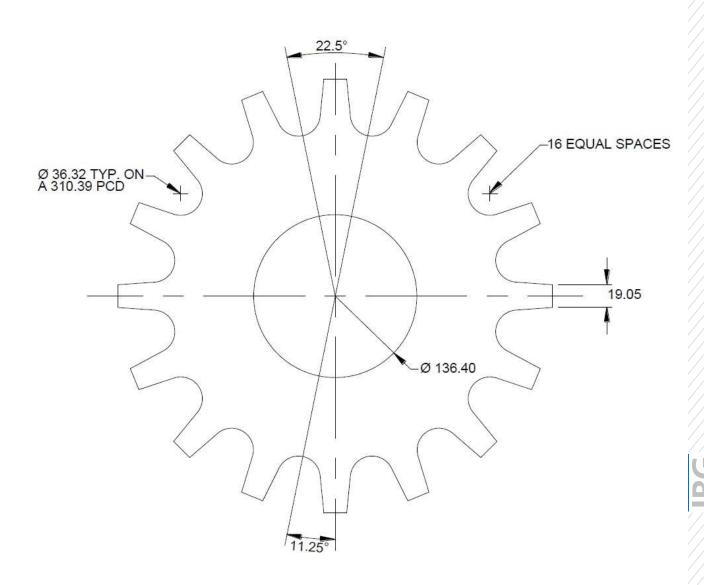


CREATION OF AN INDIVIDUAL CUTTING PROGRAM





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SECTION 1: Installing FastCAM [®] software	.3
SECTION 2: Creating a simple cutting program	.6
SECTION 3: Nesting1	14

SECTION 1.

INSTALLING FASTCAM® SOFTWARE:

1. Insert CD.

2. Select "English". Preferred language can be changed later.

3. Select "Install FastCam".

4. Follow the wizard "Next".

5. Accept the "terms of the license agreement".





The World Standard in Profiling Software





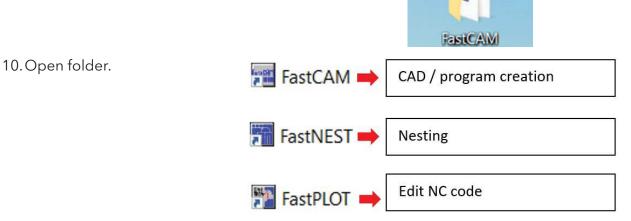
6. Select the "START" field.

7. Select "Install" in the next window.

8. Installation completed "Finish".

 When the installation is complete, a new folder "FastCAM" will appear on the desktop.





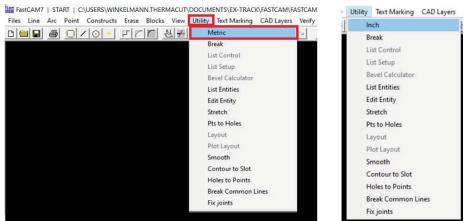
11. To open the software, the **Software protection USB-dongle** must be used. Then open the "FastCAM"software to change the national language.



12. Click on "Language" in the upper bar and select the preferred language.

s Line	Arc	Point	Constructs	Erase	Blocks	View	Utility	Text Marking	CAD Lay	ers Verify	Trim	Program Path	-Control pts	Bevel L	anguage
	8	0/	101+1	Fr	r.	₩ ≁ (A		2 +	500		A 5	(D)		Chinese
		_													Chinese-TW
															Czech
															Dutch
															 English
															French
															German
															Italian
															Japanese
															Korea
															Polish

13. If necessary click on "Utility" in the upper bar, and change the measurement unit of Metric to Inch.



14. The installation is complete, after selecting the preferred language and changing of the measurement unit. When using the software, the delivery included **Software protection USB-dongle** must always be used.

SECTION 2

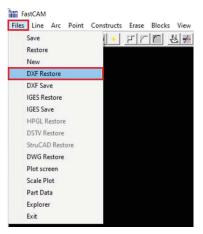
CREATING A SIMPLE CUTTING PROGRAM:

This quick guide is an example of how to create a cutting program easily and quickly. There could be also be other ways to create a cutting program.

