



**What's New**

**in**

**SmartCAM**

**v4x to v10x**

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# SmartCAM Milling Products

Version 10.0 for Microsoft® Windows™

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## What's New in Version 10.0

SmartCAM® version 10.0 includes the new features and changes described below. Each new feature is described in more detail in the online What's New document located on the Help pull-down menu in your application.

### Production Milling

Production Milling received the following additional enhancements:

#### File—Import

You can now select File—Import to import geometry into an existing process model.

#### File—Export

You can now select File—Export to export geometry from a process model.

### SmartCAM Advanced 3-D Machining and SmartCAM FreeForm Machining

SmartCAM Advanced 3-D Machining and SmartCAM FreeForm Machining received the following additional enhancements:

#### SmartCAM Advanced 3-D Machining now has ACIS Surfaces and Solids

The ACIS® Geometry Kernel was added to SmartCAM Advanced 3-D Machining. (This functionality already exists in SmartCAM FreeForm Machining.) SmartCAM Advanced 3-D Machining can now do 2 1/2 axis machining operations directly from the surface or solid model. It includes import and export of IGES™, ACIS SAT, and ATS files for exchanging surface and solid model geometry with other CAD/CAM applications. The models also can be viewed using Render Image, which displays a color shaded image of the model.

#### ACIS Version 2.1 Update

This application has been upgraded to include the latest version of the ACIS Geometry Kernel.

#### ACIS Version 2.1 Enhancements

The new SAT file header information, including model tolerances and model units, is processed during import and export. Model tolerances now can be set for a new SmartCAM model, and new model checking functions now reveal surface irregularities.

#### IGES Surface Export

A new CAM Connection® translator module can convert a SmartCAM surface or solid model into an IGES trimmed surface model.

#### File—Import

The Surface/Solid Import dialog box has been combined with the CAM Connection Import dialog to improve ease of use with access to all exchange file formats from one dialog.

#### File—Export

The Surface/Solid Export dialog box has been combined with the CAM Connection Export dialog to improve ease of use with access to all exchange file formats from one dialog.



## **All Milling Products**

### **Setting System Units to Inch or Metric**

You now can establish the units of measurement to be used on a part when you open a new file.

### **CTG Path Improvement**

Custom tool graphics (CTG) input fields respond to any change in a path with updates to all CTG tokens.

### **CTG Requirements**

Two CTG requirements are being enforced to provide a better tool display: the profile for the tool must be on layer 1 and start at the origin, and the elements of the profile must be in a continuous sequence, with no gaps.

### **Automatic Diagnostic Display**

The Utility—Diagnostics dialog box has been updated to show all messages available about a failure to initialize the job operations setup.

### **Code Path and File Name Defaults**

SmartCAM now assigns the extension `.cod` to each new code file.

### **Configurable Code File Extension**

The code file extension can be changed to meet machine requirements.

### **SmartCAM Material Librarian**

A new application, called SmartCAM Material Librarian, is available to build and edit the material library information used by the Job Operation Planner.

### **Show Cut Enhancements**

Show Cut now supports 4th axis wrapped plane milling tool paths, and 4th and 5th axis indexing and index collision checking. The Show Cut dialog box also includes a new Optimize For switch, which allows you to select faster verification of tool path or higher quality images.

### **DXF/DWG Export**

A new CAM Connection translator module can convert SmartCAM wireframe curves to either the DXF™ or DWG file format, allowing data exchange with AutoCAD® R13 and other CAD- or PC-based graphics applications.

### **Profile Sorting**

Now CAM Connection can sort wireframe geometry to make SmartCAM profiles.

### **Layer to Step Conversion**

A new Layer to Step Conversion utility macro allows conversion of CAD layer geometry to steps.

### **User Configurable Menu of Toolboxes**

A new User menu, which lists user-defined toolboxes, may be displayed on the Menu bar.

### **Readout Pause Macro**

A new Readout pause macro command is available.

### **String Evaluation Macro Functions**

Three new macro string manipulation functions have been added for comparing two strings, getting subsets of strings, and getting the number of characters in a string.



### **Measure Macro Query Functions**

New macro snap functions have been added for measuring the 2-D and 3-D distance between two points, or between a point and an element.

### **Envelope Macro Query Functions**

New envelope macro query functions have been added to return the various ordinal values of the current part envelope.

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## SmartCAM Milling Products

November 1996

Version 9.2 for Microsoft® Windows™

NTS1001202

### What's New

SmartCAM® version 9.2 includes the new features described below. Refer to the application Help for complete instructions on using these functions.

#### New Snap Function

The Snap switch in the Read-out Line has been replaced with a set of icons that enable a variety of snap settings. The improved Snap function provides an easier and more flexible method for using information from existing elements to create new geometry. Refer to page 5 for an overview of Snap.

#### Group

A new grouping tool provides a faster, more convenient method to select an active group of elements for editing. Refer to page 6 for an overview of Group.

#### Increment

Settings in the Utility—Increment dialog box have been changed to accommodate the new Snap and Group functionality.

#### Edit Filtering

The new Edit Filter tool enables you to limit the type of elements that can be selected when you use Snap, Group, or Element Data. For example, you can set the Edit Filter to permit selection of polyline elements only. Refer to page 6 for an overview of Edit Filter.

#### Tool Graphics

The tool graphic on the Process Step Tool tab shows the shape of the tool as defined in the custom tool graphics (CTG) file or in the step. If you are not using a CTG file, the tool graphic changes as you change information about the tool.

#### User Commands

Machine Events functions, such as bolt-hole-circle (BHC), line-at-angle (LAA), and grid-hole-pattern (Grid), are now displayed in the list view by name rather than as UsrCmd.

#### Improved Help System

The application Help system has been improved to include descriptions of each

input field and other new topics. Refer to page 7 for an overview.

#### JOS variables

A complete list of the product JOS data tags is included in appendix C of the *SmartCAM Customization Manual*.

