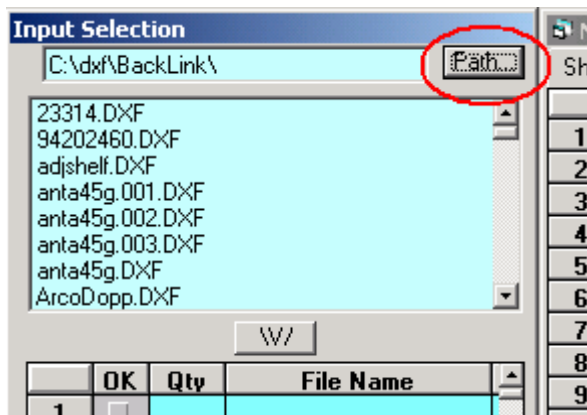 **JetNest**

JetNest is a rectangular parts optimizer used for producing Genesis Evolution programs for any of the Busellato Jet Series Router Table Machines. JetNest accepts parts input as DXF files from a variety of sources. In general, generating these part files is done with one of three methods.

1. Individual part files are made in Genesis Evolution. These files are converted to DXF using BackLink. This method requires no third party CAD or Cabinet Design Software (CDS). Parametrics, variables and most common Evolution commands are supported in BackLink.
2. Part files are drawn in AutoCAD or other CAD software capable of outputting DXF files in the standard AutoLink format.
3. DXF files generated in any CDS (Cabinet Design System) capable of outputting DXF files in the standard AutoLink format.

JetNest Setup

1. Part file input

Use the path browser button to select the folder from where JetNest gets DXF part files.

2. System settings

Right-click anywhere inside the System Settings window to maximize and minimize it. Inch or Metric units are designated by a "i" or "m". See the picture of System Settings window below.

Generate Batch – After optimization, JetNest will produce a batch file of all optimized sheets which is sent to AutoLink. This automates processing.

Respond to Batch – JetNest will automatically start optimizing when it sees a batch file sent from BackLink or CDS.

Perimeter Margin - No parts are placed in the perimeter margin to allow for out-of-square or damaged sheet goods.

Nest Path – The folder where JetNest sends nested DXF files.

Nest Name – The file name for the nested program. Can be up to 5 characters. JetNest will add a sequential three digit number to this name.

Nest by Cabinet – Sorts parts by cabinet so they are nested in the same sheet. Yield suffers. Cabinet information must be supplied by CDS or input in BackLink.

OS Area – Onion skin area. An onion cut around the perimeter of a small part minimizes it chance of moving while being cut. This is a surface area value to determine which parts will be onion-skinned.

OS Thickness – The thickness of the skin. This skin is always removed, freeing the part.

Lead length – Lead-in length for default cut out tool. Prevents tool from plunging directly down next to part eliminating possible tool burn or mark.

Cut Out Clearance – Distance between cut out tool and any adjacent part. Part spacing = Cut Out Diameter + 2 x Cut Out Clearance.

Cut Out Diameter – Nominal diameter of cut out tool.

Cut out direction – Determines whether parts are cut with a CW or CCW tool path. Use No Cutouts when perimeter tool path is already present in DXF file (for example when non-rectangular parts are nested such as circles). Setting applies to entire nest.

Cut Out Depth + - Distance cut into spoilboard.

Nest From Corner – Corner in which JetNest starts building the nest. Scrap material will usually fall to the opposite corner. Use this setting so that scrap is conveniently located for the operator.

Drop Cut – JetNest will automatically cut across the width of the material (in Y direction) to produce rectangular offal.

Drop Cut Length – Minimum amount of unused material for drop cut. Set this number low to have scrap cut into manageable pieces.

Attach Barcode – Produces a barcode with the program name. This barcode can be scanned at the machine with Gencode. Use the Print feature to produce a print of the nest with barcode.

Make CSV files – JetNest can produce a CSV file for each nest that contains information about each nest. Useful for producing part labels.

CSV path – Folder location for CSV files.

Z Limit On – JetNest will check Z depth of any tool in DXF and if it exceeds the Cut Out Depth + value will change the value and give a warning message that Z depth was changed.

Tag Parts – Will place part name on each part on the nest printout.

