



Success Story

ALPINA steps on the gas with *hyperMILL*®

ALPINA Burkard Bovensiepen GmbH + Co. KG creates exclusive automobiles for discerning customers, using BMW models as a basis. They are also active participants in the auto racing scene. The automobile manufacturer, located...

...in Buchloe in Germany's Allgäu region, has been successfully using OPEN MIND Technologies' *hyperMILL*® CAM system to create NC programs for years.

Typical ALPINA customers use their cars a lot, driving 20,000, 30,000 or even 50,000 kilometres a year. They require cars perfectly suited to everyday use, but don't wish to forgo a touch of exclusivity.

"ALPINA creates sophisticated vehicles based on the BMW 3, 5, 6 and 7 series," says ALPINA CEO Andreas Bovensiepen.

The two companies have been closely linked ever since Bovensiepen's father, Burkard Bovensiepen, placed a Weber dual carburettor in a BMW 1500 in 1961, increasing its output by 14 hp. From this promising beginning, ALPINA has developed into an independent automobile manufacturer with almost 200 employees and an annual turnover of approximately EUR 50 million. ALPINA only produces between 1,000 and 1,200 cars a year, a sure sign of their exclusive nature.

ALPINA is no mere car tuner but a proper automobile manufacturer: "A BMW ALPINA is not a vehicle modified after manufacture," says Bovensiepen. "From the mo-

ment it comes into the world, it is equipped with ALPINA-specific parts, including motor, gearbox, exhaust system, cooling system, wheels, and chassis, as well as a modified bodyshell with aerodynamic components. And let's not forget the interior." In fact, ALPINA's interiors can meet almost any customer demand.

The exquisite BMW ALPINA: A limited-edition automobile (only 99 were made) based on the BMW ALPINA B3 S Bi-Turbo Coupé.



HERSTELLER
EXCLUSIVER AUTOMOBILE

About ALPINA

As a car manufacturer in its own right since 1983, ALPINA has partnered with BMW on and off the racing circuit for more than 40 years, collaborating on technological development and producing a steady stream of groundbreaking innovations which are reflected in their automobiles. The BMW ALPINA range is like no other, combining luxury and understated exclusivity with exceptional power and ability. Combining the ALPINA philosophy and engineering with the benefits of BMW engine technology, especially with regards to efficiency and emissions, results in a combination of effortless high-performance, in petrol and diesel form, but not at environmental cost.

> www.alpina-automobiles.com

“*hyperMILL*® has provided us with lots of opportunities to manufacture components and create designs that we just weren’t able to previously.”

Matthias Schau,
Development engineer at ALPINA



Thanks to the well-developed bond of trust between BMW and ALPINA, ALPINA is given access to the CAD data they need to develop their BMW ALPINA models as far as 18 months in advance of BMW’s serial production launch.

BMW ALPINA models are partially manufactured on the BMW production line – the ALPINA-specific parts are delivered to the factory and installed by BMW. The finishing touches, such as the addition of aerodynamic components, take place at ALPINA’s factory in Buchloe. Customers receive high-performance vehicles with a high safety rating and comparatively low energy consumption.

Andreas Bovensiepen describes his core customer base as “businessmen, independent contractors and freelancers” with

Our interviewees in Buchloe (from left to right): Andreas Bovensiepen (ALPINA), Andreas Leser (OPEN MIND) and Matthias Schau (ALPINA).



a penchant for technology and automobiles; people who know how to appreciate the high quality and individuality offered by ALPINA’s vehicles.

The main markets for the cars from Allgäu, apart from Germany, are in the UK, Switzerland, the US and Japan. The cars are marketed by selected BMW dealers, who receive specialized training from ALPINA.

In addition to its production of road vehicles, ALPINA is also actively involved in the auto racing scene. 2011, ALPINA even reached first place at Germany’s GT Series, the ADAC GT Masters. “Our involvement with racing helps to strengthen our brand image and improves our market visibility around the world. That a ‘David’ like us was able to win against the ‘Goliaths’ of this world certainly attracted attention,” says Bovensiepen.