#### New Hot Key Assignments

Additions to the hot keys are as follows:

**F9** for View—Get View—Top

**F10** for View—Get View—Front

**F11** for View—Get View—Right

**F12** for View—Get View—ISO

**CTRL+F11** for File—Export

**CTRL+F12** for File—Import

**CTRL+F9** for CAM Connection Import

**CTRL+F10** for CAM Connection Export

Changes to existing hot keys are:

Removed **F3** from Workplane—Plane Data

**F6** (formerly **F9**) jumps to Utility—Status

**F3** (formerly **F11**) toggles single/multiple coordinate input

The *Quick Reference Card* is updated to include the new changes.

#### Programming the Mouse for the Group Pop-up Menu

A minor change in the `smartcam.ini` file enables you to right-click the mouse and open the Group pop-up menu. If you have a 3 button mouse, this change causes the center button to act as the Accept command. See page 6.

#### SmartCAM CAM Connection Update

CAM Connection® includes a new data translator that converts IGES™ files to SmartCAM process model files and back. Refer to page 9 for details.

CAD files will also translate from within the SmartCAM application by clicking the new icon buttons located on the Icon Bar for the CAM Connection Import and Export dialogs. See page 9.





**Visual Customization ToolKit  
(Visual CTK) Update**

SmartCAM Visual CTK version 9.2, has a Windows-based user interface and provides the ability to author directly in the PCB format. See page 7 for details.

**Additional User Element  
Commands**

See page 8 for information on four new user element commands.



## SmartCAM Turning Products

November 1996

Version 9.2 for Microsoft® Windows™

NTS1001204

### What's New

SmartCAM® version 9.2 includes the new features described below. Refer to the application Help for complete instructions on using these functions.

#### New Snap Function

The Snap switch in the Read-out Line has been replaced with a set of icons that enable a variety of snap settings. The improved Snap function provides an easier and more flexible method for using information from existing elements to create new geometry. Refer to page 5 for an overview of Snap.

#### Group

A new grouping tool provides a faster, more convenient method to select an active group of elements for editing. Refer to page 6 for an overview of Group.

#### Increment

Settings in the Utility—Increment dialog box have been changed to accommodate the new Snap and Group functionality.

#### Edit Filtering

The new Edit Filter tool enables you to limit the type of elements that can be selected when you use Snap, Group, or Element Data. For example, you can set the Edit Filter to permit selection of polyline elements only. Refer to page 6 for an overview of Edit Filter.

#### Show Cut

Show Cut provides a three dimensional graphical verification of your model. You can simulate the tool path for all or part of the model to check for gouging, collision, or clearance problems. Refer to page 7 for an overview of Show Cut.

#### Improved Finish Turning Capability

To prevent gouging, you can now specify a clearance angle for tools used in a Finish Turning operation. The new capability supports both standard and grooving tools. Refer to page 7 for more information.

#### Tool Graphics

The tool graphic on the Process Step Tool tab shows the shape of the tool as defined

in the custom tool graphics (CTG) file or in the step. If you are not using a CTG file, the tool graphic changes as you change information about the tool.

#### User Commands

Machine Events functions, such as bolt-hole-circle (BHC), line-at-angle (LAA), and grid-hole-pattern (Grid), are now displayed in the list view by name rather than as UsrCmd.

#### Improved Help System

The application Help system has been improved to include descriptions of each input field and other new topics. Refer to page 7 for an overview.

#### JOS variables

A complete list of the product JOS data tags is included in appendix C of the *SmartCAM Customization Manual*.

#### New Hot Key Assignments

Additions to the hot keys are as follows:

**F9** for View—Get View—Top

**F10** for View—Get View—Front

**F11** for View—Get View—Right

**F12** for View—Get View—ISO

**CTRL+F9** for CAM Connection Import

**CTRL+F10** for CAM Connection Export

Changes to existing hot keys are:

Removed **F3** from Workplane—Plane Data

**F6** (formerly **F9**) jumps to Utility—Status

**F3** (formerly **F11**) toggles single/multiple coordinate input

The *Quick Reference Card* is updated to include the new changes.

#### Programming the Mouse for the Group Pop-up Menu

A minor change in the `smartcam.ini` file enables you to right-click the mouse and open the Group pop-up menu. If you have a 3 button mouse, this change causes the center button to act as the Accept command. See page 6.



### **SmartCAM CAM Connection**

#### **Update**

CAM Connection® includes a new data translator that converts IGES™ files to SmartCAM process model files and back. Refer to page 9 for details.

CAD files will also translate from within the SmartCAM application by clicking the new icon buttons located on the Icon Bar for the CAM Connection Import and Export dialogs. See page 9.

### **Visual Customization ToolKit**

#### **(Visual CTK) Update**

SmartCAM Visual CTK version 9.2, has a Windows-based user interface and provides the ability to author directly in the PCB format. See page 7 for details.



# SmartCAM Advanced Fabrication

November 1996

Version 9.2 for Microsoft® Windows™

NTS1001206

## What's New

SmartCAM® version 9.2 includes the new features described below. Refer to the application Help for complete instructions on using these functions.

### New Snap Function

The Snap switch in the read-out line has been replaced with a set of icons that enable a variety of snap settings. The improved Snap function provides an easier and more flexible method for using information from existing elements to create new geometry. Refer to page 5 for an overview of Snap.

### Group

A new grouping tool provides a faster, more convenient method to select an active group of elements for editing. Refer to page 6 for an overview of Group.

### Increment

Settings in the Utility—Increment dialog box have been changed to accommodate the new Snap and Group functionality.

### Edit Filtering

The new Edit Filter tool enables you to limit the type of elements that can be selected when you use Snap, Group, or Element Data. For example, you can set the Edit Filter to permit selection of polyline elements only. Refer to page 6 for an overview of Edit Filter.

### Tool Graphics

The tool graphic on the Process Step Tool tab shows the shape of the tool as defined in the custom tool graphics (CTG) file or in the step. If you are not using a CTG file, the tool graphic changes as you change information about the tool.

### User Commands

Machine Events functions, such as bolt-hole-circle (BHC), line-at-angle (LAA), and grid-hole-pattern (Grid), are now displayed in the list view by name rather than as UsrCmd.

