CNC Fidia

High speed, improved precision
and maximum reliability

FIDIA

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Fidia Numerical Controls: The Solution for Machining High-speed 5-axis!

Fidia Numerical Controls offers solutions specifically designed for highly complex applications. All the controls are equipped with advanced features that enable high-speed 5-axis machining with RTCP (Rotary Tool Center Point) capabilities, as well as the ability to simultaneously control a large number of drives, including Gantry, Tandem, and multiple axes configurations.

Cutting-edge technology

Fidia numerical controls employ state-of-the-art hardware, such as multi-core processors, and operate on the Windows operating system. This powerful and flexible combination ensures exceptional performance, capable of fulfilling even the most intricate demands. The user interface is intuitive, enabling operators to work with utmost flexibility and accommodating various machining types.

Maximum operational flexibility

Fidia numerical controls seamlessly process programs generated by widely-used CAM systems, ensuring a smooth and efficient transition from design to machining. Moreover, for those who prefer programming directly at the machine, Isograph offers the required solutions and flexibility to meet their needs.

Exceptional performance

Thanks to advanced “look-ahead” algorithms and the integration of Xpower drive technology, our numerical controls offer exceptional performance in terms of speed and machining quality. y. You can achieve high-level results, ensuring both efficiency and precision in your production process.

Look Ahead

The term “Look Ahead” refers to a collection of algorithms that govern the dynamics of the machine, specifically its speed and acceleration, based on the tool path. This functionality enables the control system to anticipate and optimize the movements of the machine, leading to enhanced performance and efficiency during machining operations.

Don’t let complex machining slow you down. Choose Fidia Numerical Controls for a superior machining experience. Discover more about our cutting-edge solutions and maximize the potential of your production process.

C20 -
C20 Vision

High speed, improved precision, maximum reliability

The new hardware and software solutions featured in C20 and C20 Vision enable achieving maximum performance and the highest precision in the machining of molds and aerospace components. The multiprocessor architecture for operator interface management, axis control, real-time anti-collision software ViMill, in synergy with the new Velocity Six™ function for tool path management, allows for high milling performance in terms of quality and speed.

X-Power

FIDIA's digital drives for maximum performance in high-speed milling.

The Fidia XPower series of digital drives is the natural complement to axis control technology.

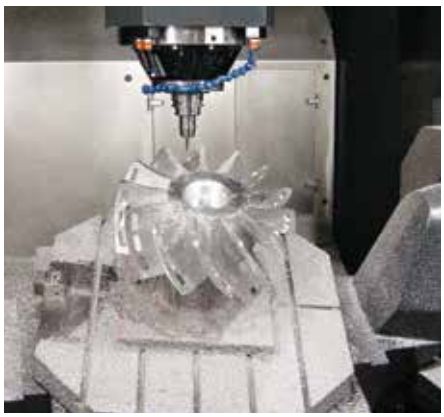
nC19

The FIDIA numerical control, flexible and compact

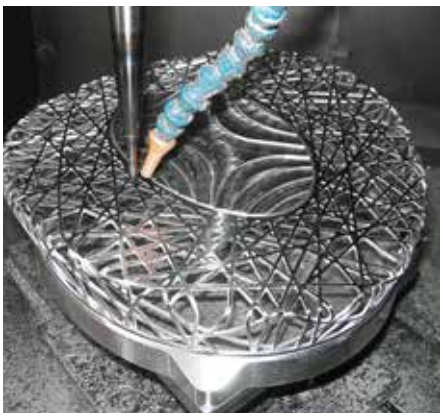
In the pursuit of providing all-encompassing solutions for modern machine tool equipment, Fidia has developed nC19. It retains essential performance features, including the ability to execute 3D paths quickly and precisely, manage 5-axis interpolation, offer advanced functions for mold and pattern machining, and ensure compatibility with Windows applications.

5-axis Milling

Discover the potential of 5-axis continuous milling: create complex shapes with millimeter precision, unleash your creativity, and conquer new manufacturing frontiers.

