

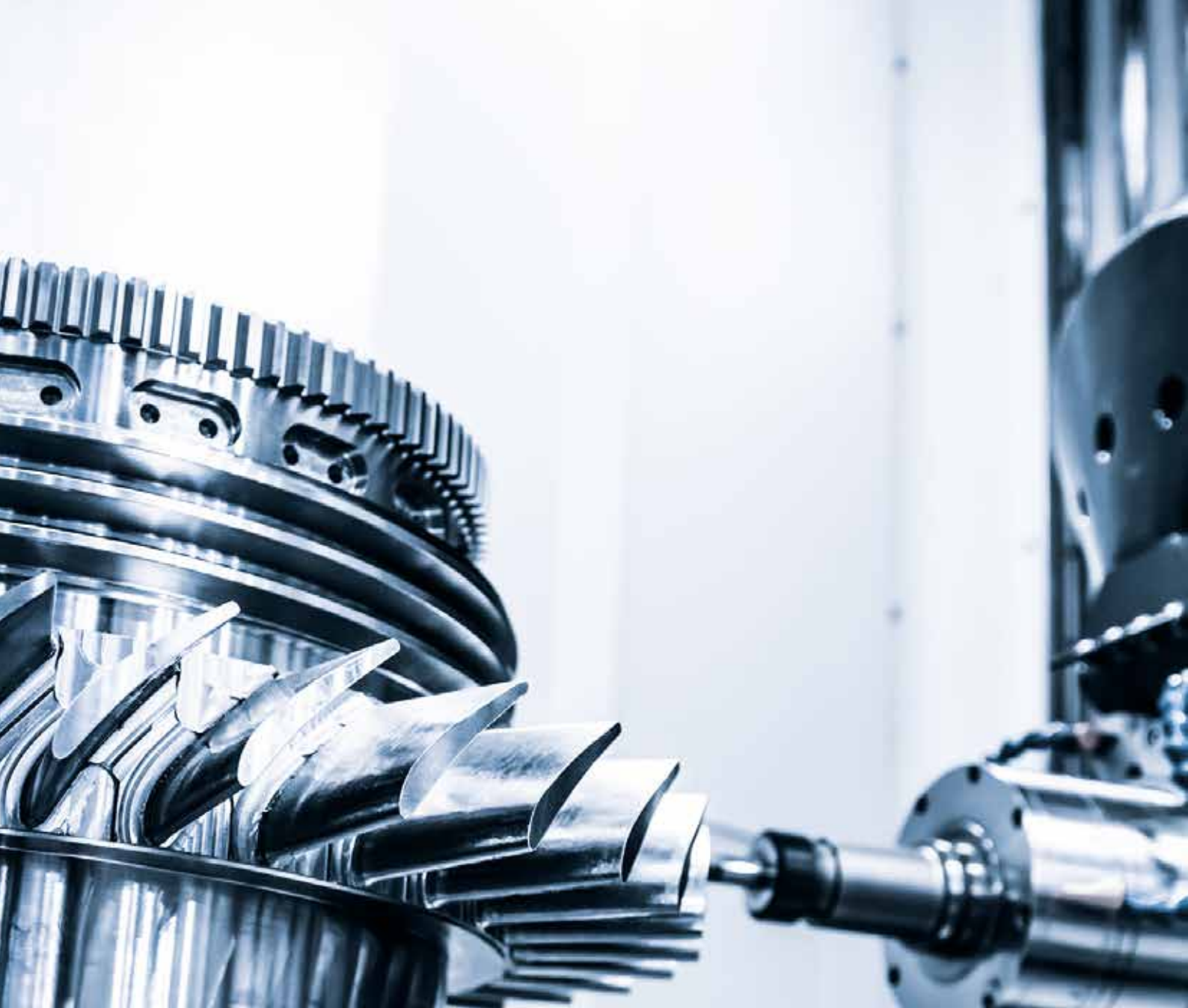
CAD/CAM with MES and NC verification from a single source



High quality – efficient – reliable

The companies manufacturing for the aerospace industry are among the best. Part geometries and materials used are subject to strict requirements. First-class machines and tools are used, and these must be operated economically and efficiently. The reliability requirements for aerospace parts leave no room for manufacturer error. Therefore, the most stringent demands for reliability, quality and efficiency must be met. This can be supported by CAD/CAM with MES, verification and simulation of NC programs with Tebis.





Benefits from machining centers with digital twins

You work hard to ensure the optimal use of your machining centers to manufacture parts for the aerospace industry. You need fast setups, minimal positioning times, reliable resource planning and capacity control as well as highly efficient NC programs.

It's good if you can rely on these work flows before the order is even sent to the machine. How does it work?

The complete and true-to-life digital mapping of your manufacturing lets you check in advance what will happen later in the actual setting.

Tebis CAD/CAM provides you with digital twins of your manufacturing resources – machines, tools, clamping devices, etc. Even before the first toolpath is calculated, you can clamp the part virtually on the machine and select the correct clamping devices, cutting tools and machining directions.

