



Simulation Software for CNC Machines and Robots

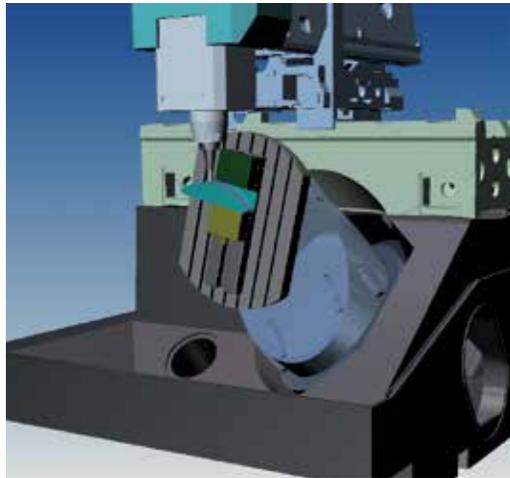


Eureka G-Code



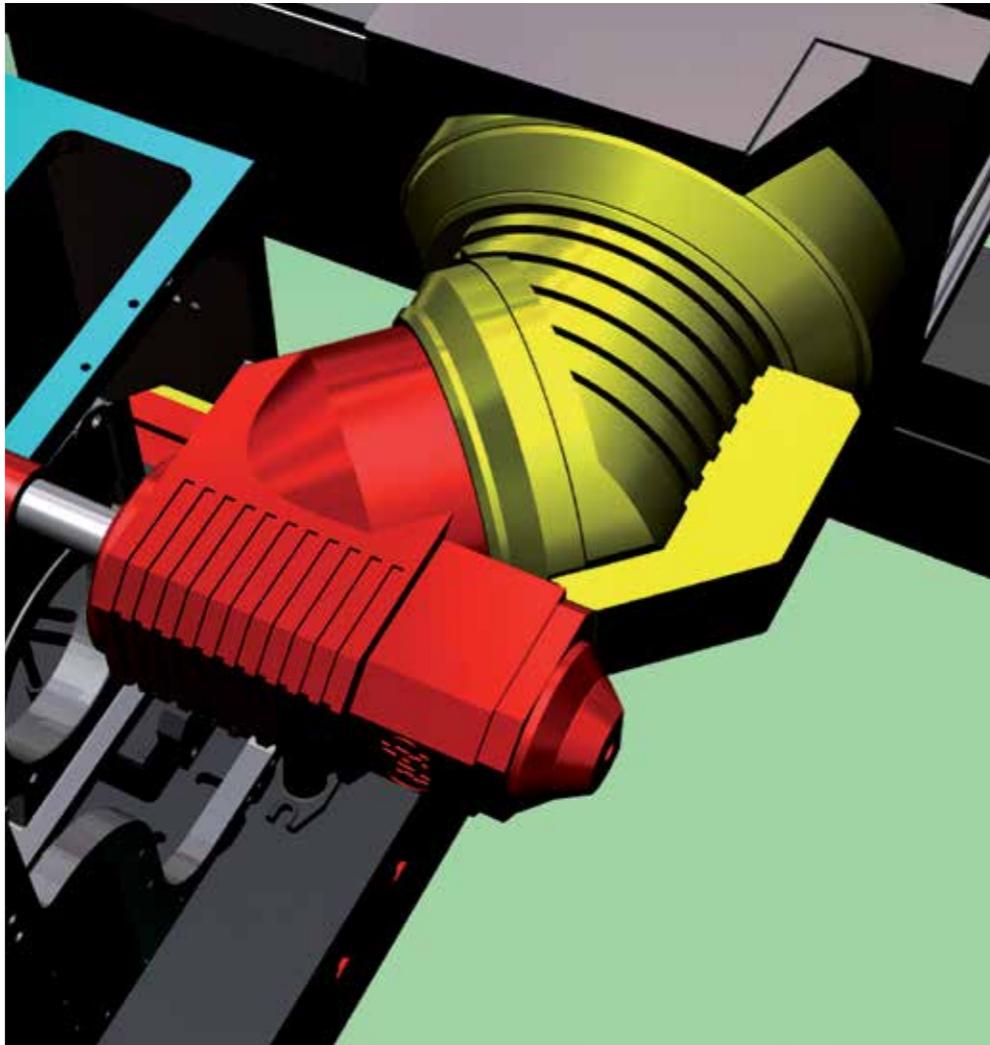
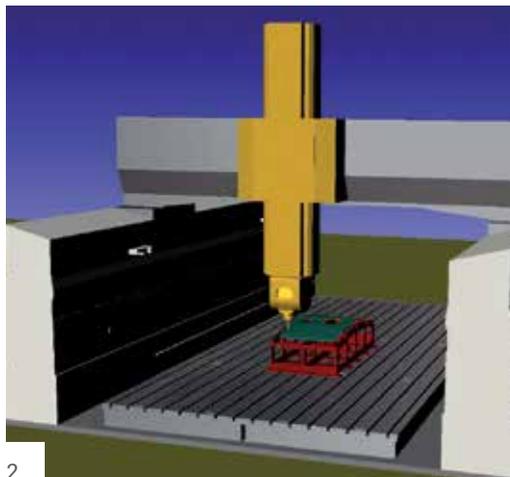
Eureka Robot

powered by **ROBORIS**



5-axis machine with dual-axis rotary table ^

5-axis machine with dual-axis rotary head v



Eureka G-Code | Software

ACCURATE AND REALISTIC SIMULATION

Eureka makes it easy to build all types of kinematics and supports any kind of numerically controlled machine with unlimited axes—from 3-axis milling machines up to multi-axis mill-turn machines.

