



What's NEW in VERICUT 6.1

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February 5, 2007

Dear VERICUT® User:

Thank you for your continued investment in VERICUT, an important part of your NC programming and machining process!

The VERICUT 6.1 NC simulation, verification, and optimization technology is packed with new features making it more powerful and easier to use. This letter describes important changes in VERICUT 6.1. Take a moment to review what's new and improved in this release.

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Sincerely,

Bill Hasenjaeger

CGTech Product Marketing

VERICUT 6.1

Release Notes

February 5, 2007

Over 140 customer reported problems and 80 customer requested enhancements have been implemented in VERICUT 6.1. The following is a summary of enhancements.

VERICUT 6.1 Enhancements

NC Program Review

In VERICUT 6.1 NC program Review uses VERICUT's desktop and graphics, it no longer opens in a separate window. It is combined with the Info NC Program display. An icon button in the Info NC Program window switches modes between the Info display and the Review display. When in Review mode, simulation is disabled and the user can navigate backwards from the last NC program line simulated.

Entering Review mode adds Step Backward and Play Backward buttons to VERICUT's other VCR buttons. The existing Step, Play, Rewind and Reset buttons also change to interact in Review mode.

Both machine views and profile views are now active in Review mode, including an option tool path line display in the profile view.

When stepping, or playing backwards, the machine can also be animated by optionally enabling File > Properties > Animate Machine When Stepping Back. This optional choice uses additional memory to store the machine locations for backwards animation. Only motions simulated after this option is enabled are stored for backwards animation.

Material can also be added back to the cut stock when stepping back, by optionally enabling File > Properties > Replace Material When Stepping Back. This optional choice uses additional memory to store the material for backwards animation. 500 backwards steps are stored. Only material removed after this option is enabled are stored for backwards animation.

Synchronized subsystem simulation (such as for multi-channel controls) can now be displayed in Review mode.

Tool information is displayed below the NC program text when in Review mode.

Error text is highlighted when an error mark on the stock or fixture (usually red color) is selected in a workpiece view while in Review mode.

AUTO-DIFF

AUTO-DIFF Constant Gouge Check can optionally check for a minimum amount of excess material relative to the design model. This is typically used where roughing cuts should leave a specific minimum amount of material for subsequent machining.

AUTO-DIFF profile is improved to detect very small differences and avoid reporting "false errors" associated with the design and cut stock profiles being nearly coincident.

Protecting Machine and Control Configurations

Encrypted machine and control files may be optionally created and used. The encrypted files cannot be modified. Menu features are reorganized so "project-specific" settings, and "machine/control-specific" settings are clearly separated. When using encrypted machine/control files the machine/control menus are disabled.

An environment variable, CGTECH_MACHINE_CONFIG, can be set to FALSE to completely remove the machine/control Configuration menu from VERICUT's main menu bar.

MDI Dialogue

MDI is significantly enhanced to include axis jog buttons and tool positioning by graphical picks.

CAD/CAM Interfaces

The Unigraphics interface merges tools from the UG session with tools in the template project file's Tool Library.

CATV allows users to choose how to apply the part operation's machining axis in their VERICUT simulation, by selecting the offset table (Program Zero, Work Offset, etc.) and relationship to the machine (tool, rotary axis pivot, etc.).

CATV allows the user to select sketch geometry used to define tool shapes in CATIA (in CUT and NO CUT sketch profiles). The geometry is used to create tools in VERICUT.

CATIA length units (inch or millimeter) is now automatically detected and set in the VERICUT session.

Tools

Turning tools with multiple inserts (such as "Flash" tools or other types of tools with multiple inserts) are now supported, including definition of multiple driven points. Each insert's position is checked for valid turning orientation, and must lie in a valid turning plane before it will cut.

Cutting limit checking (added in 6.0) is enhanced to include checking Minimum/Maximum RPM values.

A new Tool Manger menu, View > Allocate Width to Columns, fits tool columns to the window layout.

A new modal choice automatically creates a milling tool's gage location at the highest point on the tool assembly. Tool Manager menu Edit > Automatic Gage Offset Z is a toggle button. The button state is stored in the user's prefs file. When on, the gage offset Z is automatically positioned to the highest point of the tool assembly whenever a tool component is modified. Only the Z value is modified, preserving the existing XY. This feature only applies to milling tools.