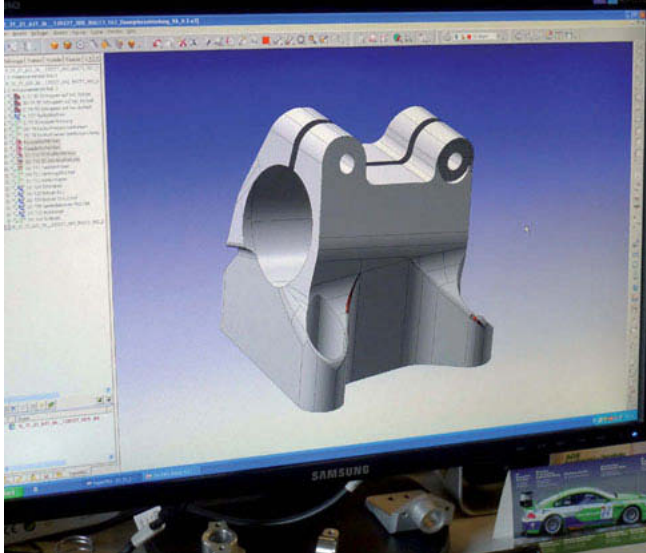
OPEN MIND sponsors ALPINA’s racing efforts, a fact reflected by advertising on the racing cars themselves.

Anyone who wants to be as successful as ALPINA when it comes to road cars and racing needs the best possible tools in order to produce quality components at every stage of the manufacturing process, and introduce new ideas wherever possible. 2008, ALPINA decided to use *hyperMILL*® for its CAM system. Not only does the program have the required functionality, it is ‘made in Germany’ and the two companies are located in close proximity – both deciding factors in ALPINA’s decision.

Reduced programming expenditure

hyperMILL® allows users to program any type of machining – 2D, 3D, HSC and 5-axis milling, as well as mill turning – from within a standardised user interface. After all, there are hardly any modern components that require only one type of machining.

In particular, the user is presented only with options that are task-oriented, practical and safe, instead of every imaginable configuration. This is one of the reasons that users are able to progress so quickly. “An additional *hyperMILL*® speciality is its ability to work with indexed axes. 5-axis machining is not about completing as many movements as possible; it is about milling economically. And that is achieved when a task can be completed with a minimum amount of movements,” explains Andreas Leser, Marketing Director for OPEN MIND. *hyperMILL*® automatically indexes those axes which are not needed. Fully simultaneous operation only occurs when there is no other option. Among other things, this process also spares the machines.



Suspension strut clamp; a sample component in *hyperMILL*®. The component is made of high-strength aluminium.



The suspension strut clamp on the 5-axis machining centre from DMG.



The suspension strut clamp installed in a BMW ALPINA B6 GT3.

Without a doubt, this list also needs to include OPEN MIND's feature and macro technology, which enables the user to standardise and automate the programming of geometries. Including intelligent macros, Customized Process Features (CPFs), and the option of connecting proprietary programs to *hyperMILL*® via an API.

New 5-axis functions continue to offer expanded options to the user. With the 5-axis shape offset machining strategy, curved surfaces can be completely machined with a consistent offset. Automatic 5-axis approach and retract strategies ensure greater quality and safety, as well as less programming time. 5axis swarf cutting now has a new parameter that can be used to define an additional hub offset.

Components and tools

In terms of CAD/CAM, ALPINA uses Catia V5 for CAD and *hyperMILL*® for NC programming. Both systems are connected to one another by a common interface, STEP AP 214. "It works very well," says Matthias Schau, Development engineer at ALPINA, "which is why we won't be needing to switch to a direct interface in the near future."

ALPINA has a well-equipped *hyperMILL*® licence that includes the following:

- *hyperMILL*® incl. 5-axis machining as well as 3 + 2 axes advanced indexing
- Special applications: Impellers and blisks, as well as tubes
- *hyperCAD*®-S as a supplementary CAD system
- *hyperMILL*® MAXX Machining as a roughing module for high-performance cutting

"You need every feature to construct an automobile, particularly a racing car – from 2D machining to milling impellers, which is why a high-end CAM system like *hyperMILL*® is perfect for the job," says Leser.