### Improved Help System

The application Help system has been improved to include descriptions of each

input field and other new topics. Refer to page 6 for an overview.

### User Guide

The new *SmartCAM Advanced Fabrication User Guide* provides detailed information that supplements the application Help system. Refer to page 7 for information about the User Guide.

### JOS variables

A complete list of the product JOS data tags is included in appendix C of the *SmartCAM Customization Manual*.

### New Hot Key Assignments

Additions to the hot keys are as follows:

F9 for View—Get View—Top

F10 for View—Get View—Front

F11 for View—Get View—Right

F12 for View—Get View—ISO

CTRL+F9 for CAM Connection Import

CTRL+F10 for CAM Connection Export

Changes to existing hot keys are:

Removed F3 from Workplane—Plane Data

F6 (formerly F9) jumps to Utility—Status

F3 (formerly F11) toggles single/multiple coordinate input

The *Quick Reference Card* is updated to include the new changes.

### Programming the Mouse for the Group Pop-up Menu

A minor change in the `smartcam.ini` file enables you to right-click the mouse and open the Group pop-up menu. If you have a 3 button mouse, this change causes the center button to act as the Accept command. See page 6.

### SmartCAM CAM Connection Update

CAM Connection® includes a new data translator that converts IGEST™ files to SmartCAM process model files and back. Refer to page 8 for details.

CAD files will also translate from within the SmartCAM application by clicking the new





icon buttons located on the Icon Bar for the CAM Connection Import and Export dialogs. See page 9.

**Visual Customization ToolKit  
(Visual CTK) Update**

SmartCAM Visual CTK version 9.2, has a Windows-based user interface and provides the ability to author directly in the PCB format. See page 7 for details.



# SmartCAM Advanced Wire EDM

November 1996

Version 9.2 for Microsoft® Windows™

NTS1001208

## What's New

SmartCAM® version 9.2 includes the new features described below. Refer to the application Help for complete instructions on using these functions.

### New Snap Function

The Snap switch in the read-out line has been replaced with a set of icons that enable a variety of snap settings. The improved Snap function provides an easier and more flexible method for using information from existing elements to create new geometry. Refer to page 5 for an overview of Snap.

### Group

A new grouping tool provides a faster, more convenient method to select an active group of elements for editing. Refer to page 6 for an overview of Group.

### Increment

Settings in the Utility—Increment dialog box have been changed to accommodate the new Snap and Group functionality.

### Edit Filtering

The new Edit Filter tool enables you to limit the type of elements that can be selected when you use Snap, Group, or Element Data. For example, you can set the Edit Filter to permit selection of polyline elements only. Refer to page 6 for an overview of Edit Filter.

### Tool Graphics

The tool graphic on the Process Step Tool tab shows the shape of the tool as defined in the custom tool graphics (CTG) file or in the step. If you are not using a CTG file, the tool graphic changes as you change information about the tool.

### User Commands

Machine Events functions, such as bolt-hole-circle (BHC), line-at-angle (LAA), and grid-hole-pattern (Grid), are now displayed in the list view by name rather than as UsrCmd.

### Improved Help System

The application Help system has been improved to include descriptions of each

input field and other new topics. Refer to page 6 for an overview.

### User Guide

The new *SmartCAM Advanced Wire EDM User Guide* provides detailed information that supplements the application Help system. Refer to page 7 for information about the User Guide.

### JOS variables

A complete list of the product JOS data tags is included in appendix C of the *SmartCAM Customization Manual*.

### Create—User Elmts Section Adds Commands

See page 7 for information on the new user element Skin Cuts command.

### New Hot Key Assignments

Additions to the hot keys are as follows:

F9 for View—Get View—Top

F10 for View—Get View—Front

F11 for View—Get View—Right

F12 for View—Get View—ISO

CTRL+F9 for CAM Connection Import

CTRL+F10 for CAM Connection Export

Changes to existing hot keys are:

Removed F3 from Workplane—Plane Data

F6 (formerly F9) jumps to Utility—Status

F3 (formerly F11) toggles single/multiple coordinate input

The *Quick Reference Card* is updated to include the new changes.

### Programming the Mouse for the Group Pop-up Menu

A minor change in the `smartcam.ini` file enables you to right-click the mouse and open the Group pop-up menu. If you have a 3 button mouse, this change causes the center button to act as the Accept command. See page 6.

### SmartCAM CAM Connection Update

CAM Connection® includes a new data translator that converts IGES™ files to





SmartCAM process model files and back.  
Refer to page 9 for details.

CAD files will also translate from within the SmartCAM application by clicking the new icon buttons located on the Icon Bar for the CAM Connection Import and Export dialogs. See page 9.

**Visual Customization ToolKit  
(Visual CTK) Update**

SmartCAM Visual CTK version 9.2, has a Windows-based user interface and provides the ability to author directly in the PCB format. See page 7 for details.



## SmartCAM Production Milling

June 1996

Version 9.0 for Microsoft® Windows™

NTS1001184

### What's New

All SmartCAM® products released in second quarter, 1996 have a version number of 9.0. SmartCAM Production Milling™ version 9.0 introduces the following new features:

#### Job Operation Planner

The new Job Operation Planner provides a simpler, faster way to enter process step parameters. The Planner adds the following new capabilities:

- Improved file management
- Tool library
- Material library
- Speed and feed calculator
- Macros for job operations setup functions

See "Job Operation Planner" on page 2.

#### Reports Generator

Reports enables you to print shop travel documents, setup sheets, and tool crib requests. For information about Reports, refer to online Help or the online reference manual.

#### Online Manuals

Reference, customization, and, code generation manuals are now online, as well as the manuals for Edit Plus™, Communicate, and CAM Connections®. See "Online Manuals" on page 4.

#### Read-Out for Steps and Tools

When you are setting Insert properties, the Read-out Line displays the tool and step description for each step as you move the cursor in the list view.

#### Double-Click for Field Selection

The method for selecting input fields has been changed to make SmartCAM more consistent with other Windows-based applications. To select an input field in a control panel or dialog box, click the field label or double click in the input field. When the content of a field is selected, any entry you make from the keyboard will replace the current field value.