1. Open the software "FastCAM" (only with Software protection USB-dongle) on a PC.

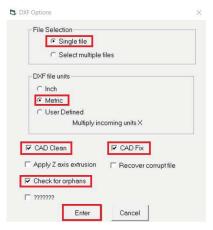


2. Restore DXF/DWG.



- 1. Files
- 2. DXF or DWG Restore

3. Adjust DXF Option.



- 1. File Selection Select "Single file"
- 2. DXF file unit Select "Metric"
- 3. Select the options
 - CAD Clean
 - CAD Fix
 - Check for orphans

(These three options check the DXF/DWG after small errors,

such as lines that are too small.)

4. Confirm with "Enter"

IMPORTANT - Requirement regarding a DXF/DWG drawing:

- The drawing should be in scale 1:1.
- All contours must be closed.
- No orphans.
- No double lines.
- The smallest radius must not be smaller than the kerf setting for cutting.

- 4. Select DXF / DWG on the hard disk.
- DXF file name

Look in: 🖃 c: [System]		
C:\ Jusers winkelmann.THERMACUT Documents EX-Track FastCAM StastCam Muster	Muster.dxf	
File <u>n</u> ame: Muster.dxf	08.10.2019 10:24:37	3.4 kb Text
Files of type: .DXF	•	Select Cancel

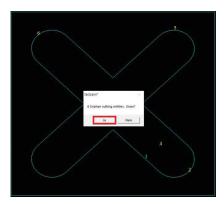
5. Import the DXF drawing and verify it by the previous "Option" selections.



Confirm the preset value with "Enter".

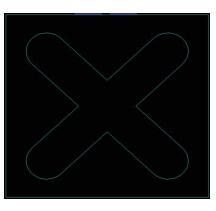
It ask for the maximum gap in the contour.

Everything smaller than 0,2mm is automatically deleted.



6 orphanes cutting units were found. Confirm the selection for erasure with "yes" (Ja).

When checking the drawing, the

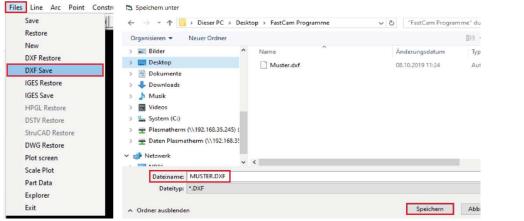


 \times

The cleaned drawing is shown.

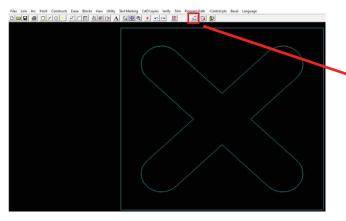
FastCAM found 6 small points that would have caused problems when cutting later.

6. If necessary, save the clean DXF/DWG drawing on the PC, as seen below.



- 1. Files
- 2. DXF Save
- 3. Select the directory on the PC and save (Speichern).

7. Creating cutting technology.



8. FastPATH settings.

External Entry	Internal Entry	Cut Sequence	Specials	Stitch / Kerf	Nest Options	Bevel	Router / Bridges
Selected proc	esses	Kerf	Side			Available p	processes
RKING ITTING		None Left	Both			DRILL	
ply processes ← Across who ← Part by part			elect proces de by clicki		order require	d. Chang	e kerf and
External	Internal	Cut	Constitute 1	Stitch /	Nest		Car
External	Internal Entry	Cut Sequence	Specials	Kerf	Options	Bevel	
External	Entry	Sequence	Specials	Kerf	Options Smart (Pat	Bevel	Router / Bridges
Positio Positio	Entry In Bottom lef	Straight		Kerf	Options Smart (Pat n/Off Maximum ch Plate edge s Edge Start 1	Bevel) ox Height Box Width hain length tart none	Router / Bridges 0 0 0
External Entry Positio	Entry In Bottom lef	Sequence		Edge	Options Smart (Pat n/Off Maximum ch Plate edge s Edge Start 1	Bevel	Router / Bridges 0 0 0
Positio	Entry In Bottom lef Type [: L Sion I Type [S	R Straight Length 6. Angle 0 Length 0 Straight ength 5.	•	Kerf	Options Smart (Pat n/off B Maximum ct Plate edge s Edge Start 1 ngle (plasma ment minim lumns only ws only s oid protected	Bevel	Router / Bridges 0 0 0 0 0 art v
Position Positi	In Bottom left	t Straight Straight 6. Angle 0 Straight 5. Angle 0 ength 5. Angle 0	·	Kerf	Options Smart (Patt n/Off B Maximum ct Plate edge s Edge Start 1 ogle (plasma ment minim lumns only we only s	Bevel .) .) .) .) .) .) .) .) .) .)	Router / Bridges 0 0 0 att w Both (Oxy)

Select the function "Set FastPATH" This function is used to define the lead-in and lead-out geometry.