Status Lights

More VERICUT status lights are added to indicate activity during simulation.

The Busy light stays on when VERICUT is loading models.

Siemens 840D VNCK

The Siemens 840D VNCK uses a new VERICUT simulation API. The simulation API allows an external program to control the VERICUT simulation.

VERICUT uses VNCK version 1.5.

VERICUT uses the VNCK's ISV licensing model.

Error Message Display

A new logger display now shows messages in a scrolling list. Messages are organized by category: Information, Warning, Error. Each category of message can be blanked or displayed via right-mouse menu or View > Logger View Options. Selecting an error or warning message in the list highlights the associated NC program line in the NC program display. The logger display is a dockable panel and can be located horizontally within the desktop, or outside the desktop.

Logger and log file messages are more consistent.

Duplicate messages for one NC program record are eliminated (such as collision errors reported twice during a Drilling Cycle).

The logger now behaves correctly with Step and Play.

The logger correctly displays "End of file".

Collision messages indicate whether a HOLDER or SHANK collides.

Mouse Button and View Dynamics

Mouse dynamic view is modified to work "one-handed" as follows:

- Left button – Rotate
- Middle button – Zoom to box
- Right button - Pan
- Mouse wheel – Zoom in/out

The original mouse button controls still work:

- Shift + left button – Pan
- Control + left button – Zoom in/out
- Control + shift + left button – Rotate

Miscellaneous Enhancements

The memory available to VERICUT's display and GUI (via Java runtime parameters Xmx, Xms, and Xss) is increased for improved stability.

Info > G-Code Report and Control Report now open the report in a text editor without forcing the user to save a file.

Floor/Wall texture files are configurable in the View Attributes dialogue under a new OpenGL Settings tab. Initial texture files are shown if the environment variables are set.

The Status window now displays axis positions with 8 decimal place accuracy. Trailing zeros are suppressed.

The File > Merge menu in Tool Manager combines a "Master" tool library file with another tool library file, creating a 3rd "Merged" tool library file. Options are available for the disposition of duplicate tool ID's.

Added support for Sinumerik 840D DEFINE AS variable substitution.

The VERICUT main window stays behind the image playback windows. Behavior of the status window with playback is also improved.

Project Tree text color highlighting is enhanced.

The user can now specify the number of Recent Files to display and can clear the list.

Cutting graphs only displays subsystems that are being synchronized. Display of "auxiliary" subsystems, such as tool changers, pallet changers, etc, are not displayed.

Probing now works correctly with rotation planes active.

Project > Setup Models > Define now displays only components and models of the current setup.

A new environment variable CGTECH_VIEWER is added to specify the editor to be used when viewing any text files.

Added a new Translucent choice to component Mixed Mode visibility in the modeling dialogue. Translucency is only valid for Accelerated views set to Mixed display mode. The View > Attributes > OpenGL settings has a Translucency slider to control the objects translucency.

A Model Auto Block button is added to the Model Definition > Model tab. When pressed the button calculates a block enveloping the models of the first Design component in the tree. The offset value is applied. The former Auto Block button is renamed to Path Auto Block to indicate the block size created by this button is based on the NC Program file.

Added an icon to the tool bar to enable the No Animation option from Project > Processing Options > Motion.

A new Autosave file naming scheme is implemented in order to create unique file names. Files created by Autosave are now named as follows:

Filename#S#F#Tid.ext

Filename is the name specified in the Autosave dialogue

is a unique sequential file counter, start with 1, reset to 1 on VERICUT reset

S# is setup index number

F# is the toolpath file index number

Tid is the tool id, omitted if not using a tool library

.ext is the default file extension of ps, eps, tif, jpg, etc. depending on the file being saved and if not specified in Filename

AVI record/playback now records a Profile view.

The Mold & Die product license is retired.

The Advanced Machine Features license is retired. All features formerly under this license are now available with the Verification base license.

The number of facet normals fixed by Polyfix is now displayed in the polyfix log file.

The Collision Table contents are now divided between the machine file and project file's setup depending on the component pairs.

VERICUT optional and debug environment variables are now included as comments in VERICUT run scripts.

Corrections

Some sites have been experiencing "random" unexpected VERICUT termination. A "random" unexpected VERICUT termination is defined as one that is not repeatable and cannot be duplicated. Significant effort has been made to identify, and eliminate, possible sources of these random terminations and thereby improving the stability of VERICUT.