With the Tebis ProLeiS MES system, you can use templates to define and plan all manufacturing steps. Automatic resource assignment enables you to optimally utilize your personnel, machines and meet your delivery deadlines.

Because the virtual environment follows along throughout the entire programming, it provides reliable and integrated NC simulation and verification. The created NC programs have minimized idle toolpaths and are collision-free from the very start. The setup and clamping devices are documented. Your structure, engine or landing gear parts are manufactured smoothly, no matter how large and complex the machines.

Advantages:

- Fully utilize the potential of machining centers
- Collision-free already during programming
- Minimal positioning times, short machining times



Mitigating the shortage of qualified personnel

You have to keep manufacturing and NC programming running, even though it is increasingly difficult to find qualified personnel. This requires that you relieve your staff of routine tasks and ensure that knowledge is readily available. This also simplifies training of new employees.

It's beneficial if you can rely on these points even before NC programming starts. How can this be achieved? Save existing manufacturing knowledge easily and without programming training. All employees must be able to access this information with the same ease.



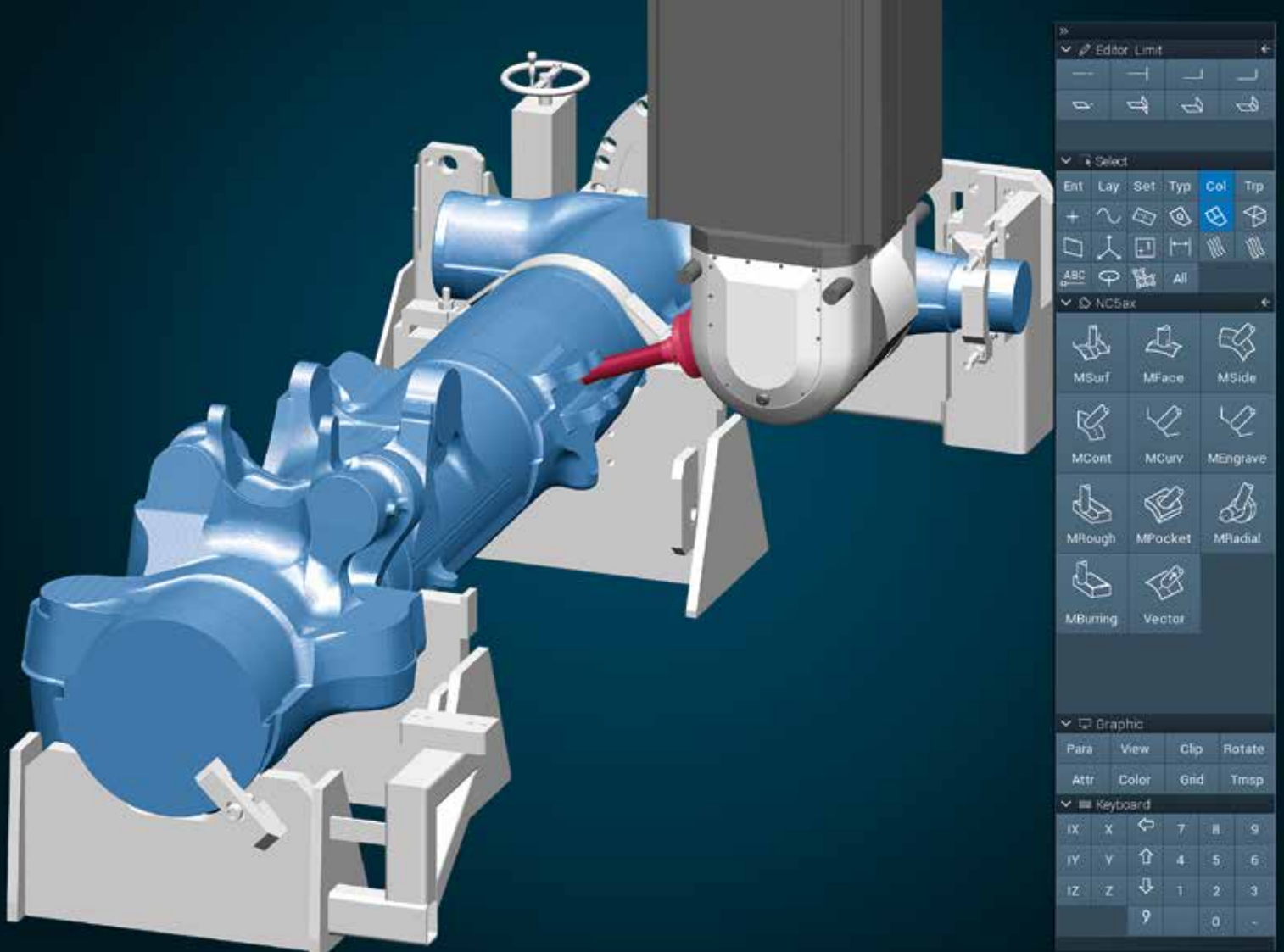
Use Tebis CAD/CAM to create manufacturing templates for all levels. This may involve the optimal use of individual tools or tool sequences for specific machining operations such as threads or tolerance fits to complete machining processes for families of parts – such as molds and fixtures for composite processing. The templates can be automated to the extent that they automatically find the relevant geometry elements, regardless of the system in which the data were designed.