With no additional customization, it emulates all of the most popular CNC controls, including Fanuc, Siemens, Heidenhain, Okuma, Mori Seiki, Mazak, Fidia, Selca, Osai, Num and more.

Material removal is simulated in real-time, verifying errors like rapid motion contacts and collisions with the design model and fixtures.

MAIN FEATURES

- 1 Simulation of multi-channel, mill-turn machines.
- 2 Simulation of tool change, head change, pallet change, movements of auxiliary parts and dual spindle.
- 3 Accurate emulation of all control functionalities:
 - G codes and M functions.
 - Coordinate systems.

- Tool radius and length compensation.
 - Drilling cycles, multiple cycles.
 - Logical instructions.
- 4 Real-time collision detection between all machine parts, stocks and fixtures.
 - 5 Verification of over-travel limits.
 - 6 Real-time visualization of coordinate systems and tool reference points.
 - 7 Interactive and automatic removal of scrap material.
 - 8 JOG and MDI functionalities.

Eureka is easy to use. Its graphical interface meets the needs of users in the technical department and on the shop floor.

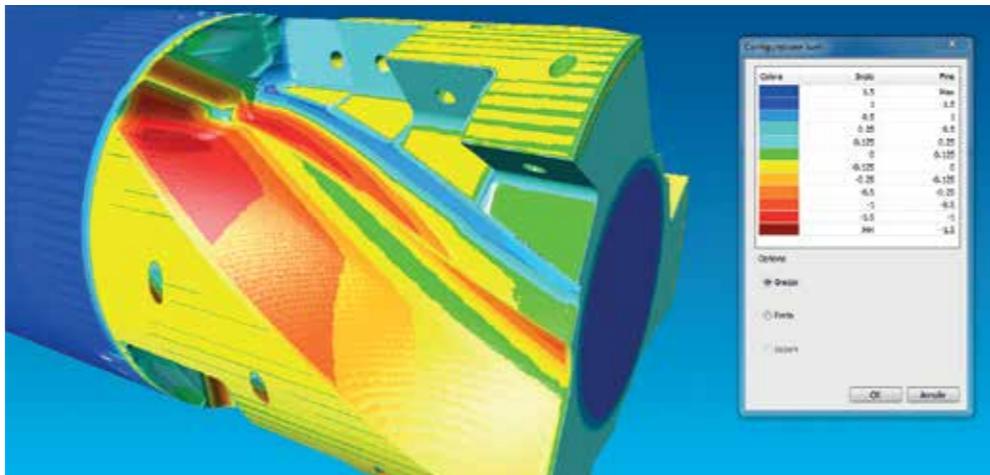
Eureka integrates with other software applications through a rich set of APIs, compatible with the most popular programming languages to include **.NET, VB, C++, Delphi and VBScript.**

 Simulation

 Customization

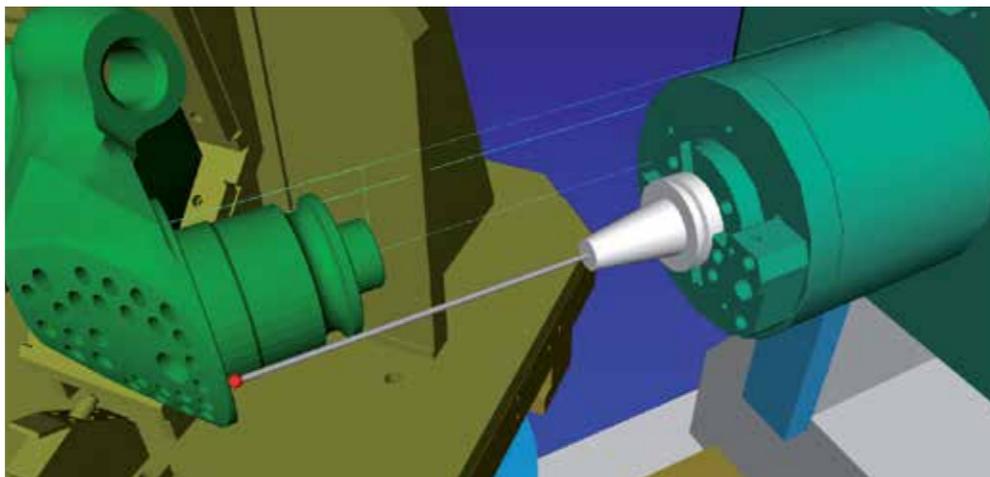


Measuring tools ^



Comparison of machined part and finished model ^

Probing cycles v



Debugger and realtime editing v

```

110 M6
111 M98P8020
112 G54.1P2T2091
113 G90G0B0
114 G52Z67.11
115 G0Z462.89
116 #699=0
117 WHILE[#699LE#619]DO1
118 G0B[#699*180+0]
119 G52X0Y0Z67.11
120 #698=1
121 WHILE[#698LE#609]DO2
122 G52X[0*[#698-1]]Y[0*[#698-1]]
123 #697=1
124 WHILE[#697LE2]DO3
125 G52Y[0*[#698-1]+#614*[#697-1]]

