



## **Nesting Optimiser – Datasheet NE**

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

Where parts are cut (and machined) at a Machining centre Nesting 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 to Weeke WoodWop or 2D DXF

- ***Enter part sizes***
- ***Optimise***
- ***Send cutting data to machining centre***



### **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

- Use external part files (MPR)
- Enter rectangular parts in the Part list grid

The result is a list of part sizes with attached drawings (where required).

In this example the drawings for parts are stored in the Machining library.

The screenshot displays a software window titled "Part list - Nesting - Machining library". The window contains a menu bar (File, Edit, View, Optimise, Help) and a toolbar with various icons. Below the toolbar, there are dropdown menus for "Title" (set to "Machining library drawing source"), "Opt" (set to "nesting"), and "Saw" (set to "lite").

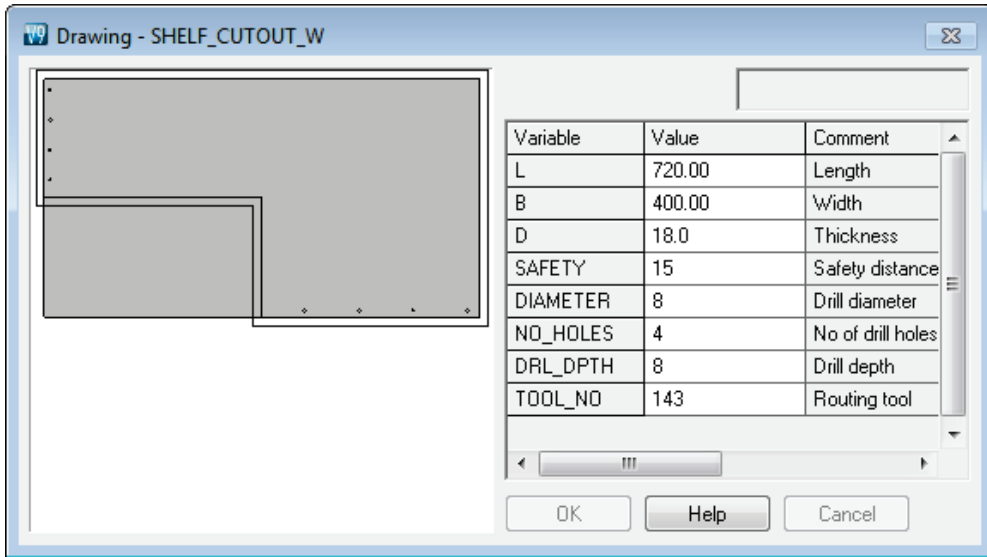
Global	Description	Material	Length	Width	Qua...	Grain	Edge Btm	Edge Top
1.	CORNER-BOTTOM	MEL-CHIP-18MM	520.0	600.0	9	N		
2.	CORNER-BOTTOM	MEL-CHIP-18MM	750.0	700.0	8	N		
3.	CORNER-SHELF	MEL-CHIP-18MM	490.0	570.0	4	N		
4.	CORNER-SHELF	MEL-CHIP-18MM	580.0	600.0	7	N		
5.	CORNER-TOP	MEL-CHIP-18MM	520.0	600.0	6	N		
6.	CORNER-TOP							
7.	F-WALL-UNIT-END							
8.	F-WALL-UNIT-BASE							
9.	N-SHELF-ANGLE-L							
10.	F-UNIT-DRAWER							
11.								

The "Machining library" window is overlaid on the part list. It features a toolbar with icons for search, refresh, and a grid. The main area displays several part drawings with labels: "F-HOUSING-RAIL", "F-SHAPED-POCKET", "F-UNIT-DRAWER" (highlighted in blue), "F-UNIT-END-LEFT", and "F-UNIT-BASE". At the bottom of the window, there is a "Find" text box, a "Filter" checkbox, and buttons for "OK", "Edit", "Help", and "Cancel".

part list (Example of large part list 28-M  
part list A (Example of large part list 28-  
part list B (Example of large part list 28-l

The part drawing can be viewed at the part list.

Where MPR based parts are used these can be used in a part list and the MPR drawing and details viewed on screen.



The drawings are created in Weeke WoodWop. NE is fully integrated with Weeke WoodWop.

To use the Machining library to create drawings in a database (rather than external files) the MI module is required.

*The NE optimiser includes the Machining editor and library for creating drawing templates and making changes to drawings but it cannot be used for creating and storing part drawings.*

## Nested optimising

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

Management summary Shaped nesting - part library dra...

