

"V15.1 Explanations of Functions No.4" Chapter 5,6, 7, and 8

For Chapter 1 and the first half of Chapter 2, please see "V15.1 Explanations of Functions No.1".
For the second half of Chapter 2, please see "V15.1 Explanations of Functions No.□".
For Chapter 3 and Chapter 4, please see "V15.1 Explanations of Functions No.3"

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List of V–UP Functions

1. Development of Functions for Shortening CAM Operation

Tim e

- Improvement of calculation process lists (improvements for creating new list, addition of common settings, addition of display columns, etc.)
- Improvement of Multi support
- Information (Entity): Display of profiles used
- Effective length standards implemented for safety distance heights of tools
- Improvement of Tooling DB functions (addition of display columns for neck angles, improvement of input for Multi-taper, etc.)

2. Enhancements and Improvements of Cutting Paths

- Enhancement of fine and precision functions (Z-Level High Efficiency Rough Cutting, Z-Level Finishing)
- Enhancement of Z-level Finishing Functions (Support for Spherical Lenses)
- Low Lying Processing (Variable pitch path)
- Low Lying Processing (Enhancement of corner processing)
- Z-level Low Angle Finishing: Spiral cutting
- 🗆 Scale calculation: Enhancement of supported cutting modes
- Scanning-line Cutting: Support for Fillet
- CL/5 Axis Editor "Component Point Rearrangement" Utility
- 🗆 Enhancement: Curve Cutting
- Improvement of 5 Axis Conversion (Auto)
- Enhancement of cutting modes when using Barrel Cutter Tool
- Other dunction enhancement/apecification changes
- 2.5D Side Cutting: Support for spirals
- 2.5D Rough Cutting: Last step over
- 🗆 2.5D Side Cutting: Last step over, Last step down
- 2.5D Re-machining: Combine processing
- 2.5S Approach: Avoid Interference with surfaces
- 🗆 Hole: Circular Hole-wall Cutting: Helical cutting
- Hole: Helical tapping: Support for original contour
- Hole: Support for cross hole drilling using a gun drill
- Hole: Entity (Create All): Create work plane

List of V–UP Functions

3. Enhancement of Cutting for Large/3D Objects

- Addition of Re-machining area commands
- 🗆 Merge solid from CAM-TOOL main unit
- 🗆 Re-machining: Output pencil path
- Improvement of connecting move

4. Other Function Enhancements

- Animation (Multi type)
- CL Editor: Load polygon entity
- Machining process list: Enhancement of NC output destination
- Initial Settings for "Save as type"
- Enhancement of support for mpf output variables
- Binary support for mpf files and machine files
- 🗆 Vericut I/F: Output of work/jig shape
- OM Inspect: Projecting direction of Reference point to inspect

5. Linkage with Host CAD

- Support for RGB colors
- 6. Surface Plus
 - Enhancement of Fill Surface
- 7. Addition of New Option Functions
 - Addition of Edit Polygon functions
- 8. Enhancement of Translator Functions
 - IGES Import: Conversion of Entity106 elements to points
 - IGES Import: Conversion of Entity406 strings to layer comments
 - Parasolid Import: Support for x_b extension in file "Open" and "Add"
 - RBG support for DXF Export

CAM-TOOL

5. Linkage with Host CAD

• Support for RGB colors

Base / Translator

Overview

The saving format of colors for CAM-TOOL entities has changed from "color number" to "RGB value". The restriction on the number of colors has been eliminated, and it is now possible to obtain accurate color

information.

In V14.2, there were problems with operation. For example, during data conversion, a method is used in which the design (host CAD) color data is converted to the most similar colors in the CAM-TOOL color palette, and a palette for the colors which are planned to be received had to be prepared in advance in order to correctly display the original colors. In V15.1, it is possible to construct a mechanism which enables accurate reception and operation of the RGB values of colors added in the host CAD, without any restrictions to the number of colors, by switching to the "RGB value" saving format.