To edit the existing value of a field, click the desired edit location.

#### New CAM Connection

Refer to the SmartCAM CAM Connection version 9.0 release notes for information about this new data translator.



# SmartCAM Advanced 3-D Machining

June 1996

Version 9.0 for Microsoft® Windows™

NTS1001183

## What's New

All SmartCAM® products released in second quarter, 1996 have a version number of 9.0. SmartCAM Advanced 3-D Machining™ version 9.0 introduces the following new features:

### Job Operation Planner

The new Job Operation Planner provides a simpler, faster way to enter process step parameters. The Planner adds the following new capabilities:

- Improved file management
- Tool library
- Material library
- Speed and feed calculator
- Macros for job operations setup functions

See "Job Operation Planner" on page 2.

### Reports Generator

Reports enables you to print shop travel documents, setup sheets, and tool crib requests. For information about Reports, refer to online Help or the online reference manual.

### Online Manuals

Reference, customization, and, code generation manuals are now online, as well as the manuals for Edit Plus™, Communicate, and CAM Connections®. See "Online Manuals" on page 4.

### Read-Out for Steps and Tools

When you are setting Insert properties, the Read-out Line displays the tool and step description for each step as you move the cursor in the list view.

### Double-Click for Field Selection

The method for selecting input fields has been changed to make SmartCAM more consistent with other Windows-based applications. To select an input field in a control panel or dialog box, click the field label or double-click in the input field. When the content of a field is selected, any entry you make from the keyboard will replace the current field value.

To edit the existing value of a field, click the desired edit location.

### New CAM Connection

Refer to the SmartCAM CAM Connection version 9.0 release notes for information about this new data translator.



## SmartCAM Production Milling

June 1996

Version 9.0 for Microsoft® Windows™

NTS1001184

### What's New

All SmartCAM® products released in second quarter, 1996 have a version number of 9.0. SmartCAM Production Milling™ version 9.0 introduces the following new features:

#### Job Operation Planner

The new Job Operation Planner provides a simpler, faster way to enter process step parameters. The Planner adds the following new capabilities:

- Improved file management
- Tool library
- Material library
- Speed and feed calculator
- Macros for job operations setup functions

See "Job Operation Planner" on page 2.

#### Reports Generator

Reports enables you to print shop travel documents, setup sheets, and tool crib requests. For information about Reports, refer to online Help or the online reference manual.

#### Online Manuals

Reference, customization, and, code generation manuals are now online, as well as the manuals for Edit Plus™, Communicate, and CAM Connections®. See "Online Manuals" on page 4.

#### Read-Out for Steps and Tools

When you are setting Insert properties, the Read-out Line displays the tool and step description for each step as you move the cursor in the list view.

#### Double-Click for Field Selection

The method for selecting input fields has been changed to make SmartCAM more consistent with other Windows-based applications. To select an input field in a control panel or dialog box, click the field label or double click in the input field. When the content of a field is selected, any entry you make from the keyboard will replace the current field value.

To edit the existing value of a field, click the desired edit location.

#### New CAM Connection

Refer to the SmartCAM CAM Connection version 9.0 release notes for information about this new data translator.



# SmartCAM Production Turning

June 1996

Version 9.0 for Microsoft® Windows™

NTS1001181

## What's New

All SmartCAM® products released in second quarter, 1996 have a version number of 9.0. Below are highlights of the enhancements in SmartCAM Production Turning™ version 9.0. Refer to online Help or the online *SmartCAM Production Turning Reference Manual* for detailed information about these and other features.

### Job Operation Planner

Job operations setup information is now integrated into the process model. Tool and process information is linked in process steps that you use to create tool path. Job information such as measurement units, part description, machine information, and material information is also stored with the job.

The Job Operation Planner provides a simple, fast way to enter process step parameters. A tool can be used in multiple process steps, with different speeds and feeds for each step.

In addition, the Planner provides the following new capabilities:

- Improved file management
- Tool library
- Material library
- Speed and feed calculator
- Macros for job operations setup functions

See "Job Operation Planner" on page 2

### Reports Generator

Reports enables you to print shop travel documents, setup sheets, and tool crib requests. For information about Reports, refer to online Help or the online reference manual.

### Online Manuals

Reference, customization, and code generation manuals are now online, as well as the manuals for Edit Plus™, Communicate, and CAM Connections®. See "Online Manuals" on page 5.

### Read-Out for Steps and Tools

When you are setting Insert properties, the Read-out Line displays the tool and step description for each step as you move the cursor in the list view.

### Double-Click for Field Selection

The method for selecting input fields has been changed to make SmartCAM more consistent with other Windows-based applications. To select an input field in a control panel or dialog box, click the field label or double-click in the input field. When the content of a field is selected, any entry you make from the keyboard will replace the current field value.

To edit the existing value of a field, click the desired edit location.

### User Definable Template Variables

SmartCAM Production Turning version 9.0 provides a new set of variables to aid in developing and using code generators. You can define the variable names. The variables can output integers, decimals, strings, and tables, and can be shared across multiple .tmp files in SmartCAM Production Turning. For more information about the template variables, see page 6-48 (196) of the *SmartCAM Code Generation Guide* in the online documents.

### New CAM Connection

Refer to the SmartCAM CAM Connection version 9.0 release notes for information about this new data translator.





## SmartCAM Advanced Fabrication

June 1996

Version 9.0 for Microsoft® Windows™

NTS1001185

### What's New

All SmartCAM® products released in second quarter, 1996 have a version number of 9.0. Below are highlights of the enhancements in SmartCAM Advanced Fabrication™ version 9.0. Refer to online Help for detailed information about these and other features.

#### Job Operation Planner

Job operations setup information is now integrated into the process model. Tool and process information is linked in process steps that you use to create tool path. Job information such as measurement units, part description, machine information, and material information is also stored with the job.

The Job Operation Planner provides a simple, fast way to enter process step parameters. A tool can be used in multiple process steps, with different speeds and feeds for each step.

In addition, the Planner provides the following new capabilities:

- Improved file management
- Tool library
- Material library
- Speed and feed calculator
- Macros for job operations setup functions

See "Job Operation Planner" on page 2.