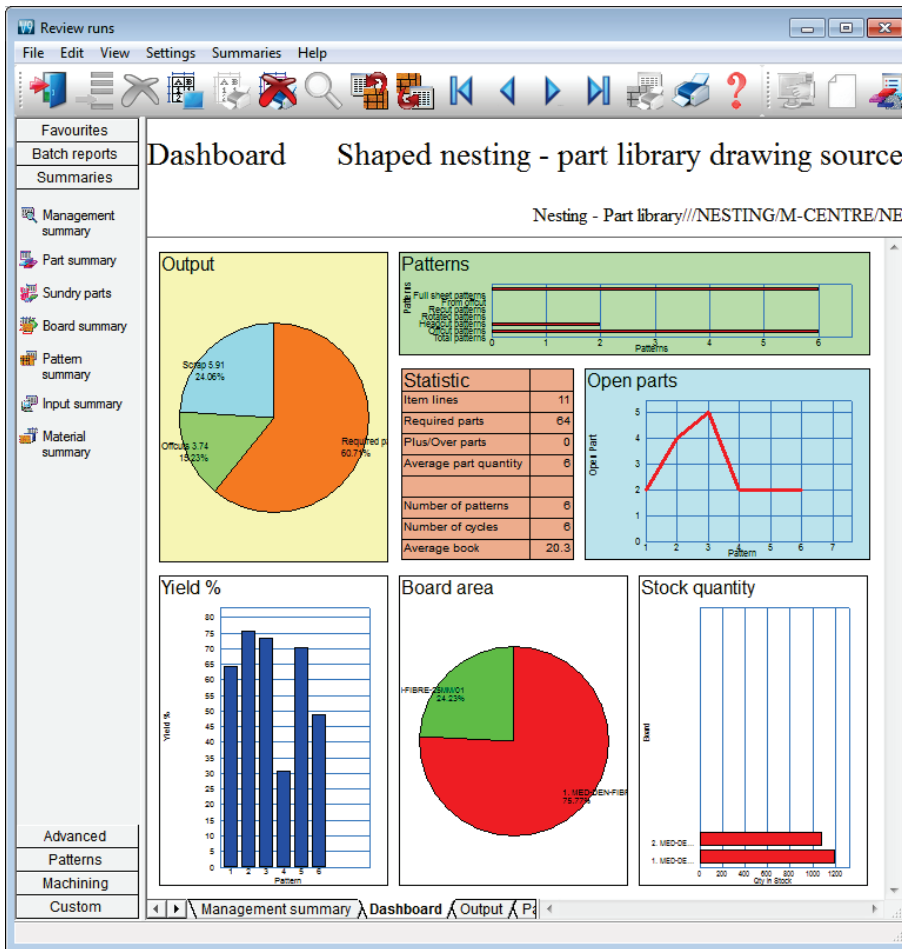
Nesting - Part library///NESTING/M-CENTRE/NE

Description	Quantity	m2	m3	Percent	Rate	Cost	Statistic	Value
Required parts	64	14.91	0.29	60.71%			Number of patterns	6
Plus/Over parts	0	0.00	0.00	0.00%			Headcut patterns	0
Offcuts	2	3.74	0.07	15.23%			Rotated patterns	0
Scrap		5.91	0.12	24.06%			Recut patterns	0
Core trim		0.00	0.00	0.00%			Number of cycles	6
Boards	6	24.56	0.48	100.00%			Cutting length	0.0
							Throughput (M3/Hr)	0.0
							Waste (%Parts)	64.72%
							Waste (%Boards)	39.29%
Sheets used		24.56	0.48	100.00%		121.23		
Offcuts used		0.00	0.00	0.00%		0.00		
Offcuts created		-3.74	-0.07	-15.23%	0.000	0.00		
<b>Net material used</b>		<b>20.82</b>	<b>0.41</b>	<b>84.77%</b>		<b>121.23</b>		
Cutting time	0:00Hr				0.000	0.00		
<b>Total parts</b>	<b>64</b>	<b>14.91</b>	<b>0.29</b>	<b>60.71%</b>	<b>8.131</b>	<b>121.23</b>		