```

Eureka G-Code | Features

OPTIMIZATION

- Use interactive and automatic tools to insert or modify Approach and Retract movements between operations.
- Employ the powerful integrated editor to make real-time modifications to the NC code directly in Eureka, then simulate again without restarting the process.
- Use the tool length optimization feature to calculate the minimum tool length for preventing collisions between the toolholder and machined stock.
- Completely emulate probing routines including the motion stops when the probe tip touches objects and origins computation.
- Detect any errors and anomalies during material removal using real-time cutting conditions analysis during simulation; analyze the workpiece material, spindle and tools.

COMPLETE AND ACCURATE ANALYSIS OF THE RESULTS

- **Dimensional analysis on the machined stock.** Easily measure diameters, thickness and distances.
- **Comparisons between machined stock and CAD design model.** Identify gouges and excess material in 3D to enable users to examine from any point of view.
- **Export the machined stock** as a high-quality 3D file compatible with any CAD system.
- **Simulation results summary in default HTML and Excel or user-defined reports.** Use reports to prepare quotes or optimize the machining process. For example, estimate the machining time for each tool in each machining cycle, in both rapid and feed rate states.

Eureka provides more than just simulation. It **analyzes machining results** under many scenarios to **detect and remove mistakes**, reduce production time, while providing machining process reports and time summary sheets.



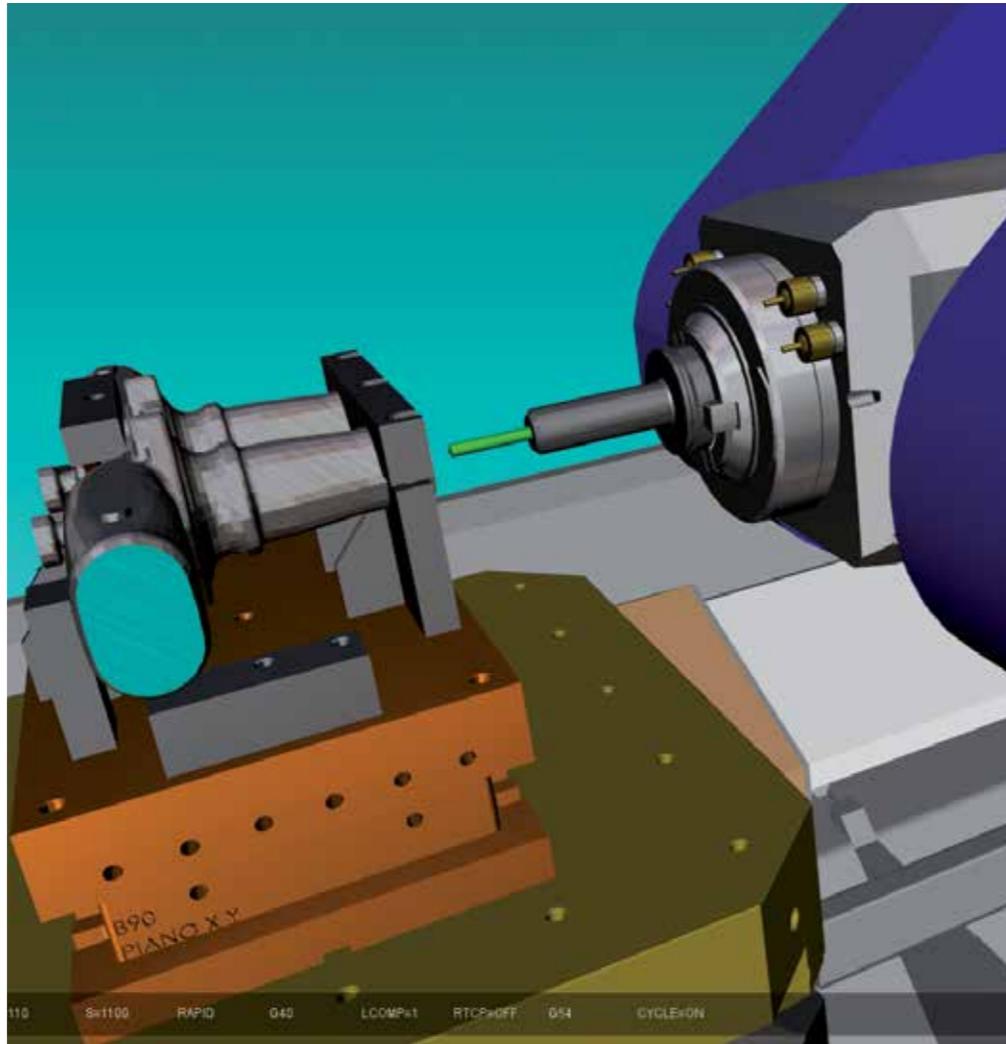
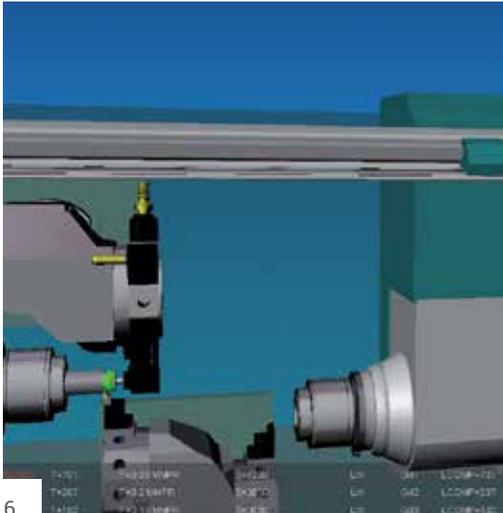
Optimization



