
ArtCAM CabinetMaker

Getting Started

By Delcam plc



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Introduction

Overview

Working alongside ArtCAM Insignia, ArtCAM Cabinetmaker provides a fully automated Nested-Based Manufacturing software solution for makers of custom furniture and cabinetry. ArtCAM Cabinetmaker combines a very simple user-interface with exceptional calculation speed, providing an effortless and efficient progression from design to manufacture.

Using layered DXF files originating from a variety of CAD systems, including the popular KCDw Cabinetmakers software, ArtCAM Cabinetmaker nests vector artwork representing each of the cabinet components across multiple sheets, grouping them according to material and thickness.

ArtCAM Cabinetmaker then generates optimised toolpaths using pre-defined templates, assigning any combination of machining strategy, cutting tool and machining parameters to each of the DXF layers that make up the design.

The calculated toolpaths can be simulated, if required, before being sent to the machine. More than 180 machine tool control options are supported, including those that offer automatic tool changing.

ArtCAM Cabinetmaker generates sheet reports for your nested design and outputs panel label data compatible with several third-party labelling packages, thus streamlining the entire process for the machine operator.

Understanding the Cabinetmaker Process

ArtCAM Cabinetmaker differs from most other modelling packages that you are likely to encounter. It has many more features in common with paint or drawing packages. Since it is a largely unique process, it is prudent to consider the general process of model-making using ArtCAM Cabinetmaker.

ArtCAM Models

Nearly all models (*.art) throughout the ArtCAM product range begin as 2D artwork. This artwork can be an image made up of dots of colour, known as pixels. This type of image is known as a bitmap image. This is the sort of image representation used for digital photographs or scans.

An alternative system for representing 2D artwork is known as vector drawing. This is the name given to line drawing elements, or contours, in ArtCAM that are defined in terms of their geometric shape, such as arcs, squares or circles. This type of image is most suited to technical drawings or designs that require precise geometry and sizing.

ArtCAM Cabinetmaker can import DXF layered panel data previously exported from third party design software as 2D vector artwork, which in turn is displayed in its **2D View** design window. A single ArtCAM model file can represent an entire cabinet project.

Layers

2D vector artwork can be assigned to different layers. DXF cabinet software makes extensive use of layers, containing common features on the same layer. For example, dadoes or slots can be found on one layer, with profiles on another. Layers are typically given a name so that manufacturing features can be quickly and easily identified.

ArtCAM Cabinetmaker makes intelligent use of layer names when deciding upon the appropriate machining strategy for a feature.

ArtCAM Cabinetmaker creates layers in a model according to the exact layer information provided within a DXF file. ArtCAM Cabinetmaker also preserves any colour information associated with a layer within a DXF file.

Nesting

Once created, the 2D panel vectors are nested across sheets of material using ArtCAM's advanced Nesting module. Nesting guarantees the most economical use of material and minimises waste. The output of nesting is a number of sheets representing available material. Vectors representing the cabinet panels are arranged in an efficient manner, providing sufficient tool clearance for cutting them during the machining process. ArtCAM Cabinetmaker arranges the sheets by material and thickness.

Sheets

Sheets of nested vectors are listed on the **Layers** page, and only one sheet can be active at a time.

ArtCAM Cabinetmaker merges all sheets containing an identical number and layout of nested vectors into a single sheet, and names it so that you can easily identify what of the original nested sheet output makes up the merged sheet.

Using sheets is an extremely efficient concept for handling parts. For example, a cabinet project might comprise of thirty panels nested across five sheets of wood. If we were to display all five sheets simultaneously, the **2D View** would be incredibly congested and it would be impossible for us to determine the purpose of any single sheet. By displaying only one sheet at a time, the purpose of each sheet is made explicit.

Toolpaths and Templates

ArtCAM Cabinetmaker creates toolpaths for the nested panels by identifying vector layer names within the names of the various toolpaths that make up a single template. An ArtCAM Toolpath Template is a collection of toolpaths with their tools, cutting parameters and strategy settings stored within a template file (*.tpl). The template file can be loaded into later sessions of ArtCAM and the predefined toolpath settings quickly applied to vectors. ArtCAM Cabinetmaker loads a toolpath template, proceeds to compare all layer names within the model against the names of the individual toolpaths within the imported template file, assign the toolpaths to the relevant layers and finally calculate the toolpaths in a batch sequence.

For example, all shelf pinholes on the *DrillShelf* layer will be machined with the *Drilling_(DrillShelf)* toolpath:

Layer Name	Feature	Toolpath Name
<i>Shape</i>	shape of panel	<i>Profile_(Shape)</i>
<i>Dado05</i>	½ inch dado slot	<i>AreaClear_(Dado05)</i>
<i>Dado075</i>	¾ inch dado slot	<i>AreaClear_(Dado075)</i>
<i>DrillShelf</i>	5 mm shelf pinholes	<i>Drilling_(DrillShelf)</i>

ArtCAM Cabinetmaker identifies all text within brackets in the name given to a toolpath within the template file, and then proceeds to compare this against the names of the layers in the model. Where there is a match, the toolpath settings within the template file are applied to the layer. This provides you with the freedom to assign any toolpath settings to any layer within a model.

Batch Processing

ArtCAM Cabinetmaker differs from conventional CAD/CAM, which often focuses on individual part design, in that it manages perhaps 25 or more cabinet panels simultaneously. As a result, separate pop-up messages are diverted to a common message area and you are not required to continually press an **OK** or **Cancel** button in order to complete the calculation process.

After the batch processing of all panels is complete, you can scroll back through the calculation details, check for errors and verify that the process has been completed as anticipated. The following details are displayed during a batch sequence:

- The time and date on which the batch calculation process commences.
- The elapsed time for the calculation of each of the toolpaths within the batch.
- The elapsed time for the entire batch calculation process.

Tutorial – Using ArtCAM Cabinetmaker

Overview

The following tutorial demonstrates how to use ArtCAM Cabinetmaker in the manufacturing of cabinetry designs and explains the concepts behind sheet layout and toolpath calculation.

ArtCAM Cabinet Frame Project

The stages that you will cover during the course of this tutorial are:

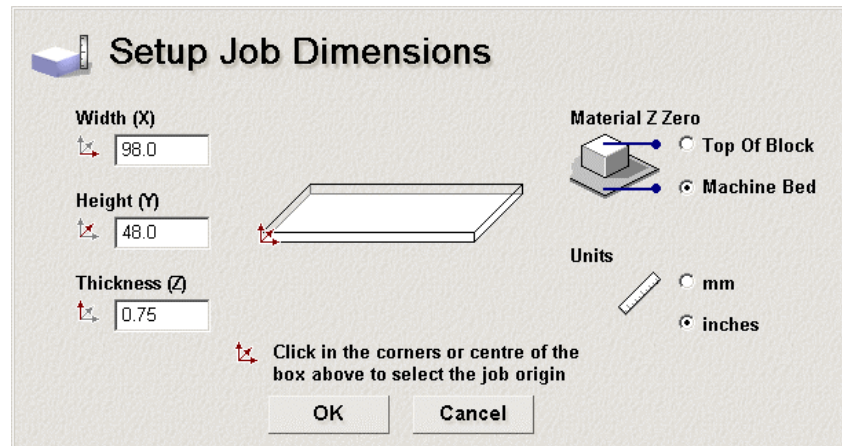
- Preparing the model.
- Defining the Cabinetmaker settings.
- Understanding the cabinet calculation process.
- Simulating the toolpaths.
- Previewing the labels.

The tutorial will lead you through each of these stages, guiding you through the complete process of calculating the toolpath data needed to machine a complete set of cabinet framework.

Preparing the Model

First we will set up the model dimensions for this particular job. It is not possible to begin the cabinet calculation process without first creating an ArtCAM model. We shall use model dimensions equivalent to a 98 x 48 inch (2440 x 1220 mm) sheet of material.

1. Click on the **Create New Model** icon  in the **Create Model** area of the **Assistant's Getting Started** page to display the **Setup Job Dimensions** dialog box.



2. Make sure that you are using the appropriate units of measurement by clicking on either the **mm** or **Inches** radio button in the **Units** area.
3. Type *98 inches (2440 mm)* in the **Width (X)** box, *48 inches (1220 mm)* in the **Height (Y)** box and *0.75 inches (20 mm)* in the **Thickness (Z)** box.

These imperial and metric measurements are equivalent to the standard dimensions of a sheet of material.

4. Click on either of the **Material Z Zero** options to define the Z-axis zero level; the position of the cutting tool relative to the surface of the sheet of material you are using for the cabinet project:
 - Click on the **Top of Block** option if you want to position the cutting tool on the material surface.
 - Click on the **Machine Bed** option if you want to position the cutting tool on the bed of the machine.
5. Click on the **OK** button to close the **Setup Job Dimensions** dialog box and create an ArtCAM model according to these settings.

A **2D View** window automatically fills the previously empty design window area. The white model area shown in the window represents a sheet of material when viewed down the Z-axis.

