



## **Nesting Optimiser – Datasheet NE**

### ***A powerful tool for nested based manufacturing***

Where parts are cut (and machined) at a Machining Centre, Nested-based optimisation is required. This handles both rectangular and shaped parts.

Nesting typically deals with bespoke or 'one off' jobs and small run quantities.

Data can be transferred in a range of established formats including Homag Weeke WoodWop (MPR(X)), Xilog(xxl), Biesse(cix) and 2D DXF.

The following complementary features are included as standard with the Nesting Optimiser. For more details please visit [www.magi-cut.co.uk/features](http://www.magi-cut.co.uk/features)

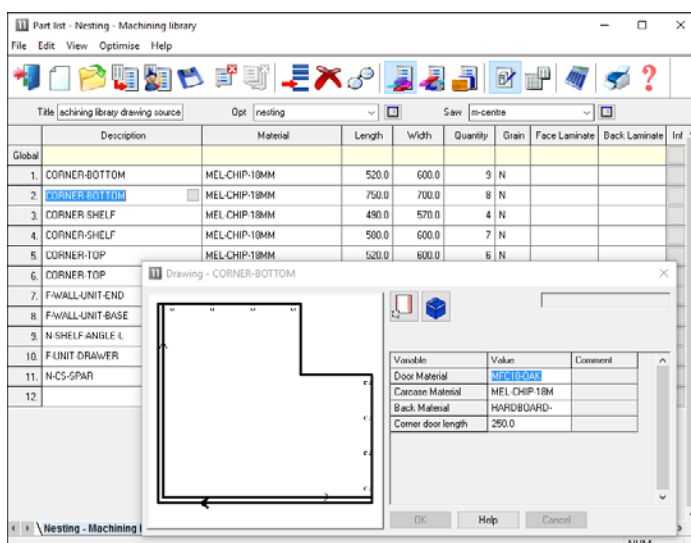
- Parts Library
- Edges and Laminating
- Machining Interface
- Forms & Labels



### **Part sizes**

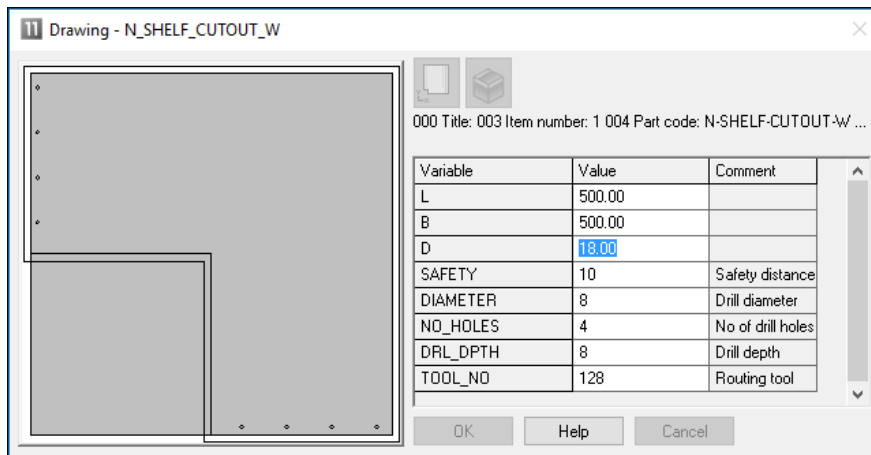
The starting point of optimisation is a list of part sizes and/or drawings. This can be produced in a variety of ways:-

- By using external parametric drawing files: WoodWop - MPR(X)
- Entry of rectangular parts in the Part list grid
- Use parametric parts from the Machining library
- By importing 2D DXF drawings using the comprehensive DXF layer configurator



