



Steel Projects

WinNEST 5.xx

ActCut 3.6

User Manual

April 2009

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1. Overview

WinNEST is a truly flexible, user-friendly plug and play plate nesting software system which does not require a software engineer to spend weeks or months to integrate the software into the Company's production processes and systems.

The WinNEST module can act as either a standalone Plate Nesting system, and also links with WinSTEEL and WinSER modules to provide structural steel fabricators the very best Production Management software for their TIPOB plate machine.

Direct importation of CAM files from WinSTEEL/WinSER or direct from CAD files (DSTV, DXF) allows for nestings of parts with similar plate thickness and material grade.

The system has three main functions. The first is plate nesting, where parts can either be automatically or manually nested into suitable size plates. WinNEST has three different types of automatic nesting techniques, the most suitable can be chosen depending on the types of component to be nested. Automatic nestings can be manually amended if required using a simple drag and drop interface.

The second main function of WinNEST is the Pathfinder, which controls the cutting sequence the machine will follow. This sequence is automated, but can be changed as the user sees fit. Starting points are also controlled here and WinNEST utilizes many different configurable options. Bridging can also be controlled here, which offers a way to use common line cutting on this machine.

WinNEST also acts as a post processor for the machine. Many parameters can be set up and configured so you get the best out of the machine. Marking can be set as required, maximum punching diameters set, and Standard half gap measurements determined for individual plate thicknesses.

Once the program is completed, an FNC file is automatically created and sent to the machine either through the company network or straight onto a flash disk. A detailed workshop document can also be produced which includes all the information required to find the correct file and produce the nested plate.

In summary, WinNEST is a powerful tool, which will save hours of production time compared to manually nesting at the machine.

This document is intended to act as a training aid for WinNEST users.

2. Configuration

WinNEST will be set up by a Steel Projects engineer during the first installation. However, you might need to change these settings after upgrading WinNEST or buying a new machine to be integrated in your production system.

2.1 Options

The following Configuration / Options menu contains all the general settings of WinNEST.

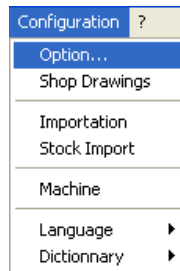


Fig. 2.1.1 - Configuration / Option Menu

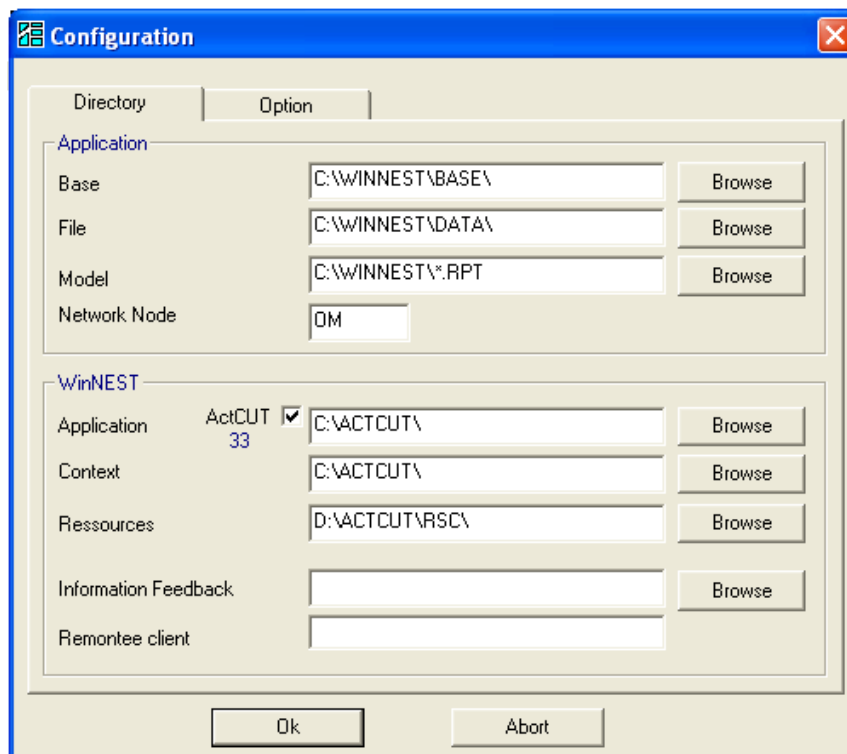


Fig. 2.1.2 - Directory Tab

| Section | Label | Default value | Description |
|-------------|----------------------|------------------|---|
| Application | BASE | C:\WinNEST\BASE\ | Information about profiles, material grade, etc. |
| | DATA | C:\WinNEST\DATA\ | All the parts, profiles, etc. |
| | Model | C:\WinNEST*.rpt | Models for printings. |
| | Network Node | \$\$1 | Key to identify each workstation in network configuration. |
| WinNEST | Application | C:\ActCut\ | Directory, on the local workstation, where ActCut is installed. |
| | Context | C:\ActCut\ | Directory where all the data of ActCut are located. May be shared on a server. |
| | Resources | C:\ActCut\RSC\ | Machine settings. May be shared on a server. |
| | Information Feedback | | In case of manual production feedback, location of the REMONTE.DAT file. Please refer to Steel Projects. |
| | Remontées client | | Custom production feedback. Please refer to Steel Projects |