Result Analysis

2094	Fresa	245	0
2095	Fresa	197	0
2096	Fresa	197	0
2097	Fresa	161	0
2098	Fresa	230	0
2099	Fresa	239	0
2100	Fresa	180	0
2101	Fresa	190	0
2104	Fresa	175	0
2105	Fresa	180	0
2106	Fresa	282	0
2107	Fresa	209	0
2108	Fresa	104	0
2109	Fresa	215	0
2110	Fresa	246	0
2175	Fresa	165	0
2176	Fresa	160	0
2177	Fresa	150	0
2178	Fresa	150	0
2179	Fresa	160	0
2180	Fresa	150	0
2181	Fresa	150	0
2193	Fresa	150	0
2194	Fresa	150	0

Tool library. Parametric definitions,  from DXF or from 3D models.



Eureka G-Code | Features

CAD/CAM AND TOOL DATA MANAGEMENT SYSTEMS INTEGRATION

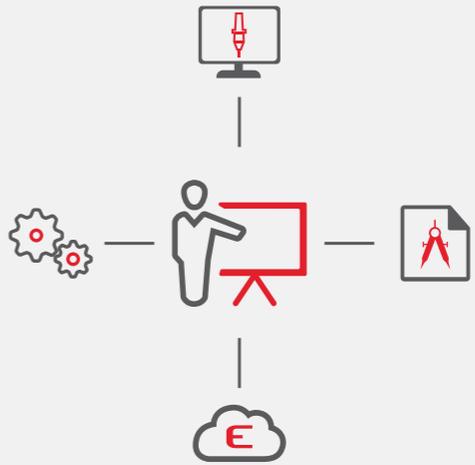
Transfer the machining toolpath, necessary tools, stock, design model and fixtures from your CAM system to Eureka with just the push of a button.

Supported systems:

- ALPHACAM
- CAMWORKS
- CIMATRON
- CREO
- EDGECAM
- FEATURECAM
- ESPRIT
- GIBBSCAM
- GO2CAM
- MASTERCAM
- POWERMILL
- PRO-MANUFACTURING
- RTM
- SOLIDCAM
- SUM3D
- TDM
- TEBIS
- TOPSOLID
- VISI
- WINTOOL
- WORKNC
- ZOLLER TMS
- ZW3D

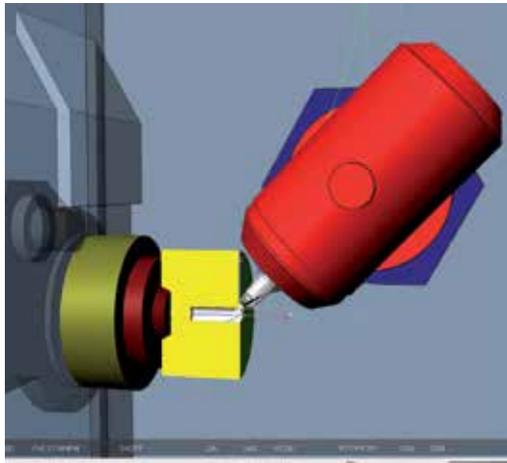
EDUCATIONAL TOOL

Eureka is also useful for **training new personnel and teaching NC programming to students**. NC programs for any kind of machine and control can be designed and verified with Eureka, even when the real machine is not available.



