

Success Story

Aerospace Subcontractor Takes-Off with *hyperMILL*®

When AIM Ltd strategically changed its business model from large production runs to intricate batch manufacture, the company invested in a series of 5-axis CNC machining centres and CAD/CAM software from OPEN MIND to support its aspirations.

The Clevedon based company has been involved in aerospace manufacture since receiving its first order from Airbus in 1984, when the business was producing specialist machines and jigs & fixtures for a variety of industry sectors. The opportunity to work with Airbus changed the company's focus; it has now evolved into a prestigious aerospace subcontractor operating out of five units and employing 40 staff.

The now Managing Director, and son of company founder Mr Ken Kendall, Mr Rob Kendall explains: "In the 1980's and 90's the company was predominantly machining large production runs, however this type of work is less common within today's UK aerospace industry. Evolving to meet the demands of the industry, we have a diverse range of machines with four CNC turning centres and 28 CNC machining centres with a bed size up to 6.5m. We continually invest in new technology to bring flexibility to our business; this now includes four 5-axis machining centres."

To meet the demands of the aerospace sector

This diversity now enables the company to produce anything from 6m parachute rails to small complex components that demand 5-axis machining. The AIM business mo-

del now sees it conducting R&D projects, repair schemes and the updating of commercial and military aircraft with particular emphasis on airframe structures. AIM has maintained its relationship with Airbus

*above: Mr Kendall: "We run one shift with lights out machining gradually increasing. This rise in unmanned machining is credit to the confidence in *hyperMILL*® and its remarkable collision avoidance."*

*below: In July 2009 AIM acquired two seats of OPEN MIND's *hyperMILL*® system.*



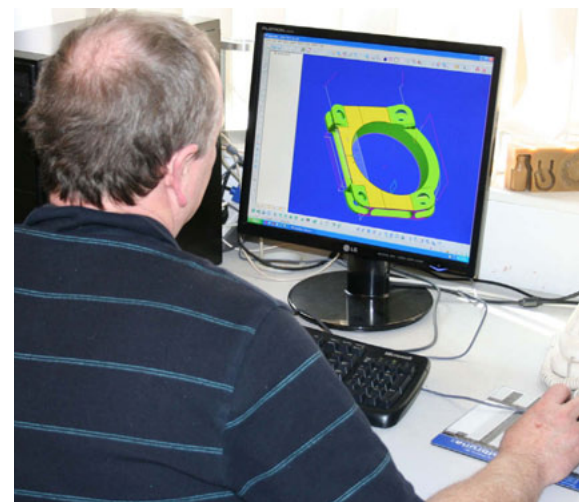
About AIM

Established for over 35 years, AIM has a proven working record in the Aviation, Racing Car and General Engineering Industries.

The scope of work ranges from parts the size of a fifty pence piece up to 6.5 metres in length from 1 off components through to ongoing production orders.

AIM works closely with their customers to ensure high quality parts, delivered on time at competitive prices, with a commitment to cost reductions on long term projects.

> www.aim-ltd.net



“*hyperMILL*® has enabled us to improve cycle times by upwards of 50%, reduced programming times, and improved confidence, surface finishes and product quality.”

Rob Kendall, Managing Director



OPEN MIND supplied post-processors for all machines.

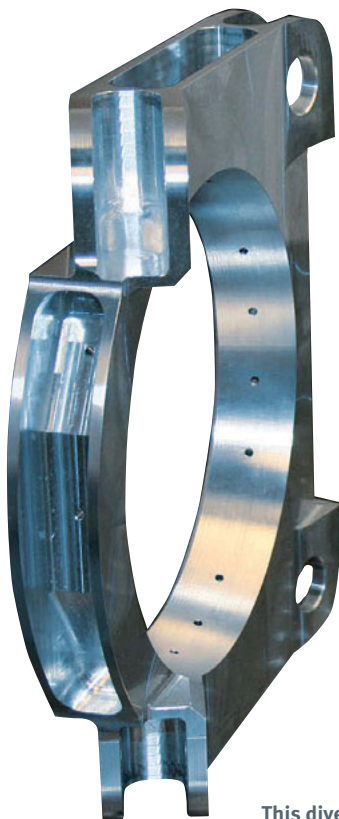
whilst also delivering projects for GKN, MoD, GE Aviation and a number of additional prestigious customers that include component production for helicopters, A380 and the Typhoon Euro Fighter.