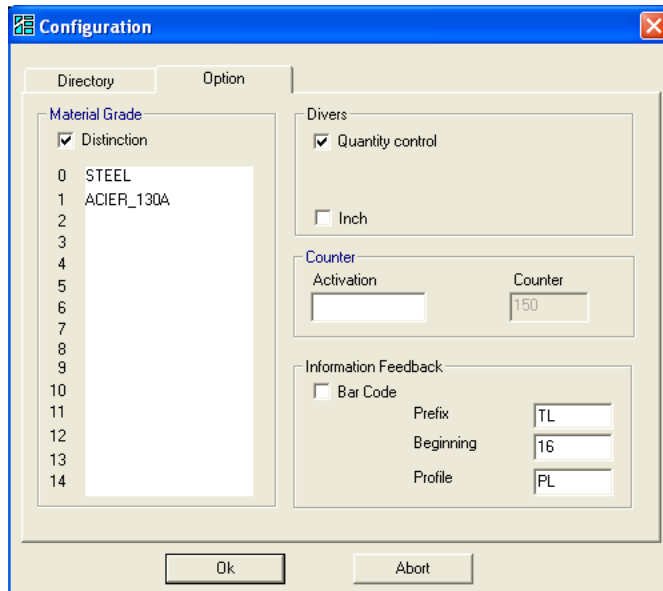


Fig. 2.1.3 - Option Tab

| Section | Label | Default Value | Description |
|----------------------|------------------|--------------------------|--|
| Material Grade | Distinction | Activated | If activated, WinNEST won't nest parts with different grades in a same plate. |
| | List | STEEL | For FICEP machines, material needed is: STEEL. For HPM machines, all materials must be input (Refer to Steel Projects) |
| Divers | Quantity control | <input type="checkbox"/> | If activated, a green mark will be added in front of each nesting when all the parts are nested in plates. |
| | Inch | <input type="checkbox"/> | Switches to imperial mode. |
| Counter | Activation | empty | Password prompt to activate counter change. |
| | Counter | current nesting number | current nesting number |
| Information Feedback | Barcode | <input type="checkbox"/> | |
| | Prefix | TL | |
| | Beginning | 16 | |
| | Profile | PL | |

2.2 Machines

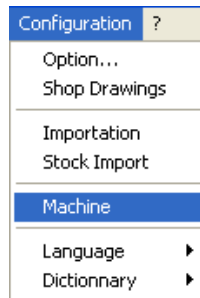


Fig. 2.2.1 - Configuration Machine

This menu allows us to configure the settings for each machine (FICEP or other)

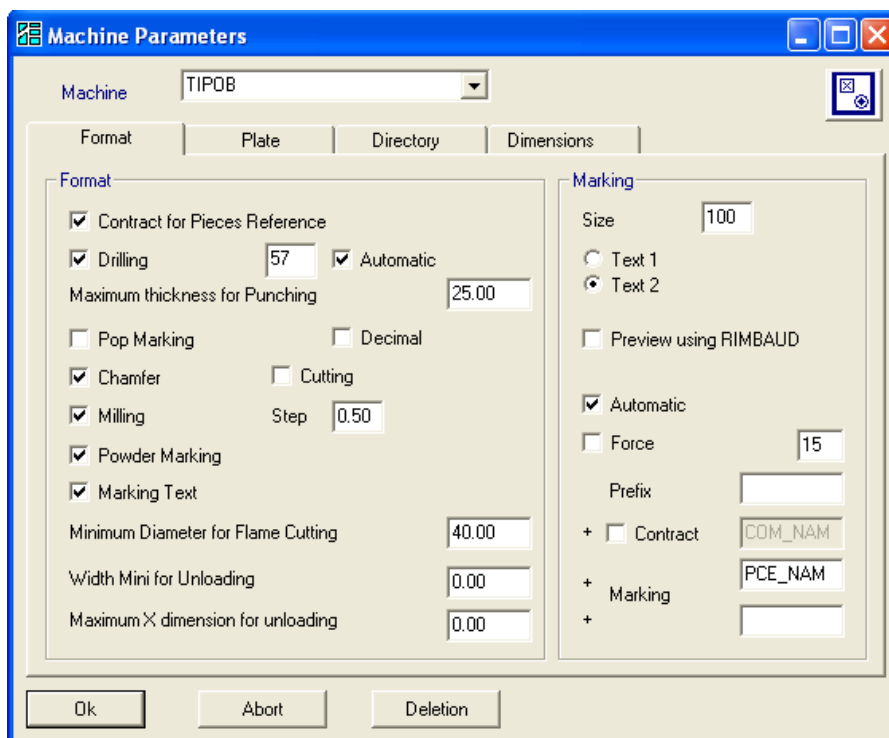


Fig. 2.2.2 - General Format settings

| Section | Field | Default Value | Description | |
|-----------------------|-----------------------------------|-------------------------------------|---|---|
| Format | Contract for pieces reference | <input checked="" type="checkbox"/> | Adds the contract name to the part name | |
| | Drilling | <input checked="" type="checkbox"/> | 51 for Drill only 57 for Drill and Punch | |
| | Automatic | <input checked="" type="checkbox"/> | Converts automatically the holes to Drill or Punch regarding the diameter and the thickness. | |
| | Maximum thickness for punching | - | Indicates the maximum thickness to allow Punching. Above this value, all holes will be drilled. | |
| | Pop Marking | <input type="checkbox"/> | | |
| | Decimal | <input type="checkbox"/> | | |
| | Chamfer | <input type="checkbox"/> | If ON, WinNEST will import chamfer information from WinSTEEL. | |
| | Cutting | <input type="checkbox"/> | | |
| | Milling | <input type="checkbox"/> | If ON, WinNEST will import milling information from WinSTEEL. | |
| | Step | 0.50 | Distance between each milling step. | |
| | Powder marking | <input type="checkbox"/> | If ON, WinNEST imports scribing lines from WinSTEEL | |
| | Marking Text | <input type="checkbox"/> | If ON, WinNEST will generate marking text for each part regarding the options defined in the Marking section. | |
| | Min. diameter for flame cutting | 40 | All the holes with a diameter greater than this value will be cut with flame. | |
| | Width mini for unloading | 0 | | |
| | Maximum X dimension for unloading | 0 | | |
| | Marking | Size | 100 | For Text1 : size in mm For Text2 : Percentage of the size. |
| | | Text 1 / Text 2 | Text1 | Text1 -> Marking instruction sent as a path. Text2 -> Marking instruction sent as a tool code. |
| Preview using Rimbaud | | <input type="checkbox"/> | | |
| Automatic | | ON | | |
| Force | | <input type="checkbox"/> / 15 | | |
| Prefix | | - | Adds a prefix to the mark | |
| Contract | | <input type="checkbox"/> | Adds the contract name to the marking | |
| | Marking | PCE_NAM | Uses the piece name as marking | |