Select tab "Process" defines the process.

- Selected processes box = Select "Cutting".
- Kerf box = Select "Left".
- Side box = Select "Both".

- Select tab "External Entry" defines the lead-in and leadout geometry for the outer contour.
- "Position" box defines select the starting point.
- "Entry" box defines the lead-in geometry.
- Type = Select the type of lead-in in Pull-Down menu (straight ahead, quarter circle or semicircle).
- Length = length of the lead-in geometry in mm or inch.
- Angle = 0° , 45° or 90° lead-in angle.
- Corner pierce = check box (If available the lead-in is placed at a corner).
- "Exit" box defines the lead-out geometry.
- Type = Select the type of lead-out (straight ahead, quarter circle or semicircle).
- Length = length of the lead-out geometry in mm or inch.
- Angle = 0° , 45° or 90° lead-out angle.

ocess	External Entry	Internal Entry	Cut Sequence	Specials	Stitch / Kerf	Nest Options	Bevel	Router / Bridges	
	Position	Bottom		•		iternal sa	me as		
C Pie C Bre G Bre	ition erce in Corne eak eak longest eck entry llisions		Entry On/Off Extens Exit On/Off	Radi An tion Leng Ty	pe Quarter (us 6. gle 0 th 0 pe Quarter (us 5.				
Cer	nter Pierc	-	☐ Exten	sion Len	gle 0 gth 0 n				

Select tab "Internal Entry" defines the lead-in and leadout geometry for the inner contour.

- "Position" box defines select the starting point.
- **"Entry" box** defines the lead-in geometry. Select On or OFF then enter.
- Type = Select the type of lead-in (straight ahead, quarter circle or semicircle).
- Radius = Enter value.
- Angle = 0° , 45° or 90° lead-in angle.
- Length = length of the lead-in geometry in mm or inch.
- "Exit" box defines the lead-out geometry
- Type = Select the type of lead-out (straight ahead, quarter circle or semicircle).
- Length = length of the lead-out geometry in mm or inch.

- Angle = 0° , 45° or 90° lead-out angle.

Tipp's for the lead-in and lead-out geometry

Inner contours:

You should try to move to the contour with a radius (quarter circle / half circle). The radius should be adapted to the material thickness or hole diameter. The starting point of the lead-in should be at least so far away from the contour that the contour is not damaged when piercing.

The lead-in and lead-out geometry may be different for materials and material thicknesses.

Outer contours:

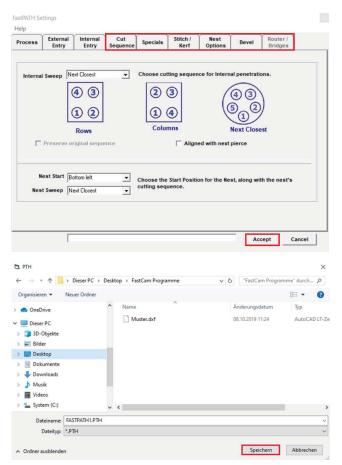
If there is a "sharp" corner (90 degrees) on the outer contour, this is the ideal starting point. The preferred lead-in geometry is then to move "straight ahead" on the contour. Otherwise, as with the inner contours, you should move gently with a radius to the contour.