#### Reports Generator

Reports enables you to print shop travel documents, setup sheets, and tool crib requests. For information about Reports, refer to online Help or the online reference manual.

#### Online Manuals

Reference, customization, and code generation manuals are now online, as well as the manuals for Edit Plus™, Communicate, and CAM Connections®. See "Online Manuals" on page 4.

#### Read-Out for Steps and Tools

When you are setting Insert properties, the Read-out Line displays the tool and step

description for each step as you move the cursor in the list view.

#### Double-Click for Field Selection

The method for selecting input fields has been changed to make SmartCAM more consistent with other Windows-based applications. To select an input field in a control panel or dialog box, click the field label or double-click in the input field. When the content of a field is selected, any entry you make from the keyboard will replace the current field value.

To edit the existing value of a field, click the desired edit location.

#### New CAM Connection

Refer to the SmartCAM CAM Connection version 9.0 release notes for information about this new data translator.





## SmartCAM Advanced Wire EDM

June 1996

Version 9.0 for Microsoft® Windows™

NTS1001186

### What's New

All SmartCAM® products released in second quarter, 1996 have a version number of 9.0. Below are highlights of the enhancements in SmartCAM Advanced Wire EDM™ version 9.0. Refer to online Help for detailed information about these and other features.

#### Job Operation Planner

Job operations setup information is now integrated into the process model. Tool and process information is linked in process steps that you use to create tool path. Job information such as measurement units, part description, machine information, and material information is also stored with the job.

The Job Operation Planner provides a simple, fast way to enter process step parameters. A tool can be used in multiple process steps, with different speeds and feeds for each step.

In addition, the Planner provides the following new capabilities:

- Improved file management
- Tool library
- Material library
- Speed and feed calculator
- Macros for job operations setup functions

See "Job Operation Planner" on page 2.

#### Reports Generator

Reports enables you to print shop travel documents, setup sheets, and tool crib requests. For information about Reports, refer to online Help or the online reference manual.

#### Online Manuals

Reference, customization, and code generation manuals are now online, as well as the manuals for Edit Plus™, Communicate, and CAM Connections®. See "Online Manuals" on page 4.

#### Read-Out for Steps and Tools

When you are setting Insert properties, the Read-out Line displays the tool and step description for each step as you move the cursor in the list view.

#### Double-Click for Field Selection

The method for selecting input fields has been changed to make SmartCAM more consistent with other Windows-based applications. To select an input field in a control panel or dialog box, click the field label or double-click in the input field. When the content of a field is selected, any entry you make from the keyboard will replace the current field value.

To edit the existing value of a field, click the desired edit location.

#### User Definable Template Variables

SmartCAM Advanced Wire EDM version 9.0 provides a new set of variables to aid in developing and using code generators. You can define the variable names. The variables can output integers, decimals, strings, and tables. For more information about the template variables, see page 6-48 (196) of the *SmartCAM Code Generation Guide* in the online documents.

#### New CAM Connection

Refer to the SmartCAM CAM Connection version 9.0 release notes for information about this new data translator.



## SmartCAM Production Milling™

September 1995

Version 8.2 for Microsoft® Windows™

NTS1001165

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### What's New

SmartCAM Production Milling™ version 8.2 includes the following new feature and improvements:

#### **Show Cut Stock Transparency**

The View—Show Cut—Colors dialog box now includes settings to display transparency for material stock, fixtures, and tools.

To set the transparency values for the components of the Show Cut simulation, select Colors from the Show Cut dialog box to open the Show Cut Colors dialog box. Enter the percentage of transparency in the input fields for stock, fixture, and tool. A transparency value of 0 makes the component invisible (fully transparent), a transparency of 100 makes the component opaque (non-transparent).

Refer to online Help for more information about Show Cut colors and transparency.

#### **Macro Variables Enhancement**

Macro variables can now support characters six places to the left of the decimal and five places to the right (999999.99999).

#### **Edit Plus Uses System Font**

Edit Plus™ now uses your default system font, providing a more consistent and readable display.





# SmartCAM Production Milling™

March 1995

Version 8.1 for Microsoft® Windows™

NTS1001151

## What's New

Production Milling version 8.1 includes the following new features:

### Enhanced Memory Management

We have upgraded memory management to better handle system demands. The changes improve overall performance.

### AutoCAD® R13 Support

The AutoCAD R13 DXF file format was changed, without prior notification from Autodesk™, between the pre-release version and the released version of R13. As a result, the released version of the AutoCAD R13 DXF is incompatible with the current version of the SmartCAM DXF CAM Connection®.

As an interim solution, we are providing an R13 strip utility, which you can access from an icon in the SmartCAM program group. Instructions for using the utility are in the file `r13strip.txt`, which is in the SmartCAM program directory.

### Upgraded Installation

The installation procedure has been streamlined, eliminating the need to edit the `smartcam.ini` file after installing a new version of SmartCAM, or the `pmdeflt.su` file after installing the Productivity Macros.

### Changes to Edit Plus®

The Edit Plus commands File Save and Edit Cut and Paste now work correctly. To take advantage of the changes, make sure to choose the Edit Plus option when you install SmartCAM.

### Changes to Snap

Using the mouse to snap to the midpoints and intersections of lines and arcs now returns the Z coordinate in addition to X and Y coordinates. Problems with snapping to endpoints have been fixed.

Production Milling is installed with midpoints snap and intersections snap turned on. To turn off these options, change their settings to zero (0) in the Snap section of the `pmill.ini` file. For more information on editing the `.ini` files, refer to the SmartCAM Customization Manual.



# SmartCAM Production Turning™

December 1995

Version 8.1 for Microsoft® Windows™

NTS1001172

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## What's New

Below are highlights of the enhancements in SmartCAM Production Turning™ version 8.1. Refer to the *SmartCAM Production Turning Reference Manual* or the online Help system for detailed information about these and other features in the application.

### Single Roughing Passes

Process—Turn Rough—Contour now permits you to specify a single pass on the profile. This enables you to generate a pre-finishing cut with different X and Z allowances.