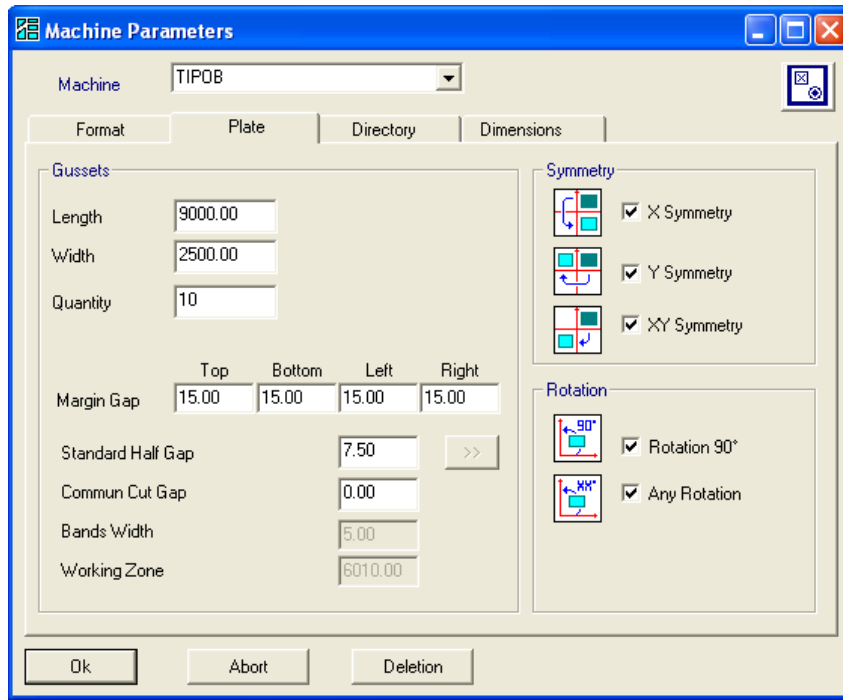


Fig. 2.2.3 - Plate settings

| Section | Label | Default Value | Description |
|----------|-------------------|-------------------------------------|---|
| Gussets | Length | 12000 | Length of default plate |
| | Width | 2000 | Width of default plate |
| | Quantity | 10 | Quantity of available plates for one nesting. |
| | Margin gap | 15 – 15 – 15 – 15 | Value of the margin on each edge of the plate. |
| | Standard Half Gap | 7.50 | Half gap between 2 parts in standard mode. Not used anymore with Actcut 3.3 and superior. |
| | Common Cut Gap | 0 | Gap between 2 parts in common cut mode. Not used anymore with Actcut 3.3 and superior. |
| | Bands Width | | |
| Symmetry | Working Zone | | |
| | X Symmetry | <input checked="" type="checkbox"/> | Allows X symmetries |
| | Y Symmetry | <input checked="" type="checkbox"/> | Allows Y symmetries |
| Rotation | XY Symmetry | <input checked="" type="checkbox"/> | Allows X & Y symmetries |
| | Rotation 90° | <input checked="" type="checkbox"/> | Allows 90° rotations |
| | Any rotation | <input checked="" type="checkbox"/> | Allows any rotation |

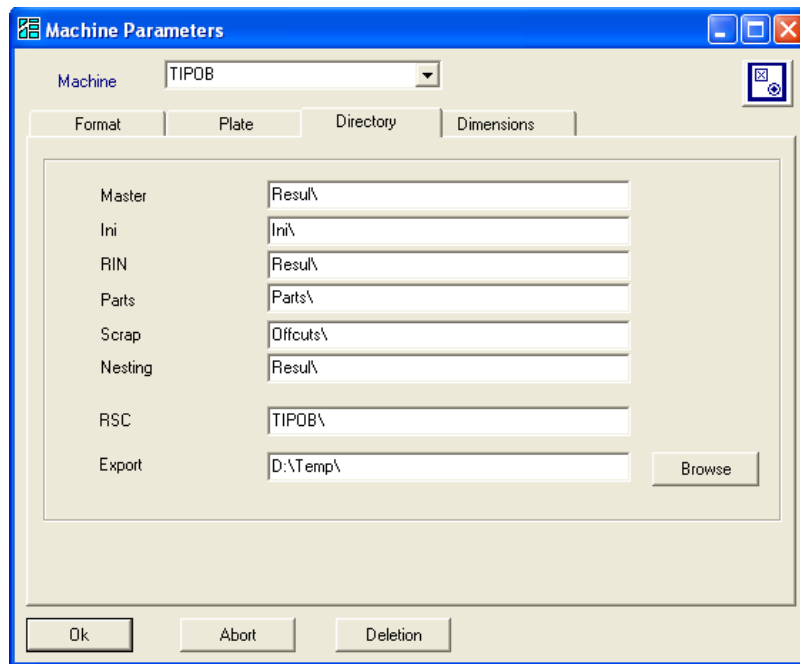


Fig. 2.2.4 - Directory Configuration

| Label | Default Value | Description |
|---------|----------------|--|
| Master | Result\ | Don't change |
| Ini | Ini\ | Don't change |
| RIN | Result\ | Don't change |
| Parts | Parts\ | Don't change |
| Scrap | Offcuts\ | Don't change |
| Nesting | Result\ | Don't change |
| RSC | [YourMachine]\ | Don't change |
| Export | | Folder where the program for the machine will be exported. |

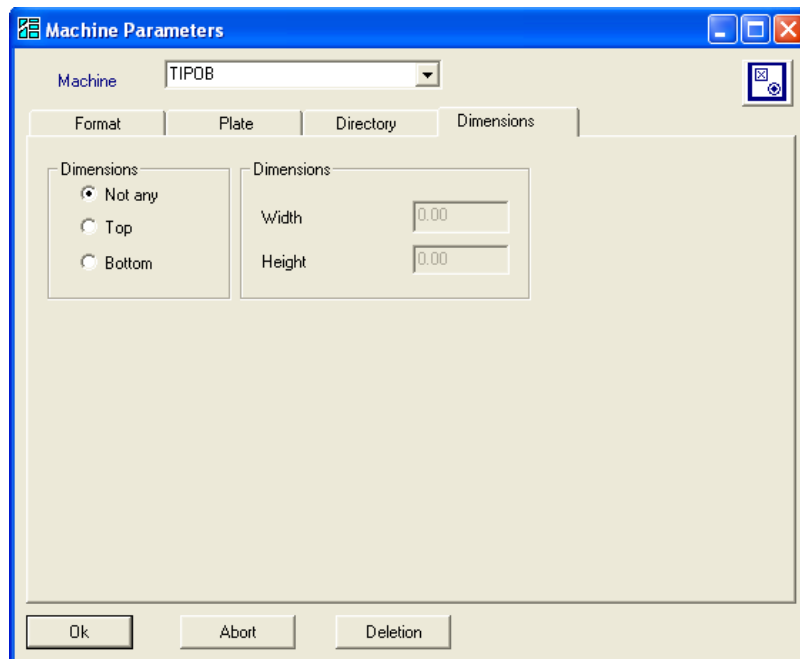


Fig. 2.2.5 - Dimensions Settings

| Field | Default Value | Description |
|------------|---------------|-------------|
| Dimensions | Not Any | |
| Width | | |
| Height | | |