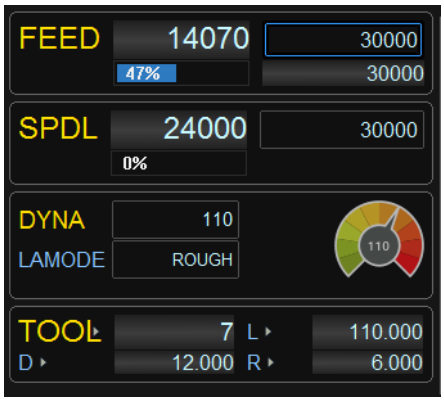


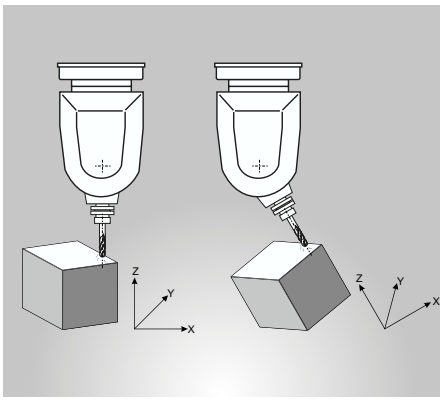
Aerospace



Complex parts

The Simplicity of 5-axis Management





Dyna

Dyna is a parameter that comes into play within the Look Ahead algorithms, allowing the operator to adjust the dynamic performance of the machine. The default value is 100 and can be set between 50 and 150: higher values increase the feedrate while lower values improve surface quality.

TCS

Tool Coordinate System (TCS) is a feature of CNC that allows the execution of a tool path according to a reference system different from the one used for programming. This simplifies the creation of machining programs, such as in the case of machining to be performed on an inclined plane that can be generated on the XY plane and then rotated.

Retract

In case of an unforeseen interruption during machining, the retract functions allow the tool to safely move away from the workpiece. These functions are particularly useful on 5-axis machines in combination with the Virtual Axis function. In this case, the retraction movement is automatically executed according to the actual direction of the tool axis. By pressing the Release button, the machining operation automatically resumes from the point of interruption.

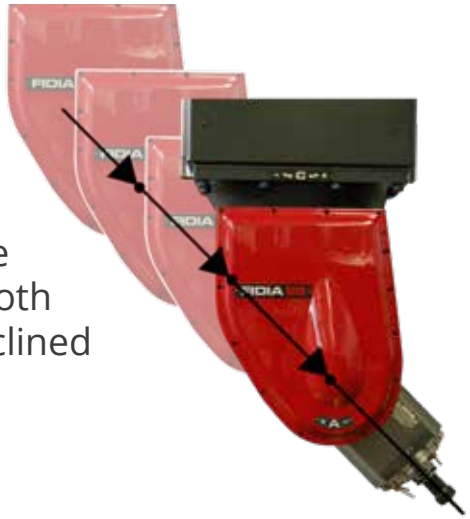
3 and 5-axis machining

RTCP

RTCP (Rotation Tool Coordinate System) in 5-axis milling numerical controls is a coordinate system that takes into account the rotation of the milling tool during the operation. It ensures precision and flexibility by calculating the movements and trajectories of the axes to keep the tool tip in the correct position, automatically accounting for machine geometry and tool length. Whether it's bi-rotary heads or rotary-tilting tables, Fidia numerical controls support RTCP programming.

Virtual Axis

The virtual axis simplifies all operations where it is necessary to move the tool along its axis, both manually and programmatically. For example, inclined drilling or retracting at the end of machining.