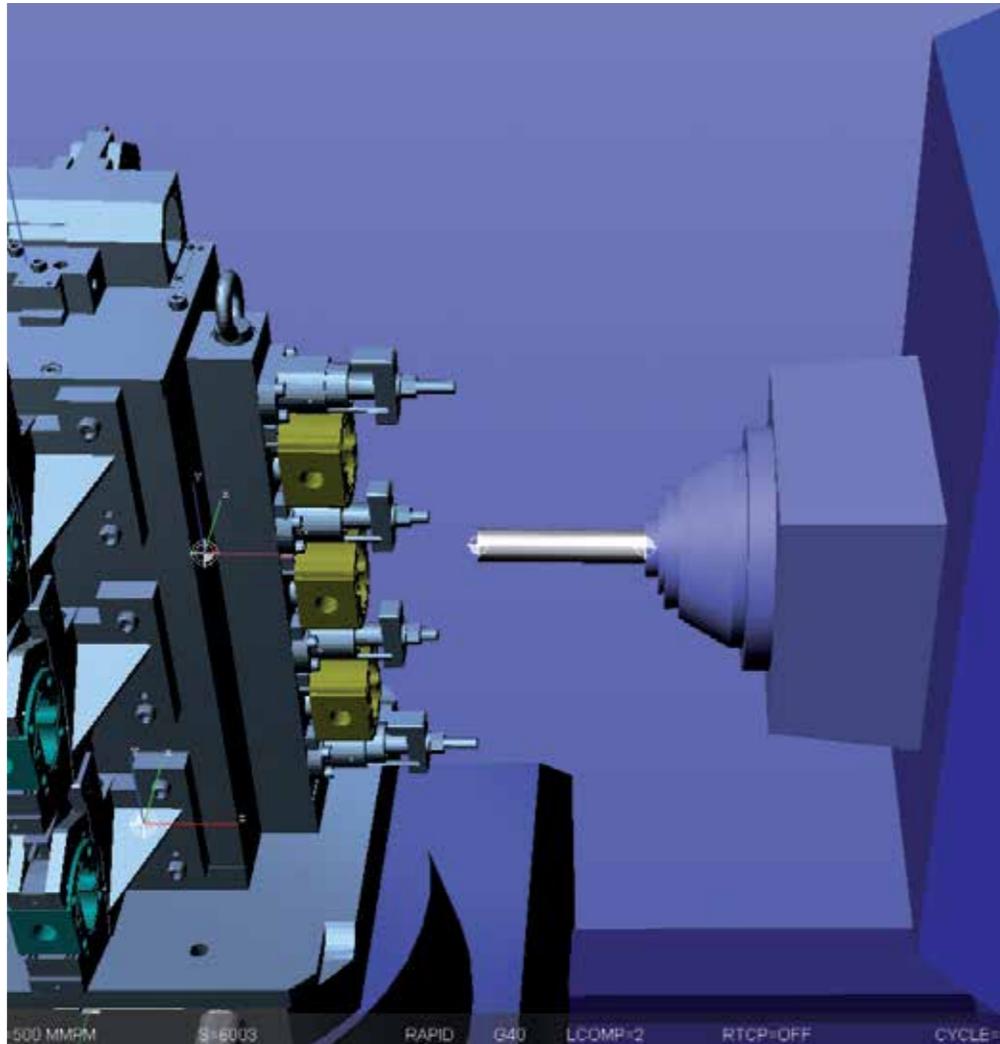
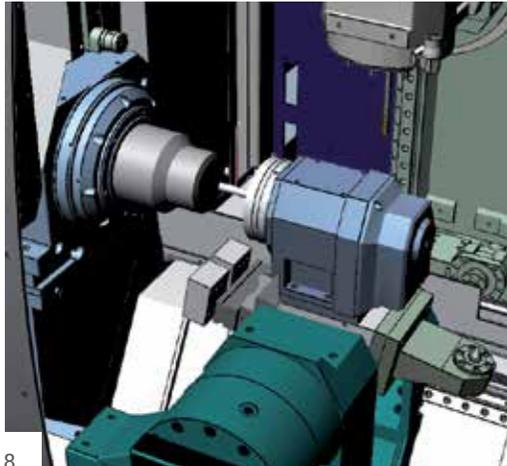
Eureka provides an advanced **tool assembly procedure**, which is very efficient when starting from 3D models of tool components. The tool components library is extended to **include any combination of cutting and non-cutting parts**, which simplifies composing in the tool assembly window.

-  CAD/CAM Interfaces
-  Educational tool



5-axis continuous machining with sub-spindle ^

Machining with workpiece transfer v



Eureka G-Code | Features

MULTI-CHANNEL MILL-TURN MACHINES

- Simulation of multi-channel, mill-turn machines.
- Continuous 5-axis and simultaneous mill-turn machinings on different spindles and workpieces.
- Multiple repetitive cycles emulation (G71, G72 for Fanuc and CYCLE93-CYCLE95 for Siemens 840D).
- Mill-turn machining toolpaths using Z, X and C axes or Z, X and Y axes (G112 for Fanuc and TRANSMIT for Siemens840D).
- Automatic workpiece transfer to pick-off or sub-spindles.
- Accurate management of bar feeders and sliding headstock machines.

PRODUCTION MACHINES

- Machining simulation with multiple workpieces, pallets and program zeros.
- Accurate emulation of the Fanuc and Siemens G-codes including logic and mathematical functions, subprograms, macro, special cycles, probing cycles, conditional jumps, variables, use and definition of zeros and multiple tool offsets.
- Tilted work planes simulation (G68.2, PLANE SPATIAL, CYCLE800).
- Simulation of tombstones, tool changes and probing cycles.
- Accurate report of the machining times and list of tools.
- Tools defined by parametric models, starting from a 2D profile or 3D model.
- Direct import of tools from CAD/CAM systems and from tool management applications.
- Import/Export of the presetting table in Excel format.