2.3 Stock Configuration

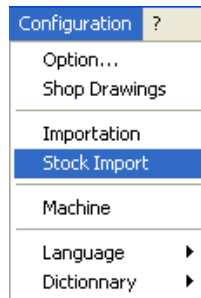


Fig. 2.3.1 - Stock Import

WinNEST can be interfaced with a stock control software. Here is the way to set it up with WinSTOCK.

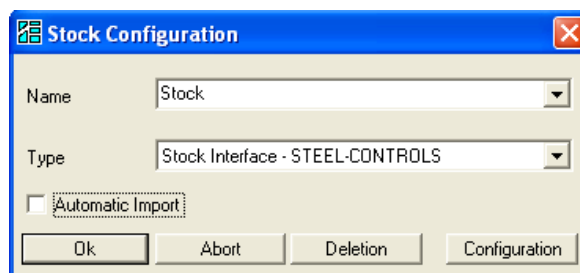


Fig. 2.3.2 - Stock Configuration

In the *Name* field, write the name of your import (generally *Stock*). Then select *Stock Interface – STEEL CONTROLS*, tick *Automatic Import* and click on *Configuration*.

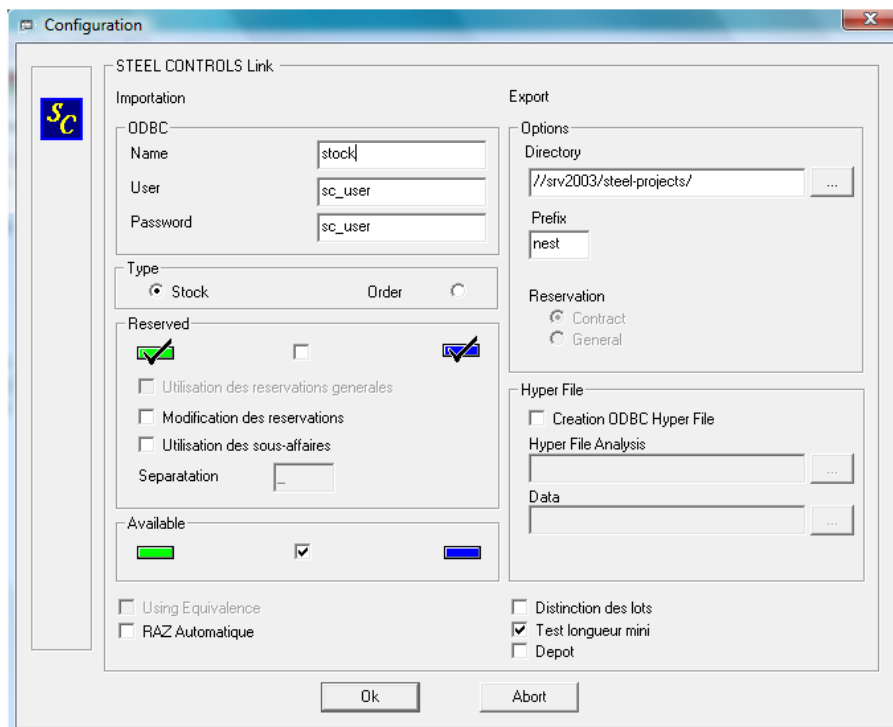



Fig. 2.3.3 - Stock Configuration Window

| Section | Field | Default Value | Description |
|-----------|--|-------------------------------------|---|
| ODBC | Name | Stock | ODBC name |
| | User | sc_user | ODBC user name |
| | Password | sc_user | ODBC password |
| Type | Stock / Order | Stock | If Order is marked, WinNEST will consider ordered quantities instead of real quantities. |
| Reserved | Picture | <input checked="" type="checkbox"/> | If ON, WinNEST imports plates with correct thickness and grade, reserved for the current contract only. |
| | Utilisation des réservations générales | <input type="checkbox"/> | |
| | Modification des réservations | <input type="checkbox"/> | |
| | Utilisation des sous-affaires | <input type="checkbox"/> | Allows WinNEST to import reserved plates from sub contracts defines by the sub contract separator. |
| Available | Picture | <input checked="" type="checkbox"/> | If ON, WinNEST imports all the plates with the same thickness and the same grade available. |
| Options | Directory | | Exchange directory with WinSTOCK |
| | Prefix | | Prefix to the exported file |
| | Reservation | | |
| HyperFile | Creation ODBC HyperFile | <input type="checkbox"/> | |
| | HyperFile Analysis | | |
| | Data | | |
| General | Using Equivalence | <input type="checkbox"/> | |
| | RAZ Automatique | <input checked="" type="checkbox"/> | Reset before importing |
| | Distinction des lots | <input checked="" type="checkbox"/> | Bundle distinction |
| | Test Longueur mini | <input checked="" type="checkbox"/> | |
| | Depot | <input type="checkbox"/> | Must be ticked if stock use bundle management |

Nb: Note that you must choose between available and reserved, you cannot have both ticked.

3. Basic Use of WinNEST

3.1 Importing parts

In the main screen, click on the import button  to start the importation process.

If many imports are set up, select the one you want to use. Note that if you purchased WinSTEEL, you don't need to import DSTV or DXF files in WinNEST, those parts will be imported through WinSTEEL.