Input Selection — System Settings

Setting	Value
Generate Batch	✔ Yes
Respond to Batch	✔ Yes
Perimeter Margin	0.15i
Nest Path	C:\dxf\JETNEST
Nest Name	ritter
Nest By Cabinet	☐ No
OS Area <	150i
OS Thickness	0.02i
Lead Length	1.5i
Cut Out Clearance	0.03i
Cut Out Diameter	0.5i
Cut Out Router#	1311
Cut Out Direction	Clockwise
Cut Out Depth +	0.02m
Nest From Corner	Upper Left
Drop Cut	✔ Yes
Drop Cut Length	1i
Attach Barcode	✔ Yes
Make CSV Files	✔ Yes
CSV Path	C:\dxf\CSV
Z Limit On	✔ Yes
Tag Parts	✔ Yes

3. Material list and Pull list

Material — Sheet Stock / Pull List

	OK	Material	Drop	Grain	Length	Width	Thicknes
1	✔	No Material		☐	97.000	49.000	0.764
2	☐	3/4 MAPLE A/2 VENEER		☐	97.000	49.000	0.750
3	✔	3/4 RED OAK MELAMINE		☐	97.000	49.000	0.750
4	☐	3/4 RED OAK MELAMINE	1	☐	48.000	49.000	0.750
5	☐	3/4 RED OAK MELAMINE	1	☐	32.000	49.000	0.750
6	☐	3/4 RED OAK MELAMINE		☐	109.000	61.000	0.750
7	☐	3/4 Maple	1	☐	97.000	49.000	0.750
8	☐	3/4 Maple	1	☐	45.000	49.000	0.750
9	✔	3/4 Maple		✔	145.000	61.000	0.750
10	☐			☐			
11	☐			☐			

Enter material descriptions and sizes here. The material list can be sorted by any column by clicking on the heading. To exclude a material from the optimizer, uncheck the OK column. Multiple lines must be entered for multiple sizes. If the material has a grain direction, check that box. Grain direction of individual parts is assumed to be the X direction from the original part program. If material is a solid color or to ignore the grain direction, leave the box unchecked and the optimizer is then free to rotate parts 90 degrees to try and improve yield. Drop material, or offal, can be entered manually and, if made available when optimized, the job will use the drops before using full sheets. To set up a drop, go to a new row, enter a quantity in the drop column first. Then enter the description, being sure to type exactly as the full sheet description and then enter the size

of the drop. Click on the Pull List tab after optimizing a job to see a list of materials required for that job. The Pull List can be printed from the File pulldown menu.

Methods of generating part files for nesting

Method #1 Part files from Genesis Evolution using BackLink

BackLink is used to convert Genesis Evolution program files to DXF files. Use the Path Browser button to choose the folder where Evolution part files are located. Files are added to the Process List by right-clicking to select and then clicking the \V/ button to add to the Process List   Multiple files can be chosen using the CTRL key and then added at once with the \V/ button. Next expand the Process List by right clicking anywhere in it and choosing Expand. The window will look like the following:

Set the quantities of each part in the Norm column. If mirror parts are needed, enter that quantity in the Mir column. The Job, Room, Cabinet, and Part Description columns are generally used if this information is imported from a CDS but can be entered if desired. Choose the material from the pulldown list. This list accesses the JetNest material list. The Length, Width, and Thick columns are filled in automatically from the Evolution file. If the program was written parametrically, then the part dimensions can be modified as needed. If a part is needed in multiple sizes, use the \V/ button to add that part to the Process List multiple times and then enter the desired sizes of each one. When the Process list is complete, right- click anywhere in the window and choose Restore. Then click Process make DXF files.

BackLink Preferences

Translate on selection This converts the selected Evolution file to DXF and makes available in the viewer window.
Save on Selection Translate This saves the selected file.
Generate Batch.lst file This creates a batch file with all the information in the Process list. This batch file is read by JetNest and is used to automate processing from BackLink to JetNest to AutoLink.
Tool Number to Diameter If the Evolution program calls drills by tool number instead of diameter, those drilling lines will be converted to diameter. This is usually the preferred method since drilling by diameter takes advantage of the powerful drill optimizer at the machine.
Attach Barcode If programs are sent to JetNest, leave this option unchecked. It is possible to print individual parts with barcode attached for purposes other than creating nested output.
Maintain Route Sequence Leave this option checked to maintain the routing sequence from the original program in the nested program.