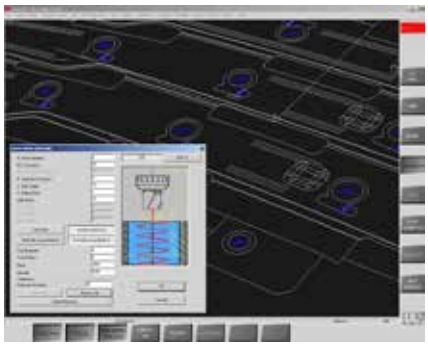


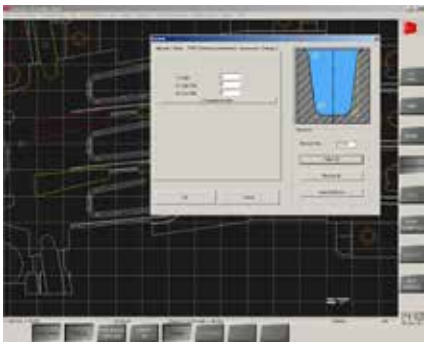
A Complete Programming System

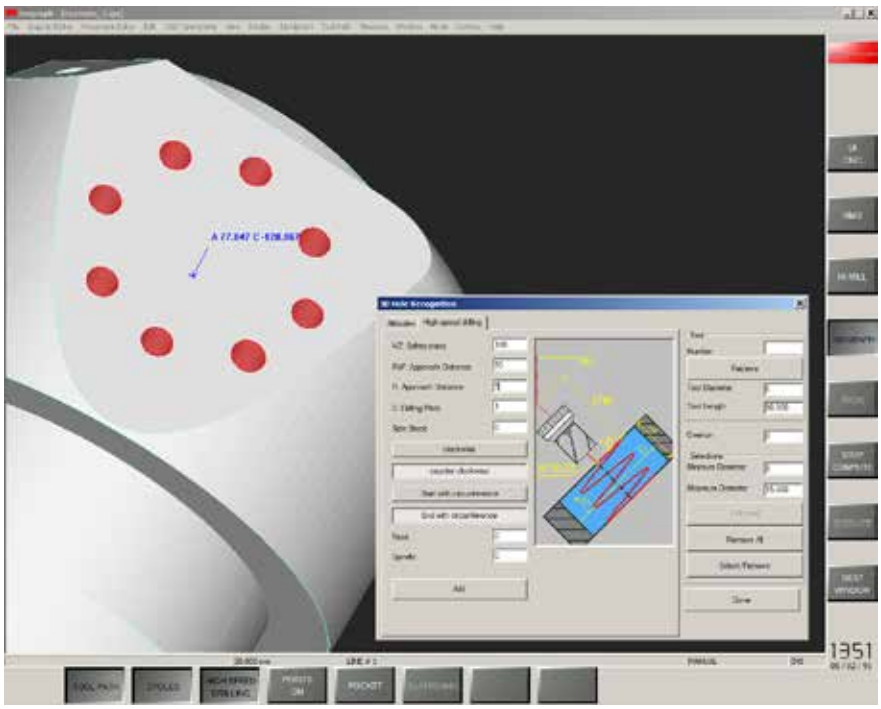
Isograph

ISOGRAPH™ is a 2.5D CAD/CAM software specifically designed for workshop use, which can be installed directly on board the CNC. It is ideal for quickly programming and for performing service machining operations such as pocketing, facing, profiling, drilling, boring, and more.

The use of softkeys and touch screen enables immediate and user-friendly interaction for all operators, including those without specific programming knowledge.







3D Graphic

With ISOGRAPH™, it is possible to simulate machining programs and visualize the tool path in 3D, before and during the machining process.

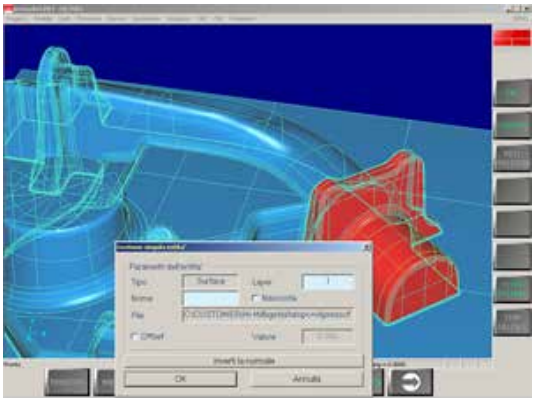
For a quick verification of the tool path, optimized visualization of large-sized files in different formats is also supported.