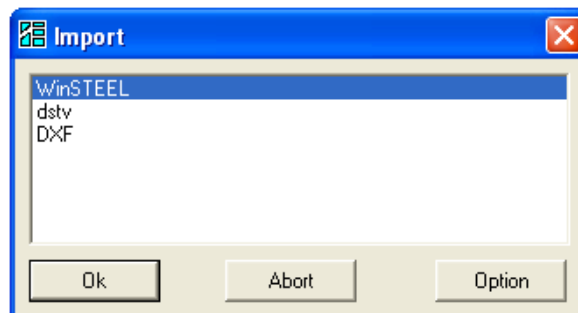


Fig. 3.1.1 - Import Selection

After clicking OK, you will have to select the files you want to import in the following window :

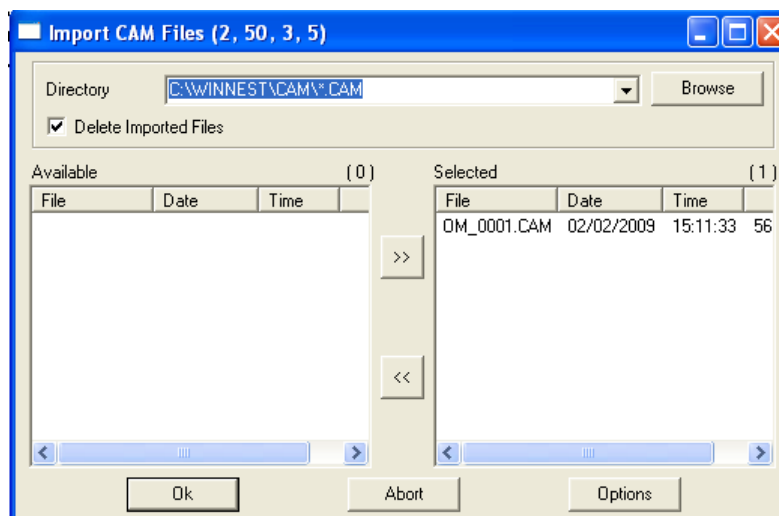


Fig. 3.1.2 - Import File Selection

The files on the right hand side will be imported. If you have many files and don't want to import some of them, just move them to the left hand side by double clicking on them or by selecting them and clicking on the chevrons. If *Delete Imported Files* is ticked (recommended), these files will be deleted after being imported. Now, just click OK to launch the import process. If you have more than one machine configured in WinNEST you will have to choose the one you want to use for the nesting, except if you are using WinSER (automatic choice of machine).

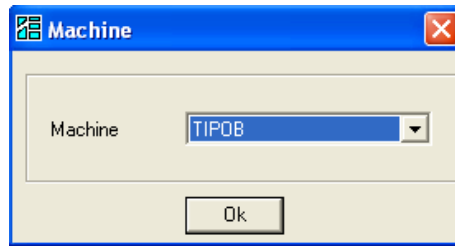


Fig. 3.1.3 - Machine Selection

After importation process is finished, if a part is too small to be stamped, this window will appear :

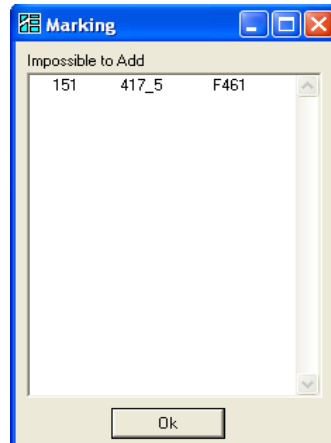


Fig. 3.1.4 - Marking Error


The name of the part which can't be stamped is written, with its nesting number.

| Name | Material Grade | Thickness | Comment | Machine | Working Zone | Standard Half | Commun Cut | Bands Width | Master | State | Material code | Date |
|-------|----------------|-----------|------------|---------|--------------|---------------|------------|-------------|--------|-------|---------------|------------|
| ✓ 118 | A36 | 3.40 | MUELLER | TIPOB | 12000.00 | 7.50 | | 5.00 | 1 | 4 | STEEL | 09/09/2008 |
| ✓ 119 | A36 | 4.78 | MUELLER | TIPOB | 12000.00 | 7.50 | | 5.00 | 1 | 4 | STEEL | 09/09/2008 |
| ✓ 120 | A36 | 6.35 | MUELLER | TIPOB | 12000.00 | 7.50 | | 5.00 | 1 | 4 | STEEL | 09/09/2008 |
| 129 | G50 | 9.50 | DOMINION | HPM | 6000.00 | 7.50 | | 5.00 | 1 | 1 | STEEL | 26/11/2008 |
| ✓ 138 | A572-50 | 20.00 | TB | TBPDM | 15240.00 | 5.00 | 5.00 | 5.00 | 1 | 3 | STEEL | 19/12/2008 |
| ✓ 139 | A572-50 | 25.00 | TB | TBPDM | 15240.00 | 5.00 | 5.00 | 5.00 | 1 | 3 | STEEL | 19/12/2008 |
| ✓ 148 | A36 | 10.00 | S0276-1235 | TIPOB | 12000.00 | 7.50 | 3.00 | 5.00 | 1 | 4 | STEEL | 28/01/2009 |
| 150 | S235JR | 15.00 | GMM | TIPOB | 12000.00 | 7.50 | 3.00 | 5.00 | 1 | 1 | STEEL | 28/01/2009 |
| 151 | S275JR | 10.00 | 417_5 | TIPOB | 12000.00 | 7.50 | 3.00 | 5.00 | 1 | 1 | STEEL | 02/02/2009 |
| 152 | S275JR | 12.00 | 417_5 | TIPOB | 12000.00 | 7.50 | 3.00 | 5.00 | 1 | 1 | STEEL | 02/02/2009 |
| 153 | S275JR | 15.00 | 417_5 | TIPOB | 12000.00 | 7.50 | 3.00 | 5.00 | 1 | 1 | STEEL | 02/02/2009 |
| 154 | S275JR | 20.00 | 417_5 | TIPOB | 12000.00 | 7.50 | 3.00 | 5.00 | 1 | 1 | STEEL | 02/02/2009 |

Fig. 3.1.5 - Overview after importation

WinNEST imported all the parts and sorted them by thickness and material grade. We can see 4 new nestings in WinNEST : one for each thickness.

