NC Simulation - Solutions.

Vericut

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What Managing Directors think of NC simulation

More software? We recently invested six figures in new CNC machinery.

Then it's time to make things clearer with NC code simulation before machining begins. Vericut means you do not have to worry about rework, deviations from schedules or delays in delivery.

How much extra burden will be on the NC Programmers to implement it?

This is not rocket science. We're talking about a quick introduction in just a few weeks.

Where exactly is this software used? In production planning? There are already enough problems in the production itself.

Vericut integrates with your existing process. Just one step before production will fix those problems.

Are you sure that we will increase our machine capacities?

Definitely! Only verified NC programs are released to the real machines, which reduces prove-out time. The ROI is usually less than one year.

If we're not cutting parts, we're not earning money. That's a fact!

Retractions, machine collisions, damaged fixtures, & tool breakage are problems that every machinist knows. But it does not have to be this way.

We are currently in the process of updating our software infrastructure. How does Vericut fit?

Vericut is a digital building block that seamlessly integrates with your existing IT systems. Vericut is completely independent of the programming system, machine, and controller, which guarantees nonbiassed verification.

Getting the most out of NC Simulation:

Lose the inefficiencies, increase added value.

Work smater

Set up the machine. Load the workpiece. Press a button. Cut parts with confidence. That's how our customers work calmly, 24/7, around the globe, in all major industry segments. What they no longer have: machine collisions, damaged fixtures, tool breakage and scrapped parts. Because our customers can let it rip in Vericut, on their desktop, before the real machining begins.

Digital jigsaw piece

Vericut is the world's leading CNC simulation software with over 7,000 companies in 60 countries simulating their machining and correcting errors in their NC programs before starting their real machines. The procedure is a proven "must have". Our customers have confirmed this since 1988! Vericut also allows measurement, inspection and analysis functions of the virtually manufactured component. Additionally, optimization can reduce machining time while extending tool life.

Productive from the start

We implement Vericut in a very short time. We deliver the interfaces which integrate NC code simulation into all popular manufacturing applications. We train employees to work with Vericut. We provide support – for today and tomorrow. In principle, it goes from NC programming to production exactly as before. Vericut acts independently of the programming system, machine, and control, which makes your manufacturing process much more efficient, safer and less stressful.

What does Vericut do?

Ensures Safe NC programs.

Extends tool life.

Reduces prove-outs.

Avoids tool breakage.

Improves manufacturing processes.

Optimizes NC programs.

Reduces operating costs.

Reduces processing time.

What Production Managers think of NC simulation

The production batches for today and tomorrow must proceed error-free, otherwise we get serious problems.

That's exactly why. We are concerned about protecting your valuable machinery and valuable parts.

We already have a simulation in our CAM system. Why do we need NC code simulation?

Because the only meaningful simulation to offer absolute security must run the real NC code, after the CAM system's postprocessor or manual edits.

Failed Quality Control? No chance! Do you know what our stock materials cost?

We know. In the aerospace segment individual forgings can cost over $24,000. Vericut reliably prevents rejected parts before they reach final inspection.

Can the machine operators handle NC simulation? Do we need more staff?

Absolutely not! Anyone who uses Vericut can confidently go through the process so they know how it runs on the real machine. An important step towards lean production.

The Directors wants to work towards Industry 4.0 with digital twins.

We really should talk. We have been working since 1988 with manufacturing automation, digital twins, the simulation of machining processes, and helping customers improve their process chains.

We have to reduce prove-out times - otherwise we can forget our KPI targets.

Focus on these goals. We have helped hundreds of Vericut users drastically reduced their prove-out times.

Reduce prove-out times - reduce costs

Vericut has many advantages. Let's look at one in particular: the reduction of prove-out times. Wasting valuable machine time on proving out new parts really costs money.

Savings can be made by:

- Avoiding machine crashes
- Preventing tool breakage
- Ensuring there are no damaged parts or rejects
- Avoiding delivery delays
- Optimizing machining time
- Extending tool life
- Etc

Example return on investment:

Days / Week	5
Hours / Shift	8
Shifts / Day	2
Weeks / Year	48
Number of CNC machines	5
Hourly Capacity / Year	19,200
Prove-out	5%
Reduction of prove-out time by a prior CNC machine	960 Hours / Year
Hourly rate of CNC machine	$80
Saving per year	$76,800

Conventional Process Chain

Process Chain with Vericut
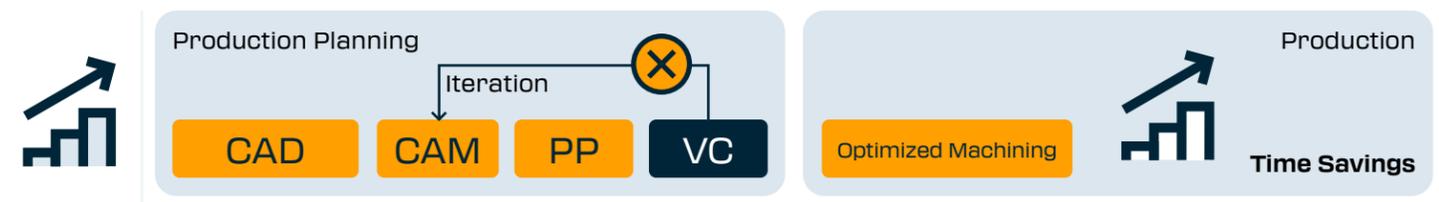
Check NC programs without wasting expensive machine time proving out parts. That's it. Vericut simulates machining on your desktop, not on the CNC machine, so rework can be done fast and efficiently. With the optional modules; OptiPath and Force, Vericut optimizes feedrates to reduce machining time and extend tool life.