### Linear Roughing

Process—Turn Rough—Linear can now be used to create roughing passes on profiles that are longer than 1000 measurement units.

### Improved CTG Files

The number of elements you can include in a Custom Tool Graphics file has been increased to 500. The new limit will increase the amount of detail that you can include to model the insert, holder, and turret. For information about creating and using CTG files, refer to the *SmartCAM Production Turning Reference Manual*.

### Modifying Machine Events

The Geo Edit—Modify panel now displays the appropriate diameter values when Full Diameter is set in Display Modes.

### Macro Variables Enhancement

Macro variables can now support characters six places to the left of the decimal and five places to the right (999999.99999).





# SmartCAM Production Turning™

September 1995

Version 8.0 for Microsoft® Windows™

NTS1001166

## What's New

Below are highlights of the new features in SmartCAM Production Turning™ version 8.0. Refer to the *SmartCAM Production Turning Reference Manual* or online Help for detailed information about these and other features in the application.

### Windows Compatibility

SmartCAM® is now on Microsoft® Windows™. This enables you to switch between tasks and provides the ease of use and all the standard features of a Windows-based program.

If you used earlier versions of SmartCAM, you will find that many of the familiar screen display elements are still there. You will also find many new elements, such as icons, file search routines, and window control buttons that are common to most Windows-based programs.

The utility programs (Edit Plus™, Machine Define, CAM Connection®, Communicate) have also been updated for Windows compatibility.

### Dynamic View

This new viewing tool enables you to easily rotate the view of your model to any desired orientation. You can rotate, spin, or pan the view, or zoom in and out on the view. For more information about Dynamic View, refer to online Help.

### Quick View Status

The Status function enables you to view the current insert properties without leaving the open control panel. Select **Utility—Status** or Press **F9** to display the Quick View Status dialog box.

### Windows-Style Online Help

Help now offers many Windows Help features, including a search capability. To access Help, select **Help** from the menu bar and then **Contents** (or another option), or press **F1** to open Help Contents directly.

To use context-sensitive Help, press **SHIFT+F1** to display the pointer as a floating question mark (similar to the Help Context icon). Position the cursor over any open

control panel or dialog box, or any menu bar item, icon, or open toolbox, and then click to display the Help topic for that item. You can place bookmarks in Help topics, as well as annotations for later reference.

To learn more about using online Help, select **Help—Using Help** from the SmartCAM menu. You can also add the context-sensitive Help icon to your icon bar by using **Utility—Icon Bar—Button Add** to select Help Context in the Add Bar Button dialog box.

### New File Handling Routines

Creating, saving, and opening model files is now faster and easier. Refer to the *SmartCAM Production Turning Reference Manual* or to online Help for more information.

### Icon Bar

The icon bar provides direct access to a variety of features. The read-out line below the graphic view provides a description of each icon as you point to it.

You can use one of the standard icon bars or create a custom icon bar that includes the icons for the modeling tools that you use most often. For detailed information, refer to online Help and the *SmartCAM Customization Manual*.

### AutoCAD® R13 DXF Support

A new utility strips incompatible entities out of your R13 DXF files. (See page 4.)

### New Snap Capability

You can now use the mouse to snap to the midpoints and intersections as well as the endpoints of elements. For more information about Snap, refer to the *SmartCAM Production Turning Reference Manual*.



## SmartCAM Advanced Wire EDM™

September 1995

Version 7.1 for Microsoft® Windows™

NTS1001162

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### What's New

Below are highlights of the features in SmartCAM Advanced Wire EDM™ version 7.1.

- You can now create 4-axis path using profiles on non-parallel planes. For more information, refer to online Help.
  - Macro variables can now support characters six places to the left of the decimal and five places to the right (999999.99999).
  - Edit Plus™ now uses your default system font, providing a more consistent and readable display.
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## SmartCAM Advanced Wire EDM™

March 1995

Version 7.0 for Microsoft® Windows™

NTS1001152.

### What's New

Below are highlights of the features in Advanced Wire EDM version 7.0. See Contents for more information.

- Microsoft Windows Compatibility  
SmartCAM is now on Windows. This enables you to switch between tasks, and provides the ease of use and all the standard features of a Windows-based program.
- Simplified Installation Routines  
It's now faster and easier to install your SmartCAM software. The *Installation Guide* provides complete instructions.
- Dynamic View  
This new viewing tool enables you to easily rotate your model view to any orientation.
- New File Handling Routines  
Creating, saving, and opening model files is now faster and easier.
- Windows Style Online Help System  
Help now offers many Windows Help features, including a search capability.
- Quick View Status  
View the current insert properties without leaving the open control panel.
- Customization Manual  
A new manual provides information on customizing the appearance of your SmartCAM window.
- Icon Bar  
You can customize the new icon bar to give quick access to your most commonly used functions.
- Edit Plus®, Machine Define, Communicate  
The utility programs have been updated for Windows compatibility.
- AutoCAD® R13 DXF Support  
A new utility strips incompatible entities out of your R13 DXF files.



# SmartCAM FreeForm Machining™

March 1996

Version 4.61 for Microsoft® Windows™

NTS1001177

## What's New

Below are highlights of the features in SmartCAM FreeForm Machining™ version 4.61.

### Quality Improvements

This maintenance release of FreeForm Machining includes upgrades to the internal subsystems as well as many problem fixes. The focus of this release has been to fix problems with importing IGES files and machining imported SAT files. Importing of IGES files from Pro-Engineer version 15, IGES files from CAMAND, and SAT files from AutoCAD Designer are significantly improved. In general, importing IGES files from all CAD systems is also improved.

**Note** In order to improve import speed, the number of U and V curves for the surface display grid are now defaulted to zero.

### ACIS Upgrade

The ACIS geometry kernel was upgraded from version 1.6 to version 1.7. This version has a faster faceting engine with a richer set of user options. Improvements were made in the quality and reliability of surface grid display curve creation in curve-curve intersection routines. For more information about the ACIS upgrade, see "ACIS Upgrade" on page 2.