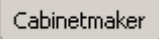
Defining the Cabinetmaker Settings

We are now ready to define the settings that we will use in ArtCAM Cabinetmaker. We need to select a text file, a toolpath template, our machining and drilling post-processors and a destination folder for our resulting toolpath output files.

The text file that we will use contains data relating to a group of 46 DXF files exported from KCDw Cabinetmakers software. The names given to the DXF files were determined by the project created within this software. Each of the DXF files is layered and each of their layers contains a specific group of cabinet features. A colour has also been assigned to each of its layers. In order to distinguish between different holes, these features have also been assigned to separate layers.

If a DXF file contains height information, this data overrides any defined Finish Depth setting found within a toolpath template file. However, ArtCAM Cabinetmaker does not currently support the machining of holes at different depths in a single toolpath.

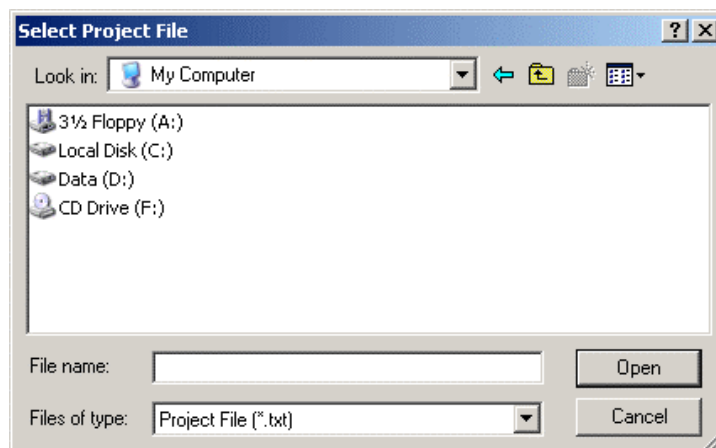
The toolpath template file that we will use contains nine separate toolpaths: six Profiling toolpaths, two Area Clearance toolpaths and a single Drilling toolpath. Eight of the nine toolpaths make use of a 3/8 Inch (10 mm) End Mill tool. A ninth Drilling toolpath makes use of a 0.197 Inch (5 mm) End Mill tool.

1. Click on the **Cabinetmaker** tab  to display the **Cabinetmaker** settings page in the **Assistant** window.



Tip: Click on the **Show Help** option at the top of the Cabinetmaker settings page to display in-line help on using ArtCAM Cabinetmaker. You can click on the **Hide Help** option to conceal the in-line help.

2. Click on the **Browse...** button in the **Choose Project CSV File** area to display the **Select Project File** dialog box:



3. Select the text file (*.csv or *.txt) containing the cabinet project data. This text file must be located in the same directory as the DXF files to which it refers.

Navigate to the *ArtCamFrame* folder within the *ArtCAM Insignia 3.6\Examples* directory on your computer, and then click to select the file named *ArtCamFrame_CNCList.txt*. This appears in the **File name** area of the dialog box.

If we open this text file in a text-editing tool, we can see that each line of text comprises of values associated with the following fields:

```
DXF Filename, Part Description, Width, Length,  
Thickness, Material Type, Cabinet ID Number,  
Quantity, Origin in X-axis, Origin in Y-axis,  
Orientation
```

4. Click on the **Open** button to import the selected text file into the **Choose Project CSV File...** area of the **Cabinetmaker** settings age.

ArtCAM Cabinetmaker identifies the total number of panels, different types of material and different types of parts within the selected text file and displays these details in the **Message Area** window.

If ArtCAM Cabinetmaker cannot find any of the DXF files referenced within your selected text file, an error message is displayed in the **Message Area** window warning you that the file(s) cannot be recognised.

Typically, an error will be encountered if the text file and its associated DXF files are not stored in the same folder on your computer, or if there is a discrepancy between the spelling of the actual DXF filename and how it is referenced within the selected text file.



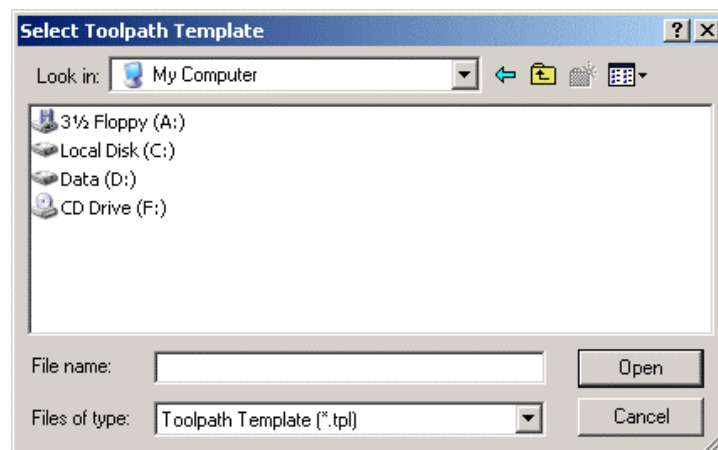
Tip: Click on the **View Log** button to display a text file in a new Internet Explorer window containing all data currently recorded in the **Message Area** window.

Using the *ArtCamFrame_CNCList.txt* file, ArtCAM Cabinetmaker first identifies that this particular job is made up of 46 different panels, and then lists them all in turn. This data confirms that all 46 of the DXF files referenced within the selected text file have been recognised. Details of the specific type of material required to machine each of the panels are also reported.

Next, ArtCAM Cabinetmaker identifies that 5 different types of material are required for the job: *3/4 Finish Ply*, *3/4 Ply*, *1/4 Ply*, *1/2 Birch* and *1/4 Birch*. Details of the required sheet thickness for each different type of material is also reported.

Finally, ArtCAM Cabinetmaker summarises that a total of 48 parts of 46 different types make up this particular job. This confirms that two of the DXF files referenced within the text file are in fact required twice. If we look at the content of the text file once again, we can see that these are the DXF files named *ArtCamFrame_01_Shelf_(Adj)_001F* and *ArtCamFrame_02_Nailer_001F*.

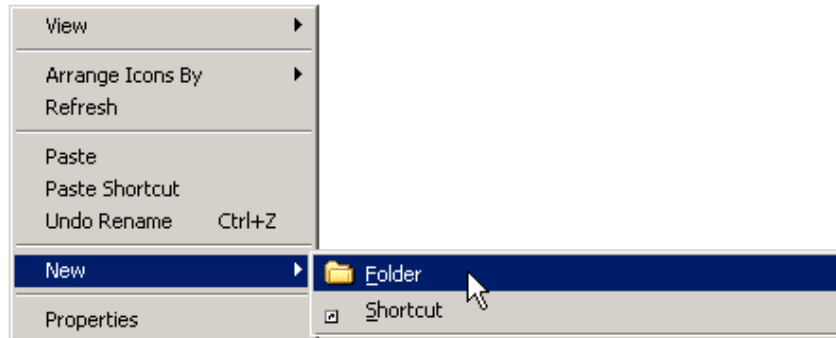
5. Click on the **Browse** button in the **Choose Toolpath Template...** area to display the **Select Toolpath Template** dialog box:



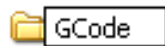
6. Navigate to the *C:\Documents and Settings\All Users\Documents\ArtCAM Files\Toolpath Templates* directory on your computer, and then click to select the toolpath template file that you want to use. This appears in the **File name** area of the dialog box.
 - If you are using imperial measurements and have set the **Material Z Zero** option as **Top of Block**, make sure that you select the file named *DefaultInchLayers_Z_Top.tpl* as your toolpath template.
 - If you are using imperial measurements and have set the **Material Z Zero** option as **Machine Bed**, make sure that you select the file named *DefaultInchLayers_Z_Bottom.tpl* as your toolpath template.

- If you are using metric measurements and have set the **Material Z Zero** option as **Top of Block**, make sure that you select the file named *DefaultMMLayers_Z_Top.tpl* as your toolpath template.
 - If you are using metric measurements and have set the **Material Z Zero** option as **Machine Bed**, make sure that you select the file named *DefaultMMLayers_Z_Bottom.tpl* as your toolpath template.
7. Click on the **Open** button to import the selected text file into the **Choose Toolpath Template...** area of the **Cabinetmaker** settings page.
 8. Make sure that the offset applied to the nested vector panel artwork is set to *0.4* inches (*10* mm) in the **Nesting Clearance** box. This value should at least be equivalent to the diameter of the Profiling Tool that you are using to machine the nested panel vector artwork.