What NC Programmers think of NC simulation

We are being bombarded with tasks - and now NC code simulation too?

You don't have to. Vericut runs independently of your CAM system. Above all, let Vericut help you validate your NC programs right on your desktop.

We don't make mistakes now - the last time there was a machining error it was arguably not our problem.

It's a fact that NC Programmers have less time for increasingly complex tasks. Vericut is a powerful tool to ensure that rework and rescheduling is kept to a minimum.

Can you be sure that you are getting NC code simulation from our data?

Quite certain. Vericut works with a multitude of CAD/CAM and CNC format data. Whether you program manually or use a CAM system and postprocessor, we can simulate all CNC operations on all CNC machines.

And the interfaces?

We've got them all covered. We provide the interfaces for integration. All data such as; stock, part, fixtures, tools, zero points, NC programs & subroutines are transferred to the Vericut digital twin for verification.

What exactly is needed for NC code simulation?

Quite simply: a machine model, tools, fixtures and stock. Vericut simulates the real NC code just like your CNC machine.

What about the support?

Always up to date! We live and breathe Vericut and don't do anything else. Our technical support engineers can be reached by phone, email, web, online remote support, at training courses, and face-to-face. Each year Vericut users can join us for our regular Vericut Users' Exchange meetings.

The maximum reliable feed rate

Vericut Force:

Force calculates the maximum reliable feed rate. The technology was co-developed by United Technology Corporation (UTC) and CGTech for more than seven years. Force is ideally suited for difficult-to-machine materials and complex multi-axis operations. Force determines the feedrate for a particular cutting condition based on four factors; maximum chip thickness, cutting force, spindle power, and maximum permissible feed.

Fast Results

- No expert user knowledge necessary
- No complicated software tests necessary
- No reprogramming necessary
- Functions perfectly with aggressive material removal

Increased Productivity

- Shorter machining times
- Improved part quality
- Less tool wear
- Constant cutting conditions

Practical Optimization

With Force, interactive charts make it easy to identify and improve sub-optimal cutting conditions in the NC program. The user then has two options:

- **Allow Force to automatically choose ideal feedrates on the basis of chip thickness, cutting force or spindle power.**
- **Modify the NC programs by re-programming in your CAM system.**

Vericut Force Calculation Example

	Without Force	With Force
Tool life		+315%
Processing time		-21%
Costs per hour		-34%
Life of the Spindle		>350%

Comparison test: Performed with SANDVIK Coromant

What Machine Operators think of NC simulation

Actually, I wanted to go to the gym this evening.

Don't worry, the NC program is running as it should. It has been tested in Vericut.

With too many rejects, there's trouble.

And rightly so. But we promise to help you get prove-outs and rejects under control.

A precise indication of the cycle time might not be bad, then we can get our shifts better organized.

We agree 100 percent. This is also ensured by Vericut.

Can our new multi-axis CNC machines also be prepared as digital twins for NC code simulation?

Absolutely!

Damaged cutter, crashed machine, delivery problems - we have already experienced everything.

Unfortunately, you are not the only one. We already had companies who wanted to test Vericut and shortly before the test began they experienced a crash. A very expensive story that could been avoided with Vericut.

Somehow everything has become more stressful, pressure without end.

We recognize that this can affect all employees in a company. By choosing Vericut, you can achieve an unparalleled understanding of your machining processes.

7 Reasons Why

Whether milling, turning, drilling, or grinding, Vericut is the world's leading solution for the simulation of CNC machines, verification, and optimization of NC programs. This industry-proven solution activates untapped potential in seven key areas.

01
International Competitiveness

Efficiency gains in manufacturing are the only justifiable answer to rising wages, higher prices for raw materials and energy, shorter delivery times and pressure on profit margins.

02
Digitalization

Intelligent manufacturing needs an intelligent workflow: Vericut has been working with "Digital Twins" for more than 30 years, and is an indispensable element on your journey to automated production.

03
Protect Capital Investment

Machinery is the capital of a manufacturing company. Vericut not only protects your investments in machinery, equipment, and raw material but also optimizes the processes.

04
Time-to-Market

Anyone who uses Vericut in their NC programming process realizes significant efficiency gains in production. Vericut helps to get new products to market sooner.

05
Resource Management

The workforce and machinery must be organized. On one hand, Vericut frees workers from tedious checking activities, on the other hand it ensures reliable planning and scheduling through accurate cycle time calculations.