"*hyperMILL*® is used by ALPINA in all areas; for serial components, for prototype components, for racing car components and for tools," Schau explains. ALPINA is also using an increasing number of CFK components, particularly for racing, but also for serial production models. ALPINA creates its own laminating tools for this process.

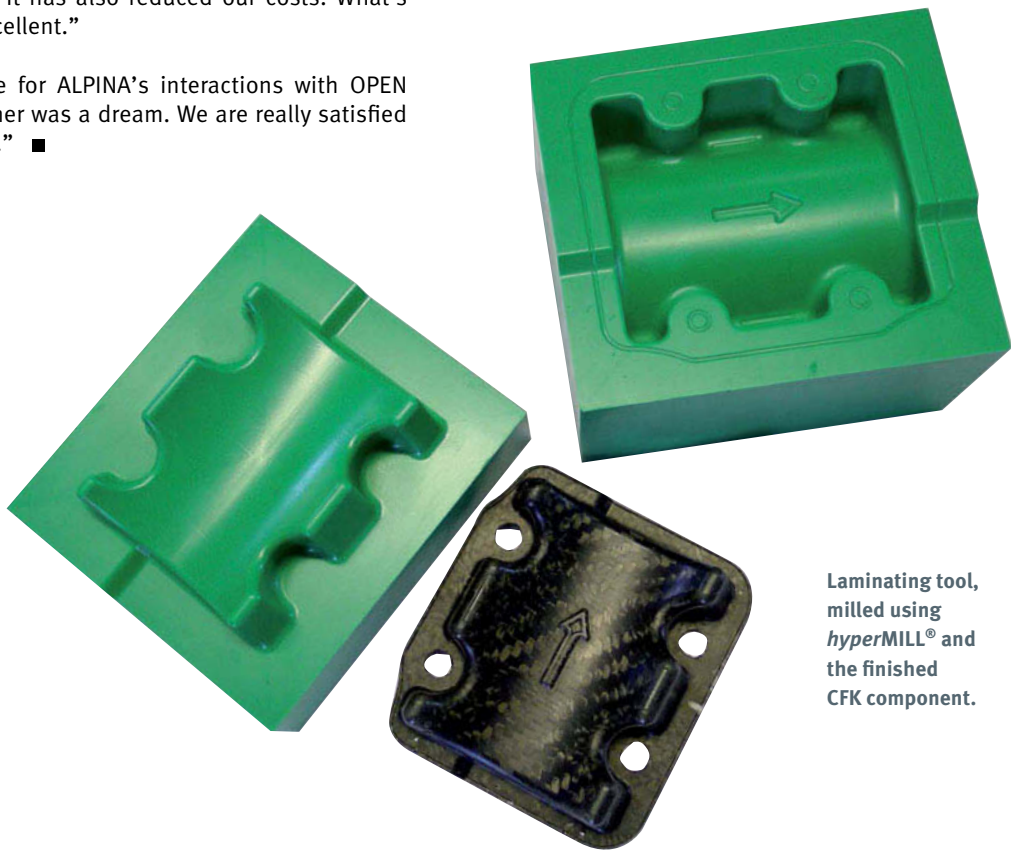
It is particularly important to the vehicle specialists at ALPINA that *hyperMILL*® provides a simple user interface, with tried and tested commands which allow them to reach their goals quickly. The safety technology integrated into the CAM system, which automatically avoids collisions, is also very important. Says Schau, "If we run components through the milling machine overnight, we want to be certain that everything is in working order."

The overall system works so well that ALPINA now uses *hyperMILL*® to program 98 percent of all its NC parts. A post-processor (with MillPlus controls), also created by OPEN MIND, is placed between the CAM system and the 5-axis machining centre from Deckel Maho (DMU 100 T). OPEN MIND's care and attention to detail really pays off: "We barely notice the post-processor," says Schau. Which is exactly how it should be.

"*hyperMILL*® has provided us with lots of opportunities to manufacture components and create designs that we just weren't

able to previously. The system has not only significantly increased our productivity, it has also reduced our costs. What's more, the quality is excellent."

Schau also has praise for ALPINA's interactions with OPEN MIND: "Working together was a dream. We are really satisfied with this collaboration." ■



Laminating tool, milled using *hyperMILL*® and the finished CFK component.

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

www.openmind-tech.com