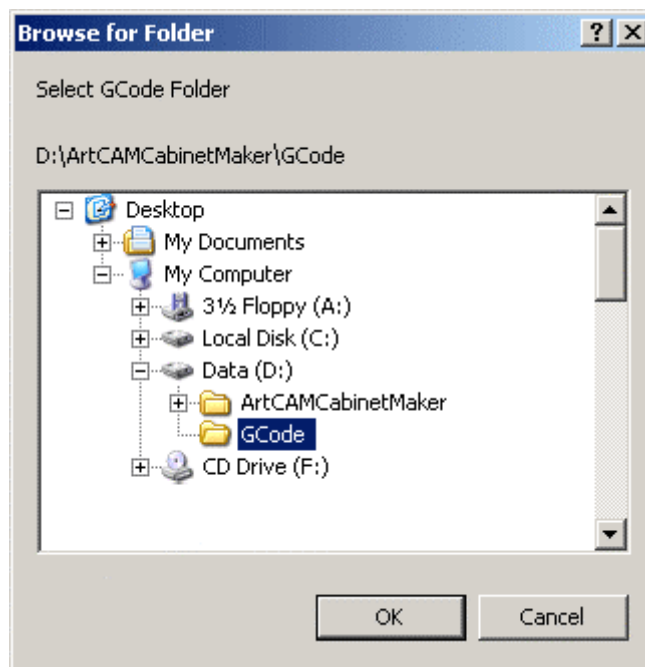
For example, if you were using a ½ Inch End Mill Profiling Tool with a diameter of *0.5* inches (*13* mm), you would then define the Nesting Clearance as *0.5* inches (*13* mm).
 9. Click on the **Machine Type...** list box, and then on the post-processor that is compatible with your machining tool.
 10. If you are using a drilling bit separate from the router-head, click to select the **Use optional Drilling type** option, and then click on the list box below followed by the appropriate post-processor.
 11. Using Windows Explorer, navigate to the location on your computer in which you want to store your toolpath output files generated by ArtCAM Cabinetmaker. For example, the *D:* drive.
 12. Right-click to display the mouse context menu, move the mouse cursor over the **New** option and then click on the **Folder** option to create a new folder.



13. Type an appropriate name for the new folder. For example, 'GCode'.



14. Once you have named the folder appropriately, return to the **Cabinetmaker** settings page.
15. Click on the **Browse** button in the **Choose GCode Folder** area to display the **Browse for Folder** dialog box:



16. Using the tree in the dialog box window, navigate to the folder you have created for your toolpath output files, and then click to select the folder.
17. Click on the **OK** button to close the **Browse for Folder** dialog box and define the location of the toolpath output folder. The path of the folder is displayed on the **Cabinetmaker** settings page.
18. Click on the **Read Files** button to read the selected text file and search for the DXF files referenced within the text file.

Understanding the Cabinet Calculation Process

We are now ready to use the Cabinetmaker settings to calculate the toolpaths needed to machine the cabinet components within the job as efficiently and economically as possible.

1. Click on the **Do It All** button to begin the cabinet calculation process.

A message reading "Nesting panels for..." is displayed in the **Message Area** on the **Cabinetmaker** settings page.

ArtCAM Cabinetmaker begins by calculating the required number of sheets for each of the different types of the material previously identified from the text file. We have already established that five different types of material are required for this job, so at this stage we have already established that at least five sheets will be needed. These sheets adopt the name of the material found in the text file.

The vector data contained in the DXF files referenced within the text file is then nested across these sheets. The data within the text file determines what vector artwork is intended for which sheet. For example, the artwork within the *ArtCAMFrame_03_Drawer_Box_Side_001F* file is bound for a sheet named *1/2 Birch*.

The Nesting Clearance you have previously defined is applied during the nesting calculation process.

Where accumulated vector data found between the DXF files cannot be nested on a single sheet, subsequent sheets are created as necessary and are numbered iteratively. For example, two sheets of *3/4 Ply* are needed to contain all of the vector artwork embedded within thirteen of the DXF files, and these are named *3/4 Ply_Sheet1* and *3/4 Ply_Sheet2* respectively.

ArtCAM Cabinetmaker then creates layers in the ArtCAM model according to the layer information contained within the DXF files. The nested vectors remain on the same layer that was originally created as part of the DXF file.

Once all of the vector data has been assigned to appropriate sheets and layers, ArtCAM Cabinetmaker loads the toolpath template and begins the toolpath calculation process.

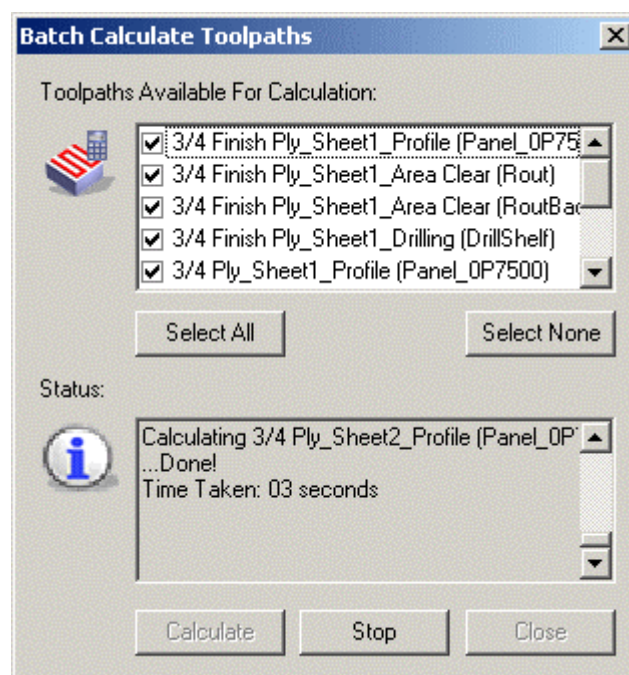
A message reading "Creating toolpaths for each sheet..." is then displayed in the **Message Area**.

ArtCAM Cabinetmaker reads the name of a layer, and then searches for exactly the same text in all of the toolpath names that originate from the toolpath template. This information is contained within brackets in a toolpath name. For example, the layer named *Panel_0P2500* is clearly referenced in the toolpath named *1/4 Ply_Sheet1_Profile (Panel_0P2500)*.

Where the name of a layer matches the text within brackets in the toolpath name, ArtCAM Cabinetmaker applies the toolpath settings in the template to the vector artwork on that layer. This process is repeated until toolpath settings have been applied to all of the vector artwork drawn across the layers.

A message reading "Calculating toolpaths..." is then displayed in the **Message Area**.

ArtCAM Cabinetmaker calculates all of the toolpaths in sequence as part of a single batch:



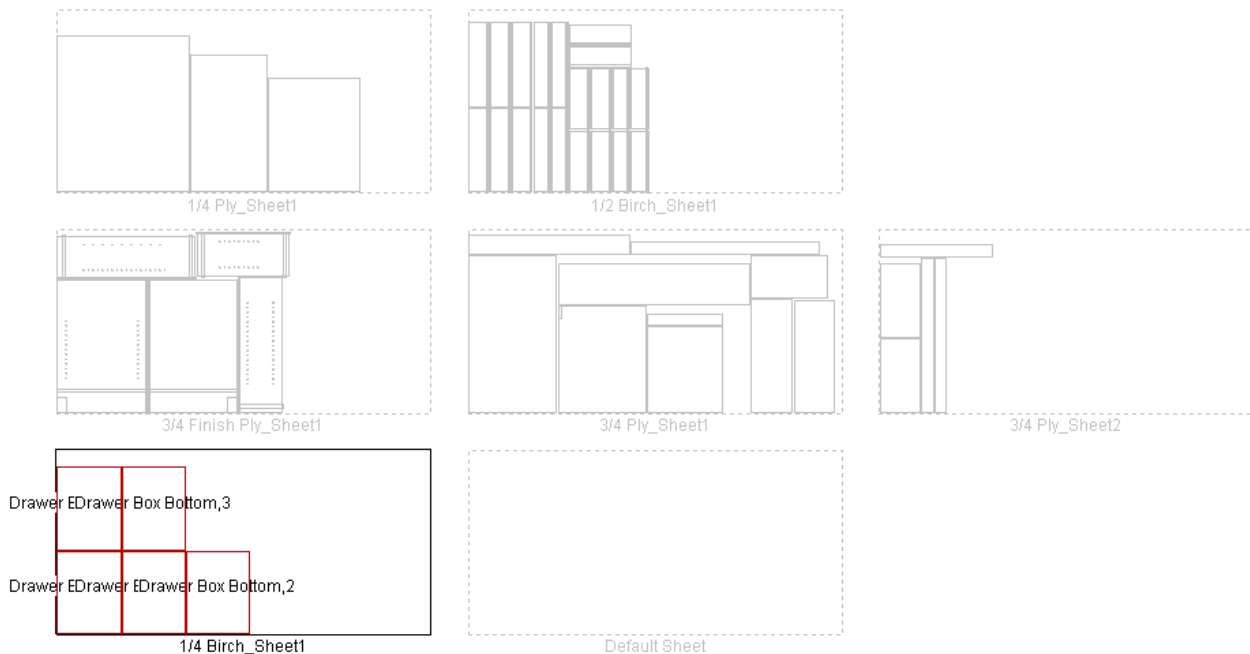
All of the messages displayed in the **Status** area of the **Batch Calculate Toolpaths** dialog box are echoed in the **Message Area**.