NC Program Review display inconsistencies, seen during multiple Step Forward/Step Backward picks, are fixed.

Coordinate system preview symbol display inconsistencies are corrected.

Tool display error in the workpiece view associated with tool orientation rotation, rotary axis motion and spindle on command is fixed.

Cuttercomp now works correctly with polar motion.

Circular motion while in cylindrical interpolation mode is fixed.

Helical motion after Z axis motion while cutter compensation is active now works correctly.

Milling tool wizard correctly places inserts when helix angle is zero.

Status window now show the correct IPM when FeedPerMinuteType is set and cutter compensation is active.

VERICUT processes correctly with multiple insert/cutter tool.

VERICUT correctly executes OptiPath Learn mode when the process tree is open.

VERICUT correctly continues processing after pressing OK in Model Export's Preview and Combine dialogue.

A problem in VERICUT's motion break-up logic associated with the speed slider is fixed.

NC Toolpaths are now displayed in CATV's files selection box in alpha order, rather than the previous random order received from CATIA.

CATV opens VERICUT with the updated setup template tool library created during previous runs when the user selects "Use tool library referenced by setup template".

It is now possible to use a VERICUT sweep file as an Insert Cutter for turning.

Inspection correctly maintains a feature's position when the view is rotated and the feature location is refreshed.

Duplicate R values are no longer output in the optimised NC program file when Optimise Circles is turned on.

CycleMillPocketCutType with override value of 2 or 4 is now working correctly when stepover is zero.

Tree display modified, and highlight color is added, for better character clarity.

Motion > Tool Spindle Always On option no longer requires the user to press Reset to activate.

Improvements to memory allocation allow larger VCT model to work correctly as fixtures.

The Mastercam interface now correctly transfers NC program information to VERICUT when operations are in sub groups.

STL Normals set to Computed in model definition is now correctly saved in the machine file.

Motion > Tool Spindle Always On option works for all NC program files being processed.

Fanuc G71 Rough Turn cycle emulation now correctly determines turning (OD) vs. boring (ID) based on the relative positions of the starting and ending X values.

VERICUT now correctly sets the spindle speed based on the active spindle when in units-per-revolution feed mode, and running a sync job. This corrects the time and the display in the Tool Use graph.

The EdgeCAM interface has been updated to version 10.75. A problem in the menu is caused by EdgeCAM and will be fixed in version 11.00. A new VERICUT menu has been added to work around this problem.

VERICUT correctly removes material, including during circular motion, with a complex turning insert consisting of multiple concavities.

Mixing cutter and holder components in a tool list (cutter A and holder B) is improved. However this practice is not recommended since the desired tool assembly in the machine view cannot always be determined. Correctly configuring the tools in Tool Manager is the recommended method.

Two heads processing a G28 ReferencePointIndex motion simultaneously during sync motion now works correctly.

CATV now correctly writes higher-order ASCII characters to the VERICUT project file, allowing labels to include these characters (such as ü).

The default action for an NC program in VERICUT's project tree is now a text editor. This causes a double-click on the NC program file name to open the file in a text editor.

A problem causing incorrect emulation of Heidenhain iTNC 530 pocket cycle def 4 under specific conditions is now fixed.

A geometry inconsistency problem in DXF tool profile causing the resulting tool in VERICUT to not remove material has been fixed.

A problem with milling tool inserts that intersect the tool centerline causing incorrect measurements in X-Caliper has been fixed.

WorkingPlane2ABC works correctly with Local Rotation Plane (ref. Sinumerik 840D CYCLE800).

Cutting Graphs now work correctly for tools loaded in two subsystems.

An editing problem in NC Program Review is corrected by reorganization of the NC Program Review feature.

RestoreSubsystemID now correctly restores the subsystem when used with After Motion during a sync job.

A specific material removal problem affected by the simulation speed slider has been corrected.

Fanuc G76 Thread Cycle now works correctly during sync motion.

Fanuc G71 Rough Turn Cycle now works correctly when no motion is on the last sequence.

CATV allows the user to specify the G-Code Settings table name to use for program zero. The choices can be translated to the local language.

Groove insert geometry adjusted to support the condition where the cutting width equals the overall width.

VERICUT correctly processes a complex turning tool shape with multiple concavities.

Importing a setup now uses the same “find file” logic as when opening the project containing the setup.