Example hole:



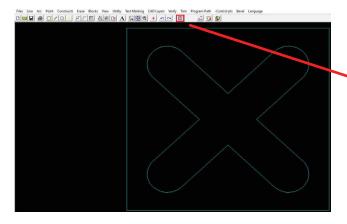
Example outer contour with a sharp edge:



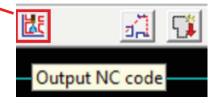


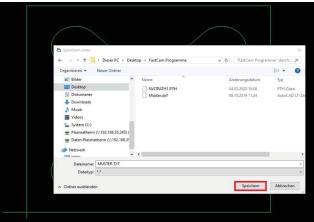
- In "Cut Sequence" you can change the cutting sequence.
- "Specials / Stitch, Kerf / Nest Options / Bevel" are for the time being not required for creating a cutting program.
- As soon as the settings are completed, close the field with "Accept".
- Then FastCAM wants to save the settings for lead-in and lead-out geometry.
- Select the required directory.
- It will be saved as FASTPATH1.PTH (The name can be changed. It is important that the file is saved as .PTH).
- Close the field with "Save" (Speichern).

9. Assign lead-in and lead-out geometry / create cutting program.



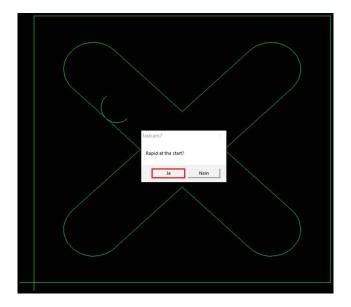
Select function "Output NC Code". With this function the setting of lead-in and lead-out geometry assigned.

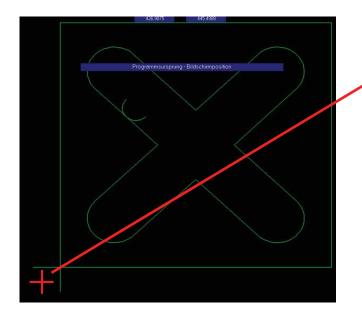


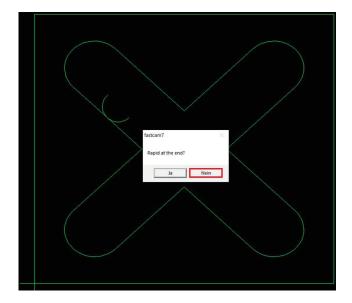


Then FastCAM wants to save the cutting program

- Select the required directory.
- It will be saved as Muster.TXT (The name can be changed. It is important that the file is saved as.TXT).
- Close the field with "Save" (Speichern).







FastCAM asks "Rapid at the start"? - Select these message with "yes" (Ja).

Yes (Ja) means:

It can be selected with the mouse by clicking in the field of the program starting point (see next page).

No (Nein) means:

The cutting program starts at the starting point of the outer contour. This can therefore be any position, depending on the starting point for the outer contour set before.

For pierce starting, when positioning the cutting torch, care should be taken to ensure that the lead-out is still in the material.

If the previous field was confirmed with "yes", you can now use the mouse to set the program starting point. For example, click with the left mouse button on the left below where the "red cross" is shown.

This method has the advantage that the later positioning of the cutting torch is simplified.

This means that when standing in front of the CNC control, the cutting torch can be positioned at the bottom left of the plate to be cut, without having to take care that the lead-out can still take place in the material.

After assigning the program start point, FastCAM asks "Rapid at the end?"

- Select this message with "no" (Nein).

No (Nein) means:

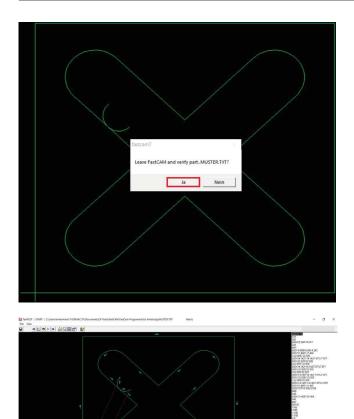
As soon as the last contour has been cut, the cutting torch stops at this contour.

Yes (Ja) means:

As soon as the last contour has been cut, the cutting torch moves back to the program starting point.

10. Check cutting program.

(up / down).



By pressing this field, the cutting program (NC code) can do a Dry-Run step by step with the cursor keys FastCAM ask "Leave FastCAM and verify part. Muster TXT?"

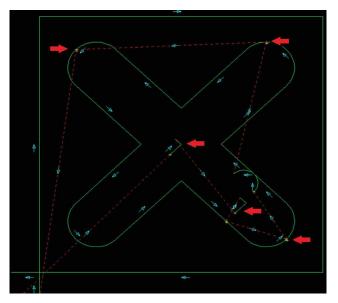
- Select this message with "yes" (Ja).