A message reading "Writing GCode..." is then displayed in the **Message Area**.

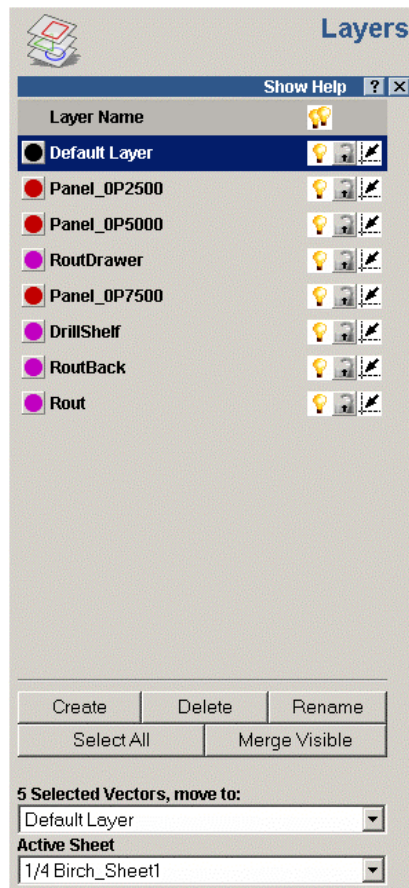
ArtCAM Cabinetmaker outputs the toolpath files according to the post-processors that are defined on the settings page to your designated toolpath output folder.

A message reading "Finished" is displayed in the **Message Area**.

We can see the nested panel vector artwork and a preview of the toolpaths needed to machine them in the **2D View** window, and that the *1/4 Birch_Sheet1* sheet is currently active.



2. Click on the **View Log** button to display a text file in a new Internet Explorer window containing a record of data from every stage of the entire cabinet calculation process. This file is stored in your designated toolpath output folder.
3. Click on the **Layers** tab  to display the **Layers** page.



We can see that there are a total of seven layers in our model; eight if we include the *Default Layer*. Let us consider the meaning behind the names given to each of these layers:

- *Panel* describes a layer containing vector artwork used to create a toolpath for machining the perimeter of panels.
- *RoutDrawer* describes a layer containing vector artwork used to create a toolpath for machining a dado in a drawer-bottom panel.
- *DrillShelf* describes a layer containing vector artwork used to create a toolpath for drilling shelf holes in a panel.
- *RoutBack* describes a layer containing vector artwork used to create a toolpath for routing a back panel.
- *Rout* describes a layer containing vector artwork used to create a toolpath for routing a top or a bottom panel.

There are two different colours assigned between the seven layers.



The vector artwork found within the DXF files has been nested across six sheets. Each sheet represents an actual sheet of material required for the job, and adopts the name of the different types of materials identified in the text file during the calculation process.

We can see that the *1/4 Birch_Sheet1* sheet is currently active. You can control which sheet of nested vectors is shown in the **2D View** window by clicking to select the name of the specific *Sheet* you want to view from the **Active Sheet** list box. Only one sheet can be active at any given time, although it is possible to preview the contents of all sheets. You can only edit the vector artwork on the active sheet.

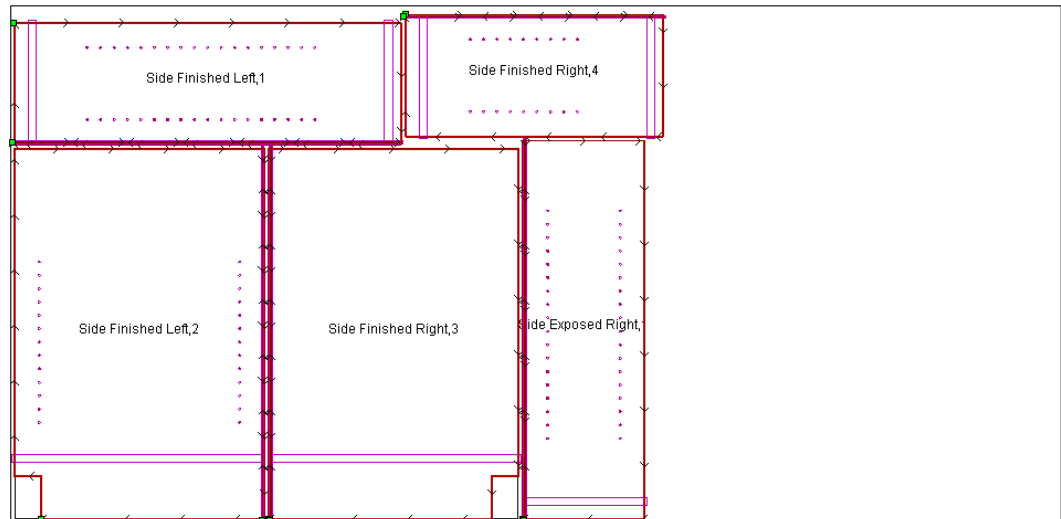
It may help to visualise the active sheet as the CNC table bed and the remaining greyed-out sheets as the material within your workshop.

Simulating the Toolpaths

We are now ready to simulate the calculated toolpaths associated with each of the sheets in our ArtCAM model. This allows us to visualise how each of the calculated toolpaths is used to machine the various cabinet components that make up this particular job.

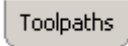
1. Click on the **Layers** tab  to display the **Layers** page.
2. Make sure that the *3/4 Finish Ply_Sheet1* sheet is selected as the active sheet by clicking on this option in the **Active Sheet** list box.
3. Click on the **Window Fit** button  on the **2D View** toolbar to scale the view so that only the vector artwork associated with the *3/4 Finish Ply_Sheet1* sheet can be seen.


The vector artwork associated with the sheet, together with previews of its associated toolpaths, can be seen in the **2D View** window as shown below:



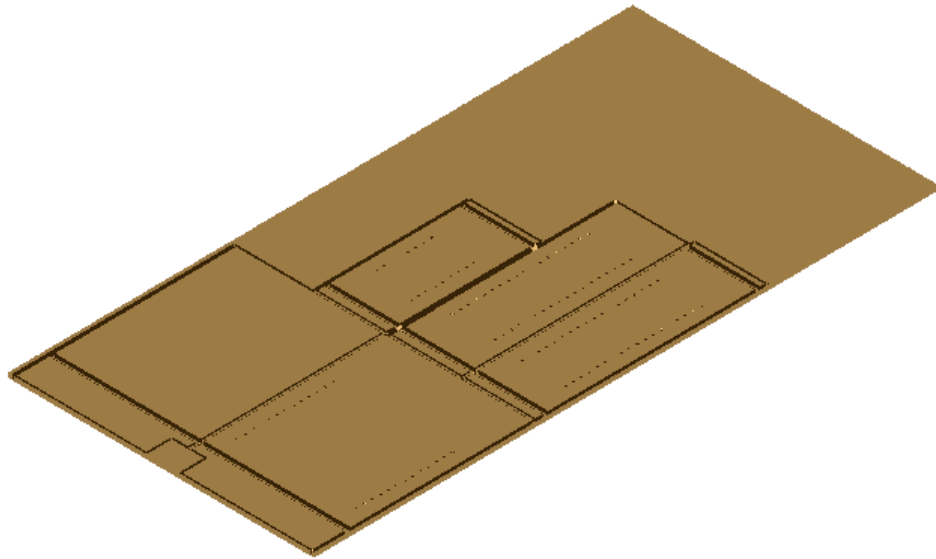
3/4 Finish Ply_Sheet1

We can see that the vector artwork has been labelled with the *Part Description* and *Cabinet ID Number* data from within the *ArtCamFrame_CNCList* text file that we chose for this project. These labels allow the machine operator to quickly determine the purpose of each of the panels within a sheet.

4. Click on the **Toolpaths** tab  to display the **Toolpaths** Home page.

5. Click on the **Simulate All Toolpaths** button  in the **Toolpath Simulation** area of the page to simulate all of the toolpaths associated with the vector artwork drawn on the active sheet.