Nesting - part list entry

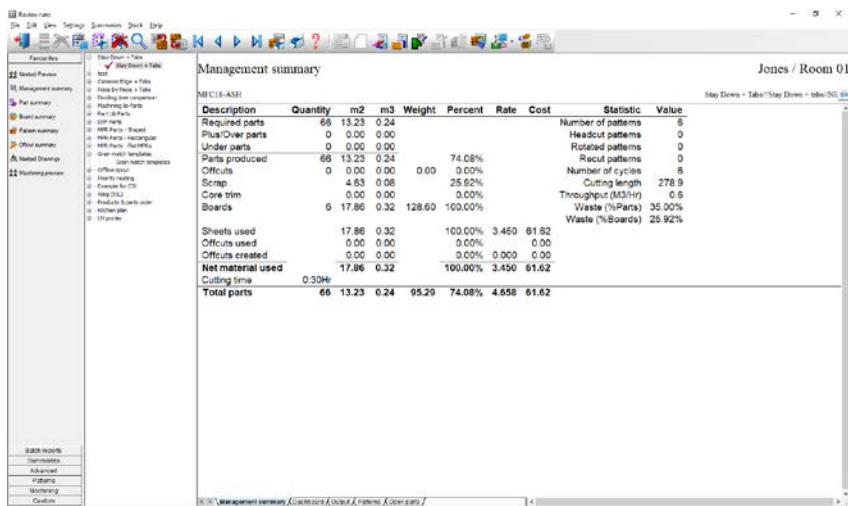
In this example the drawings for parts are stored in the machining library. Alternatively the drawings can be taken from parametric MPR(X) files and variables contained in those drawings can be answered via a dialog.



The drawings are created in Homag Weeke WoodWop and the Nesting optimiser is fully integrated with WoodWop.

## Nested Optimising

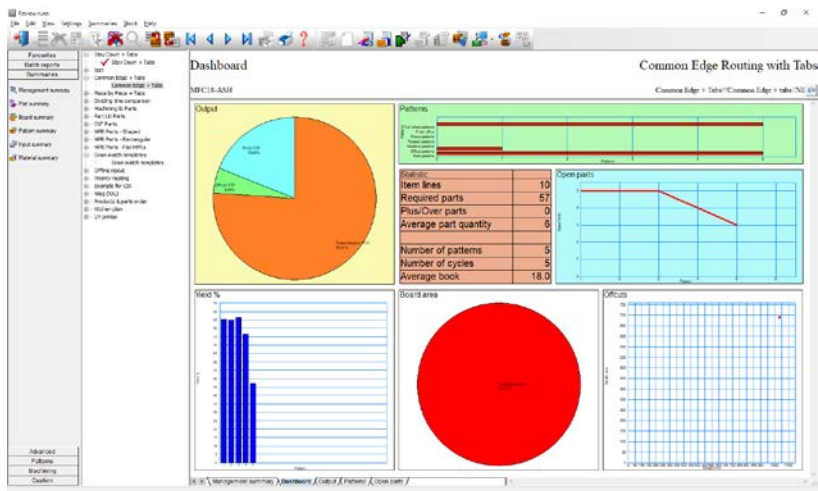
Part sizes are optimised to produce a set of patterns for machining. Part lists can be optimised singularly or in a batch. The first summary shown for each job is an overview of cutting and costs.



Nesting - Management summary

The summary shows the overall yield, costs and other details.

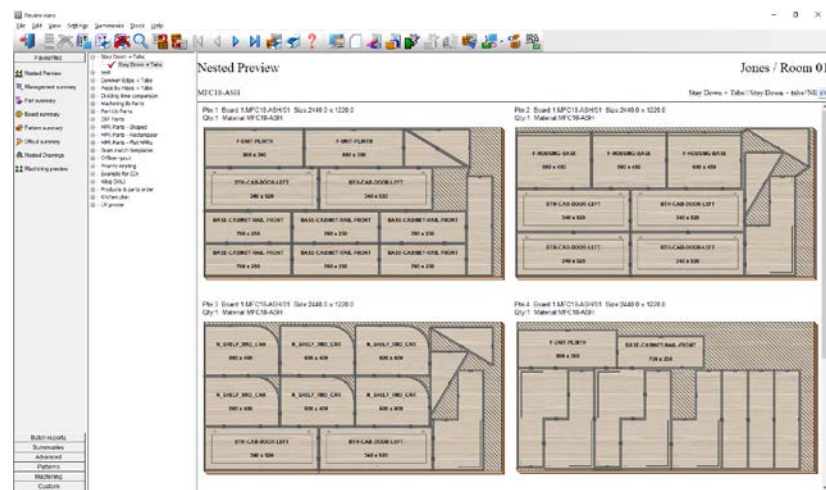
The management summary includes a Dashboard option which displays charts and snapshots of the data.



