

## NC Programs at the Push of a Button

Marco Bauer, Managing Director of BAM GmbH headquartered in the German town of Weiden is certain that no manufacturing company will survive over the long term without digitization and automation.

He, therefore, implemented a process landscape that is consistently digital and automated, from the online shop to the company's robot-assisted production cells. A key component of this highly efficient system is automated CAM programming using *hyperMILL*®, which BAM introduced together with CAD/CAM partner OPEN MIND.

Ordered today, delivered tomorrow – in our private lives, we take this level of service for granted. And at the workplace? There, we are used to waiting for weeks. Of course, individual components and assemblies that need to be manufactured according to construction drawings take a little longer. However, in the age of digitization and Industry 4.0, it is possible to accelerate many processes and make them more flexible.

Managing Director of BAM GmbH Marco Bauer, who studied business information technology, views digitization and automation as one of the great opportunities of our time. This holds especially true for industrial production. Bauer is convinced that: “due to the new technical possibilities, we have to look at the entire process chain in a completely new way. In this area, we like to think of ourselves as creative pioneers.”

### Unique ‘On-Demand Manufacturing’

Marco Bauer certainly has the entrepreneurial spirit to back up this claim. In 2011, he took over a small contract manufacturing operation with eight employees and four machines. In just a few years, he transformed it into a modern company for precision manufacturing, special-purpose machine construction and digital services.

Even the company website presents several unique features for visitors. What stands out here is the online manufacturing service order option, BAM's ‘Digital Services.’ “We have largely digitized the process chain including manufacturing,” explains the BAM founder. “This has enabled us to set up an ‘on-demand manufacturing platform’ and an online shop for customized sheet metal cutting. At [mipart.com](http://mipart.com) and [stahlnachmass.com](http://stahlnachmass.com), corporate >

### About



**BAM – Know-How and Passion  
Nurtured in Germany**

- > BAM GmbH offers precision manufacturing, special-purpose machine construction, and digital services. Founded in 2011 in the German town of Weiden, the company has developed from a traditional contract manufacturer to a digital manufacturer whose high-quality machinery operates based on automation and smart material flow concepts. BAM produces laser cut-outs and manufactures metal and plastic components using machining as well as erosive, additive, and forming processes. The high-quality products adhere to stringent tolerances.

> <https://bam.group>



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customers and private individuals can configure and order components and blanks directly online. After uploading the 3D CAD data that defines the desired component, customers receive a quote for their order within five to ten seconds. Once the order has been confirmed, we deliver even complex components in up to three days.”

#### Factors that Drive Efficiency: Digitization and Automation

In order to offer such rapid delivery of high-quality manufactured industrial parts – whether ordered online or traditionally – BAM has implemented a high degree of automation along the entire process chain. It goes without saying that this automation is software-driven. “I’m a computer scientist,” explains Marco Bauer, “and we employ 30 people in software development and research & development.”

The best example of innovative software solutions is the ‘on-demand manufacturing platform’ known as mipart.com mentioned previously. It not only assures that customers get their orders quickly but BAM, too, benefits from accelerated processes. This is because immediately after an order is placed, the software has already created the entire work plan fully automatically. Following the automated quoting process, the CAM programmers are the first team members to see the order. “Here, too, we are streamlining the automation process together with our supplier OPEN MIND,” stresses Marco Bauer. “After all, we want our NC programs to get to our automated production cells as quickly as possible. In initial projects, we have succeeded in reducing the time and effort required for CAM programming by 70 to 80 percent.”



**Marco Bauer, founder and managing director of BAM GmbH:** “We dare to take the unbeaten path. This holds equally true for metal or plastic components, complex machines, or digital solutions for the manufacturing industry. We always aim to infuse our precision and production machining know-how with our digital DNA.”

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**Marco Bauer, Founder and Managing Director, BAM GmbH**

#### CAM Programming that Meets Demanding Requirements

BAM has been programming with CAD/CAM software for a long time. The company continually increases the level of 5-axis machining with eleven of the of twelve machining centers now employing 5-axis technology. So, the management decided to switch to the *hyperMILL*® CAM solution from OPEN MIND Technologies AG in 2013. Stefan Bauer, Head of Manufacturing, had already successfully

**Machining at BAM is all about dynamic workflows and flexibility. The modern CNC processing centers are seamlessly integrated in the digital process chain.**



used this software before joining BAM. The way he sees it: “*hyperMILL*® is the best software to program 5-axis machining operations. This is because there are always several tilt strategies available, allowing me to select a suitable solution for every geometry and any machine kinematic configuration.” In his opinion, however, the strengths of *hyperMILL*®, which also include excellent machine simulation and collision checking and avoiding functions, become apparent as soon as you open the software, thanks to the clear, intuitive user interface.