The simulated toolpaths appear in the **3D View** window as shown:

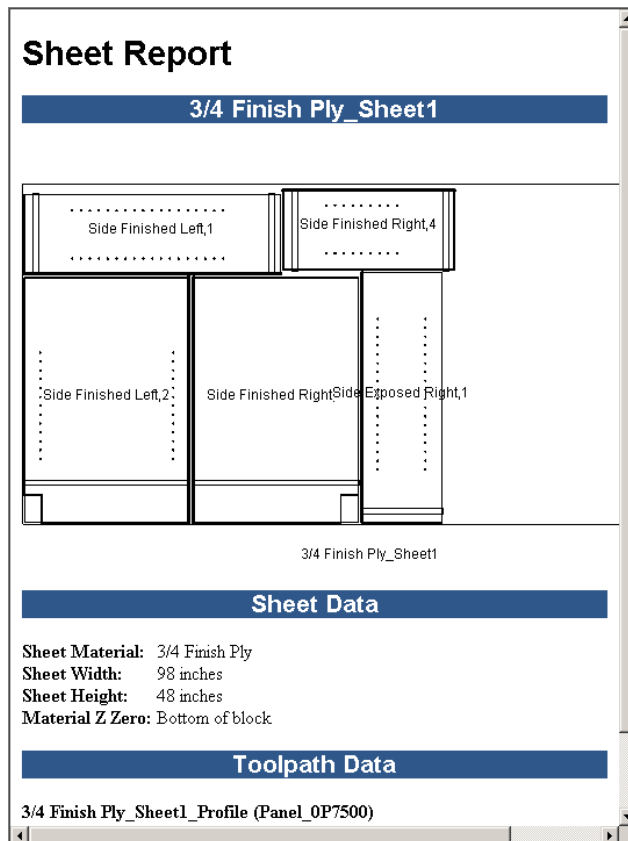



The toolpaths associated with the *3/4 Finish Ply_Sheet1* layer are *3/4 Finish Ply_Sheet1_Profile (Panel 0P7500)*, *3/4 Finish Ply_Sheet1_Area Clear (Rout)*, *3/4 Finish Ply_Sheet1_Area Clear (RoutBack)* and *3/4 Finish Ply_Sheet1_Drilling (DrillShelf)*.

6. From the Main menu bar, click on the **2D View > Sheets > Sheet Report** menu option to display a sheet report for the *3/4 Finish Ply_Sheet1* sheet in a new window.

This report contains a preview of the vector artwork associated with the sheet, data concerning the sheet dimensions and toolpath data associated with the sheet. The report can be saved or sent to any printer installed on your computer.

The sheet report for the *3/4 Finish Ply_Sheet1* sheet appears as follows:

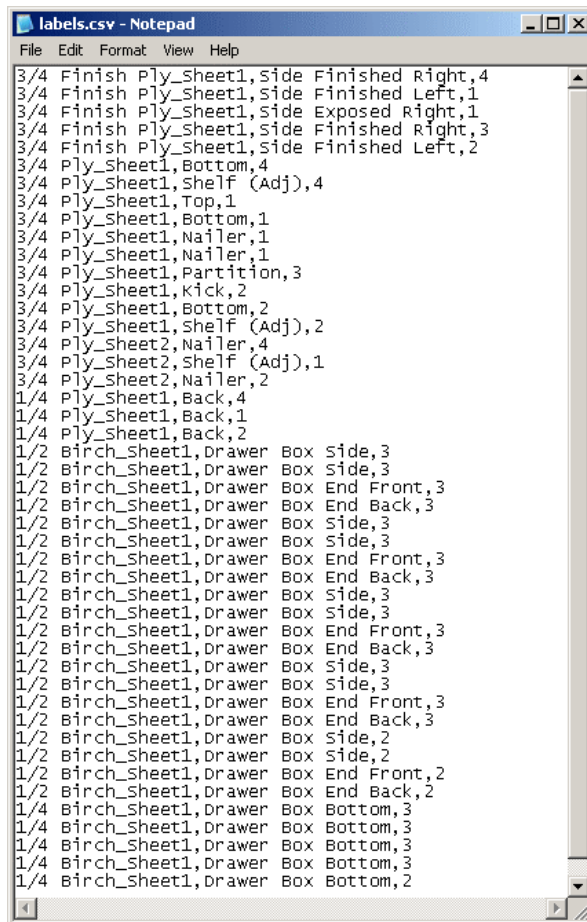


7. Click on the **Reset Simulation** button  to delete the simulated toolpaths currently shown in the **3D View** window.
8. Repeat these steps for each of the sheets within the model.

Previewing the Labels

Finally, we will preview the labels generated for each of the panels that make up our cabinet project.

1. Using Windows Explorer, navigate to whichever folder you have defined in the **Select Gcode Folder** area as the location for the toolpath output files generated by ArtCAM Cabinetmaker.
2. Double-click your mouse on this folder to view its contents.
3. Right-click on the *labels.csv* file to display its context menu, move the mouse cursor over the **Open With** menu option, and then select the **Notepad** option to view the contents of the file:



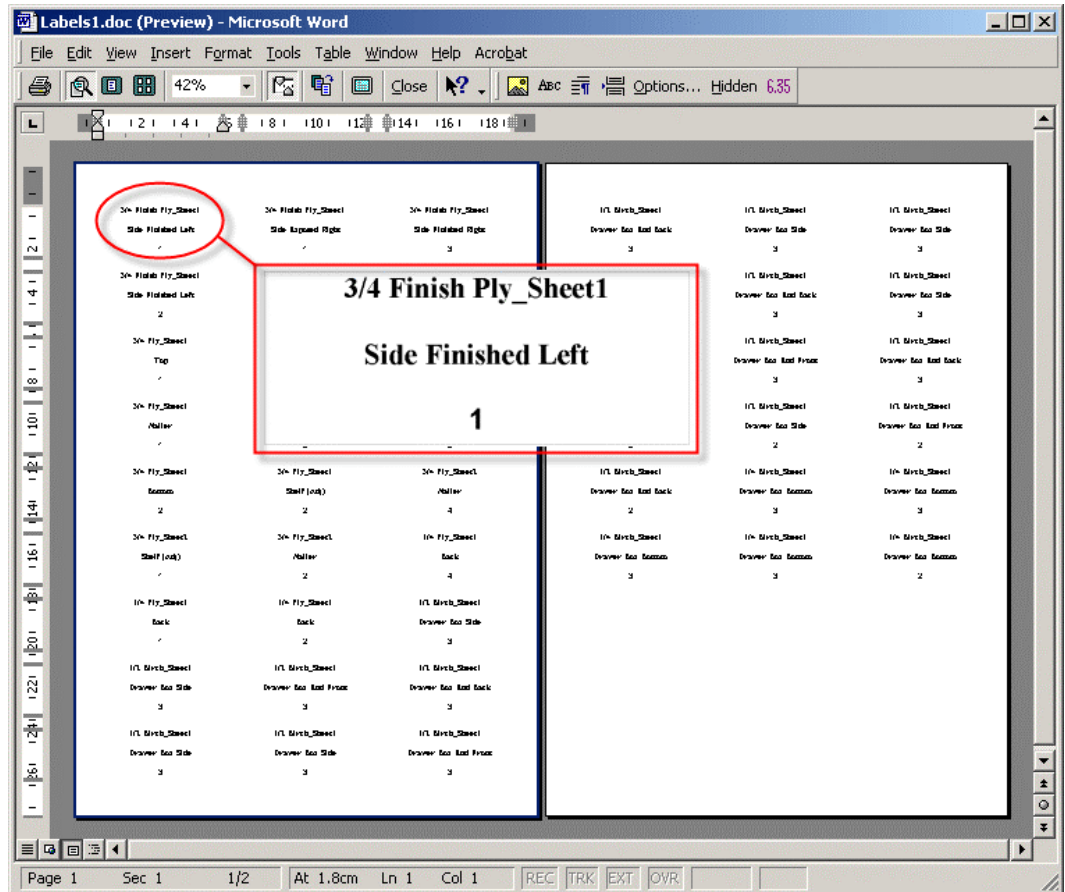
```
3/4 Finish Ply_Sheet1,Side Finished Right,4
3/4 Finish Ply_Sheet1,Side Finished Left,1
3/4 Finish Ply_Sheet1,Side Exposed Right,1
3/4 Finish Ply_Sheet1,Side Finished Right,3
3/4 Finish Ply_Sheet1,Side Finished Left,2
3/4 Ply_Sheet1,Bottom,4
3/4 Ply_Sheet1,Shelf (Adj),4
3/4 Ply_Sheet1,Top,1
3/4 Ply_Sheet1,Bottom,1
3/4 Ply_Sheet1,Nailer,1
3/4 Ply_Sheet1,Nailer,1
3/4 Ply_Sheet1,Partition,3
3/4 Ply_Sheet1,Kick,2
3/4 Ply_Sheet1,Bottom,2
3/4 Ply_Sheet1,Shelf (Adj),2
3/4 Ply_Sheet2,Nailer,4
3/4 Ply_Sheet2,Shelf (Adj),1
3/4 Ply_Sheet2,Nailer,2
1/4 Ply_Sheet1,Back,4
1/4 Ply_Sheet1,Back,1
1/4 Ply_Sheet1,Back,2
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box End Front,3
1/2 Birch_Sheet1,Drawer Box End Back,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box End Front,3
1/2 Birch_Sheet1,Drawer Box End Back,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box End Front,3
1/2 Birch_Sheet1,Drawer Box End Back,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box Side,3
1/2 Birch_Sheet1,Drawer Box End Front,3
1/2 Birch_Sheet1,Drawer Box End Back,3
1/2 Birch_Sheet1,Drawer Box Side,2
1/2 Birch_Sheet1,Drawer Box Side,2
1/2 Birch_Sheet1,Drawer Box End Front,2
1/2 Birch_Sheet1,Drawer Box End Back,2
1/4 Birch_Sheet1,Drawer Box Bottom,3
1/4 Birch_Sheet1,Drawer Box Bottom,3
1/4 Birch_Sheet1,Drawer Box Bottom,3
1/4 Birch_Sheet1,Drawer Box Bottom,3
1/4 Birch_Sheet1,Drawer Box Bottom,2
```

If you do not have Notepad installed, you can use WordPad, Microsoft Excel or any other suitable text-editing tool currently installed on your computer to open the file.