06
Customer Loyalty

A first class product is one thing. Customer care, innovation and dependability are another. All should be considered to identify a company as a reliable partner. Vericut delivers on all fronts.

07
Employee Motivation

Vericut not only saves time, minimizes errors and improves productivity, but it also helps reduce the need for rework, delays and rescheduling. Consequently reducing employees' stress levels.

What we think of NC simulation

To make it short.

If we were machinists ourselves, no NC program would go on the machine without being tested first in Vericut.
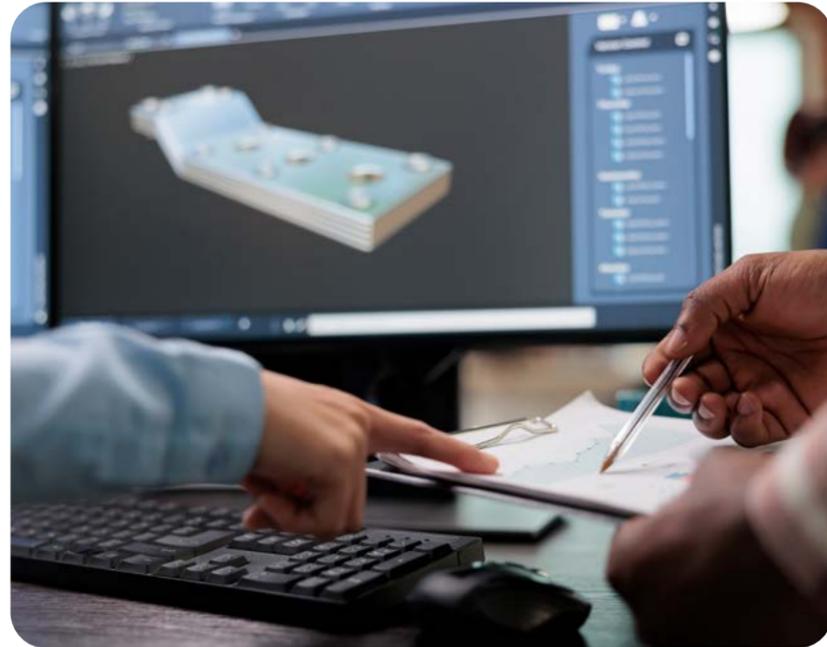
CGTech

CGTech is the market leader in software technology for CNC machine simulation, testing and optimization. CGTech's corporate headquarters is in California, with offices in the UK, France, Germany, Italy, Japan, China, South Korea, Singapore, India, Brazil and Russia with a network of Resellers worldwide.

Continuity

Market leader since 1988. Headquartered in Irvine California for over 30 years.

Security of Investment

CGTech owner managed since 1988. 100% inhouse development - Global Support.

Global Footprint

Industry standard in 60 countries. 12 CGTech locations worldwide. Resellers worldwide.

Employees

Over 200 employees worldwide. Over 300 Reseller employees.

Worldwide Success

Over 7,000 customers with over 20,000 licenses.

Always and everywhere

Personal Support
Training, hotline, services.

Regular Software Releases
Always upwardly compatible.

Customer-oriented Development
Strong industry partners, annual Vericut Users' Exchange meeting.

Many Customers - Many Sectors
Interdisciplinary expertise.

Up-to-date Technology
Timely support of new industry practices and emerging standards.

Investing in Vericut is more than purchasing software. It is the start of a partnership with one of the world's leading manufacturing software vendors. Nowhere else will you find as many CNC specialists as at CGTech.

What Vericut customers think of NC simulation

"There are occasions that we send our people home, turn the lights out and run our finished programs for the first time with nobody there. That's how confident we are in Vericut.

Jerry Anthony, President
UCAR Composites, Inc.

"Before Vericut, we were having difficulty getting first-time programs through the shop. Now we're quickly approaching our goal of an 80% perfect part ratio on all first-time programs.

Creg Crones, Programming Dept. Mgr.
ProCam Machine

"I used Force on a program that I'd already optimized with a popular CAM system and Force lopped off (an additional) 40% of cycle time on the first go.

John Giraldo, Aerospace Engineer
Sandvik Coromant

"We looked at all of the major manufacturing software providers for their simulation capabilities and Vericut was the only one that met our needs out of the box.

Austin Kron, Managing Director
BeAM Machines

"Vericut is one of the most powerful and underutilized tools available today.

Gary Wills, Director of Mfg.
D&H Manufacturing Company

"Vericut paid for itself the first time we used it.

Dave Watson, Manufacturing Eng.
Lockheed Martin Aeronautical Systems

"The use of Vericut Machine Simulation has been a critical factor in the successful implementation of our new 5-axis machines.

Bill Taylor, Production Engineering Mgr.
Aerostructures Hamble, LTD

"Vericut is an important part of our manufacturing process. Everything we program goes through Vericut for verification before it goes to the shop.

Hector Davis, Director of Mfg.
ADI

"The savings on scrapped parts and material pays for the software many times over.

Stan Boland, Systems & Programming Manager
Brek Manufacturing

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