Evolution commands supported in BackLink

Genesis Evolution has numerous methods of programming lines, arcs, holes and grooves. For example, there are twelve different commands for drawing an arc! Many of these commands are not commonly used and so are not supported in BackLink. The currently supported commands are:

Hole X & Y
Repeat in X
Repeat in Y
Repeat in X & Y
L1
L3
A01 Evolution
A11 Evolution
 --- Evolution
Groove X
Groove Y
If
Else (Evolution)
End If
Offset
Comment
r Variables

Method #2 Part files from CAD packages

Part files can be saved as DXF directly from CAD packages. In AutoCAD (and possibly other packages), multiple parts can be in one file and saved by windowing each part individually. From the File Save dialog box in AutoCAD, choose options, DXF options and check the Select Objects box. In either case, the CAD files must follow the standard AutoLink layer format. See your AutoLink documentation for this layer format. Once these files are created, point the Path Browser in JetNest to the folder where these files are located and then select and add to the Process List, set quantities and materials and optimize.
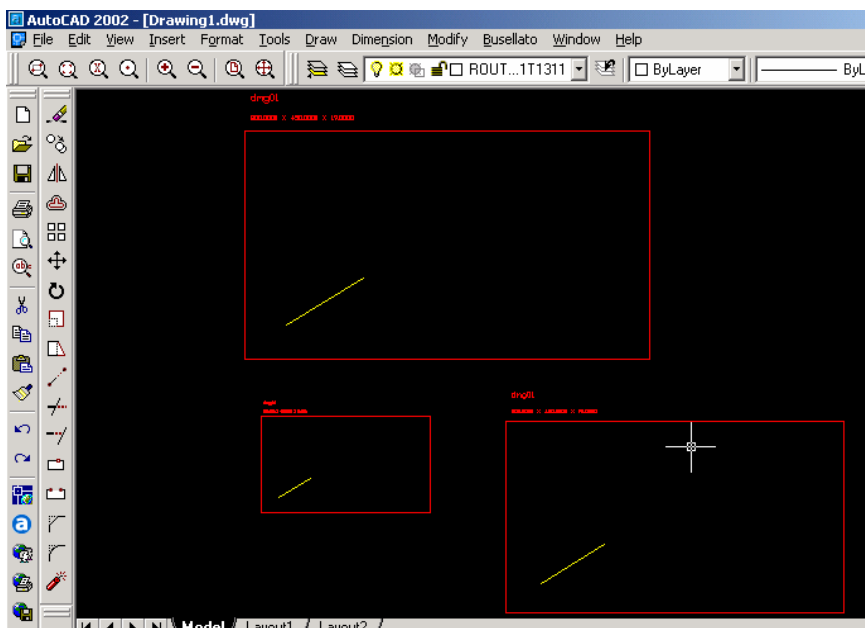
Method #3 Part files from a Cabinet Design System (CDS)

Most CDS can be configured to output part files in the standard AutoLink format. These DXF files can then be selected and input into the process list. Some CDS can be configured to create a batch file which BackLink can respond to automatically and then send its batch file to JetNest and then through AutoLink, thereby automating the entire process seamlessly.

In JetNest, it is easy to run various scenarios before creating the nested Evolution program. For example, part quantities can be changed, drops can be included or excluded and the nest re-processed. Part quantities of standard parts can be increased to utilize unused material if desired.

Be aware that some CDS will add information such as room number, material, etc. to the dxf file of each part. JetNest cannot strip this information out and it may display on top of adjacent parts and cause confusion. This information must be controlled from the CDS either by deleting or making the font size very small.

Method #1 – Advanced technique

As an extension to using Evolution to produce part files, it is possible to use a spreadsheet to produce the Process list for BackLink. Setup a spreadsheet to calculate the size of each part based on the overall cabinet dimensions. You input the quantity and size of each cabinet and the spreadsheet calculates the size of Evolution program. Of course, you must have a parametric program written in Evolution. Set up the rows and columns to match the Process List in BackLink, as below, and the entire Process List can be copied and pasted into BackLink. This is a powerful feature that can dramatically increase productivity without the need for a full-blown CDS.

Cut and paste directly into BackLink