We can see that each line of text within the file comprises of values associated with the following fields:

Material_ArtCAM Sheet, Part Description,
Cabinet ID Number

This file can be used to print labels for each of the components in your cabinet project. For example, when opening the *labels.csv* file using the Avery Wizard for Microsoft Word 2000 along with its L4737 Removable Labels template, the data within the file is formatted as follows:



Delcam plc do not recommend any particular third-party labelling software for use in conjunction with the *labels.csv* file generated by ArtCAM Cabinetmaker. For further information, please consult with your software reseller.

Reference Material

Associated File Types

There are four common file types associated with ArtCAM Cabinetmaker: CSV, TXT, DXF and TPL. The following information offers an explanation of each of these file types.

What are CSV Files?

CSV (Comma Separated Variable) files are a traditional means of writing database or spreadsheet files to disk. Many modern applications, such as Microsoft Excel and Microsoft Access, can read and write these files. Their advantage nowadays is that they and the data in them can easily be manipulated with a simple text editor, rather than needing the full application which wrote them. The structure of a CSV file is very simple. It is a text file, and usually starts with a list of fields, separated by commas. For example, if the file was to store people's names and addresses, the first line of the file might look like:

Forename, Surname, Address1, Address2, City, PostCode

Subsequent lines contain the data corresponding to these fields, e.g:

John, Doe, 12 Any Street, A Town, Some County, B1 2YZ

What are TXT Files?

TXT files are plain text format files. In general, "text" refers to characters of the alphabet, numerals, punctuation, and a few common symbols. Although text is encoded in files by various methods, the most common encoding for western text is ASCII (American Standard Code for Information Interchange) format.

What are DXF Files?

DXF (Drawing Interchange Format) files were first introduced by AutoDesk AutoCAD, and are one of the most widely used CAD/CAM/CAE applications in the world. The DXF format is very popular and is supported by most 3D formats on PC platforms.

A DXF file is an ASCII file containing 2D and 3D components representing a drawing. Those components are known as Entities. The DXF file can represent almost any CAD drawing using those entities, and can connect a group of entities together (such as panels, frames, etc.) and use them later in the file.

What are TPL Files?

TPL (Toolpath Template) files are ArtCAM proprietary files that were first introduced in the release of ArtCAM Pro 5.509 and ArtCAM Insignia 2.0. They store toolpath settings which can be applied to vector artwork drawn in an ArtCAM model file (*.art).

Associated Cabinetmaker Techniques

The following information provides an explanation of the tools and concepts relevant to using ArtCAM Cabinetmaker.

Editing an Existing TXT or CSV File

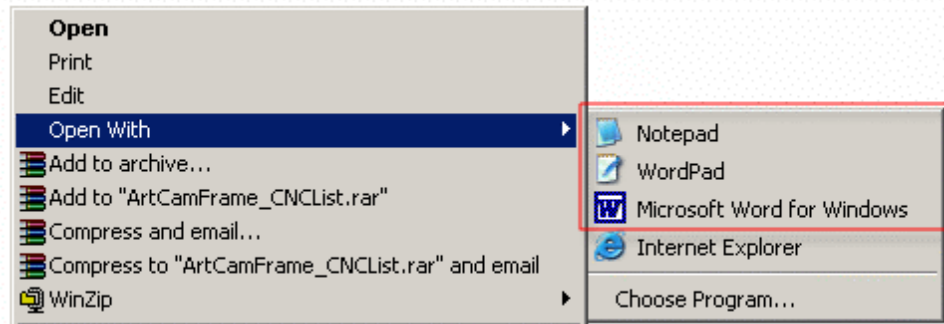
You can use any text editing tool to modify the content of an existing text file (*.csv and *.txt). For example, Notepad, WordPad or Microsoft Word.

It is essential that commas separate all new entries in the data file. You should also make sure that the names of the DXF files referenced within your text file are spelt identically to their actual filenames. Failure to do either of these steps will mean that ArtCAM Cabinetmaker fails to identify your files during the calculation process.

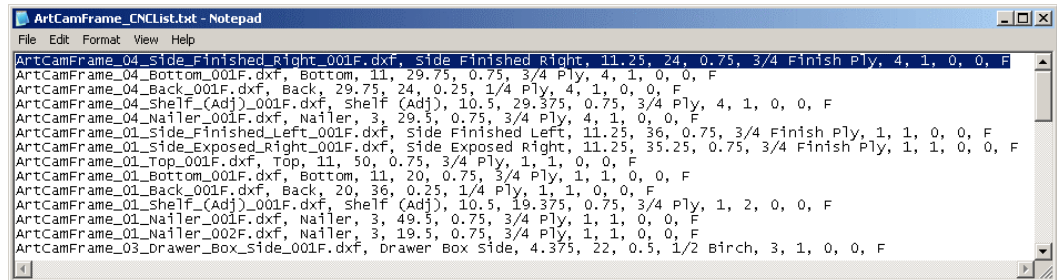
To edit an existing text file:

1. Right-click on the text file that you want to edit to display its context menu.
2. Move the mouse cursor over the **Open With** option to display a menu of the text editing tools currently installed on your computer, and then click on the option for the text

editor that you want to use for editing the content of the selected text file.




3. The content of the text file is displayed in your chosen text-editing tool. For example, a text file named *ArtCamFrame_CNCList.txt* file appears as follows when opened in Notepad:



4. You can now edit the data within the file, just as you would any other document containing text.

Checking the Layer Information within an Imported DXF File

To check the layer information within an imported DXF file:

1. Click on the **Layers** tab  to display the **Layers** page.

You can see the name of the layer and the colour that has been assigned to the layer. All vector artwork associated with a layer is drawn in the colour assigned to the layer. You can edit the colour associated with any layer.

All layers are shown in the **2D View** window by default, although you can toggle their visibility either individually or simultaneously. For details, see the "ArtCAM Insignia Layout" chapter of the ArtCAM Insignia User Guide.

Understanding Layer Names

When importing DXF files originating from KCDw Cabinetmakers software, the names given to layers make specific reference to terminology used in cabinetry and furniture making. The table below provides a description of each of the layer names adopted by ArtCAM Cabinetmaker:

Layer Name	Description
<i>Panel</i>	Tool used to cut the perimeter.
<i>Rout</i>	Tool used to rout for tops or bottoms.
<i>Routback</i>	Tool used to rout for back.
<i>DrillShelf</i>	Tool used to drill shelf holes.
<i>RabbetDrawer</i>	Tool used to rabbet drawer.
<i>RoutDrawer</i>	Tool used to rout drawer bottom groove.
<i>DrillDowel</i>	Tool used to drill Dowel Holes.
<i>DrillDrawer</i>	Tool used to drill Drawer Holes.
<i>RoutTab</i>	Tool used to Rabbet Tabs.
<i>RoutBackTab</i>	Tool used to Rabbet Back Tabs.
<i>RoutFront</i>	Tool used to Rabbet Front Sides.
<i>RoutTop</i>	Tool used to cut Dado for Top.
<i>Bore</i>	Tool used to Bore Door.
<i>RoutKick</i>	Tool used to Rout Kicks.
<i>RoutKDHoleEdge</i>	Tool used to Rout KD Hole.
<i>DrillPilot</i>	Tool used to drill Pilot Holes.
<i>DrillLeg</i>	Tool used to drill Legleveler Holes.
<i>DrillShelf</i>	Tool used to drill Shelf Holes.
<i>DrillHinge</i>	Tool used to drill Hinge Holes.
<i>DrillDrawer</i>	Tool used to drill Drawer Slide Holes.
<i>DrillConfirmat</i>	Tool used to drill Confirmat Holes.
<i>DrillDowel</i>	Tool used to drill Dowel Holes.
<i>DrillDrwFrontPilot</i>	Tool used to drill Attach Drawer front pilot.

<i>DrillLeglevelercorner</i>	Tool used to drill Pilot holes for leg levelers.
<i>DrillKDHole</i>	Tool used to Drill KD hole.

The following table identifies the door and saw layer names that have **not** yet been adopted by ArtCAM Cabinetmaker, although these will be integrated in the future. You can still create templates for these layer names but we recommend you utilise these specific descriptions in order to avoid problems in future releases.