Eureka conserves production time by eliminating the need to test the program on your machine. Potential errors such as collisions, over travels and gouging, can be easily detected ahead of time on your PC

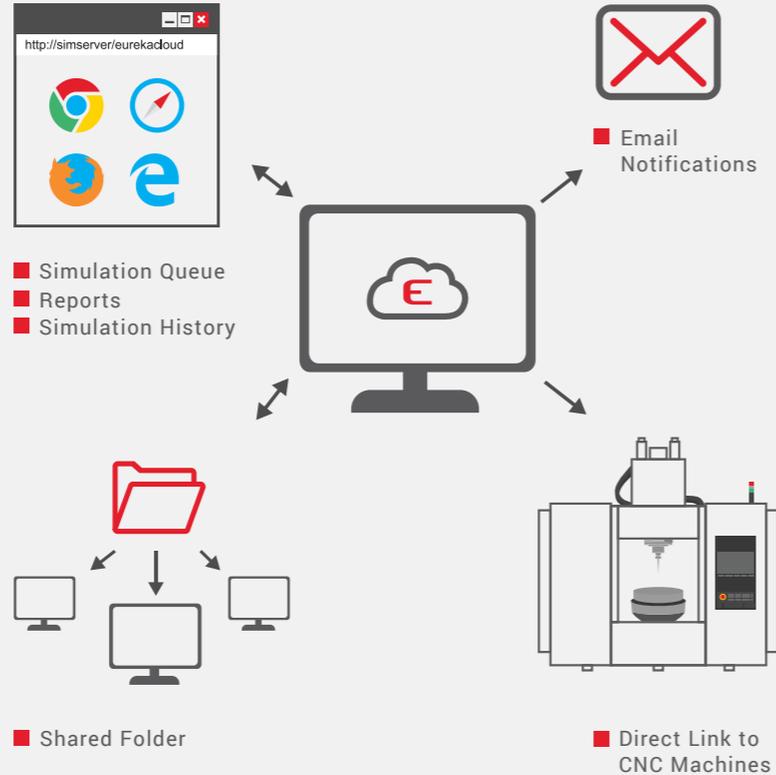
Available for:
Windows XP/Vista/7/8/10
32 e 64 bit

EUREKA CLOUD AUTOMATIC SIMULATION SERVICE

Eureka Cloud is a simulation service which provides complete automation of the design-to-production workflow. Any CAD/CAM operator can simply export simulation data to a shared folder that is monitored by Eureka Cloud. Eureka Cloud will automatically simulate the new data and send results by email.

- If a simulation is successful, the NC program can be sent directly to the CNC machine.
- If errors occur, Eureka Cloud sends feedback, including a report with useful information and the EVDF simulation file to be reviewed on any mobile device via the Eureka Mobile app.

Anywhere and at any time it is possible, using a Web browser, to check the status of the pending and ongoing simulations and the history of the previous simulations. Eureka Cloud is highly customizable and easily integrates with CRM and PLM systems.



EUREKA MOBILE

All Eureka Virtual Machining simulations can be reviewed and analyzed anywhere on any mobile device. This enables machine tool operators to review the NC program simulation on their own mobile devices, ensuring optimal machine setup and identification of potentially critical issues flagged by the technical office.

In addition to the 3D simulation of the machine movements, Eureka Mobile provides a detailed analysis of any messages, warning and/or errors generated during the simulation. In the case of collision, colliding parts are highlighted in 3D for easy identification of issues.

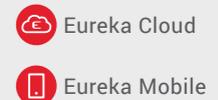
The executed NC code, the tool, the feed rate and other useful information are also displayed during the simulation.

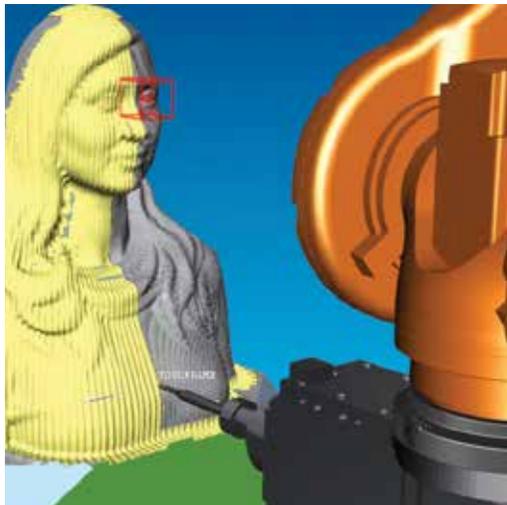
The Eureka Mobile app is available for any iOS and Android device. A standalone Windows application is also available.



Eureka fits perfectly into the Industry 4.0 concept:

- Cuts proofing time on the actual machine.
- Connects teams and workflows (see specifically Eureka Cloud and Eureka Mobile).
- Helps deliver a lean manufacturing process.
- Provides planned workload ahead of time.





Eureka Robot

ROBOT MILLING

Eureka converts APT or ISO codes generated by popular CAM systems, enabling the programming of 6+ axis robot cells using a dedicated post-processing module. During this process, Eureka calculates the optimal movements of the robots and external axes by simulating the process in all aspects. The software detects problems like singularities, collisions and out-of-limits, while providing powerful, easy-to-use tools to remedy them. Collisions are computed between all moving parts including machined stock. The 64-bit version delivers the necessary resources to quickly process files of unlimited size.

- Realistic 3D simulation of the whole work cell.
- Real-time material removal simulation.
- Collisions, singularities and out-of-limits detection.
- Automatic tool change management.
- Support for huge tool paths with millions of points.
- Interactive editing of trajectories.