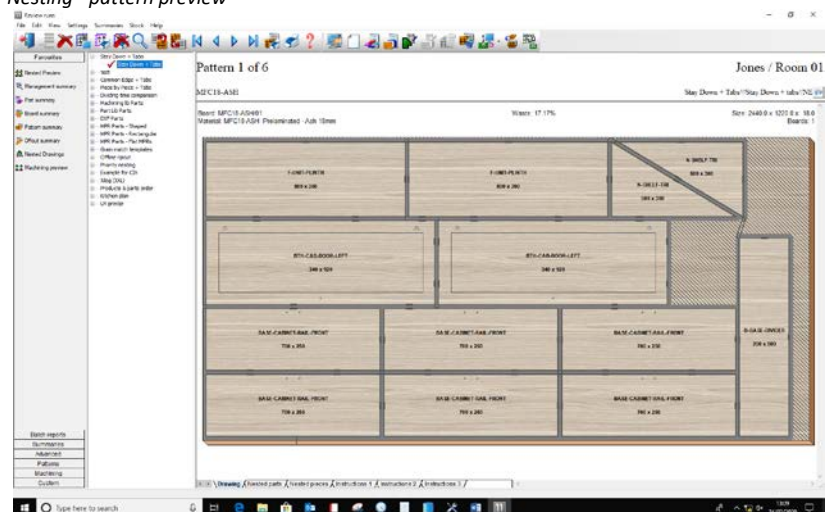
Nesting - Dashboard

The dashboard can include charts from other summaries – so the critical data can be set up and viewed at a glance.

The cutting patterns are shown in a thumbnail view and full screen view.



Nesting - pattern preview



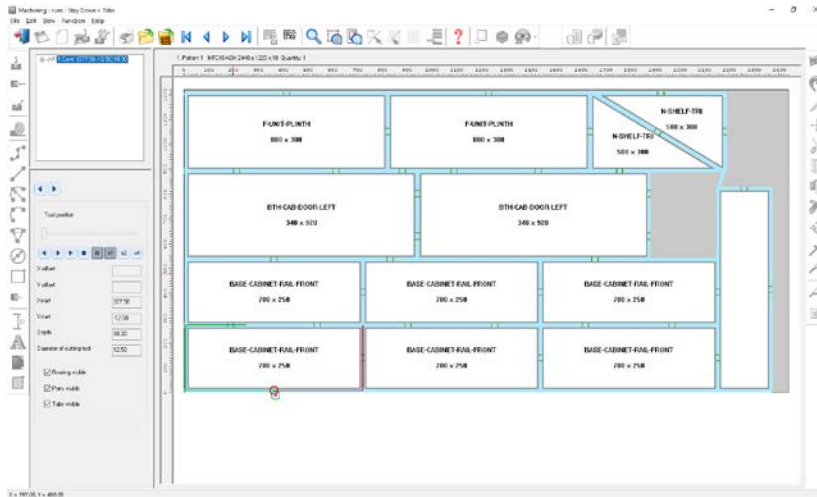
Nesting - pattern

Further information about the cutting pattern is on the tabs at the foot of the drawing.

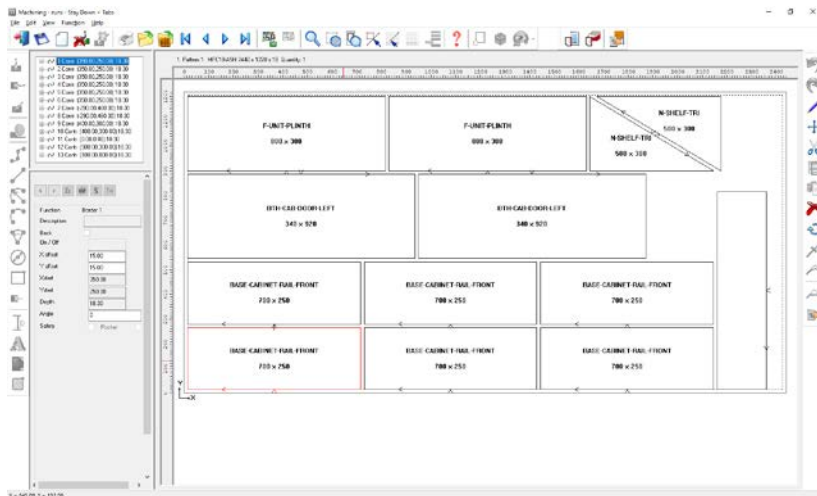


## Routing View

The routing view is accessible from nesting pattern preview and pattern view. The view provides a simulation of the tool path.