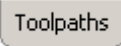
Layer Name	Description
<i>Saw</i>	Tool used to cut a Cut.
<i>CutOutTool</i>	MDF Door tool used to cut the door perimeter.
<i>EdgeTool</i>	MDF Door tool used to cut a decorative edge profile.
<i>BeadTool</i>	MDF Door tool used to cut the frame bead.
<i>FrameCleanUpTool</i>	MDF Door tool used to cut the top of bead. Used to nearly square the inside frame corners (small diameter cutter).
<i>BeadCleanUpTool</i>	MDF Door tool used to cut the bottom of bead. Used to nearly square the inside bead corners (small diameter cutter).
<i>RaisedPanelTool</i>	MDF Door tool used to cut the panel raise.
<i>PanelCleanUpTool</i>	MDF Door tool used to clean up the remainder left by the other tools at the bottom of the panel groove.
<i>GlassPanelTool</i>	MDF Door tool used to cut through the door to make a hole for the glass in a glass panel door.
<i>FlatPanelTool</i>	MDF Door tool used to cut a large pocket in the middle of the door to make a flat recessed panel door.
<i>VGrooveTool</i>	MDF Door tool used to cut a number of small decorative v-grooves in the door panel.

<i>WideGrooveTool</i>	MDF Door Tool used to cut a groove that runs around the door about 2 inches in from the edge (not used often).
<i>DrillPilotTool</i>	MDF Door tool used to drill the handle holes in the door.


Creating a Toolpath Template

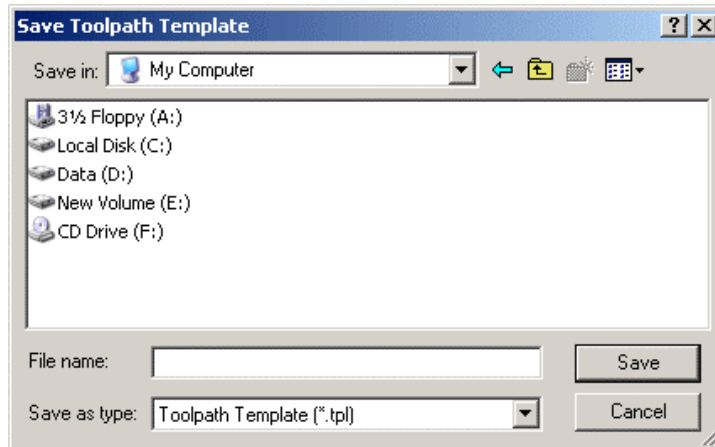
You can create a template from any toolpath(s) that you have either created or calculated in ArtCAM Insignia. The toolpath template file contains all of the original settings that you have made when creating the toolpath(s). The toolpath settings saved within the template can then be applied to vector artwork drawn within an ArtCAM model file.

To create a toolpath template from existing toolpaths:

1. Click on the **Toolpaths** tab  to display the **Toolpaths** Home page.
2. Make sure that only the toolpaths that you want to save as a template are listed on the page. These toolpaths can either be created or calculated. Created toolpaths are listed in red text, whilst calculated toolpaths are listed in black text.
3. The name of each toolpath you intend to save as part of the template **must** include the name of its associated layer in brackets. This is **critical** in order for the cabinet process to operate successfully.

For example, if a layer is named *Panel_OP7500*, the toolpath used to machine the vector artwork associated with this particular layer must also include this text somewhere in its name within brackets. A suitable label for the toolpath associated with this layer would be *3/4 Finish Ply_Sheet1_Profile_(Panel_OP7500)*.

4. Click on the **Save Toolpath As Template** button  in the **Toolpath Operations** area to display the **Save Toolpath Template** dialog box.



5. Click on the **Save In** list box and select the directory in which you want to save the toolpath template.

The default location for ArtCAM Toolpath Template files is *C:\Documents and Settings\All Users\Documents\ArtCAM Files\Toolpath Templates*.

6. Type the file name that you want to give to the toolpath template in the **File name** box.

Make sure that the name is **not** the same as any of the sample templates provided with ArtCAM Cabinetmaker.




Tip: The name of your toolpath template file should denote the Units of Measurement and the Material Z Zero position used in the current ArtCAM model. For example, if you are creating kitchen cabinets using imperial dimensions and your cutting tool is positioned relative to the material surface, you might name your template file as *KitchenCabinetsInchLayers_Z_Top.tpl* or similar.


7. Click on the **Save** button to close the dialog box and save the toolpath template file.

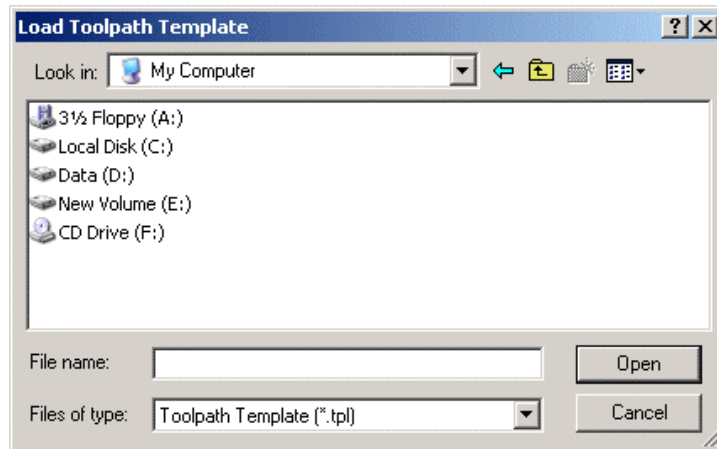
Loading a Toolpath Template

You can load a toolpath template file into ArtCAM Insignia and then check or edit the toolpath settings saved within the file.

To load a toolpath template and display a list of the toolpaths saved within the file:

1. Click on the **Toolpaths** tab  to display the **Toolpaths** Home page.

- Click on the **Load Toolpath As Template** button  in the **Toolpath Operations** area to display the **Load Toolpath Template** dialog box.



- Click on the **Look In** list box and then click to select the directory in which the toolpath template file you want to use is located.

The default location for ArtCAM Toolpath Template files is *C:\Documents and Settings\All Users\Documents\ArtCAM Files\Toolpath Templates*.

- When you have found the toolpath template file, click on the file name listed in the main window of the **Load Toolpath Template** dialog box.

The name of each of the four sample toolpath template files installed with ArtCAM Cabinetmaker denote the Units of Measurement and the Material Z Zero position used when creating them. You should select a toolpath template file equivalent to your current job settings. For example, if you are using imperial dimensions and your cutting tool is positioned relative to the material surface, you might select the *DefaultInchLayers_Z_Top.tpl* toolpath template file.


You are only able to select toolpath template files (*.tpl). You can confirm this by clicking on the **Files of Type** list box.

- Click on the **Open** button to load the toolpaths within the template file into ArtCAM Insignia. The toolpaths are listed on the **Toolpaths** Home page.

Editing an Existing Toolpath Template

You can modify the toolpath settings within an existing toolpath template file originally created in ArtCAM Insignia.

To edit the settings within a toolpath template file:

1. Click on the **Toolpaths** tab  to display the **Toolpaths** Home page.
2. Load the toolpath template that you want to edit. For details, see "Loading a Toolpath Template" on page 29.

The default location for ArtCAM Toolpath Template files is *C:\Documents and Settings\All Users\Documents\ArtCAM Files\Toolpath Templates*.

The four sample toolpath template files provided with ArtCAM Cabinetmaker are named *DefaultInchLayers_Z_Top.tpl*, *DefaultInchLayers_Z_Bottom.tpl*, *DefaultMMLayers_Z_Top.tpl* and *DefaultMMLayers_Z_Bottom.tpl*.

The name of each sample toolpath template file denotes the Units of Measurement and the Material Z Zero position used during its creation. You should edit the toolpath template equivalent to your current job settings.

Any of these toolpath template files can easily be edited to suit your individual machining requirements. For example, the settings used within the *DefaultInchLayers_Z_Top.tpl* are summarised in the following table:

Toolpath Name	Tool	Tool #
<i>3/4 Finish Ply_Sheet1_Profile (Panel_OP7500)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>3/4 Finish Ply_Sheet1_Area Clear (Rout)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>3/4 Finish Ply_Sheet1_Area Clear (RoutBack)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>3/4 Finish Ply_Sheet1_Drilling (DrillShelf)</i>	<i>End Mill 0.197 Inch (5 mm)</i>	<i>2</i>
<i>3/4 Ply_Sheet1_Profile (Panel_OP7500)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>3/4 Ply_Sheet2_Profile (Panel_OP7500)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>1/4 Ply_Sheet1_Profile (Panel_OP2500)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>1/2 Birch_Sheet1_Profile (Panel_OP5000)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>
<i>1/4 Birch_Sheet1_Profile (Panel_OP2500)</i>	<i>End Mill 3/8 Inch</i>	<i>1</i>

3. Double-click on the name of the toolpath listed on the **Toolpaths** Home page that you want to edit. Its settings are displayed in the **Assistant** window.