### PDE/Lib Upgrade

The PDE/Lib subsystem was upgraded from version 1.2 to version 2.0.3. This improved the quality and reliability of translation of surfaces from IGES to ACIS format. The trim curve generation and fix up algorithms are improved, as are the split periodic surface algorithms.

### Improved CTG Files

The number of elements you can include in a Custom Tool Graphics file has been increased to 500. The new limit will increase the amount of detail that you can include to model the tool, holder, and spindle. For information about creating and using CTG files, refer to the *SmartCAM FreeForm Machining Reference Manual*.

## Enhancements

In addition to the new features listed above, SmartCAM FreeForm Machining version 4.61 includes the following improvements:

### Render Image

The Render Image modeling tool was enhanced to add two movable light sources: a vector light and a point light. These light sources make it faster and easier to light up dark areas, helping you visualize your part better. The new faceting engine and enhanced lighting capabilities produce more realistic images. For more information about these Render Image enhancements, refer to online Help.

### New Render Macros

New Render macro commands allow you to save your image to a disk file and load it back later. This allows you to automate image generation, saving the images for viewing at a later time. The new macro commands RENDER\_SAVE and RENDER\_LOAD are described on page 7.

### Parting Line

The parting line macro was enhanced to add a user variable for the approximation tolerance. The PART\_CURVES macro is described on page 7. Also, the silhouette curve quality is improved in ACIS version 1.7.

### List View Background Color

The list view background color is now automatically set to be the same color as the graphics view background color. This makes viewing the colors of layers, steps, and elements consistent with the graphics view.

### Print Orientation

The Print dialog has been enhanced to support options for either Portrait or Landscape paper orientation, so you can print either a vertical or a horizontal view of the model.

### Remove User Variable Macros

New Remove User Variable macro commands allow you to remove one or





more user variables. The new macro commands VAR\_REMOVE and VAR\_REMOVE\_ALL are described on page 7.

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## SmartCAM FreeForm Machining™

September 1995

Version 4.6 for Microsoft® Windows™

NTS1001164

### What's New

Below are highlights of the features in SmartCAM FreeForm Machining™ version 4.6.

#### Surface Punching

Use Punch Surface to remove a piece of an existing surface, based on its intersection with the volume defined by the punch profile and punch distance.

#### Surface Extensions

Extend an existing surface from a single edge boundary to create a new NURBS surface. The new surface shares the edge boundary with the existing surface.

For detailed information about using these new modeling tools refer, to the *SmartCAM FreeForm Machining Reference Manual* or to online Help.

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### Enhancements

In addition to the new features listed above, SmartCAM FreeForm Machining version 4.6 includes the following improvements:

- Changes in the process model file format (.pm4) result in smaller model files (approximately 20%) and considerably faster opening and saving of files.
- An upgrade to the ACIS® Geometric Modeler includes significant quality improvements. For more information about the ACIS upgrade, see "ACIS Upgrade" on page 3.
- Show Cut now includes solid tool display and stock transparency.
- New display options and the capability to reverse surface-normals are available to help you create and edit surfaces.
- A new option (Model Resolution) in the Import dialog box provides improved import of IGES™ files. The Default, IGES, and ACIS settings under this option produce a display grid tolerance that is looser than the base surface and

trim curve tolerance. This results in a more reliable and faster import.

**Note:** The Model Resolution Value input field displays only the first four characters to the right of the decimal, unless the field is active. If you enter a small value, this results in the field displaying zeros. Import uses the entered value, even though it does not display.

- Macro variables can now support characters six places to the left of the decimal and five places to the right (999999.99999).
- Edit Plus™ now uses your default system font, providing a more consistent and readable display.

For more information about these enhancements refer, to the *SmartCAM FreeForm Machining Reference Manual* or to online Help.

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# SmartCAM Advanced 3-D Machining™

September 1995

Version 4.4 for Microsoft® Windows™

NTS1001160

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## What's New

SmartCAM Advanced 3-D Machining™ version 4.4 includes the following new feature and improvements:

### **Show Cut Stock Transparency**

The View—Show Cut—Colors dialog box now includes settings to display transparency for material stock, fixtures, and tools.

To set the transparency values for the components of the Show Cut simulation, select Colors from the Show Cut dialog box to open the Show Cut Colors dialog box. Enter the percentage of transparency in the input fields for stock, fixture, and tool. A transparency value of 0 makes the component invisible (fully transparent), a transparency of 100 makes the component opaque (non-transparent).

Refer to online Help for more information about Show Cut colors and transparency.

### **Macro Variables Enhancement**

Macro variables can now support characters six places to the left of the decimal and five places to the right (999999.99999).

### **Edit Plus Uses System Font**

Edit Plus™ now uses your default system font, providing a more consistent and readable display.

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# SmartCAM Advanced 3-D Machining™

March 1995

Version 4.3 for Microsoft® Windows™

NTS1001150

## What's New

Advanced 3-D Machining version 4.3 includes the following new features:

### Enhanced Memory Management

We have upgraded memory management to better handle system demands. The changes improve overall performance.

### AutoCAD® R13 Support

The AutoCAD R13 DXF file format was changed, without prior notification from Autodesk™, between the pre-release version and the released version of R13. As a result, the released version of the AutoCAD R13 DXF is incompatible with the current version of the SmartCAM DXF CAM Connection®.

As an interim solution, we are providing an R13 strip utility, which you can access from an icon in the SmartCAM program group. Instructions for using the utility are in the file `r13strip.txt`, which is in the SmartCAM program directory.

### Upgraded Installation

The installation procedure has been streamlined, eliminating the need to edit the `smartcam.ini` file after installing a new version of SmartCAM, or the `pmdflt.su` file after installing the Productivity Macros.

### Changes to Edit Plus®

The Edit Plus commands File Save and Edit Cut and Paste now work correctly. To take advantage of the changes, make sure to choose the Edit Plus option when you install SmartCAM.

### Changes to Snap

Using the mouse to snap to the midpoints and intersections of lines and arcs now returns the Z coordinate in addition to X and Y coordinates. Problems with snapping to endpoints have been fixed.