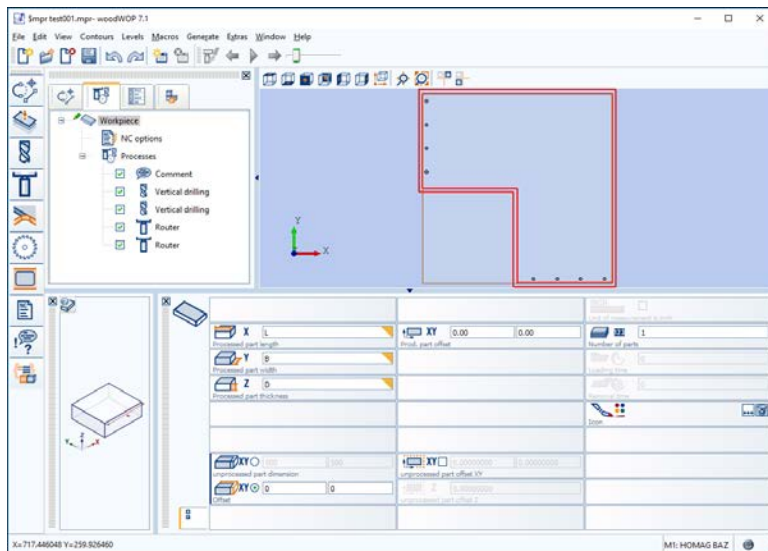
The machining editor can be used to check the details and make any last minute changes to the cutting plan.



*Nesting - edit pattern*

Parts can be moved or deleted and minor changes can be made to the borders. The machining instructions for each part (drilling, routing ...) can also be viewed at each part drawing.

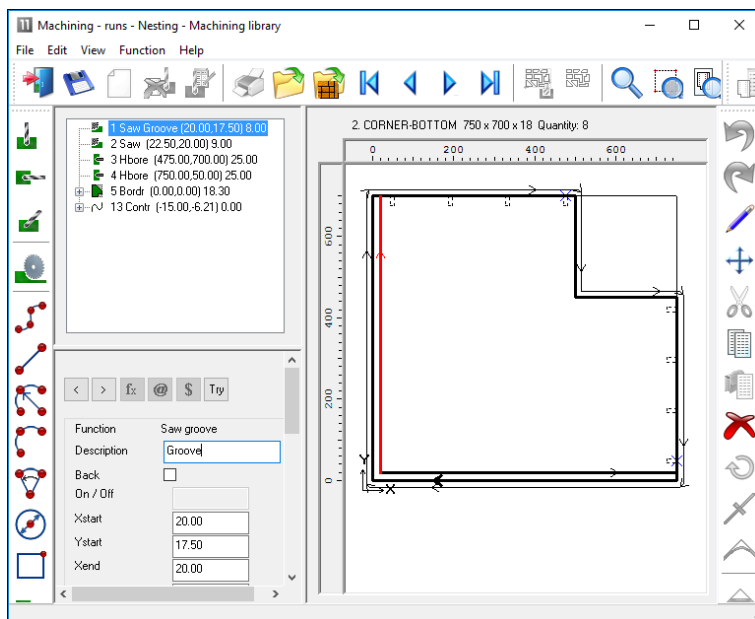
Where the NE module is used with Homag/Weeke WoodWop the program automatically moves to the WoodWop editor when editing individual MPR(X) parts.



WoodWop editor

Each MPR(X) part is stored in a single file.

The Machining library editor can also be used for part drawings.



Shaped nesting edit

The editors should only be used for minor or last minute changes, if there are substantial changes then it is better to re-optimize the job as the balance of waste and cost may have changed significantly.