Management summary | Dashboard | Output | F

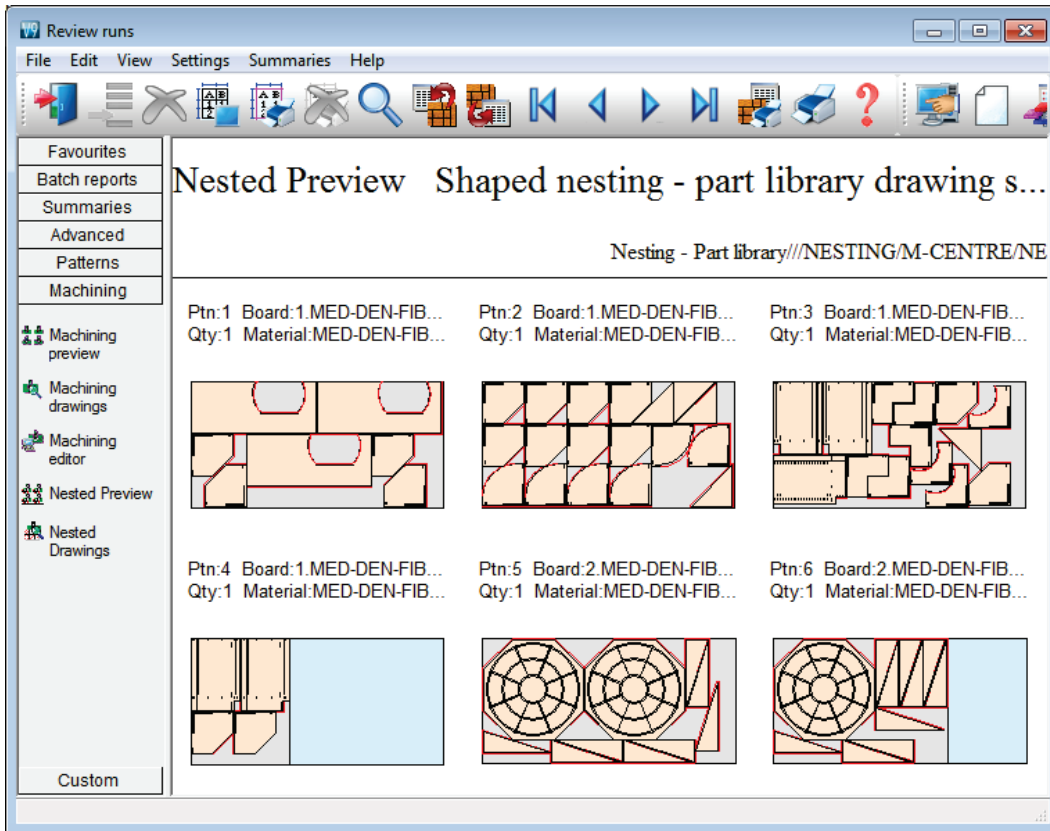
The summary shows the overall yield, costs and other details.

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



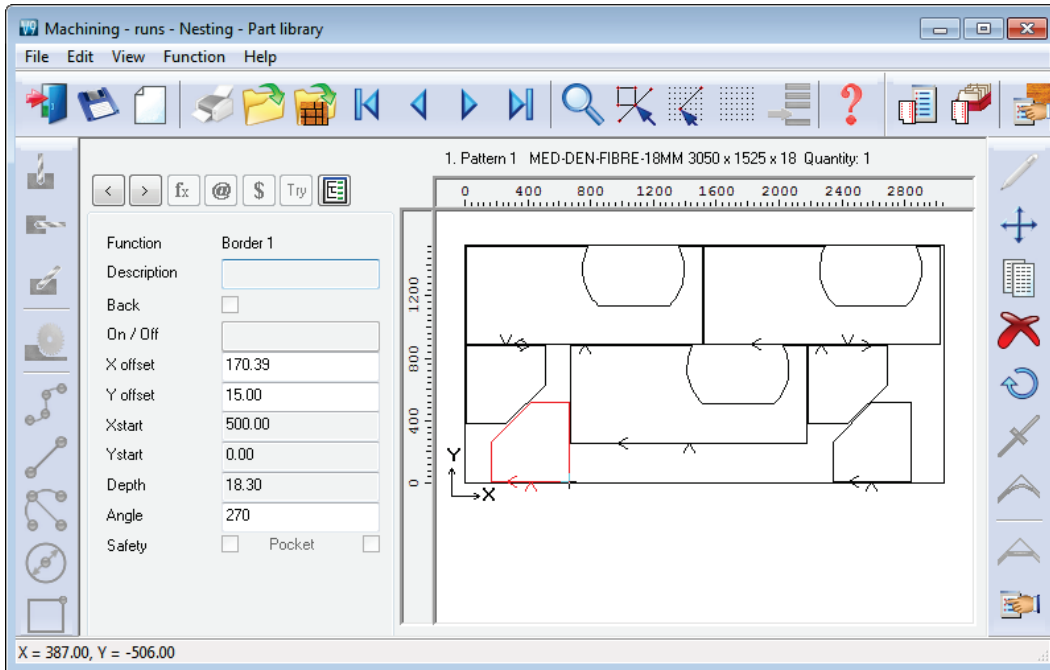
The Dashboard can include charts from other summaries - so the critical data can be set up and viewed at a glance.