3.2 Mixing parts from different nestings

WinNEST allows you to copy parts from a nesting to another. To do this, select the destination nesting, go on the *PART* tab and press .

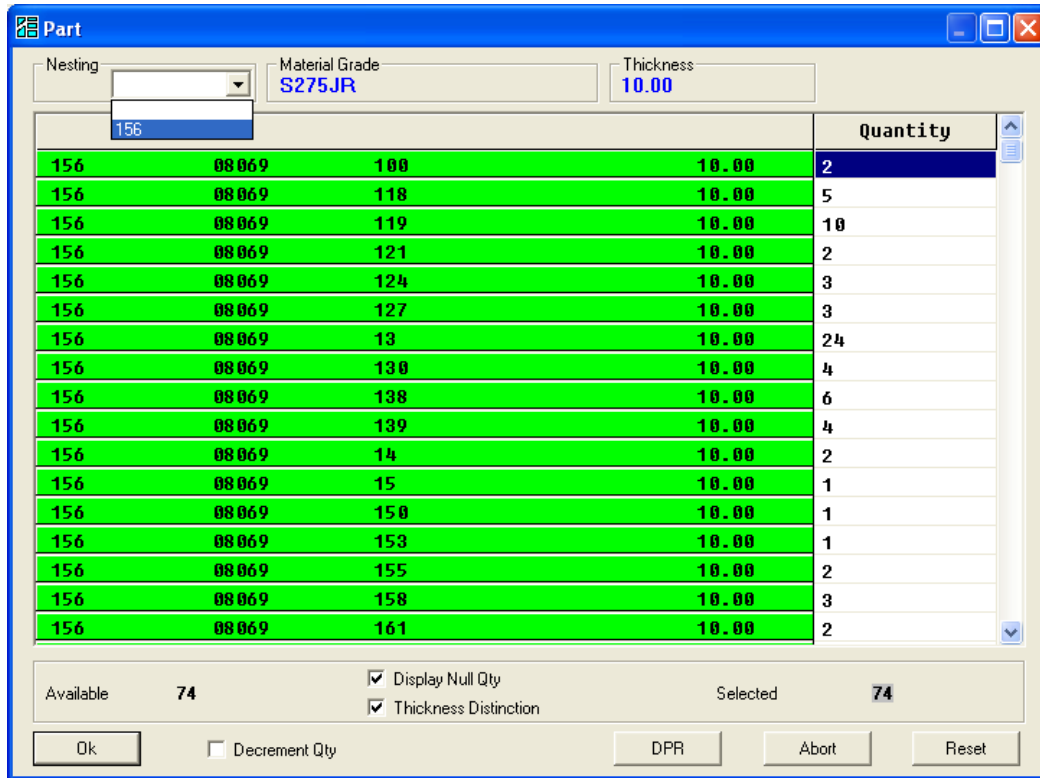


Fig. 3.2.1 - Part Copy in WinNEST


| Item | Description |
|-----------------------|--|
| Nesting | Nesting where the parts come from. If nothing is selected, all parts fitting the thickness and grade requirements are displayed |
| Material Grade | Current material grade |
| Thickness | Current Thickness |
| Quantity | For each part, quantity to import. |
| Display Null Qty | If <input checked="" type="checkbox"/> , even the parts already nested are displayed (and available to import) |
| Thickness Distinction | If <input checked="" type="checkbox"/> , only parts with same thickness will be displayed (and available to import). |
| Decrement Qty | If <input checked="" type="checkbox"/> , after import the quantity of the part will be decremented in its original nesting. |
| DPR | Allows you to select a different DPR folder (refer to Steel Projects) |
| Available | Available parts for importation |
| Selected | Selected parts quantity. |

When you click OK, all the selected parts will be copied to your current nesting.

3.3 Stock selection

We now need to tell WinNEST which plate format it can use to nest all the parts of the nesting. We also need to setup the available quantity of each format we can use for the nesting.

If WinSTOCK is installed, you can import the plates available. Go to the Stock tab

and click on  to open the following window :

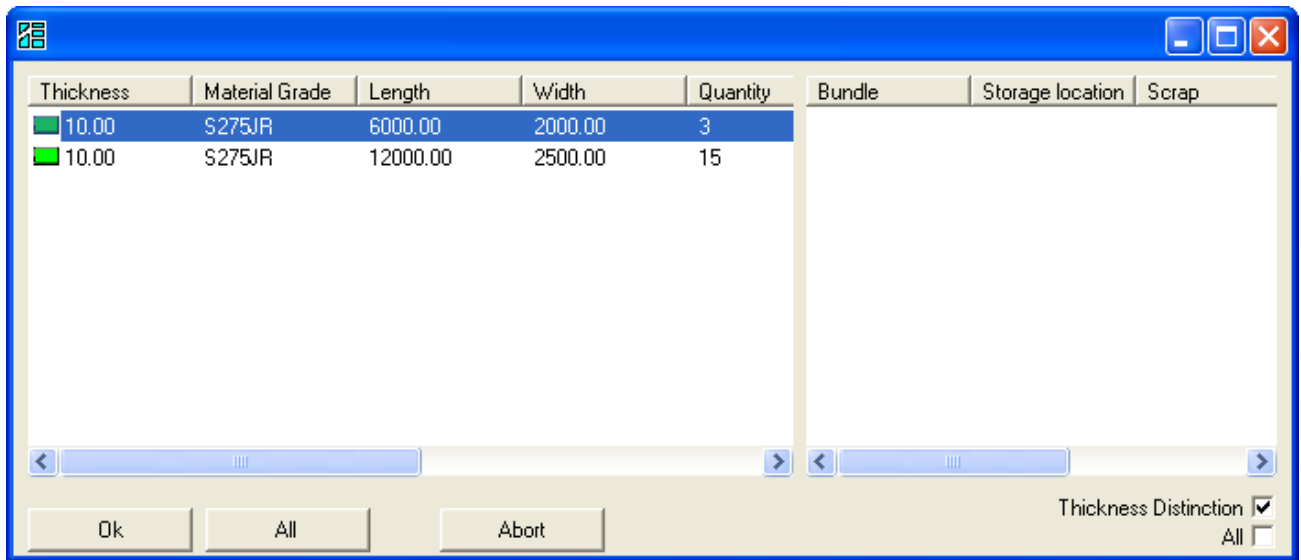



Fig. 3.3.1 - Stock Import

You can either double click on a plate to import it or click *All* to import all plates available.