- Automatic robot and external axes movements optimization.
- Powerful visual tools for solving collisions, singularities and out-of-limits.
- Machining with disks and blades.
- Machining with the workpiece mounted on the robot and fixed tools.
- Compatibility with all the robots in the market including ABB, Kuka, Fanuc, Motoman, Kawasaki, Staubli, Comau, etc.
- Can be interfaced with most popular CAD/CAM systems.

Eureka has been a leader in robot milling applications for many years, making it possible to combine the flexibility of a 6-axis industrial robot and the reliable technology of CNC machining centers for the creation of models and artistic objects.

Eureka Robot

MILLING SCULPTING

Transform your robot into a machining center.



Collision detection and material removal

Real-time material removal simulation provides full-collision detection with machined stock.



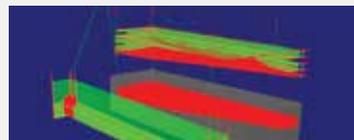
External axes optimization

Extend workspace using external axes. Automatically optimize the axes positions.



Monitor axes and speed

Estimate the machining time. Compare machined stock with design model. Save your machined stock.



Process any CAM toolpath

Use your favorite CAM system. No limit on program size. Support millions of points using 64-bit technology.



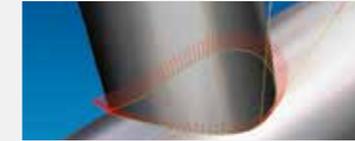
Any configuration is supported

Automatic tool change, multiple spindles, shared motors, as well as fixed tools and parts on the robot are supported.

Eureka Robot

DEBURRING, CUTTING AND WELDING

Create complex toolpaths in seconds.



Do you have the 3D model?

Use your favorite CAM system to get a machining toolpath.



Pick your toolpath manually in Eureka.



Don't have the 3D model?

Use a 3D-digitizer to define the toolpath directly on the real part. Use custom macros for fast and easy programming inside Eureka.

Or, just mix all methods!



Are you cutting with blades?

Automatically exploit all degrees of freedom to keep the blade correctly oriented.



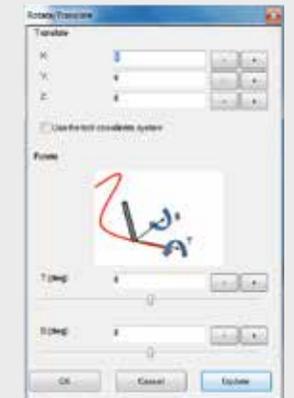
Fix and optimize

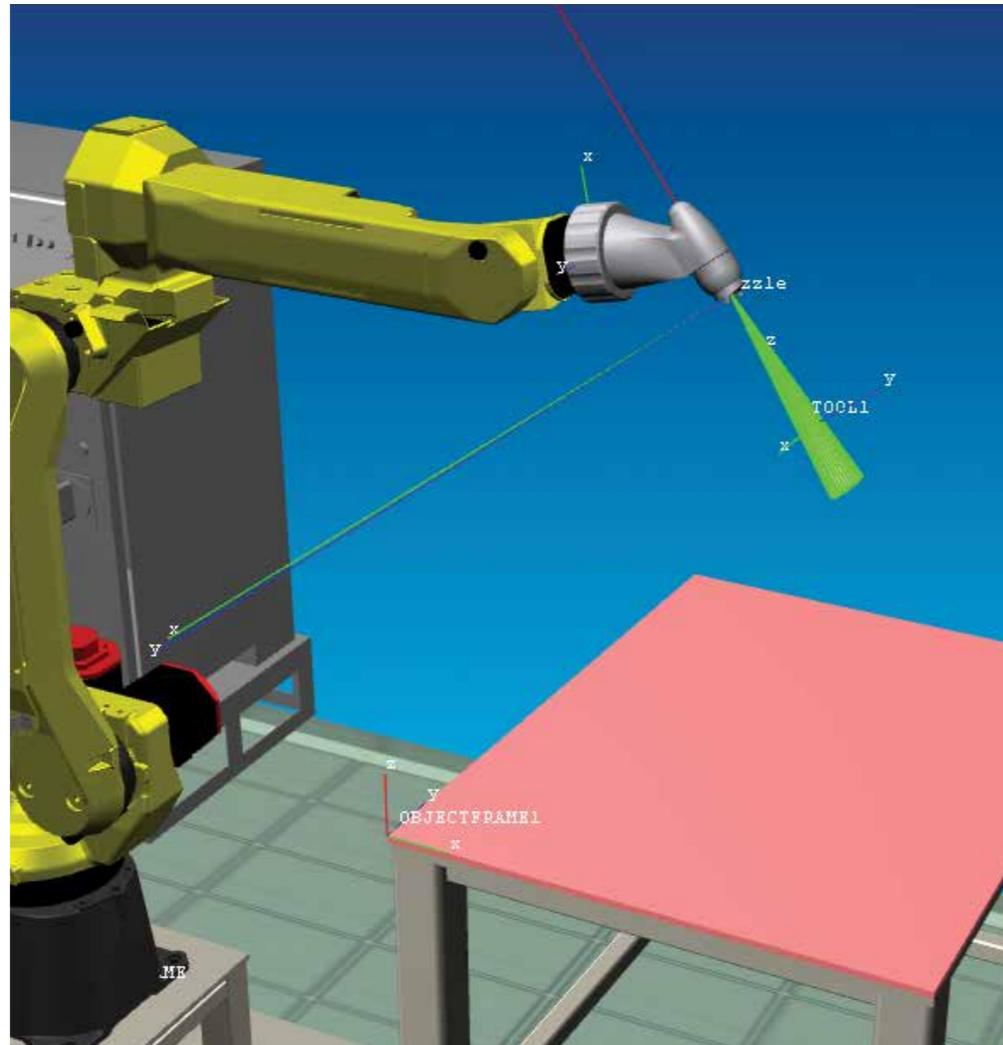
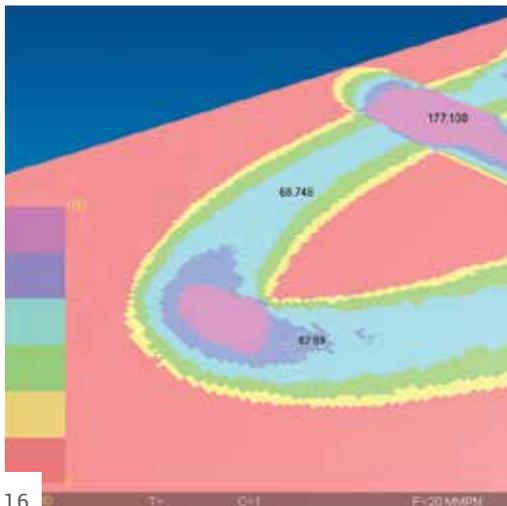
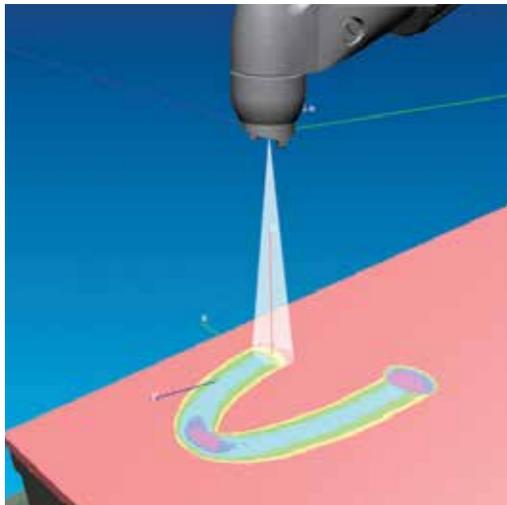
Detect singularities, out-of-limits and any kind of collision, and then fix them in Eureka using powerful, yet easy-to-use tools.