The cutting patterns are shown in a thumbnail view.



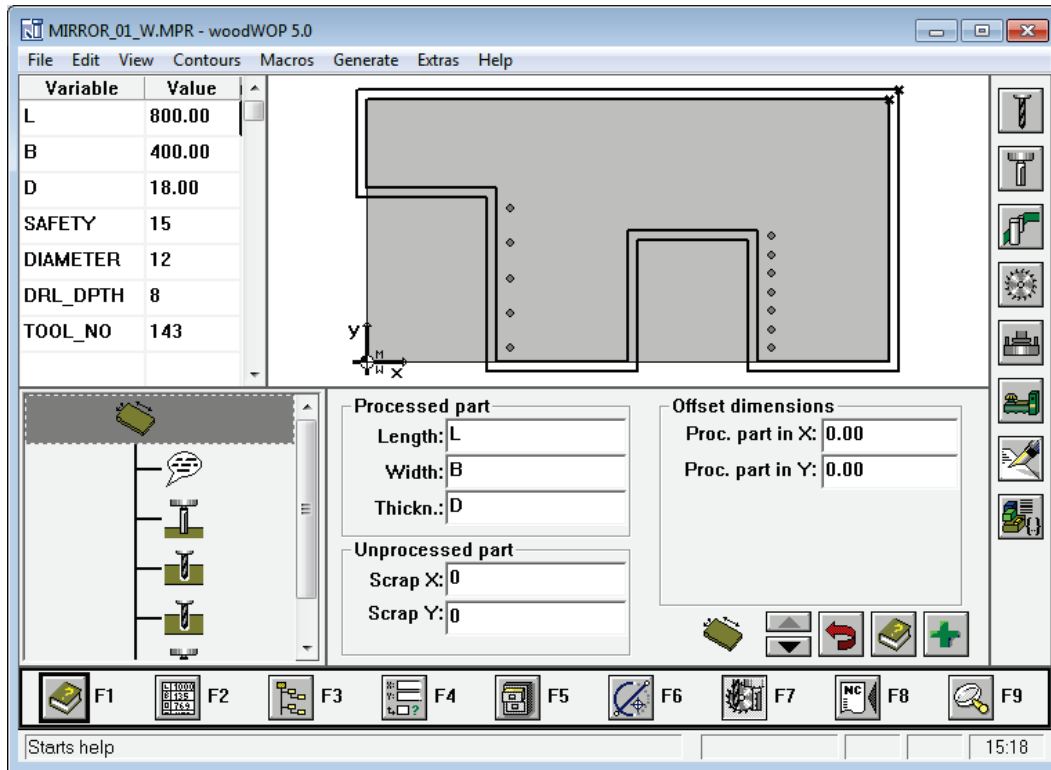
Click on a thumbnail to see the pattern in full screen view. Further information about the cutting pattern is on the tabs at the foot of the drawing.

Use the machining editor to check the details and make any last minute changes to the cutting plan.



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.