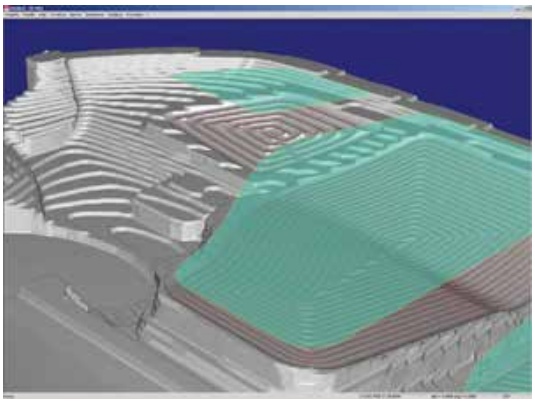
Hi-Mill

HI-MILL is the integrated 3D CAM software in Fidia numerical controls, allowing the generation of tool paths for roughing, semi-finishing, and finishing operations, with a wide range of machining strategies, directly on the machine.

It imports mathematical models by reading IGES, VDA, STL files, as well as physical models obtained through contact probes or lasers. Additionally, it can interpret the native Catia language with an optional module.

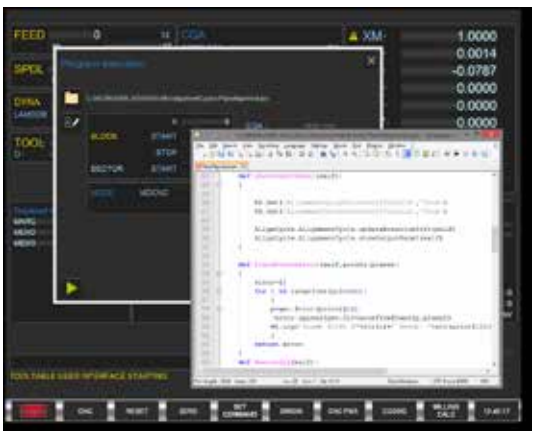
Within HI-MILL, there is also an integrated module for displaying the raw workpiece. The presence of any extra material is highlighted by colors that vary according to the amount of remaining material.





PRX: Customized Automation

Increasing automation demands have driven Fidia to develop a new language for implementing complex machining processes. This language, called PRX, derives from and therefore includes the capabilities of the Python language. It provides the ability to access all Python functionalities, in addition to commands for the CNC. Furthermore, users are free to access standard Python libraries and/or incorporate custom modules.