Improved operability through

CAM-TOOL V15.1

Folder: V15.1 \ V15.1 - DEMO-03 Model file: V15.1 - DEMO-03.gm d LAY = 180,181

Function details

1. Approximation can be switched ON/ OFF for the color palette when data is received

DXF/IGES/STEP/Parasolid/NX/CATIA V5 Not applicable to CADmeister Import ON by default (Same as the conventional conversion results)

- 2. When a gmd file saved in the previous version is opened, the RBG values of the color palette in use at that point in time is retained in the entity
- 3. "Output only shapes" output format has been added in V15.1 For files saved in V2.3 and V13.1, approximation is used for the colors closest to the color pallet used
- 4. In addition to the 64-color palette, "More Colors" has been newly added in order to handle colors which are not in the palette

In "More Colors", it is possible to display colors acquired with "Specify Entity" and directly set arbitrary RBG values



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Data import setting screen

Setup (Output only shapes)

- Format	
Version :	2.3
Number of Ia Group data Color type : Polygon ent	ayers : 255 output : Impossible Color number ity output : Impossible

CAM-TOOL V15.1

Base / Translator

Base / Translator

Function details

5. Setting colors by directly specifying RBG values

(1) Click "More Colors". (2) This opens the color setting screen. (3) Pick a color from the color area or directly input RBG values. (4) Click "Add to Custom Colors". (5) A new color is created.



Color settings

6. Tool tip can be displayed on the palette



Base / Translator

Function details

7. Entity information: Displays RGB values

*Not	displayed	when	there	is		
no color number						

8. Mask settings





- 1. Displays all colors not in the palette (Can be switched ON/OFF)
- 2. "Update" button to be used when an entity color has been updated or added has been added
- 3. When multiple models are open, the colors used for all models are displayed

CAM-TOOL

6. Surface Plus

• Enhancement of Fill Surface

Surface Plus

Overview

The contour function has been updated, and it is now possible to define contours inside fill surface commands. Also, there have been enhancements to the method for defining closed areas, such as by automatically dividing outer circumference contour at the ends of curves. These changes greatly improved operability.

Function details

1. Auto-compensation function for outer circumference contour





Outer circum ference contours are automatically created in fill surface commands even when the surrounding surface contour is not closed

2. Arbitrarily define and add curve



Define and add curves for outer circumference contours and transit entities

Reduces operations for creating fill surfaces !!

3. Definition method of closed areas enhanced

Open edges of surface contours (Magenta lines)

Magenta lines are automatically split (brown lines)

Closed areas are defined by automatically splitting open edges of surface contours at the ends of curves

Enhancement of Fill Surface

1. Auto-compensation for outer contour

"Auto-compensation for outer contour": Automatically defines a curve connected with a blend curve between the nearest end points (Not tangent when equal to or greater than the internal judgement angle)

Preview of completed contour definition

Completely define contours in fill surface commands!!

CAM-TOOL V15.1

Edge entity used, and contour successively defined

Folder: V15.1 \ V15.1-DEMO-05 Model file: V15.1-DEMO-05.gm d LAY = 100

SurfacePlus

2. Arbitrarily define and add curve

(1) Select surface

Confirm

circum ference contour" -

"Define Curve"

Pic1: Pick edge

Pic2: Pick surface

(3) Confirm

(4) Created curve ' *Not created as an actual entity

*When picked on a surface, a tangent connection is made between the closest edge points at a right angle

Fill Surface	– 🗆 X			
✓ s	Surface 🗸			
✓ Outer circu	n(færen)ce contour 🗸			
Entity	Continuity			
Added curve1	Cat			
Contour1	560			
Contour2	Clear All			
	Define Curve			

Shell tolerance :	0.02
Automatic compensation :	Perform 💌
V Auto-compensation fo	or outer contour
🔽 Trim	

3. Definition method of closed areas enhanced

Flexibly create fill surfaces thanks to enhancements to adding arbitrary curves and defining closed areas!!

CAM-TOOL V15.1

Folder: V15.1\V15.1-DEMO-05 Model file: V15.1-DEMO-05.gm d LAY = 101

7. Addition of Edit Polygon Functions (New Option)

• Addition of Edit Polygon functions

Addition of Edit Polygon Functions (OP)

Overview

In order to handle an increase in the circulation of polygon shapes, Edit Polygon functions have been newly provided for CAM-TOOL.

It is now possible to edit polygon entities for CAM processing, which was not possible in the previous versions.

