What's New in VisualCAD/CAM 2015

February 1

This document describes new features and enhancements introduced in VisualCAD/CAM 2015, the standalone CAD/CAM system from MecSoft Corporation.
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VisualCAD/CAM 2015

This document describes the new functionality that has been introduced with the release of the VisualCAD/CAM 2015 product in January, 2015. VisualCAD/CAM 2015 is a consolidation and the enhancement of various products and solutions that MecSoft has released over the years, resulting in a powerful standalone CAD/CAM solution. This product brings under its umbrella, VisualCAD as the CAD front-end and VisualCAM as a plug-in that hosts VisualMILL, VisualTURN, VisualNEST and VisualART as modules. Each of the modules can be independently licensed and invoked inside of the VisualCAD/CAM environment. This document describes the enhancements incorporated into each of the constituent modules of VisualCAD/CAM.

In addition to the VisualCAM plug-in, MecSoft has released a separate plug-in for VisualCAD 2015 that targets the needs of additive manufacturing users called Visual3DPRINT. This product will be described in a separate in a separate document.

What’s new in VisualCAD 2015

VisualCAD 2015 is the base CAD platform that will host the VisualCAM 2015 plug-in. This section describes the new features that have been added to enhance the VisualCAD 2015 platform.

1) New ribbon-based interface 
2) Export to DXF/DWG formats introduced 
3) New importers to support additional file formats
   - Wavefront *.OBJ
   - Google Sketch-up *.SKP
   - 3D Studio Max *.3DS files
   - LightWave 3D
   - Adobe Illustrator
   - PCL point cloud files *.PCD
   - Slice files *.SLC
   - 3D PDF - U3D
4) Support of the latest versions of DXF / DWG files 
5) Updated all other existing translators 
6) Auto backup 
7) Updated Auto Recover 
8) Reorder layers in layer manager 
9) Allows selection of multiple layers in the layer manger to
   a. toggle visibility, 
   b. delete layers, 
   c. duplicate layer 
   d. duplicate layer & objects 
   e. reorder layers (move up or down)
10) New “Point Cloud” object introduced (which currently can only be created during import of corresponding data from the file)
11) Additional construction aids added
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12) Center, Quad Object snaps to work for solid/surface geometry
13) View toolbar replaced with heads up display toolbar and automatically appears in the active viewport.
14) New Solid modeling tools - Box, Sphere, Cylinder, Cone, Torus, Extrude, Revolve, Rectangular Tube, Circular Tube, and Bounding Box.
15) New icons for command buttons.
16) User preference to set right mouse button action to pan or rotate depending on view orientation.
17) Enhanced on-line help

VisualCAM 2015

VisualCAM 2015 as mentioned before is a plug-in that runs inside VisualCAD 2015 and hosts the following modules:

1. VisualMILL
2. VisualTURN
3. VisualNEST
4. VisualART

Each of these modules can be licensed and invoked separately of the other modules. Users upgrading from older versions will be upgraded to VisualCAD/CAM and the corresponding CAM module that the user has a license to. This section describes the various enhancements and improvement to each of the modules.

What’s new in VisualCAM 2015

This section describes the common enhancements and changes to VisualCAM 2015, which is the base platform that hosts the other CAM modules such as MILL, TURN and NEST.

1) UI platform for VisualCAM has been separated from the VisualCAD platform which allows for separate themes and window styles for VisualCAM
2) Improved Docked Machining Operations dialog UI
3) All old style dialog pictures and icons have been reworked for a more modern look
4) Display stock model and stock information as a separate page in the shop documentation
5) Regions order in machining operations dialog can now be changed
6) On-line help for all modules completely rewritten and enhanced
7) A new welcome dialog has been added for new users
8) Hardware licensing has been speeded up

What’s new in VisualMILL 2015

This section describes the enhancements and changes to the VisualMILL 2015 module.
Hole Feature Detection & Machining
The most significant enhancement to the VisualMILL module in the 2015 release is the introduction of the Hole Feature Detection and Machining functionality.