Industry 4.0

Machine Monitor

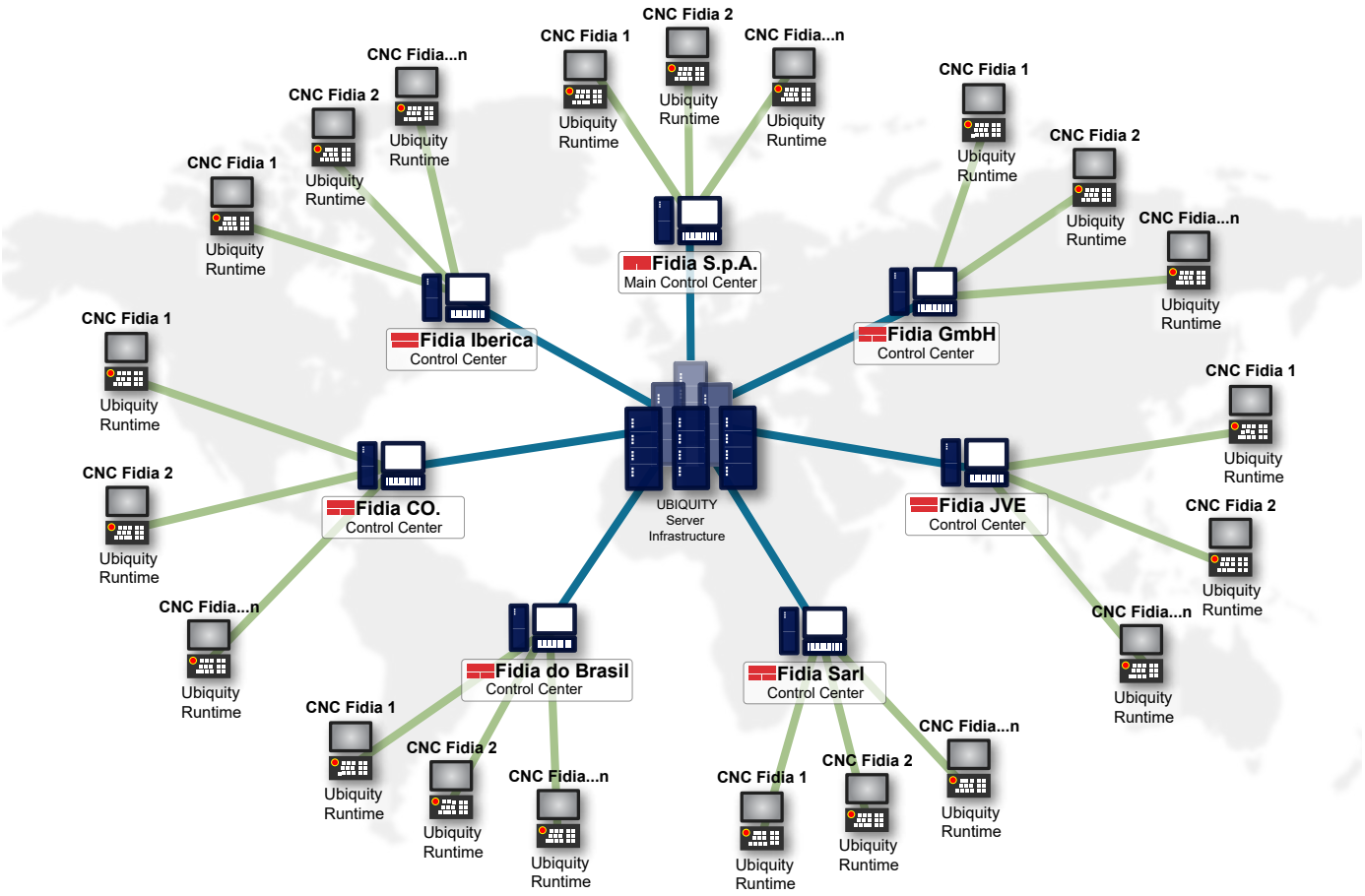
Application software that monitors CNC and/or machine tool activities in the background. In particular, it allows you to:

- Record and display CNC activities
- Manage orders/customers in a personalized way
- Analyze and monitor processing times

- Output data in xls and html formats
- Real-time activity view via internal network and web
- Receive automatic and personalized email alerts
- Manage on-machine webcams
- Customizable to meet customer requirements.