To meet the demands of the aerospace sector to manufacture intricate components with rapid turnaround times, AIM acquired three Mikron and one Hedelius 5-axis machine and then loaded the machines with high specification tooling from Iscar to meet the capabilities of the high speed machines. Despite the investment, there was still a bottleneck with part programming, enter OPEN MIND.

Mr Kendall continues: “We knew that our CAD/CAM package wasn’t well suited to 5-axis applications and it couldn’t meet the performance of our machines, so we looked for an alternative. We spoke to our machine tool and tooling distributors and customers. The name OPEN MIND kept popping up. We conducted trials with a number of vendors and OPEN MIND’s *hyperMILL*® ticked all the boxes. We then invited OPEN MIND’s Technical Engineer, Mr Ken Baldwin to program one of our parts at our facility. Ken programmed the specified part in just over two hours, even with three of our programmers continually interrupting to ask questions! Using the previous system our programmers take almost ten hours to program the same component. The decision was made.”

Moving more parts from our 3-axis machines to 5-axis

In July 2009 AIM acquired two seats of OPEN MIND’s *hyperMILL*® system and with new package updates imminent; AIM sent its staff on training days in September. Despite staff still being in the familiarity stage, progress is impressive as Mr Kendall continues: “Our five programmer’s confidence in *hyperMILL*® and our 5-axis capability is growing and we are moving more parts from our 3-axis machines to 5-axis daily. Our production times are up to 50% faster on our 5-axis machines and whilst set-ups and the elimination of second operations is a major contributor, it is *hyperMILL*® that has enabled us to move parts across with confidence.”



This diversity now enables the company to produce anything from 6m parachute rails to small complex components that demand 5-axis machining.





Evolving to meet the demands of the industry, AIM has a diverse range of machines with four CNC turning centres and 28 CNC machining centres with a bed size up to 6.5m.

The problem prior to the introduction of *hyperMILL*[®] was the previous CAM supplier had difficulty providing post processors for the company's diverse range of machine tools, which immediately caused issues. OPEN MIND supplied post-processors for all machines. Added to this problem, if any 5-axis part programs were broken into during production, the CAM system had anomalies where it wouldn't pick up exactly where it stopped. This caused positional issues and inevitably scrap.

To emphasise the cost of scrap, AIM manufactures components from expensive aerospace grade aluminium, titanium, steels and carbon composites. This cost is highlighted when some parts require over ten hours machining with some three ton billets being machined to a finished weight of 315kg. With such instances there was little wonder staff had a lack of confidence machining 5-axis parts with the previous CAM system.

Reduce secondary operations and improve cycle times

"We now produce 3 to 4 times more part variations than 10 years ago. This means more set-ups and smaller batches of typically 5 to 30 parts, which causes issues when most parts are complex and demand multiple machine set-ups. Our previous CAM system was holding our machine shop back and we didn't have the confidence to fully utilise our 5-axis machines. Since the introduction of *hyperMILL*[®], we are conti-

nually loading the 5-axis machines with more jobs to reduce secondary operations and improve cycle times. To demonstrate our cycle time benefits, we have taken one job from a 3-axis machine and moved it to a 5-axis centre and this has taken set-ups from seven to two and cycle times from 3.5 to 1.5 hours. Another cycle time has fallen from 8 hours to 5 with another job falling from 3.5 to 2.25 hours. Whilst these savings are partially down to the machines and respective set-ups, none of it would have been possible without OPEN MIND," says Mr Kendall.

"We run one shift with lights out machining gradually increasing. This rise in unmanned machining is credit to the confidence in *hyperMILL*[®] and its remarkable collision avoidance. *hyperMILL*[®] has enabled us to improve cycle times by upwards of 50%, reduced programming times, and improved confidence, surface finishes and product quality. It has also drastically cut finishing operations like deburring."

"In the aerospace industry we are always under cost pressure from customers whilst trying to maintain staff and increase throughput. OPEN MIND's *hyperMILL*[®] has certainly supported us in all these aspects of our business and we are delighted with the benefits we have already reaped, and will continue to reap from the system," concludes Mr Kendall. ■

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 2D, 3D as well as 5axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the *hyperMILL*[®] CAM system. *hyperMILL*[®] 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 2015 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.



We push machining to the limit

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