You can also create a plate manually. Just click on  when you are in the *PLATE* tab and fill the following window as shown:

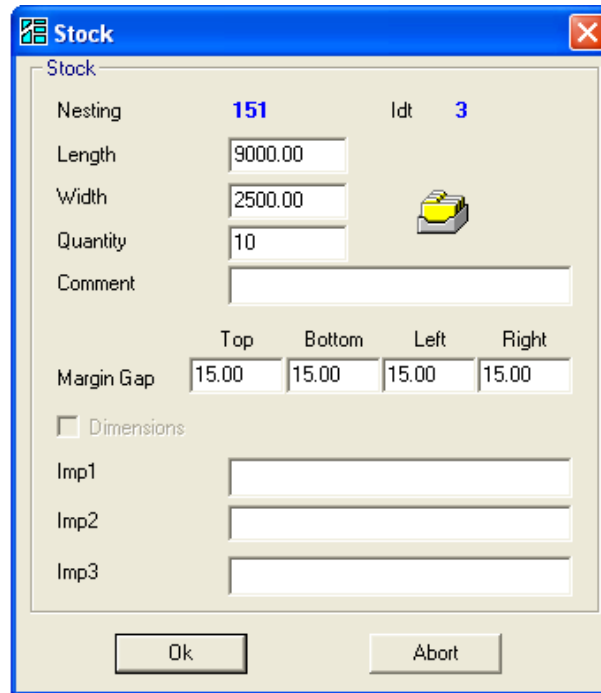


Fig. 3.3.2 - Manual Stock Input

After clicking OK, the *PLATE* tab should be like this :







| Length | Width | Comment | Qty |
|--|---------|---------|-----|
|  6000.00 | 2000.00 | 895 | 3 |
|  12000.00 | 2500.00 | 893 | 15 |
|  9000.00 | 2500.00 | | 10 |

Fig. 3.3.3 - Stock Status

You can also select remnants from previous nestings by clicking  and selecting the offcut you want to reuse. This plate will appear with this icon  to indicate it's an offcut.

3.4 Nesting the parts on a plate

Go to the *NESTING* tab, be sure the nesting you want to work on is selected and

click on  to launch the Nester.

3.4.1 Description of the nester

On the following screenshot, we can see five zones :

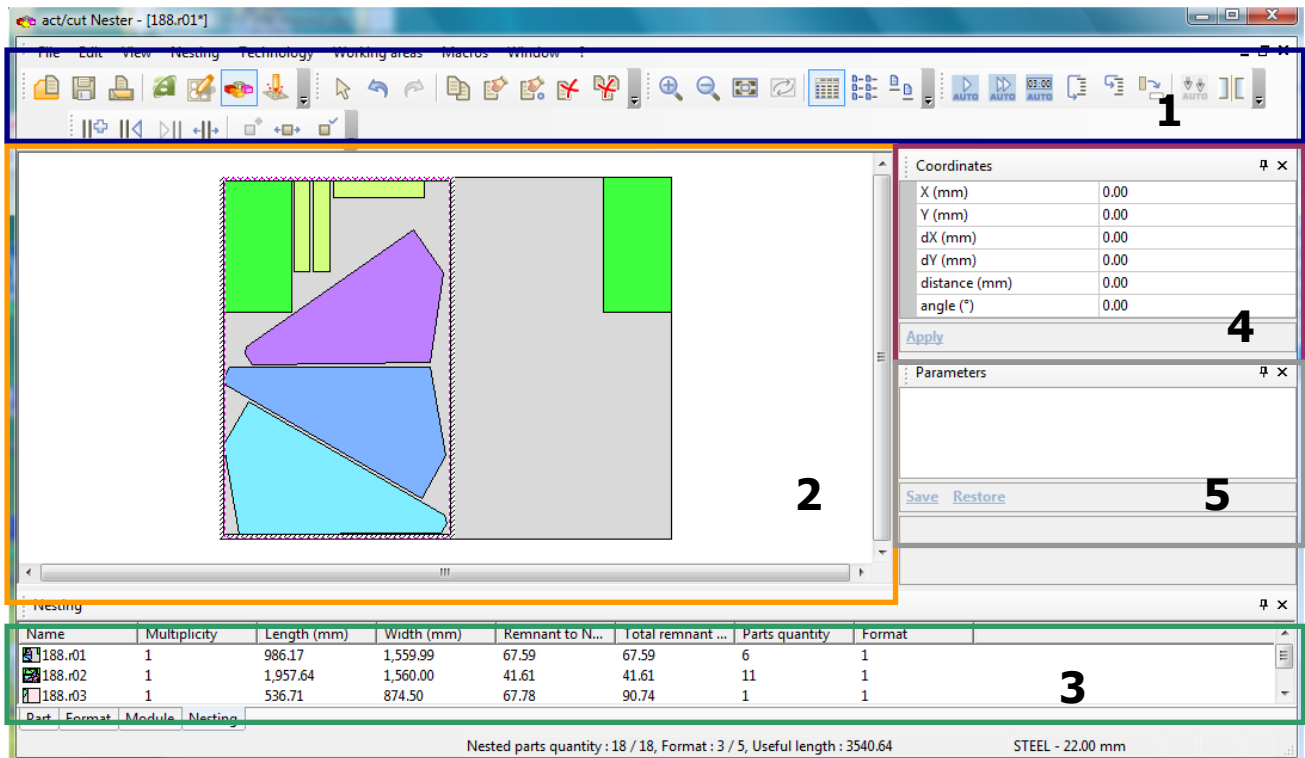


Fig. 3.4.1 - Nester Overview

| Zone | Description |
|------|---|
| 1 | Toolbar. The layout may be different on your workstation but all the items can be reached through the menu. |
| 2 | Main working zone |
| 3 | Multi items zone. See below for more info. |
| 4 | Coordinates box. |
| 5 | Properties box. Will be used for data input. |