This reduces programming times and increases quality, because all of your employees can benefit from the knowledge of their most skilled colleagues.

Integrated NC simulation and verification (p. 3) is further help when qualified personnel are in short supply, because reliable NC programs are a prerequisite for multiple-machine operation.

Advantages:

- Better use of personnel
- Faster creation of NC programs
- Manufacturing with the highest quality



Manage complex manufacturing tasks

You are responsible for manufacturing large, complex parts. You use a wide range of machining types and technologies to achieve the maximum material removal rate – even in materials that are difficult to machine.

It's good to know that you can rely on these points before the work planner and NC programmer even get started. What do you need in order to do this? Plan, manage and calculate all manufacturing methods and all strategies in a single comprehensive system.

Tebis CAD/CAM lets you program all machining operations – from 2.5 D to 5-axis simultaneous machining. You can also control many other machining types, such as turning, laser cutting, laser hardening or wire EDM, via a central job manager. Conventional machines and machining robots can be programmed in the same way.

The Tebis ProLeiS MES system provides scheduled and defined orders and subtasks for all employees and machines.

Many strategies proven in practice give you the best possible equipment for precision machining of aluminum, Inconel, titanium and other demanding materials.



Use HPC, HFC and circle-segment cutters in 3-axis and 5-axis machining for efficient roughing, finishing and residual stock machining.

Robust interfaces for platforms, including Catia, NX and SolidWorks, give you compatibility with all customers.

Advantages:

- Program all methods and strategies with a single system
- Optimally implement modern high-performance machining tools
- Compatible with all existing process chains



Global service with fast response times

Tebis is a partner you can rely on. As a long-established German company, we have reliably supported our customers with a high level of service for more than 30 years. Maximum availability of software and machines as well as fast response times are key factors to keep your manufacturing processes up and running. We stand by you with outstanding customer service and ensure smooth processing.

Our experts support you in establishing customized manufacturing process chains, taking into account all aspects: machines, tools, clamping devices, machining strategies, manufacturing procedures, etc.

What Tebis customers from the aerospace industry are saying:

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We have to be able to trust our CAM software provider implicitly. If there is a problem, someone from Tebis is always there to help find solutions. This can't be measured in financial terms.

[Thomas Jäger, managing director, ALPEX Technologies GmbH, Mils, Austria]

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When we decided to go with Tebis, we really hit the bull's eye. We were immediately impressed by the many milling strategies for all of our application areas. The collision checking is also very precise – better than what we saw in other systems.

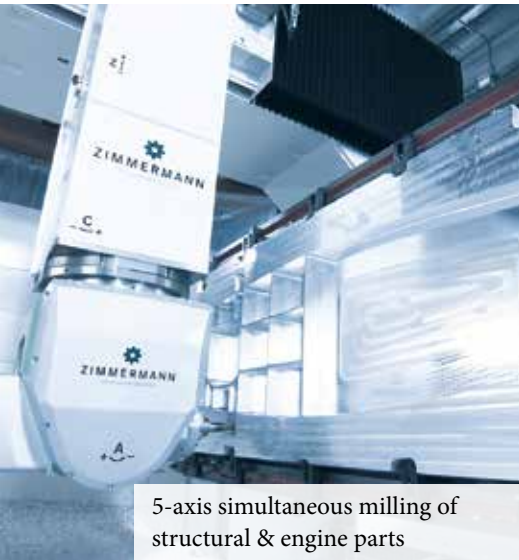
[Richard Kurz, NC programmer, Wethje Carbon Composites GmbH, Hengersberg, Germany]



Complex multi-sided machining of landing gear



Molds, fixtures and trimming for thermoforming and composites



5-axis simultaneous milling of structural & engine parts



Fixtures for manufacturing and assembly



Molds for fiber-reinforced and composite parts

Examples

Tebis is used in the aerospace manufacturing industry for a wide range of parts and equipment. Selected examples:



Advanced Integration Technology, LP • Airbus Helicopters Germany GmbH • Applications Composites
 Applied Composites • Ascent Aerospace, LLC • Aubert & Duval • AVIC Shenyang Aircraft Corporation
 Coaero Groupe Jogam • Com. Stamp s.r.l. • DEDIENNE MULTIPLASTURGY® GROUP • Ferry Capitain
 Groupe AGS • Grunewald Group • Honeywell Aerospace Olomouc s.r.o. • HUTCHINSON® Composite Industrie
 JET CUT SA • Kale Pratt & Whitney • Liebherr-Aerospace Lindenberg GmbH
 Madlener Produktionssysteme GmbH & Co. KG • Poggipolini S.R.L. • Safran Power Units SAS MICROTURBO
 Secondo Mona S.P.A. • SIBI KEP Technologies Group • UTC Aerospace Systems Collins Aerospace

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