



## Success Story

# hyperMILL® Keeps Wheels Turning

Specialising in the production of prototype components and complex small batch runs for the automotive sector, Birmingham based Advanced Engineering (UK) Ltd has always maintained its ethos of investment in technology to deliver component...



### About Advanced Engineering (UK) Ltd

Advanced Engineering has been offering computer aided manufacturing solutions to the automotive sector for the past 25 years. Initially based in the Jewellery Quarter and expanding to our current location at Hockley in 2003, the company prides itself on offering a complete and quality service to our customers. Over the last 7 years they have invested heavily (£2.75m) in the latest technology including 5axis machining centres and hyperMILL®, CAM/CAD software from OPEN MIND, for true 5axis machining from CAD data. This investment combined with their AS9001 and recently achieved automotive standard TS16949:2009, has given them a greater ability to meet customer requirements ranging from one off rapid prototyping through to on-going production at a competitive price.

> [www.ae-uk.net](http://www.ae-uk.net)

...quality at lead times beyond the capabilities of its competitors. This philosophy has resulted in the company investing over £2.75m in under seven years.

The investment has seen Advanced Engineering evolve with technology to move from 3+2 axis machining into full simultaneous 5-axis machining seven years ago. Since 2006, the company has purchased five simultaneous 5-axis machines with more recent acquisitions including Mazak Hyper Variaxis 630 and Mazak 630-5X machining centres. With two seats of CAM software from two different, local and leading vendors, Advanced Engineering's Managing Director, Mr. Terry Pedley was intent on driving through software changes to maximise the capabilities of the new machine tools.

Extensive investigation that involved visits and consequent recommendations from F1 engine manufacturers and other prestigious names in the automotive and motorsport sectors, resulted in the TS:16949, AS:9100 and ISO:9001 accredited company acquiring three seats of OPEN MIND's hyperMILL® CAM software just over 12 months ago. The Engineering Manager at Advanced Engineering, Mr. David Richardson takes up the story: "Our MD didn't believe our existing software was up to the job and to impro-

ve our quality, he investigated and invested in hyperMILL® as he wanted the 'best available' software. With two Engineers in the office with extensive experience on various CAM packages, we have witnessed the multitude of benefits of implementing hyperMILL® and can confirm the MD definitely made the right choice."

### Components for marquee names in the global Automotive sector

As a company that produces components for marquee names in the global Automotive sector, 30 employee Advanced Engi-

### Programming of Show Wheel on hyperMILL®



“From a programming standpoint, *hyperMILL*® has cut programming times by at least 70% and in the case of jobs that have left and right hand parts, the mirroring function on *hyperMILL*® cuts times by over 90%.”

Mick Mann, CAM Programmer



Advanced Engineering Production Facility in Birmingham

neering is well versed in producing anything from prototypes to batches up to 100 with remarkable complexity and even more remarkable lead times. Producing anything from CAM covers, cylinder blocks, control arms, pump housings, decorative door linings and prototype wheels for global automotive exhibitions, turnaround time is critical for Advanced Engineering.

Commenting upon how *hyperMILL*® has improved overall turnaround times for the Birmingham company, CAM Programmer Mr. Mick Mann comments: “To quantify the benefits of *hyperMILL*® over other leading packages we have; cycle times on the shop floor have been reduced by over 40%. This is credit to vastly improved toolpaths that cut machining time. Additionally, the OPEN MIND tool paths have significantly improved surface finishes. This has eliminated secondary hand finishing and fettling of parts like exhibition wheels and door linings that have to be aesthetically impeccable.”

“From a programming standpoint, *hyperMILL*® has cut programming times by at least 70% and in the case of jobs that have left and right hand parts, the mirroring function on *hyperMILL*® cuts times by over 90%. I’ve used a number of CAM packages and each has its benefits. However, *hyperMILL*® is far superior in all aspects. We do a lot of 3D 5-axis machining and *hyperMILL*® is perfect for this, whereas our other packages do not adapt well to complex designs. For example, the post-processors on alternate packages are out-dated and do not adapt well to our complex geometries and tool paths on new machine tools whereas *hyperMILL*® is user friendly and easy to get from drawing to shop-floor cutting.”

The programming team at Advanced Engineering are in agreement that *hyperMILL*® has improved productivity in the office as well as on the shop-floor. As Mr. Mann continues: “*hyperMILL*® is very user friendly, intuitive and has features that are far easier to use than alternate packages. The crash testing and tool collision is far beyond previous packages with tool data banks capable of clarifying the path of the tool and even the toolholders inside cavities to give full crash detection. It has been so intuitive and user friendly, we haven’t had to make a call for support in over 15 months.”

#### The mirroring function

Highlighting the ability of *hyperMILL*® to reduce programming times, Mr. Mann spends 90% of his time programming parts that require mirroring. On complex automotive door parts the programming time can be up to 40 hours. To program the ‘opposite hand’ component; instead of taking an additional week to program the opposite part, the mirroring function on

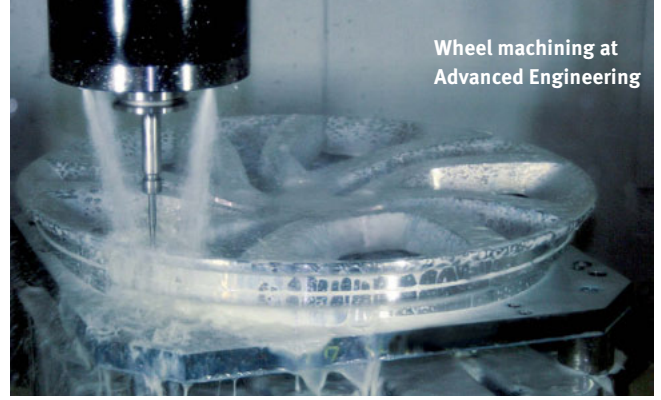
*hyperMILL*® will automatically calculate the part in an hour or two. This instantly reduces programming times by beyond 90%. In the instance of less complex parts that require 3–4 hours of programming, *hyperMILL*® calculates the opposite hand part in a matter of minutes. Comparing seats of alternate CAM packages at Advanced Engineering with *hyperMILL*®; the Birmingham based CAM vendor offers no such mirroring option whilst another package will still take 2–3 days to mirror a part that initially requires one week of programming input.

#### 5-axis Machining of Wheel





With a large percentage of production at Advanced Engineering being prototype production, *hyperMILL*® has time and again been proven to drastically cut cycle times. For example, A wheel that is turned and then 5-axis milled from an aluminium blank would take 20 hours to produce on a Mazak machining centre that is programmed with previous CAM packages. With *hyperMILL*® this time has been cut to less than 12 hours, a 40% improvement. Added to this, the improved tool paths with *hyperMILL*® eliminate secondary fettling and hand finishing that would be necessary with previous CAM packages. With improved quality, productivity and the elimination of hand finishing on a job that is manufactured up to 100 times a year, the savings have been exceptional. ■



Wheel machining at Advanced Engineering



Automotive Wheel at Advanced Engineering on Mazak



Wheel Machining on Mazak

### 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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