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KAVIA TOOLING

“Edgecam is absolutely integral to our entire manufacturing process. It’s at the heart if everything, and is vital in terms of what it does through the customisation, standardisation and removing errors.”

Edgecam is a market leading computer aided manufacturing (CAM) system for NC part programming. With unparalleled ease of use and sophisticated toolpath generation, it’s the only CAM system you’ll need for milling, turning and mill-turn machining.

Edgecam utilises your in house knowledge and experience to drive the CAM process with automation tools to suit different applications - allowing you to maintain your competitive edge.

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Edgecam Programs Merged Into Single Machining Files With 1.5-Million Lines Of Code

Mould maker Kavia Tooling have developed their own machining strategies to run multiple CNC programs at once by merging several of them into a single file…many containing around 1.5-million lines of code.

Working out of 9000 square foot premises in Burnley, with 15 employees, the company produces around 80 mould tools a year for plastic injection moulders, ranging in size from small tools of 156 mm x 156 mm, anywhere up to 2-tonnes.

The company has invested heavily in customising a range of software and equipment, including CAM solutions from Edgecam, and a Pioneer Co-ordinate Measuring Machine from Hexagon.

Edgecam drives seven high-speed CNC mills with spindle speeds varying from 12,000 to 30,000 rpm, and Sodick EDM machining, but Production Director Mark Cole says it's no ordinary machining process. "Edgecam have customised the software to create a system for us which we call Merge. It means we can put several components on the machines at once, and the Edgecam CNC code for them all is merged into one large program, along with the datums to set the parts on."

He cites a recent example when they were working on two cavity plates on one side of the machine, and four inserts on the other. "We put the individual Edgecam CNC programs for each component together into one file, and it all went to the machine as one large program."

It also keeps the cutting tools to a minimum, by looking at information such as duplication, length and quality of the tools in all the programs. "For example, if there were two repeating cuttings tools in the individually merged programs, it selects the best one for the manufacturing process. It goes through every single NC program and rearranges all the tools accordingly.

"If we have ten components that can all fit on the machine, Merge puts the tool information for all ten programs together, the datum setting information, part setting information, the pre-setter …everything. So as far as the machining's concerned, it's just one big product."

He says the benefits are "unbelievable," creating a completely standardised system. "The customised software works for us exactly how we want it to, and everyone from the CAM programmer to an apprentice setting the tools, works in the same way. It demystifies shop floor activities and eliminates error."

About The Company:

Name:
Kavia Tooling

Business:
Mould Maker

Website:
www.kaviatooling.com

Benefits Achieved:

- Customised to create their own system.
- Can put several components on the machines at once.
- Keeps the cutting tools to a minimum..
- Demystifies shop floor activities and eliminates error.
- Vital in terms of what it does through the customisation, standardisation and removing errors.

Comments:

"The customised software works for us exactly how we want it to, and everyone from the CAM programmer to an apprentice setting the tools, works in the same way. It demystifies shop floor activities and eliminates error."

Mark Cole
Production Director

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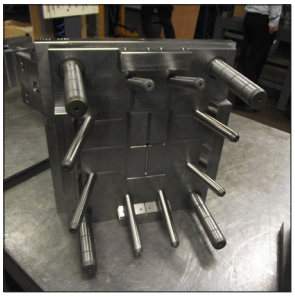
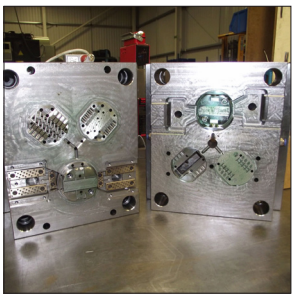
Their most recent investment in customisation is the unusual way of using a Hexagon Pioneer Co-Ordinate Measuring Machine (CMM). Rather than checking finished dimensions and ensuring a part is manufactured within tolerances at the end of the manufacturing process, Hexagon wrote a piece of customised software to enable them to use it to find offsets at the beginning of the operation.

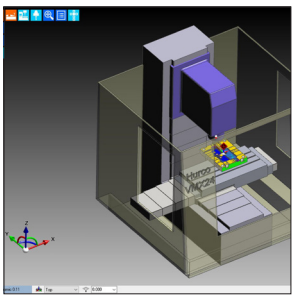


Known as Zero Transfer Fixture Plates, this particular customisation means that instead of having to put each part on the machine and set it, the component is set on the CMM which gives them the X, Y, Z and U orientation. This can be done with any number of components, and the information is transferred to the machine through the Edgecam Merge software. This uses the data to add a programmed work offset and co-ordinate rotation into the appropriate merged programs. “We only have to put the Zero Transfer Plate, which is micron-accurate, into position on the machine, and it knows exactly where the part is, so we don’t have to set it.”



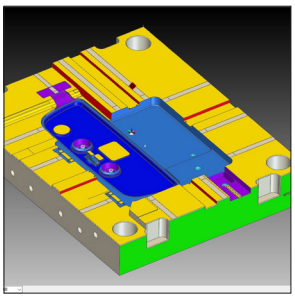
The end result is a CNC program which can machine several parts at a time, without the need to use the machine as a set-up station, as all preparatory operations are now carried out offline.

Mark Cole says: “Without the CMM, if we were setting up a component square on the CNC machine for example, we’d have to ensure it’s perfectly in line with the machine’s axis. If we were doing that for ten components the process would be prone to error, especially where there are overhangs. But setting them on the CMM means everything’s done automatically, because it tells the machine the angle of the part.



“To set up six fairly difficult components directly on the machine might take one day...during which time it’s not running. On the CMM it’ll be one hour, and you can be fully confident they’ll be absolutely accurate.”

Edgecam engineers also worked with Kavia Tooling on customising the software further, to set tooling data for the CNC programs offline by utilising data from their Zoller tool pre-setter system. Previously, the operator had to manually set all the tools for each job run, with the same costs and risks associated with datum setting. “Now Zoller captures the required tool information for all the programs, and Edgecam merges it all into the final CNC file. It used to be a skilled job…now a first year apprentice does it.”



With some of the merged programs coming out at around 36 megabytes and containing up to 1.5-million lines of NC code generated by Edgecam, they can take four days to run. “Our machine tools are generally operating 24/7, as they’re expensive and need to be running as long as possible. A lot of our investment in bespoke software and automation was to create an environment where the machines are running while we’re doing as much as we can offline.”

Their general philosophy is to run smaller programs during the day, and longer ones unsupervised overnight. “We’ve also created a lot of systems through Edgecam where we combine a number of smaller runs that would each take half an hour, into a 12-hour night run.

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