After it, the FastPLOT program opens automatically. Here the program can be checked whether

- the cutting sequence is ok
- the rapid moves are ok
- starting point is ok
- etc.

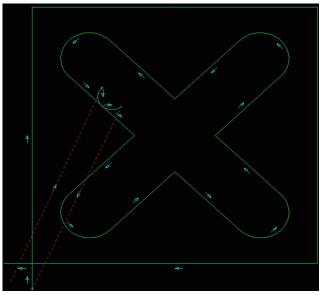
Contraction of the second decided line = Rapid move

Example of a faulty DXF drawing.



Because the DXF drawing is faulty (e.g. by double lines or small points on a line), the FastCAM generates too many starting points, which can be easily recognized by too many rapid movements and repeated starts on a line (contour).

The red arrows show the wrong points and lines.



After cleaning the DXF drawing, FastCAM shows the correct cutting sequence.

It is clearly visible that there are less rapid movements and that each line (contour) is only cut once.

In the case of a line or contour, only a rapid movement should lead to the contour and away again at the end of the line (contour).

11. Cutting program.

The finished cutting program can now be saved from the PC to a USB flash drive and can be cut on the EX-TRACK.

The finished cutting programs are saved as .TXT.

USB Flash Drives or Memory Sticks MUST BE FORMATTED TO FAT (FAT16) or FAT32. Best to have only program files on dedicated USB flash drive, or CNC may lockup trying to read other formats. FAT32 will work for USB drives up to 32 GB in size. Files can be no larger than 4GB. If your USB drive is larger than 32 GB, it can be reset to 32.

SECTION 3.

NESTING:

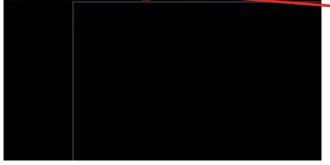
When nesting, different contours can be nested in a define plate size.

1. Open the software "FastNEST" (only with USB-dongle).

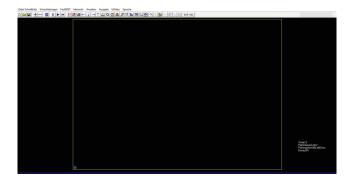


2. Define plate size.

Rie Cut List Nexts FastNST Interactive View Output Ublines Language



b Pla	ates List							_			
#	Plate name	Length \	√idth	Area	m2	Parts	Thickne	Г			
								L			
								L			
								L			
								L			
								L			
								L			
								L			
								Г	Length	1000.	mm
								L	Width	800.	mm
									Thickness	0	mm
•	Rectangle	C Remnant CA	мс	FastTi	RACI	K datal	oase		Material		-
	N	lumber of plates	in FastTF	RACK	Т			1	Grade		*
	Lis	st:				Ŧ	Insert	L	Branch		•
	1			Me	ximu	im Plat	es [5	Search		Done
_				inc					_ Daron		



Select the function "change plate".



A new window opens where the plate size can be defined.

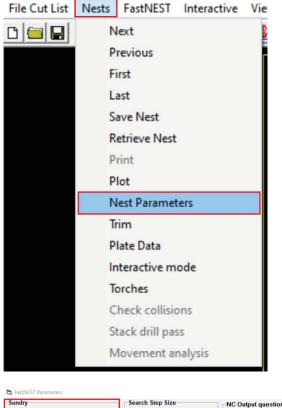
- Enter the length and width.
- Close the field with "Done".

Do not need set the thickness and material, because the EX-TRACK[®] has no automatic cutting database.

Important - Maximum plate size is 3050×1525 mm (10 x 5 ft.). This is the maximum working area of the EX-TRACK^{*} system.

The yellow frame shows the adjusted plate size.