1) Detect hole features in part models. Salient features of this method are:
   a. Part models can be Solid models, Surface models and/or Mesh models
   b. Use filters such as diameter, depth, partial arcs etc. to restrict feature search
   c. Create features and archive these features in the part model
2) Use detected features to create automatic hole machining operations. Salient features of this method are:
   a. Load operations from a knowledge base to machine detected features
   b. Automatically select tools from the tool library to implement the machining operations
   c. Creates a Mop Set that contains all of the operations to machine the hole
   d. Individually edit operations if necessary to make changes to override automatic settings

2-Axis Enhancements
1) A new method to finish holes by milling called Hole Profiling has been introduced
2) Hole Pocketing now supports open arcs, circles and points as input
3) Hole Pocketing outputs intermediate cut levels even when Cleanup Pass is not selected
4) Selecting multiple flat areas with a single pick implemented
5) Reordering of selected machining regions in Control geometry tab for machining operations.

3-Axis Enhancement
1) Clear Flats machining has been improved for performance and cleaner toolpaths
2) Horizontal Roughing with Clear Flats improved for performance and cleaner toolpaths
3) Better containment handling for all Roughing and Re-roughing modules

5-Axis Enhancements
1) Unwind handling when machine tool crosses seams or encounters unreachable angles implemented
2) Axial offset parameter implemented in all methods
3) Improved performance and memory handling in all 5 Axis toolpath methods

UI Enhancements
1) Added button to switch between Mill and Turn browsers

Numerous other smaller usability enhancements and bug-fixes ....

What’s new in VisualTURN 2015
This section describes the enhancements and changes specific to the VisualTURN 2015 module.

1) Added additional cross sectional geometry types for part profiles
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2) Upgraded 3D model slicing tools
3) Enhanced Turn threading module to output additional parameters
4) Tool display in tool definition dialog changed to reflect orientation of the tool

Common Enhancements to VisualMILL 2015 and VisualTURN 2015
This section describes the enhancements and changes that are common to the VisualMILL and VisualTURN 2015 modules.

Tooling Enhancements
1) Tool sorting with various filters such as tool name, tool number, tool type has been introduced
2) Unloading a tool library has been implemented
3) Update tools in an existing part file from tools in library by matching tool name
4) Replace a tool in all Machining Operations with another tool of same name
5) Saving feeds/speeds information with tools when saved in CSV format

Material Removal Simulation Enhancements
1) Advanced simulation in Milling and all Turning simulation has been upgraded to use the latest libraries with the following enhancements
   a. Multi-threaded simulation
   b. Faster simulation
   c. Smaller memory footprint

Post Processor Enhancements
1) New and Improved UI for the Post Processor Generator.
2) The Post Processor Generator now provides a more user friendly experience. The variables popup dialog is more easy to use and has a sorted variable list in it.
3) The post’s output precision has been improved.
4) Five additional variables ([NEXT_NONMDL_I], [NEXT_NONMDL_J], [NEXT_NONMDL_K], [TOOL_NAME], [TIME_STAMP]) have been added in 2015 to provide more functionality.
5) Start and end block for cut motion has been added as a new feature in Start/End dialog of PPG, so that users can insert commands that go before the start of cut motion and after the end of cut motion. This is really needed for laser, plasma and water jet machines as we need to turn off the beam/torch at the end of cut motion and turn it back on before a cut motion.
6) An option has been provided to post to a file without a posted file extension, as certain CNC’s like Milltrionics expect the posted code without a file extension.
7) A new section has been provided for optimized cycle output in Cycles dialog of PPG. Users can now define a cycle coordinate block by specifying what parameter to output along with the coordinate values. For example in the case of HeidenHain controllers, R F M values are required to be posted along with X & Y motion’s values.
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8) An option has been added to toggle the display of leading zeros in the generated post. This option has been added in general dialog of PPG under block format section.
9) List of tools are output as comments at the start of the generated post file.
10) An option has been added to output decimal places for dwell.

What’s new in VisualNEST 2015

This section describes the enhancements and changes to the VisualNEST 2015 module.

1) A part identification scheme using numbers has been introduced
2) A combination Grid Tree control to display parent-child relationship of parts has been introduced
3) A method to copy the properties of a machining region to all other machining regions in a part of similar geometry has been implemented. This is useful in transferring global properties of the original part after nesting to all nested parts.
4) A “Overflow Minimum Utilization” parameter has been introduced in the nesting dialog
5) A “Estimate # of Sheets” button to estimate the number of sheets required for a nesting has been added
6) The Report dialog has been updated to show the %utilization of each sheet

Other Nesting Enhancements & Improvements

1) Improvements to better recognize the topology of selected part geometries for nested curves that would be defined as a single part.
2) Enhancements to work with most types of 2D curve geometries.
3) More succinct error messages

What’s new in VisualART 2015

This VisualART 2015 module was improved with numerous small bug fixes. No major enhancements were implemented.