Success Story

Reliably machine rib geometries

OPEN MIND worked together Volkswagen in Braunschweig, Germany, to develop the ‘Rib Milling’ cycle to program rib geometries.

About Volkswagen Braunschweig

The Volkswagenwerk Braunschweig plant manufactures axles, steering mechanisms, plastic parts, battery systems, vehicle components as well as the required tools and machines. Innovative products place great demands on the manufacturing process and, as a result, on the development and manufacturing of resources that meet these requirements. In light of this, component tool engineering in Braunschweig, which occupies around 700 employees, holds a decisive position in the early phase of the product development process.

www.volkswagen.com

Programming rib geometries is not an easy task. The saying ‘It has to be easy’ was, as it so often is, the first step towards greater efficiency. By working together with OPEN MIND, Volkswagen was able to develop a feature to program rib geometries in a highly efficient manner. This function automatically detects grooves to be milled. Steep areas and floors are machined separately.

From tool engineering to the competence centre

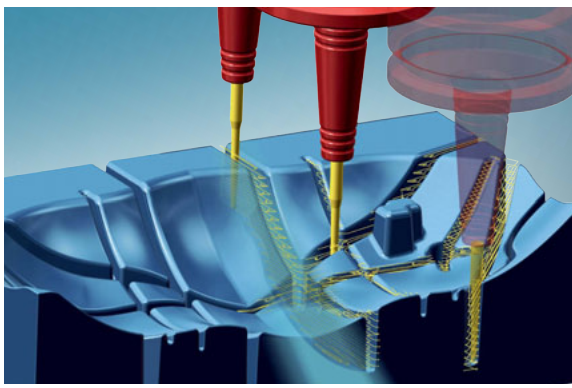
An impressive production portfolio and effectiveness and efficiency in the CAD/CAM process chain make VOLKSWAGEN AG in Braunschweig a technological pioneer in component tool engineering. Here, the company manufactures moulds for cylinder heads and chassis, die cast moulds for gearboxes, coupling housings and steering boxes and compression tools for reshaping the thick sheet metal of the chassis and injection moulds, for example, for bumpers or instrument panels made from plastic.

Consistent use of the *hyper*MILL® CAM/CAD solution from OPEN MIND Technologies AG over the past 13 years has contributed greatly to the success of 2D, 3D, HSC, mill/turn and 5-axis machining. „We opted for OPEN MIND back in 2002 because *hyper*MILL® best supports our standardisation approach“, says Jörg Wenserski, Head of Engineering at the Machine Centre. “This has led to the development of a productive partnership with OPEN MIND and as a result, we have achieved a very high technical standard.”

Rib milling without risk

The joint rib milling project provides an example from the long-standing development partnership with the CAM provider. The cooling ribs from gearboxes have very deep cavities that entail major risk and are extremely time consuming in programming and machining.

In accordance with the in-house knowledge management method, a specialist group made up of planning engineers, program-



"We opted for *hyper*MILL® back in 2002 because the system best supports our standardisation approach."

Jörg Wenserski, Head of Engineering at the Machine Centre at the Volkswagen plant in Braunschweig.

mers and machine operators was put together to optimise the machining of ribbings from die cast components. Ribs that occurred were classified and corresponding programming processes were developed. On this basis, the programming approach is to be standardised and the tool database is to be adjusted. To this end, the rib milling knowledge management employee group developed a test part that featured all of the known degrees of difficulty, such as nesting, deep cavities, rib intersections, radial ribs and interference contours.

Based on this specification, OPEN MIND subsequently developed a rib milling cycle that introduces a lot of innovations to the machining sequence, such as: an integrated roughing/finishing function, integrated pocket machining of wide ribs, automatic collision detection of the tool holder taking conical milling tools into account and integrated bottom machining. Many of those involved see the fact that the infeed parameters always come directly from the tool database, even in the case of automatically separated areas, as a particular highlight.

In the case of components with a very high degree of ribbing, the new approach made it possible to significantly reduce processing times at the machine. The new rib milling cycle cut pure programming time in half. "In addition to the planned reductions in programming and machining times, we were also able to achieve greater process reliability and considerably reduce tool wear," says Wolfgang Sofftner, contact partner for 3D machining in component tool engineering. "The approach involves the inspection components by knowledge management and the subsequent development of standardised machining options, and is pioneering for future projects." ■

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 5-axis 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 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.

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