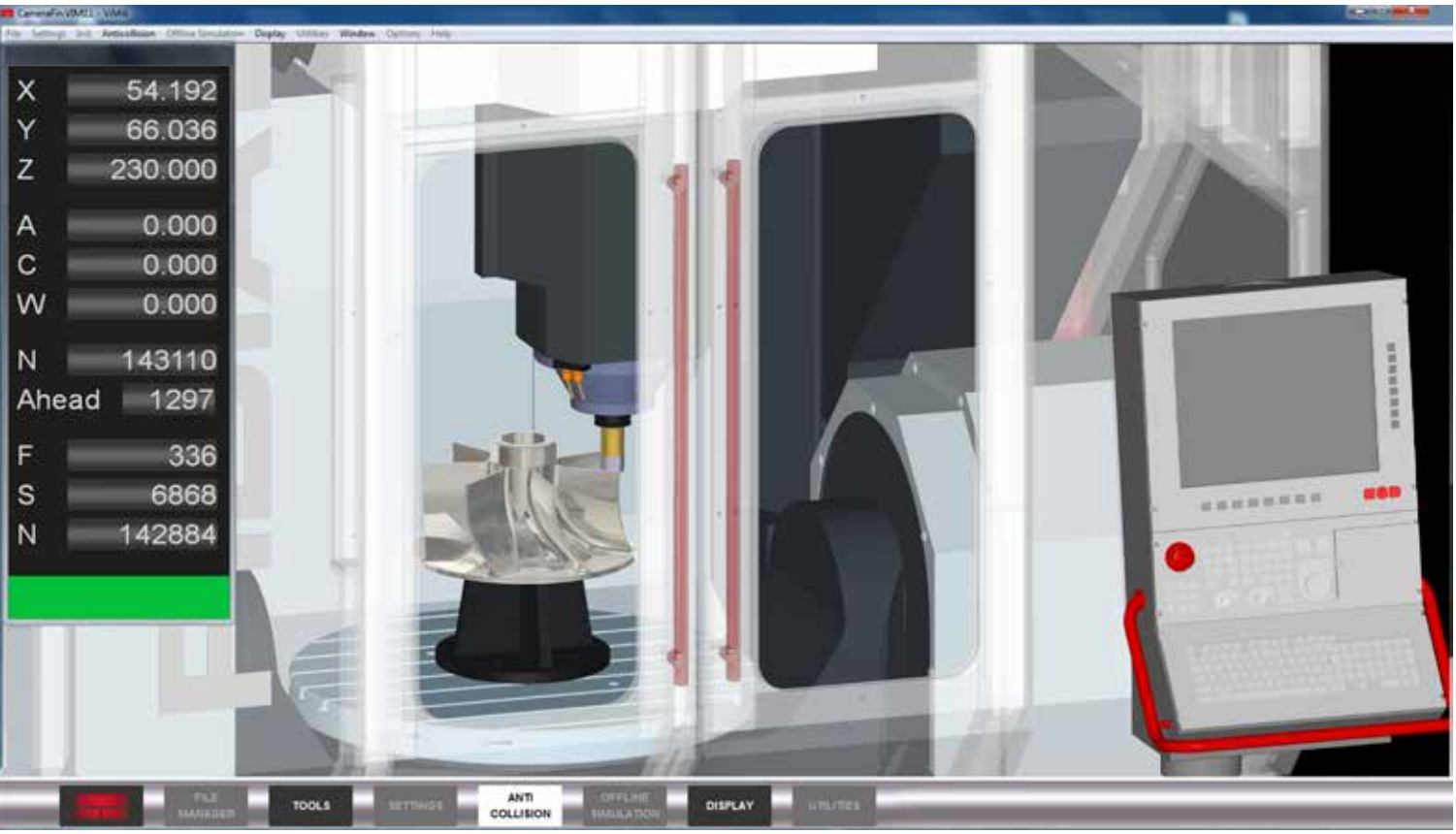
Teleservice

Secure and certified technology for remote assistance through interactive services and optimized VPN connection (no server acting as a bridge) for accessing the automation subnet.



Collision Prevention

ViMill - On-board machine protection



ViMill, real-time 3D anti-collision software, effectively helps operators avoid unforeseen collisions that can damage the machine and the workpiece.

During milling, ViMill monitors potential and unexpected collisions by visually simulating the actual machining process in advance with respect of the ongoing milling operation.

If a virtual collision between the moving parts of the machine (tool, head, table, etc.) and the workpiece is detected, ViMill promptly executes a Hold command, allowing the operator to assess the potential damage and make necessary corrections to the machining process.

Furthermore, ViMill is active even in JOG and Handwheel modes, providing protection during manual movements as well. This feature greatly supports operators, especially in situations where visibility of the workpiece or tool is limited.

ViMill acts as a lifesaver for the machine tool, serving as a virtual 3D “twin” focused on observing and safely controlling the effects of the ongoing machining process in the near future.

Power blackout management

In the event of a blackout, to ensure the preservation of CNC data and the integrity of electronic devices, a continuous power supply system (UPS) can be used. It initiates an automatic and controlled shutdown procedure for the CNC. This procedure does not require any intervention from the operator and sequentially carries out the necessary operations.

In addition to the automatic shutdown procedure of the CNC, the Fidia Xpower drives interrupt any ongoing operation by stopping the axes and spindle (Feed hold), and simultaneously a tool retract is performed to safeguard and prevent damage to the workpiece.