3. Set nesting distance.



Search Step Size NC Output questions Part to Part 10 mm Angles in 90 C Ask all questions Part to plate 10 mm Angle Step Preselect answers Maximum plate num 10 Search Step Verify nest with FastPLOT Plate loading Pause at new plate □ Plot nest Disable internal nesting ✓ Do not rotate plates Resequence ✓ Length priority ✓ Move entries Do not jostle after each array NC collision check □ Use subroutines Part Loading Determine optimum nest angle Check NC output for collisi Calculate arrays Approach distance .6 mm Change corners Limit move when collisions C Round C Sharp Nest Type Corner distance 0 mm · Standard Profile type None -C Common Cut Nest Exclude acute corner C Bridge Nest Enter Cancel

4. Set file type.

File Cut List Nests FastNEST Interactive View Output Ublifeis Language

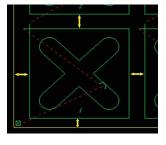
Select the "Nests" menu and then "Nest Parameters".

In this menu, the nesting distance of the plate edge to the cutting part as well as between the individual cutting parts can be adjusted.

The distances can be set in the "Sundry" section.

- Part to part = Nesting distance between the parts to be cut.
- Part to plate = Nesting distance between plate edge and the part to be cut.

The nesting distance depends on the parts to be cut and the material thickness and can be different..



Select the function "DXF - NC".



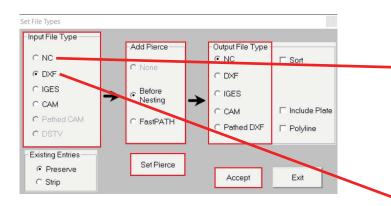
FastPATH Settings

Ordner ausble

Dateiname: NEST.PTH

Dateityp: *.PTH

Help



Input File Type

First possibility = select "NC" and confirm "Accept" You can directly continue with point 5 "Add cutting parts". The requirement is that the individual cutting programs to be nested have already been created in advance (xxx.TXT).

Second possibility = By selecting the "DXF", then continue with the following steps.

Add Pierce - Select "Before Nesting". Output File Type - Select "NC".

Then click on "Set Pierce", to define the lead-in and lead-out geometry.

By selecting the field "Set Pierce" the field "FastPATH Settings" opens.

- Repeat the procedure description "creation of a simple cutting program" under position 8 "FastPATH Settings".

Then FastNEST wants to save the settings of the lead-in and lead-out geometry.

- Select the required directory.
- It will be saved as NEST.PTH.

(The name can be changed. It is important that the file is saved as .PTH)

- Close the field with "Save" (Speichern).

	Entry	Entry	Sequence	Specials	Kerf	Options	Bevel	Bridges	
Sel	ected proce	sses	Kerf	Side			Available p	rocesses	
MARKI			None				DRILL		_
CUTTIN	0		Left	Both	-				
(• A	crocesses across whole Part by part	e nest		elect proces de by clicki	sses in the	order require em.	ed. Chang	e kerf and	
	Γ						Ac	cept	Cancel
	-								
> •			Desktop > Fa	istCam Progra	amme	~		cept	ne" durch… J
Organisier	en 🕶 Nei	Dieser PC → uer Ordner			smme	~	ල් "FastCi	əm Programm	ne" durch)
Crganisier Crganisier Corganisier Corganis	en Ver ktop umente vnloads sik tos vem (C:) matherm (\\1) en Plasmather	uer Ordner 92.168.35.245	↑ Name BJ BJ FA M M		~	~		am Programm datum 10:55 10:55 10:08 11:24	ne" durch… J

Speichern Abbrechen

5. Add cutting parts.





Individual parts can be added and removed by pressing the " + " and " - " fields.

- Select " + ".

Select the required DXF file to be cut

- Press "Select" to confirm.

Either select the DXF files here, or if the cutting programs have been created in advance, select the cutting programs.

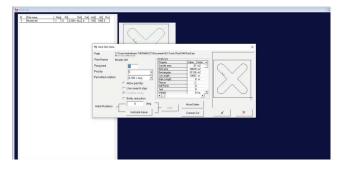
Depending on whether DXF or NC was selected in "Input - File type", the corresponding file type is displayed here.

A new window opens, where the amounts can be set..

Enter the number of parts to nest in the "Required" field.

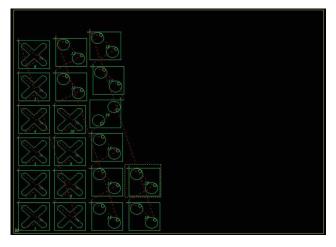
At "Initial Rotation", enter the rotation (if necessary). Then confirm.