Six functions in the first version (optional functions)

- 1. "Check": Checks, corrects, and turns over invalid spots
- 2. "Delete": Deletes faces inside polygons
- 3. "Trim": Trims polygons at lines, circles, curves, planes, and surfaces
- 4. "Fill": Fills in holes in polygons
- 5. "Separate": Separates polygons at mesh-shells (not connected)
- 6. "Extract Outline": Extracts outer circum ference contours as lines/curves

Addition of Edit Polygon Functions (OP)

Function details

1. "Check": Makes it possible to check polygon entities and correct and turn over invalid spots in polygons.

Folder: V15.1\V15.1-DEMO-05 Model file: V15.1-DEMO-05.gmd LAY = 4

OPTION

Addition of Edit Polygon Functions (OP)

2. "Delete" : Deletes faces inside polygons.

Addition of Edit Polygon Functions (OP) OPTION

4. Fill: Fills in holes in polygons.

CAM-TOOL V15.1

Can fill in holes by specifying "All" or "Individual".

OPT

OPTION

5. "Separate" : Separates polygons at mesh-shells.

"All" can separate at all mesh valleys, and "Individual" can specify the locations to

Addition of Edit Polygon Functions (OP) OPTION

6. "Extract Outline": Extracts an outer circumference contour (open edge) as a line/curve.

Crated as separate line at location at and above "Division angle" (marked)

Folder: V15.1 \ V15.1-DEMO-05 Model file: V15.1-DEMO-05.gmd LAY = 20

Improvements to Polygon Display, Etc.

Overview

Display has been improved in order to improve visibility of polygon entities.

Wire & Shade": Show polygon contours

Display status can be set by switching contour display ON/OFF.

Environment Setting "Shade S" tab

Wireframe display: Displays lighting for the polygon

Lighting ON

Lighting OFF

Folder: V15.1\V15.1-DEMO-03 Model file: V15.1-DEMO-03.gmd LAY = 200

Wire display

Contour display ON

Contour display OFF

Base

Wire & Shade display

Backface color applied to polygon entity

Wireframe display: Backface color applied to polygon entity. This changes the position of "Backface color" of Environment

Setting to be outside the Wire & Shade frame.

Improvements to Polygon Display, Etc.

Picking of polygon entities improved

Faces can also be picked within the wireframe display. (Cycle mode is used when an entity behind a P-face is picked.)

Changes display of selected/target colors of surfaces

When Texture is set in Wire & Shade, changes to display of selected/target colors of surface/Pface, and changes to color display of the entire surface from displaying the color of just the contour.

Surface/selected

Surface/selected

Surface/target

P-face/target

Miscellaneous >

- Changed to enable automatic fitting when a conversion file other than gmd file, such as an STL file, is opened. 1.
- 2. Due to enhancements to polygons, changes have been made with regards to all pick, fence, and preselect processing for other shapes, surfaces, etc.

Folder: V15.1 \ V15.1 - DEMO-03 Model file: V15.1-DEMO-03.gmd LAY = 190, 210

CAM-TOOL V15.1

Base

8. Enhancement of Translator Functions

- IGES Import: Conversion of Entity106 elements to points
- IGES Import: Conversion of Entity406 strings to layer comments
- Parasolid Import: Support for x_b extension in file "Open" and "Add"
- RBG support for DXF Export

Enhancement of Translator Functions

Translator

Overview

Import elements of IGES and Parasolid data and DXF data output method have been enhanced

• IGES Import Entity106 elements are converted to points Entity406 strings (layer names set on the CAD side) are converted into layer comments.

🚰 Control Layers (detail) - Model 1 *								
👸 🚫 🔐 🔂 🔽 Show only used layers								
No. ACT Display Mask Group Cou <mark>it</mark> Comment								
1		✓			1	Org		
2					3	PL Delete Surface/Befor modify		
3		✓			3	After modify		
4	×	✓			12	12 Unoido		

• Parasolid Import

Files with x_b, xmt_bin extensions are supported by file "Open" and "Add". *For export, the only supported extension is still x_t.

• DXF Export

In addition to the conventional 255-color output, full color is now supported.

DX	F Export Setup			×		
	Color output type					
	C 256 colors					
	Full colors					
	🔽 Plane constrai	nt on world co	ordinate syster	n		
	ОК	Cancel	Help			

Enhanced linkage with systems of other