## Materials

All materials are stored in the Board library \*\*. This is a database of all sheet material and includes quantities and costs. The Board library stores a record for each material and a record for each board size (including any offcuts) for each material type.

Board library										
Materials										
Material	Description	Thickness	Default grain	Book	Material	Picture	Type	Density		
MFC18ASH	Prelaminated - Ash 18mm	18.0	Y	0			MFC	0.400		
MFC18BEECH	Prelaminated - Beech 18mm	18.0	Y	0			MFC	0.400		
MFC18BLACK	Prelaminated - Black 18mm	18.0	N	0			MFC	0.400		
MFC18EBONY	Prelaminated - Ebony 18mm	18.0	Y	0			MFC	0.400		
MFC18OAK	Prelaminated - Oak 18mm	18.0	Y	0			MFC	0.400		
MFC18RED	Prelaminated - Red 18mm	18.0	N	0			MFC	0.400		
MFC18TEAK	Prelaminated - Teak 18mm	18.0	Y	0			MFC	0.400		
MIRROR-GLASS	Mirror Glass (sandy)	5.0	N	0			Sundy	0.000		
OAK MDF 18MM	Medium Density Fibreboard - Oak 18mm	18.0	Y	0			MDF	0.650		

Boards for material: MFC18-TEAK Prelaminated - Teak 18mm Thickness:18.0 Book:0													
Board code	Type	Length	Width	Informa	Stock	Alloc	Order	Cost	Limit	Bin	Supplier	Min Stk	ReOrd
MFC18-TEAK/001		2440.0	1220.0	1020	0	0	120	3.110	0			120	150
MFC18-TEAK/002		3050.0	1525.0	955	0	0	3.110	0				80	100
X00125/0001	X	780.0	1011.0	1	0	0	1.550	0				0	Y
X00125/0003	X	564.0	498.0	2	0	0	1.550	0				0	Y
X00148/0001	X	950.0	620.0	1	0	0	1.550	0				0	Y

Nesting - Board library

\*\* woodStore customers can take advantage of a direct link to their woodStore database with the optional Stock Control module, please see [www.magi-cut.co.uk/stock-control](http://www.magi-cut.co.uk/stock-control) for further details.

In this example the material MFC18-TEAK has two available board sizes 3050.0 x 1525.0 and 2440.0 x 1220.0 and several offcuts.

The Material column in the Part list associates each part with the correct material to use and the optimiser selects the optimum board sizes to use for each job.



## The power of nested optimising

Cutting parts on a machining centre requires control of the pattern layout. The nesting parameters give full control of the cutting process.

Nesting parameters - nesting Nesting optimiser									
Nesting 1   Nesting 2   Nesting 3   Offcuts   Part division									
Help view <<									
Nesting 1									
Optimizer type: Shaped nesting II									
Optimizer type: Shaped nesting II									
Minimum part separation - mm: 15.0									
Board orientation: Lengthways									
Nesting origin: Top left									
Board margins - mm: Top 15.0, Bottom 15.0, Left 15.0, Right 15.0									
Board dimensions: Min length 0.0, Max length 9999.0, Min width 0.0, Max width 9999.0									
Board pre-cut: Board width: Min 0.0, Max 9999.0, Tolerance 0.0									
Small parts: Offset small parts from the edge: 0.000, Global step angle: 30, Use global step angle: [ ]									
Min. area for nesting on the edge - m2: 100.0, Angle: 30									
Maximum offset from the edge - mm: 100.0, Extended optimiser time: [ ]									
Single sheet patterns only: [ ]									
Critical waste margin for rectangular parts: 0.0									
OK   Save As   Print   Help   Cancel									

Nesting parameters

The parameters cover a wide range of options and choices to match each machining situation.

The nesting parameters deal with features such as:

- Board margins.
- Safety margins.
- Part separation.
- Placement of offcuts.
- Placement of waste.
- Rules for placing small parts near the board edge.
- Rules for applying tabs to parts.

The nesting optimiser includes options for: Shaped parts, Rectangular parts only, calculation of the best position for pre-cutting jumbo boards, Piece by Piece routing, Staydown routing and Common edge routing.