For example, double clicking on the *3/4 Finish Ply_Sheet1_Profile_(Panel_OP7500)* toolpath within the *DefaultInchLayers_Z_Top.tpl* template will display the **Profiling** page. This particular toolpath defines a Finish Depth of 0.75 inches, a tolerance of 0.001 inches, a Safe Z position of 1 inch and also makes use of a 3/8 Inch End Mill tool.


4. Modify the toolpath settings as required. For details, see the "Machining Models" chapter in the ArtCAM Insignia User Guide.
5. If you are assigning this toolpath to vector artwork on a different layer to that referred in its original name, make

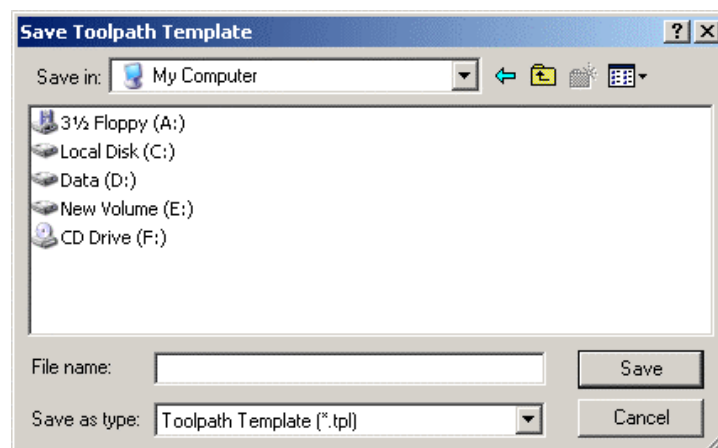
sure that the toolpath is renamed appropriately in the **Name** area. The name of the toolpath must include the name of its associated ArtCAM model layer in brackets. This is **critical** in order for the cabinet process to operate successfully.

6. Click to select the vector artwork drawn in the **2D View** window to which you want to assign the toolpath template settings.

If there is no vector artwork available in your ArtCAM model representing the various parts within your job, you should create a simple closed vector of any size such as a rectangle in order to complete a toolpath such as Profiling or Area Clearance. If you are creating a Drilling toolpath you must create a circle of any size. For details, see the "Working with Vectors" chapter in the ArtCAM Insignia User Guide.

7. Click on the **Calculate** button to calculate the toolpath according to the settings shown on the page. By calculating the toolpath now you can determine whether or not it contains any errors and ultimately decide if it should be included as part of your toolpath template as it stands or if it requires further editing.
8. Click on the **Close** button to return to the **Toolpaths** Home page.

9. Click on the **Save Toolpath As Template** button  in the **Toolpath Operations** area to display the **Save Toolpath Template** dialog box:



10. Click on the **Save In** list box and select the directory in which you want to save the toolpath template. It is recommended that you save the toolpath template in the

C:\Documents and Settings\All Users\Documents\ArtCAM Files\Toolpath Templates directory.

11. Type the file name that you want to give to the toolpath template in the **File name** box.

Make sure that the name is **not** the same as any of the sample templates provided with ArtCAM Cabinetmaker.



Tip: *The name of your toolpath template file should denote the Units of Measurement and the Material Z Zero position used in the current ArtCAM model. For example, if you are creating kitchen cabinets using imperial dimensions and your cutting tool is positioned relative to the material surface, you might name your template file as KitchenCabinetsInchLayers_Z_Top.tpl or similar.*

12. Click on the **Save** button to close the dialog box and save the toolpath template file.

The toolpath template is now ready to be used in conjunction with ArtCAM Cabinetmaker. For further assistance on customising toolpath templates to suit your machining requirements, contact ArtCAM Support.

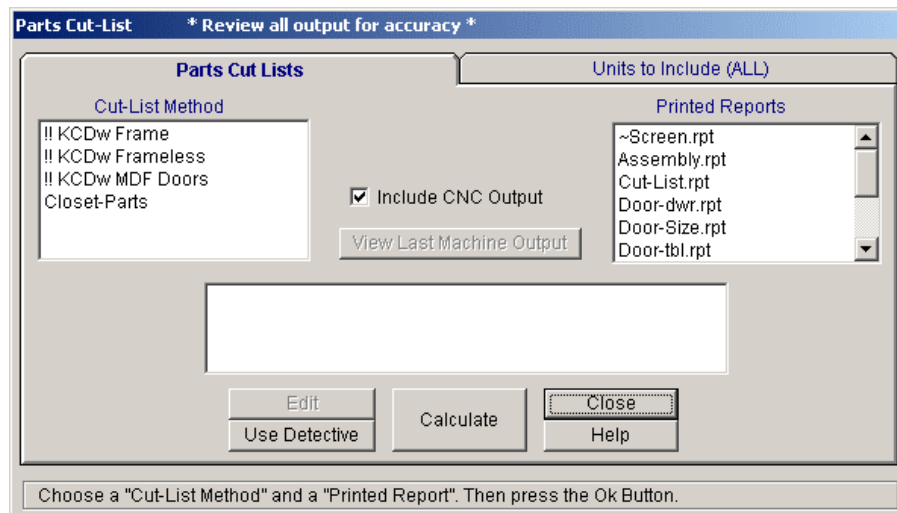
Exporting Compatible DXF Files from KCDw Cabinetmakers Software



Note: *You must have KCDw Cabinetmakers Software Version 8.017 or above installed on your computer to be able to export DXF files compatible with ArtCAM Cabinetmaker.*

To export DXF files supported by ArtCAM Cabinetmaker:

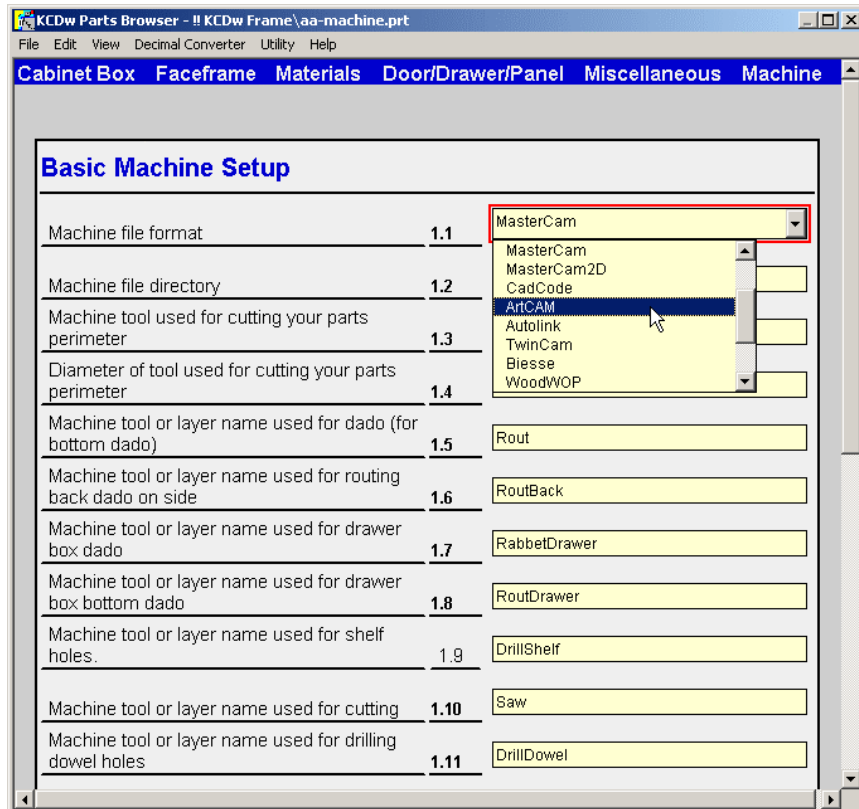
1. Make sure that your finished job is open in the KCDw Cabinetmakers software.
2. Click on the **Parts** menu item in the Main Menu Bar to display the **Parts Cut-List** dialog box.



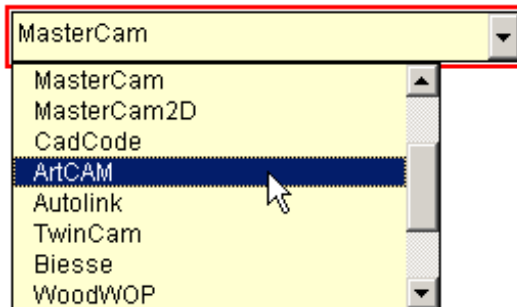
3. Click to select the method in the **Cut-List Method** list for which you want to define the machining set-up.
4. Click on the **Edit** button to display the **KCDw Parts Browser** dialog.
5. Move the mouse cursor over the **Machine** menu item in the Top Blue Menu Bar to display its menu.



6. Click on the **Machine Setup** menu item to display the **Basic Machine Setup** dialog.



7. Click on the **Machine file format** list box, followed by the **ArtCAM** option to format the DXF output files so that they are compatible with ArtCAM Cabinetmaker.



8. Make sure that all of the other machining settings required for your job is correct. Refer to the KCDw Manual or consult with your KCDw Cabinetmakers Software sales agent for further details.

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