’s most sought-after developers of powerful CAM solutions for machine and controller-independent programming.

OPEN MIND designs optimized CAM solutions that include a high number of innovative features not available elsewhere to deliver significantly higher performance in both programming and machining. Strategies such as 2.5D, 3D as well as 5axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the *hyper*MILL® CAM system. *hyper*MILL® provides the maximum possible benefits to customers thanks to its full compatibility with all current CAD solutions and extensive programming automation.

OPEN MIND strives to be the best and most innovative CAM/CAD manufacturer in the world, helping it become one of the top five in the CAM/CAD industry according to the NC Market Analysis Report 2016 compiled by CIMdata. The CAM/CAD solutions of OPEN MIND fulfil the highest demands in the automotive, tool and mould manufacturing, production machining, medical, job shops, energy and aerospace industries. OPEN MIND is represented in all key markets in Asia, Europe and America, and is a Mensch und Maschine company.

OPEN MIND
THE CAM FORCE

We push machining to the limit

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