Reports with automatically saved images of tools now work correctly when the control uses or NC program uses tool change subroutines.

Problems previously reported with NC Program Review and dynamic view modes are corrected by the NC Program Review enhancements.

Tolerance values in initm.Vcproject are corrected to millimeter values. This change improves File > New Project > Millimeter, and the behavior with CAD/CAM interfaces in millimeter mode.

Problems with the right mouse menu in the Tool Manager when dynamic controls are set to CATIA are corrected by the new implementation of mouse buttons and view dynamics.

A problem where processing with the VNCK incorrectly indicates "end of file" has been corrected by ignoring program stop and end events unless they are part of a VNCRUN() request.

Pressing Apply during Mate/Align now keeps any constraints previously set.

Zoom to Box icon and action is unavailable when in OpenGL display mode.

Sentinel license administrator WlmAdmin now works correctly for License Server Only installs.

NC Program Review incorrect display of circular motion, under specific conditions, is corrected.

A problem where Mate/Align fails on the cut stock model has been corrected.

The g-code log file now contains the output results for all NC programs processed for a given setup.

VERICUT prompts to save the project file after changing Status or Graph window settings. Note that which values to graph, and their maximums, are saved in the user preferences.

Sporadic "unable to bind" errors have been eliminated by the use of Java runtime 1.5.

Using SyncValue after setting an offset before motion no longer causes incorrect motion.

Heidenhain cycle 14 / 20 / 22 errors are now correctly written to log file.

Tool Manager middle mouse pick for gage offset location works correctly when dynamic controls = CATIA

Now that NC Program Review is in VERICUT's main desktop, the X-Caliper window no longer goes behind the window when active.

A problem causing bad circular motion in the workpiece view with a virtual-Y axis has been corrected.

APT FEDRAT/MMPM now correctly output in the optimized NC program file/

A problem associated with processing Heidenhain iTNC 530 loop count with variables, similar to the form L10.Q10, has been fixed.

VERICUT now correctly processes APT SFM spindle command and IPR/MMPR feed rates and produces correct cycle times and feed rates for an APT turning.

Added a new DST Ecospeed machine using a virtual C-on-B-on-A head configuration. Was previously C-on-A-on-B.

Activating OptiPath from a custom interface now correctly produces an optimized NC program file.

VERICUT File Selection Boxes now open with My Network Places contracted if more than 16 entries in order to improve speed.

Corrected grinding material removal for special case.

New macros added to enhance the current support of system variables: BiDirVarsModeOnOff, BiDirVarsApplyOnOff, BiDirVarsAbsIncr.

Display problems related to using VERICUT solid files from earlier versions have been corrected.

Improved material removal display on grinder spiral/helical motion.

The Tool Summary table in the log file now automatically widens based on the longest string in the list.

VERICUT no longer incorrectly prompts to save the machine when nothing has changed.

VERICUT image file enhanced to correctly handle various types of view layouts in VERICUT's main desktop.

Animation Speed slider now correctly affects turning motions.

Training Sessions

All training sessions are updated for V6.1 and include separate sections for Verification and for Machine and Control Configuration.

VERICUT Help

VERICUT Online Help is PDF file based for V6.1.

New Macros / Conditionals in V6.1

BiDirVarsAbsIncr

BiDirVarsApplyOnOff

BiDirVarsModeOnOff

CycleMillCenterAbscissa

CycleMillCenterOrdinate

CycleMillThread

CycleMillThreadDir

CycleMillThreadFeed

CycleMillThreadID

CycleMillThreadOD

CycleMillThreadPitch

CycleMillThreadToolTeeth

CycleTurnAdjustEndPoint

EI_RetractRadius

IJKVector

IJKVector2

SetMaxMotionDistance

SiemensCornerValue840D

TapeCacheCheck

TapeCachePoint

TapeCacheTows

TapeDensity

TapeHead

TapeHeadService

TapeInitialLength

TapeLayer

TapePath

TapePly

TapeReloadAllTows

TapeReloadTow

TapeThickness

TapeTotalTows
TapeTowOff
TapeTowOn
TapeTows
TapeTowSwitches
TapeTowWidth
TriceptDriveCenterpost
TripodArmLength
TripodRodLength
TurnOnOffCompTravelLimits
TurnOnOffSubsystemTravelLimits
WorkingPlane2AbcSolution



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