After confirming the parts are nested on the plate.



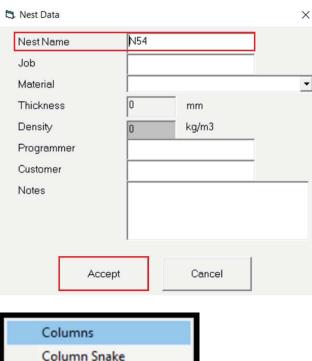
🖏 Nest Part Data	1			\times
Path	C:\Users\winkelmann.THERMACUT	Documents\EX-Track\Fast0	CAM\FastCam	
Part Name	Muster dxf	Analysis		
	muotortara	Property	Value Units 🔺	
Required	10	Outside area	.01 m2	
		Nett area	.00638 m2	
Priority	5 -	Rectangular	.01124 m2	
Permitted rotatio	on 0,180 + ALL -	Cut Length	.78507 m	
r enniced rotatio	on 0,180 + ALL <u>•</u>	Mark Length	0 m	
	Allow part flip	Pierces	2.	
		Drill Points	0	
	Use search step	Text	0	
	🔽 Disable Array	Weight	0 kg 💌	
	Entity reduction		<u> </u>	ļ
Initial Rotation	0 deg	Apply	Move Entries	
	Indicate base		Common Cut	✓ ×

6. Add more parts.



7. Save nesting.





Column Snake Rows Row Snake Next Closest Minimum Rapid Indicate Next Starting at Position 4 "Set file type", further parts can be nested on the plate.

As an example, 10 more parts were added here.

Choose "Output" in the menu and click on "Generate Output".

A new window "Nest Data" appears.

- "Nest Name" enter the name.

- Accept.

In the next window define one of the possible nesting sequences.

Examples for nesting sequences:

<u>Columns</u>

5	10	
4	9	
3	8	
2	7	
1	6	

Rows

6

1

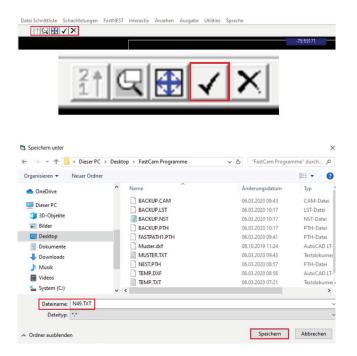
2 9 1 10 Row Snake

7	8	9	10
2	3	4	5

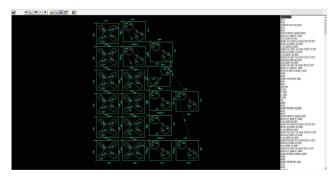
 10
 9
 8
 7
 6

 1
 2
 3
 4
 5

"Next Closest" = The closest part is cut next. "Minimum Rapid" = Try to keep the rapid movements from part to part as short as possible.



8. Check nesting.



9. Nesting program.

The finished cutting program can now be saved from the PC to a USB flash drive and can be cut on the EX-TRACK[®]. The nesting program is also saved as .TXT.

The menu changes. Confirm by clicking the

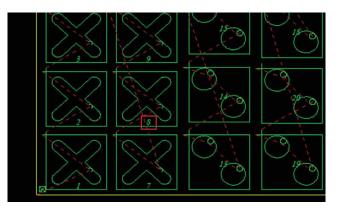


A new window appears where the nested program can now be saved.

After saving the nesting is automatically opened in FastPLOT.

As descriped in point 10 "Check cutting program", the nesting can also be checked and dry-run.

Information about the Nesting



The numbers displayed in the parts indicate the sequence.

By double-clicking on a part, the sequence can also be changed. Red box below: Drag up to Sequence 8 / 2 the individual parts can also be rotated afterwards.



If you click on a part and keep the left mouse button pressed, the chosen part can be moved.

As you can see, the software also shows nesting errors as soon as parts placed on top of each other. This is shown with a red line.



|--|--|--|--|

When a part is selected on the plate, it can be repositioned to the set nesting distances using these arrow keys.

If a nested part should be removed, select the required part and delete it with the " - " button.

NOTES:



Thermacut, k.s. Sokolovská 574, Mařatice 686 01, Uherské Hradiště Czech Republic www.thermacut.com

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