



Success Story

Fast, reliable NC data

Top performance in tool engineering: The extensive range of machinery at Volkswagen’s component tool engineering operation in Braunschweig is successfully programmed with the *hyperMILL*® CAD/CAM system from OPEN MIND...

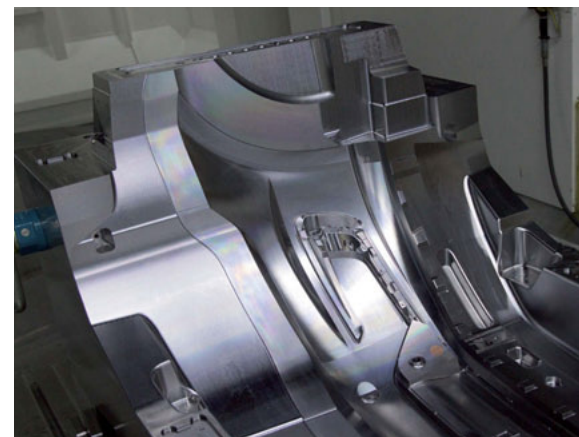
...Standardisation and automation are top priorities.

At Volkswagen’s component tool engineering operation in Braunschweig, the company manufactures moulds for cylinder heads and chassis, die cast moulds for gearboxes, coupling housing 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. For the past 13 years, Volkswagen has used the *hyperMILL*® CAD/CAM solution from OPEN MIND Technologies AG. According to users, it contributes greatly to the success of 2D, 3D, HSC, mill/turn and 5-axis machining. Two premises apply in order to achieve maximum efficiency in planning and manufacturing processes: On the one hand, company-specific manufacturing expertise should be used in planning so that only secured NC programs, equipment and tools reach the machine. On the other hand, standardisation and automation should be promoted continuously.

without drawings. As a result, the sealing surfaces of a tool are displayed in blue, for example. This supports a faster, error-free flow of information from CAD to CAM to the workshop. *hyperMILL*® detects the colour codes thanks to feature and macro technology and automatically assigns the faces to the appropriate machining mode.

In the case of drill holes, the system goes beyond conventional automatic feature recognition and automatically generates ma-

Injection mould of a bumper, manufactured at the Volkswagen Braunschweig plant.



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

Efficient transfer of manufacturing information

Volkswagen uses colour conventions assigned to specific types of machining to manufacture mould and pocket geometries

“Every job step is transparent and easily reproduced with *hyperMILL*®.”

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



chining features to any degree of complexity. When it comes to these generic features, *hyperMILL*® evaluates the technological parameters as well as the geometry of a CAD model. The transfer of data based on CAD properties enables a uniform workflow, even though the data comes from different parametric CAD systems. “In the past, the different CAD formats constantly presented problems with regard to automation,” says Jörg Heinemann, contact partner for 2.5D machining, machine simulation and postprocessors in component tool engineering. “Today, the generic features of *hyperMILL*® define uniform machining operations across all CAD systems. That’s a big advantage for us.”

Intelligent macros link complex feature definitions with tool information in automatically generated job sequences. Programming highly complex 2D machining operations is achieved in no time with minimal user interaction.

Reproducible 3D programming

An injection moulded tool for a bumper is, for example, up to 2.8 metres long, 1.5 metres wide and 1.9 metres deep. It consists of 1,500 individual parts and weighs 39 tonnes. Depending on the complexity of the components, NC programming of the mould plate can take several weeks. Meanwhile, work is already being completed on the tool in the workshop. Individual

approvals, for example, for finishing or roughing up to two millimetres to the contour, leave space for future changes.

The stock geometry may be tracked in the CAM system to ensure that the further steps can be programmed. Changes to part geometries are part of everyday life and often come at very short notice. The calculation in *hyperMILL*® makes it possible to re-use previously defined job steps, which results in enormous time savings. “Every job step is transparent and easily reproduced with *hyperMILL*®, regardless of the respective programmer,” says Jörg Wenserski, Head of Engineering at the Machine Centre.

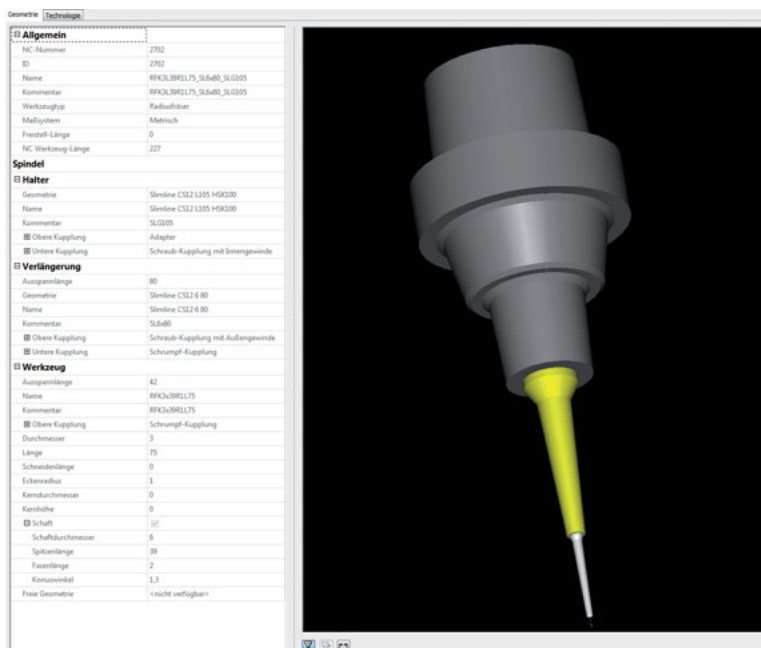
Tool database with integrated collision protection

The tool and technology database at Volkswagen contains more than 17,500 complete tools. The supervising employee is responsible for maintaining the database and supplying machinery. This is an incredibly important task considering the quantity of data records and the aim to always use the most state-of-the-art tool technologies. Many of the functionalities and structures of the *hyperMILL*® tool database provide assistance in this respect. On the one hand, it is only possible to assemble tool components with suitable couplings, for example. On the other hand, it is possible to assign each tool freely configurable technology values, depending on the application

scenario. With the help of this database, the most stable collision-free tool is automatically selected when a machining macro is output. In this way, collision protection begins with tool selection. “This technology allows us to be sure that we can reliably machine the parts on the machines,” says Wolfgang Soffner, contact partner for 3D machining in component tool engineering. “In the meantime, we have achieved a pioneering degree of efficiency in NC programming,” he adds.

Collaborative partnership

Both companies benefit from the partnership. “Volkswagen is one of our largest key accounts in the automotive sector, and we have been able to demonstrate



Large collection:
Over 17,500 complete tools are stored in the *hyperMILL*® tool database.

our strengths in 5-axis machining and automation,” says Volker Nesehoner, CEO of OPEN MIND. “As a result of the close cooperation, it has been possible to implement fascinating technical solutions that make a sustained contribution to the success of Volkswagen.” Jorg Wenserski also highlights

the positive outcomes of the long-term partnership with the CAM provider: “The innovative strength of OPEN MIND greatly contributes to the fact that our standardisation and automation strategy is being further advanced in mechanical engineering.” ■

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 *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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