Need to refine your work?

Edit the toolpath directly in Eureka. Apply filters. Interpolate directions.





Eureka Robot

PAINTING, THERMAL SPRAYING Preview of the deposited material.

Spraying simulation offers a preview of how the deposited material is distributed on the target surface and can detect any lack of material. For part-surfaces that require extra attention, material can be added or removed by directly modifying the toolpath in Eureka. This prevents the need for multiple real-world tests, which saves both time and money.



The simulated spray pattern can be finely tuned using several parameters and multiple nozzles can be simulated.



Thickness of the deposited material can be calculated and represented using a configurable color map.

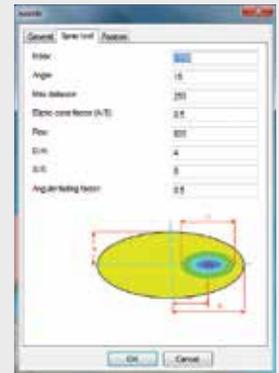


The algorithms consider speed, distance, impact angle, and code or other technology parameters.



Clicking any point of interest displays the exact thickness at that point.

The spray pattern can be finely tuned.



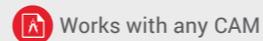
Eureka Robot

FEATURES

- Supports all robots brands including ABB, Kuka, Fanuc, Motoman, Kawasaki, Staubli, Nachi, Otc, Reiss, Comau, etc.
- Anthropomorphic and non-anthropomorphic robots.
- Supports any CAM systems including Catia, Nx, Creo/Pro-Manufacturing, CamWorks, Visi, Edgecam, Alphacam, Solidcam, Radmax/Radtube, Mastercam, Surfcam, ZW3D, Worknc, Tebis, FeatureCam, Powermill, Esprit, Cimatron, Gibbscam, Hypermill, Sum3D, Sprutcam, Go2Cam, RTM, TopSolid.
- Highly customizable menus and toolbars through use of scripts or plugins.
- Configurable output. For example for tool change, cooling and spindle settings, probing and drill/tap cycles.
- Built-in robot cell editor.
- Flexible layout and easy wizards.
- Multiple CAD formats accepted including Stl, Iges, Step, Vrml, Solidworks, Solidedge, Pro/e Creo, Catia v5, Autodesk Inventor and others.
- Entire plant simulation.
- Multiple robots or robots and CNC machines working together.
- Synchronization commands.
- Automation and server to support background simulations.
- Remote server for distribution of simulations.

Any configuration can be supported.

Any number of external axes (rotary tables, linear rails, etc.), automatic tool changes, multiple spindles, shared motors, fixed tools and robot-mounted parts.



Courtesy of **T&D Robotics**



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