Advanced 3-D Machining is installed with midpoints snap and intersections snap turned on. To turn off these options, change their settings to zero (0) in the Snap section of the `amill.ini` file. For more information on editing the `.ini` files,

refer to the *SmartCAM Customization Manual*.

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## SmartCAM Advanced Turning™

December 1995

Version 4.1 for Microsoft® Windows™

NTS1001170

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### What's New

Below are highlights of the enhancements in SmartCAM Advanced Turning™ version 4.1. Refer to the *SmartCAM Advanced Turning Reference Manual* or the online Help system for detailed information about these and other features in the application.

#### Single Roughing Passes

Process—Turn Rough—Contour now permits you to specify a single pass on the profile. This enables you to generate a pre-finishing cut with different X and Z allowances.

#### Linear Roughing

Process—Turn Rough—Linear can now be used to create roughing passes on profiles that are longer than 1000 measurement units.

#### Improved CTG Files

The number of elements you can include in a Custom Tool Graphics file has been increased to 500. The new limit will increase the amount of detail that you can include to model the insert, holder, and turret. For information about creating and using CTG files, refer to the *SmartCAM Advanced Turning Reference Manual*.

#### New TMP Variables

Several TMP variables have been implemented to use when you are working with multiple work planes.

- The fixture offset variables XFO, YFO, and ZFO enable specification of preset coordinates for subspindles.
- The tool plane vector variables INO, JNO, and KNO can be used to evaluate the orientation of any plane created during code generation.

#### Modifying Machine Events

The Geo Edit—Modify panel now displays the appropriate diameter values when Full Diameter is set in Display Modes.

#### Macro Variables Enhancement

Macro variables can now support characters six places to the left of the decimal and five places to the right (999999.99999).





## SmartCAM Advanced Turning™

September 1995

Version 4.0 for Microsoft® Windows™

NTS1001167

### What's New

Below are highlights of the new features in SmartCAM Advanced Turning™ version 4.0. Refer to the *SmartCAM Advanced Turning Reference Manual* or the online Help system for detailed information about these and other features in the application.

#### Windows Compatibility

SmartCAM® is now on Microsoft® Windows™. This enables you to switch between tasks and provides the ease of use and all the standard features of a Windows-based program.

If you used earlier versions of SmartCAM, you will find that many of the familiar screen display elements are still there. You will also find many new elements, such as icons, file search routines, and window control buttons that are common to most Windows-based programs.

The utility programs (Edit Plus™, Machine Define, CAM Connection®, Communicate) have also been updated for Windows compatibility.

#### Dynamic View

This new viewing tool enables you to easily rotate the view of your model to any desired orientation. You can rotate, spin, or pan the view, or zoom in and out on the view. For more information about Dynamic View, refer to online Help.

#### Quick View Status

The Status function enables you to view the current insert properties without leaving the open control panel. Select **Utility—Status** or Press **F9** to display the Quick View Status dialog box.

#### Windows-Style Online Help

Help now offers many Windows Help features, including a search capability. To access Help, select **Help** from the menu bar and then **Contents** (or another option), or press **F1** to open Help Contents directly.

To use context-sensitive Help, press **SHIFT+F1** to display the pointer as a floating question mark (similar to the Help Context icon). Position the cursor over any open

control panel or dialog box, or any menu bar item, icon, or open toolbox, and then click to display the Help topic for that item. You can place bookmarks in Help topics, as well as annotations for later reference.

To learn more about using online Help, select **Help—Using Help** from the SmartCAM menu. You can also add the context-sensitive Help icon to your icon bar by using **Utility—Icon Bar—Button Add** to select Help Context in the Add Bar Button dialog box.

#### New File Handling Routines

Creating, saving, and opening model files is now faster and easier. Refer to the *SmartCAM Advanced Turning Reference Manual* or to online Help for more information.

#### Icon Bar

The icon bar provides direct access to a variety of features. The read-out line below the graphic view provides a description of each icon as you point to it.

You can use one of the standard icon bars or create a custom icon bar that includes the icons for the modeling tools that you use most often. For detailed information, refer to online Help and the *SmartCAM Customization Manual*.

#### New Snap Capability

You can now use the mouse to snap to the midpoints and intersections as well as the endpoints of elements. For more information about Snap, refer to the *SmartCAM Advanced Turning Reference Manual*.

#### AutoCAD® R13 DXF Support

A new utility strips incompatible entities out of your R13 DXF files. (See page 4.)

#### Improved Mill Rough Routines

The roughing routines have been enhanced to provide you with greater capability, including unlimited island support. For more information, refer to the *SmartCAM Advanced Turning Reference Manual* or to online Help.



## SmartCAM Advanced Fabrication™

September 1995

Version 4.0 for Microsoft® Windows™

NTS1001168

### What's New

Below are highlights of the features in SmartCAM Advanced Fabrication™ version 4.0. See Contents for more information.

#### Microsoft Windows Compatibility

SmartCAM® is now on Microsoft® Windows™. This provides the ease of use and all the standard features of a Windows-based program, including the ability to switch between tasks. (See page 3.)

#### Simplified Installation Routines

It's now faster and easier to install your SmartCAM software. The *Installation Guide* provides complete instructions. (See page 1.)

#### New Modeling Tools

Three new modeling tools—Obround, Micro Joints, and Helix—are available to streamline the building of your process model. (See page 4.)

#### Windows Style Online Help

Help now offers many Windows Help features, including a search capability. (See page 4.)

#### Icon Bar

You can customize the new icon bar to give quick access to your most commonly used functions. (See page 4.)

#### New File Handling Routines

Creating, saving, and opening model files is now faster and easier. (See page 5.)

#### Dynamic View

This new viewing tool enables you to easily rotate your model view to any orientation. (See page 6.)

#### Quick View Status

You can view the current insert properties without leaving the open control panel. (See page 6.)

#### AutoCAD R13 DXF Support

A new utility strips incompatible entities out of your AutoCAD® R13 DXF files. (See page 6.)

### Customization Manual

A new manual provides information on customizing the appearance of your SmartCAM window.

### Edit Plus, Machine Define, and Communicate

The utility programs have been updated for Windows compatibility.

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