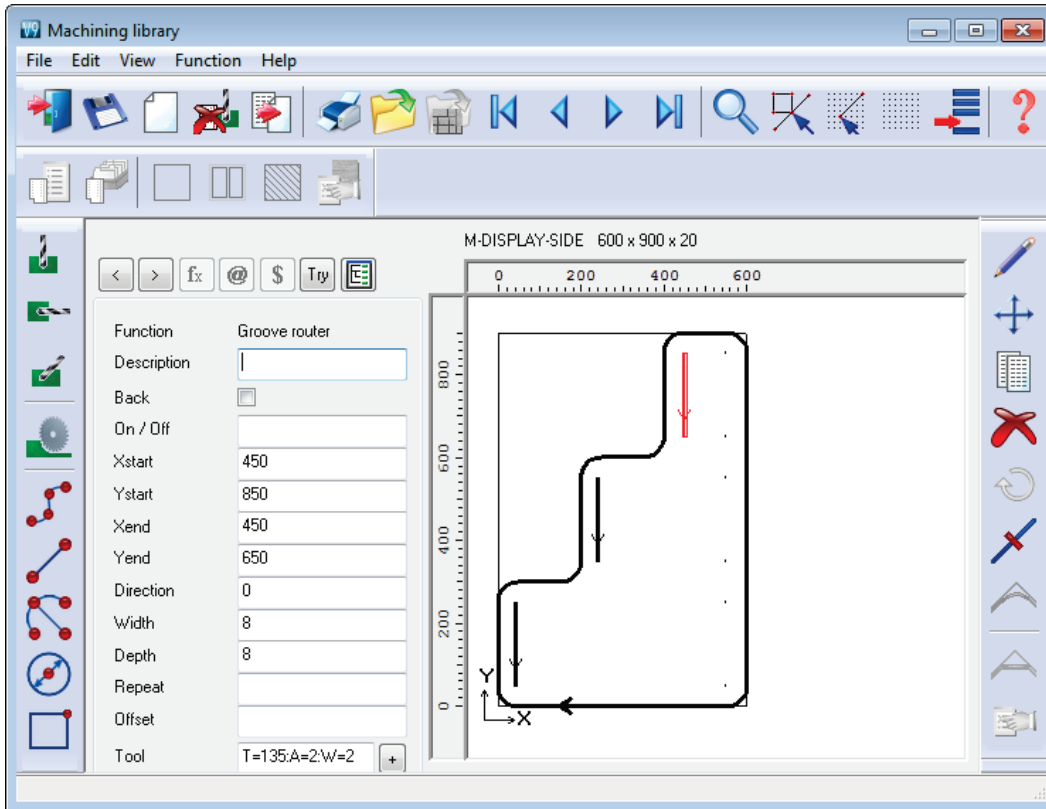
Where the NE module is used with Weeke WoodWop the program automatically moves to the WoodWop editor when editing individual MPR parts.



Each MPR part is stored in a single file.



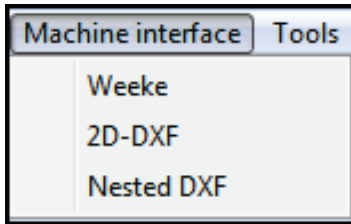
Where the program is used with the **MI module** the machining library editor can be used for part drawings.



- 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 costs may have changed significantly.

## **Machining Interface**

The cutting data is sent to the machining centre via the 'Machining interface' option.



With the 'Machining centre transfer parameters' several different transfers can be set up for the different machines available for a job.

The transfer options can be set up for:-

Weeke WoodWop MPR  
2D DXF Non-layered  
2D DXF Layered Nested

Settings include options for:-

- Splitting front and back instructions for horizontal drilling to different machines.
- Converting tool instructions from one format to another
- Convert inches data to millimetres
- Minimising the tool sequence



## 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									
File Edit View Help									
<b>Materials</b>									
Material ▲	Description	Thic	Default	Boo	Mat	Picture	Type	Density	
MFC18-EBONY	Prelaminated - Ebony 18mm	18.0	N	0			MFC	0.400	
MFC18-OAK	Prelaminated - Oak 18mm	18.0	N	0			MFC	0.400	
MFC18-RED	Prelaminated - Red 18mm	18.0	N	0			MFC	0.400	
MFC18-TEAK	Prelaminated - Teak 18mm	18.0	N	0			MFC	0.400	
MIRROR-GLASS	Mirror Glass (sundry)	5.0	N	0			Sundry	0.000	
OAK-LAM-1MM	Oak Laminate 1mm	1.0	Y	10			Laminate	0.900	
PARTICLBRD-25MM	Particle board 25mm	25.0	N	0				0.550	
RED-LAM-1MM	Red Laminate 1mm	1.0	Y	10			Laminate	0.900	
TEAK-FOIL	Foil - teak (sundry)	0.1	Y	0			Sundry	0.000	
TEAK-LAM-1MM	Teak Laminate 1mm	1.0	Y	10			Laminate	0.900	
WHITE-ACRYLIC-12MM	Acrylic - White 12mm (sundry)	12.0	N	0			Sundry	0.000	
WHITE-LAM-1MM	White Laminate 1mm	1.0	Y	10			Laminate	0.900	
Boards for material: MFC18-EBONY Prelaminated - Ebony 18mm Thickness:18.0 Book:0									
Board code ▲	Length	Width	Information	Stock	Alloc	Order	Cost	Limit	Bin
MFC18-EBONY/01	3050.0	1220.0		805	0	185	5,760	0	
MFC18-EBONY/02	2440.0	1220.0		523	0	42	5,210	0	