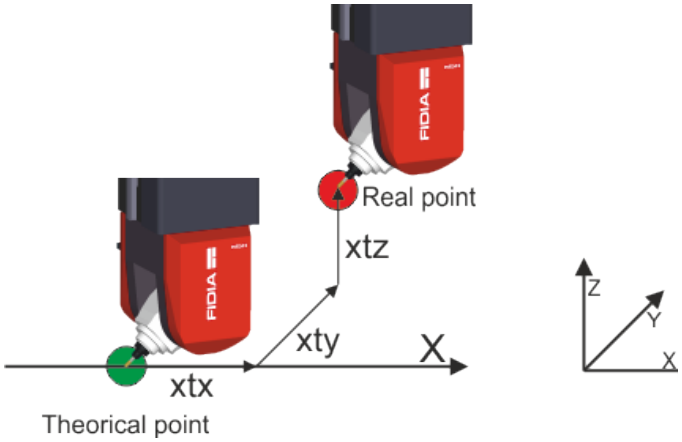
Machine Protection

Anticollision software prevents machine damage caused by collisions with its own components by constantly monitoring the workspace.

Support Tools

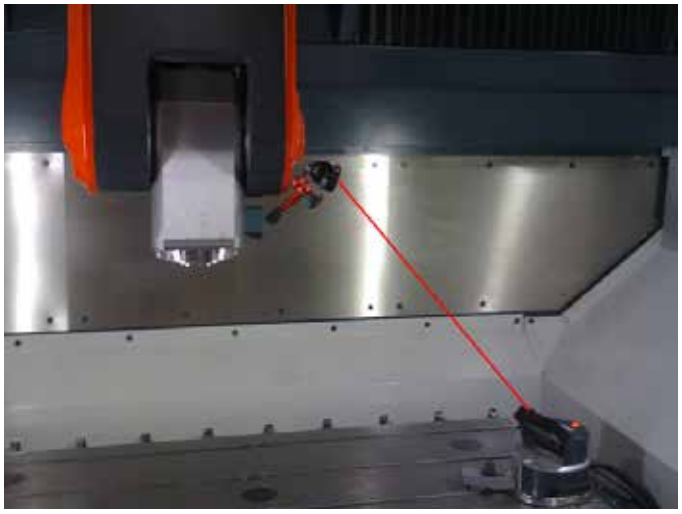
VAC - Volumetric Compensation

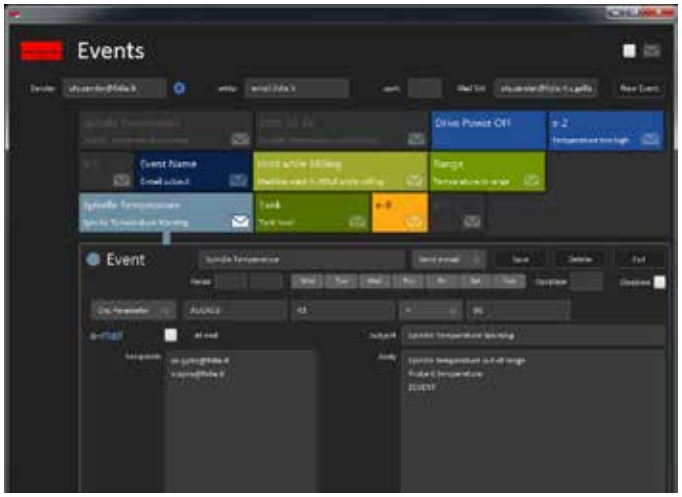
It is the three-dimensional compensation of the entire working volume of the machine, including errors arising from the orientation of the tool in space and the imprecision of the head position caused by linear axes.



This compensation, available in Fidia controls through the VAC (Volumetric Axes Compensation) software option, allows loading and processing a compensation file that contains the complete set of measured deviations on the machine, which are to be transformed into compensations.

All these compensations must be measured using an external measuring system that allows detection of errors with the required accuracy.





Event manager

Events Manager is a program for set email notifications based on events set by the operator.

HMS

The HMS™ calibration system for bi-rotary heads, in combination with RTCP capabilities, is a winning and unique formula in 5-axis milling technology.

This system allows for precise positioning of the tool tip through a fully automated calibration procedure, that is independent of any mechanical and electronic errors, ensuring maximum machining precision.

TMS

The TMS device enables the measurement of geometric characteristics of the tool such as length, diameter, and shape, while the tool is rotating under actual working conditions. It also allows the inspection of the tool shape for assessing wear across the entire cutting surface. In cases where extreme machining accuracy is required, it is also possible to evaluate the degree of wear for each individual cutting edge in relation to the others.

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