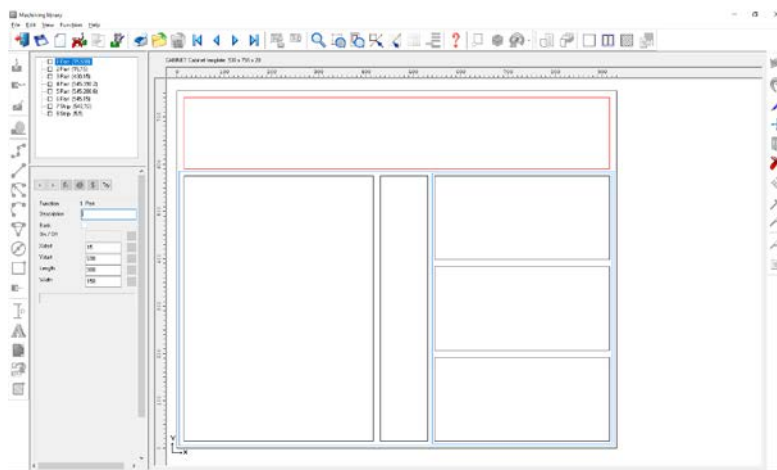
*'Piece by piece'* is where the router cuts around the perimeter of a piece (shape), then withdraws moves to the next piece then plunges and routs around that piece.

*Stay down* is where a single contour is used to rout out all the border routs of all the parts on a pattern in a continuous operation. With complex patterns a single contour is not theoretically possible, and the program will aim to keep the number of separate contours to a minimum and can significantly reduce tool wear.

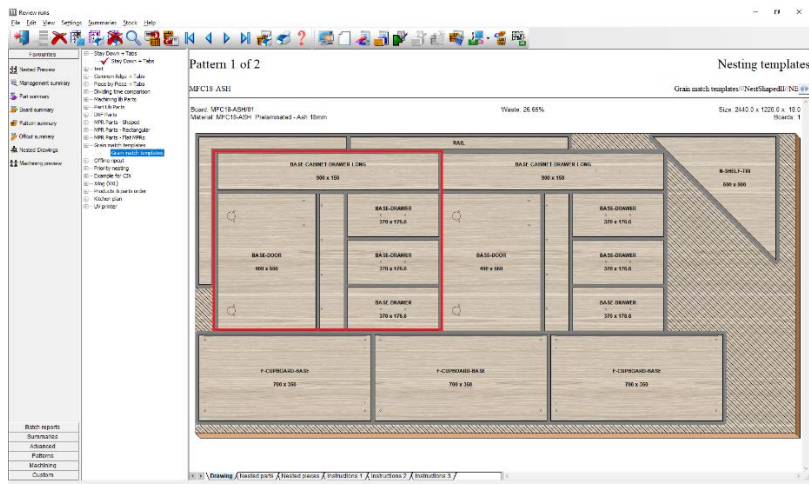
*Common edge (or common line)* is where the edges of adjacent parts can be routed in the same operation. The tool path is set to centre line, and therefore parts must be separated by the tool diameter (to the nearest 0.1mm)

## **Grain Matching**

Nesting optimising frequently involves the visible parts of a product (critical finishes) so grain matching can be important. Grain matched parts can be set as a template in the machining editor.







The template is used by the optimiser to ensure parts stay together and are cut together from adjacent areas of the board.

### Summary of nesting optimiser

	Nesting Optimiser
Part list no. of lines (part sizes)	20,000
Total pieces	99,999
Maximum jobs in batch	250
Transfer to Homag/Weeke WoodWop	•
Transfer to Xilog (xxl)	•
Transfer to Biesse (cix)	•
Transfer to 2D DXF	•
Stay down routing	•
Common edge routing	•
Piece by Piece routing	•
Full integration with Homag/Weeke WoodWop	•
Drawing database	•
External MPR(X) / DXF files	•
Batch operation	•
Shaped Parts	•
Optimise pre-cut	•
Grain matching	•
Full control of cutting	•
File Management	•
System maintenance	•
Drawing editor	•
Reports and summaries (configurable)	•
Custom reports	•
Customised part list	•
Board library	•
Form and Label design	•
Integrated local help	•
Links to website	•
Machining drawing editor – parts	Machining editor / WoodWop (MPR(X) parts)
Machining drawing editor – patterns	Machining editor