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 Nesting optimising

Cutting parts on a Machining centre requires careful 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

Nesting 1

Range

Optimiser type: Shaped nesting II

Optimiser type: Shaped nesting II

Minimum part separation - mm: 10.0

Board orientation: Lengthways

Nesting origin: Top left

Board margins - mm

Top: 15.0 | Bottom: 15.0

Left: 15.0 | Right: 15.0

Override margins for large parts

Board dimensions

Min length: 0.0 | Max length: 9999.0

Min width: 0.0 | Max width: 9999.0

Depth of nesting table: Pre-cut width of board

Min: 0.0 | Max: 9999.0 | Tolerance: 0.0

Small parts

Offset small parts from the edge

Min. area for nesting on the edge - m2: 0.000

Minimum offset from the edge - mm: 100.0

Global step angle

Use global step angle

Angle: 90.00

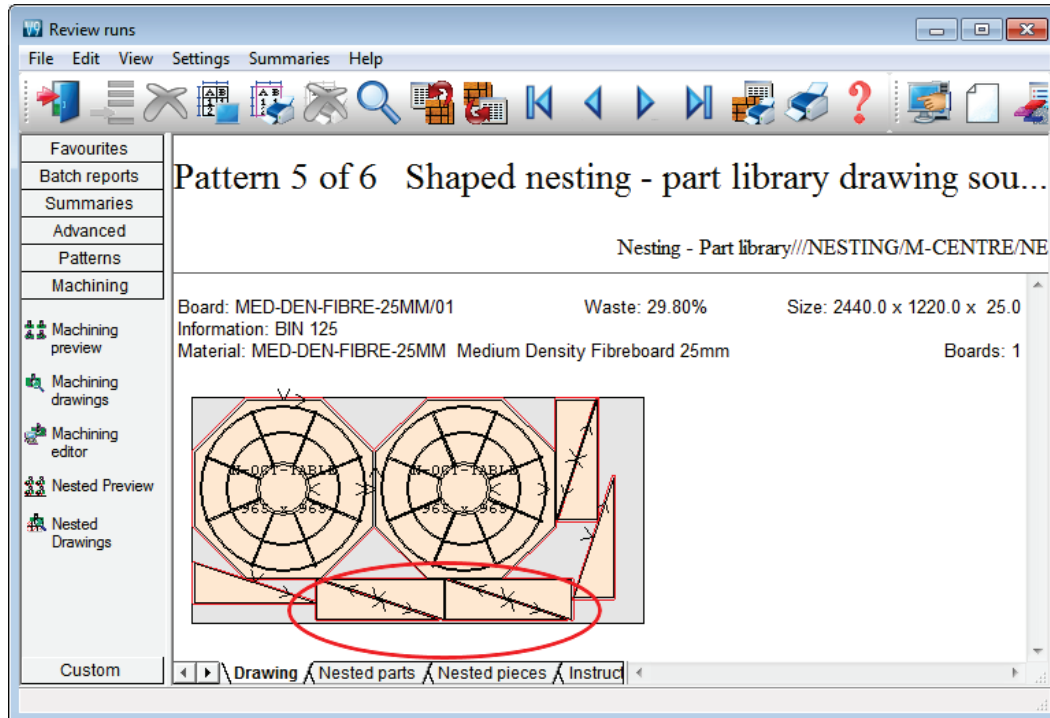
OK | Save As | Print | Help | Cancel

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 cuts. Rules for placing small parts near the board edge. The nesting optimiser includes options for: Shaped parts, Rectangular parts only, Calculate best position for pre-cutting jumbo boards

### Grain matching

Nesting optimising often involves the visible parts of a product 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 optimisers to ensure parts stay together and are cut from adjacent areas of board.

## Summary of Nesting optimiser

	<b>NE</b>	<b>NE + MI</b>
Part list No. of lines (part sizes)	20,000	20,000
Total pieces	99,999	99,999
Maximum jobs in batch	250	250
Transfer to Weeke WoodWop	•	•
Transfer to 2D DXF	•	•
Full integration with Weeke WoodWop	•	•
Drawing database		•
External MPR / DXF files	• (MPR)	•
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 & label design	•	•
Integrated local help	•	•
Links to website	•	•
Machining drawing editor - parts	WoodWop	WoodWop
		Machining editor
Machining drawing editor - patterns	Machining editor	Machining editor

*Form & label design is for printing labels and forms at the office  
For MPR files Weeke WoodWop is required*