The advantages of *hyperCAD*®-S, which is fully integrated into *hyperMILL*®, further add to the appeal of this solution. OPEN MIND specifically developed this ‘CAD for CAM’ system to help CAM programmers speed up NC coding. It allows users to switch back and forth between CAM and CAD quickly and easily, enabling them to add a support or clamping surface or to close a hole, for example.

#### Feature and Macro Technology – Foundation of Automated CAM Programming

“Thanks to the powerful 2.5D, 3D and 5-axis cycles of *hyperMILL*®, we have succeeded in reducing setup and programming times at the machining centers, resulting in increased efficiency and higher capacity utilization,” states Head of Manufacturing Stefan Bauer. BAM was also able to significantly increase the complexity of its manufacturing portfolio. This is because *hyperMILL*® provides efficient machining strategies for almost any application scenario. As a consequence, what started as a single *hyperMILL*® license has >

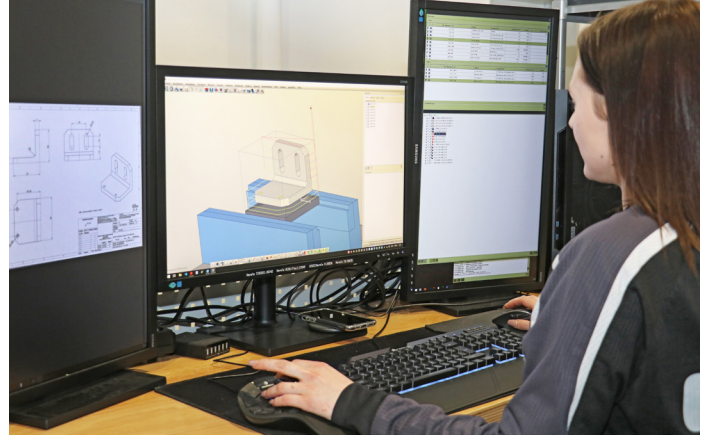
now grown to six – all including 5-axis cycles and the roughing and finishing modules of the *hyperMILL*® MAXX Machining performance package.

Stefan Bauer and his production team – which features a higher proportion of female colleagues than is normally seen in this industry – appreciate the fact that OPEN MIND is constantly evolving the software by introducing innovative strategies and processes. “With its feature technology and associated process and macro databases, *hyperMILL*® also provides a solid basis for automating programming and significantly reducing programming times by reusing pre-existing programming know-how,” adds Stefan Bauer.

### Individual Automation

Managing Director Marco Bauer, too, emphasizes the consistently excellent cooperation with OPEN MIND – from sales and service through to the project teams that worked on custom automation solutions: “The competent OPEN MIND contacts always provide us with expert support, even when dealing with highly complex applications and exotic projects. One of the decisive factors for us was that OPEN MIND develops its software in-house. As a result, we were able to obtain customized functions for our automation projects very rapidly, which has helped us improve by leaps and bounds.”

Rico Müller, Project Manager CAD/CAM Automation at OPEN MIND, confirms the intensive and highly cooperative collaboration. With regard to fully automated programming, he explains: “This works particularly well for component assemblies that have a similar structure and require similar machining strategies. Since BAM produces a rather large number of component variants, we have built an interactive user guide into our automation system. Now, our CAM programmers only need to set a few parameters to increase the range of components and significantly reduce the overall programming work.” ■



The CAM office is an essential place. Using the *hyperMILL*® high-end CAM system from OPEN MIND, employees create NC programs based on 3D design data; in some cases, the programs are even generated fully automatically.



At BAM, automation encompasses all processes, from order entry through to production. In this image, a robot supplies the 5-axis machining center with pre-fitted workpiece pallets.

## 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 develops 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 2.5D, 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 CAD/CAM manufacturer in the world, helping it become one of the top five in the CAM industry according to the “NC Market Analysis Report 2021” compiled by CIMdata. The CAD/CAM solutions of OPEN MIND fulfil the highest demands in the automotive, tool and mold 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

[www.openmind-tech.com](http://www.openmind-tech.com)

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