The Multi Items zone contains various useful information's :

| Name | Remaining quan... | Locked | Facultative | Group | Reservation | Length (mm) | Width (mm) | Surface (m²) | File |
|-----------|-------------------|--------|-------------|-------|-------------|-------------|------------|--------------|------------------|
| 08069 100 | 2 | 0 | 0 | 0 | 0 | 210.00 | 150.00 | 0.03 | \Parts\156-1.dpr |
| 08069 118 | 5 | 0 | 0 | 0 | 0 | 150.00 | 100.00 | 0.02 | \Parts\156-2.dpr |
| 08069 119 | 10 | 0 | 0 | 0 | 0 | 100.00 | 47.00 | 0.00 | \Parts\156-3.dpr |
| 08069 121 | 2 | 0 | 0 | 0 | 0 | 250.00 | 60.00 | 0.01 | \Parts\156-4.dpr |
| 08069 124 | 3 | 0 | 0 | 0 | 0 | 142.00 | 200.00 | 0.03 | \Parts\156-5.dpr |
| 08069 127 | 3 | 0 | 0 | 0 | 0 | 160.00 | 200.00 | 0.03 | \Parts\156-6.dpr |
| 08069 13 | 24 | 0 | 0 | 0 | 0 | 150.00 | 72.00 | 0.01 | \Parts\156-7.dpr |

Fig. 3.4.2 - Part List Tab

This tab contains all the parts to be nested. The layout of the part is shown as well as the remaining quantity to be nested. The column *Locked* indicates if a part is locked : if locked, a part can't be nested. To lock / unlock a part, press [Ctrl]+[L] and click on the part. Do the same in order to unlock it.

| Name | Rank | Remaining quan... | Type | Length (mm) | Width (mm) | Surface (m²) | File |
|------|------|-------------------|------|-------------|------------|--------------|------|
| 1 | 1 | 2 | 0 | 6,000.00 | 2,000.00 | 12.00 | |
| 2 | 2 | 15 | 0 | 12,000.00 | 2,500.00 | 30.00 | |
| 3 | 3 | 10 | 0 | 9,000.00 | 2,500.00 | 22.50 | |

Fig. 3.4.3 - Format Tab

This tab groups all the plates available for this nesting. These are the ones we imported / created in WinNEST. When a plate is exhausted, a green cross is made over its icon.

| Name | Multiplicity | Length (mm) | Width (mm) | Offcut to Nesting Front (%) | Total offcut (%) | Parts quantity | Format |
|---------|--------------|-------------|------------|-----------------------------|------------------|----------------|--------|
| 151.r01 | 1 | 4,638.00 | 1,970.00 | 19.47 | 37.32 | 193 | 1 |

Fig. 3.4.4 - Nesting Tab

This tab shows us the nested plates with their offcuts. The *Multiplicity* is the number of times the program must be ran on the machine in order to cut all the parts needed. The *Offcut to Nesting Front* is the percentage of scrap between the left hand edge of the plate and the nesting front. The *Format* indicates which plate has been used.

3.4.2 Creating Zones for FICEP machines (TIPO A / B)

Due to the specifications of FICEP Tipo machines, you have to divide your plate into one or more *Working Zones*. The size of each working area depends on many criteria's such as the unloading area, plates thickness, etc.

Note that for other machines (HPM, ESAB, BURNY, etc.), you don't need to create such zones.

Go to the menu called *Manual Zones*, in *Working Areas | Zones FICEP*.

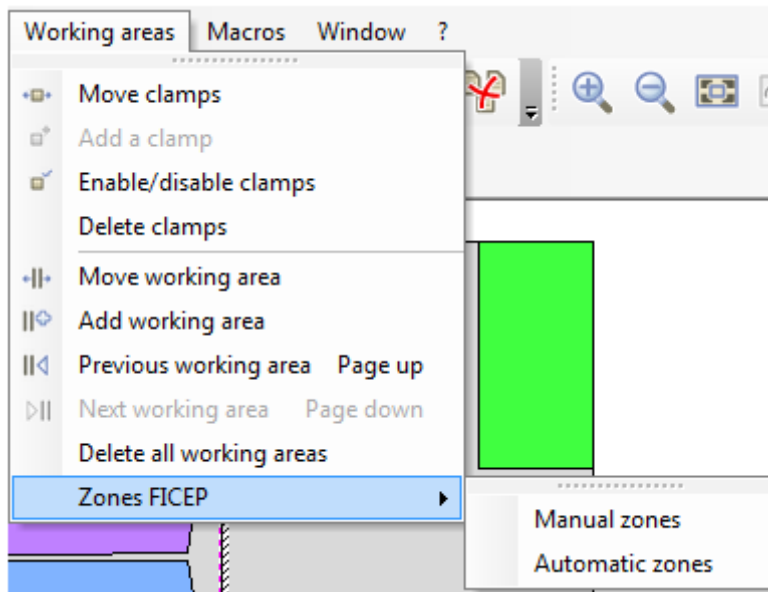


Fig. 3.4.5 - Manual Zones menu

Fill the properties box as shown :

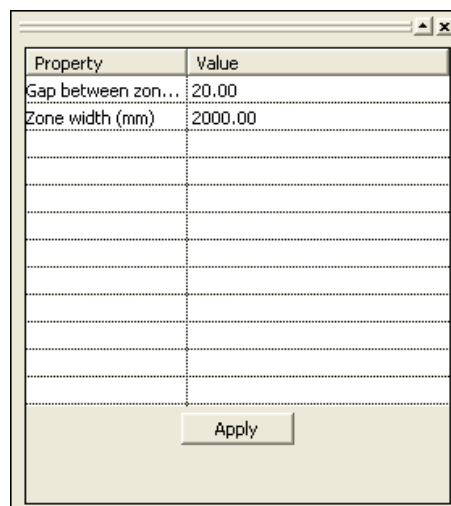


Fig. 3.4.6 - Zones Properties

The *Gap Between Zones* field must be at least 2 times the standard half gap. For example, if the standard half gap is 10mm, we advise a 25mm gap between the 2 zones.

The *Zone Width* field represents our zone's width and can be adapted to your needs and the machine restrictions. Click on the *Apply* button and see the result.

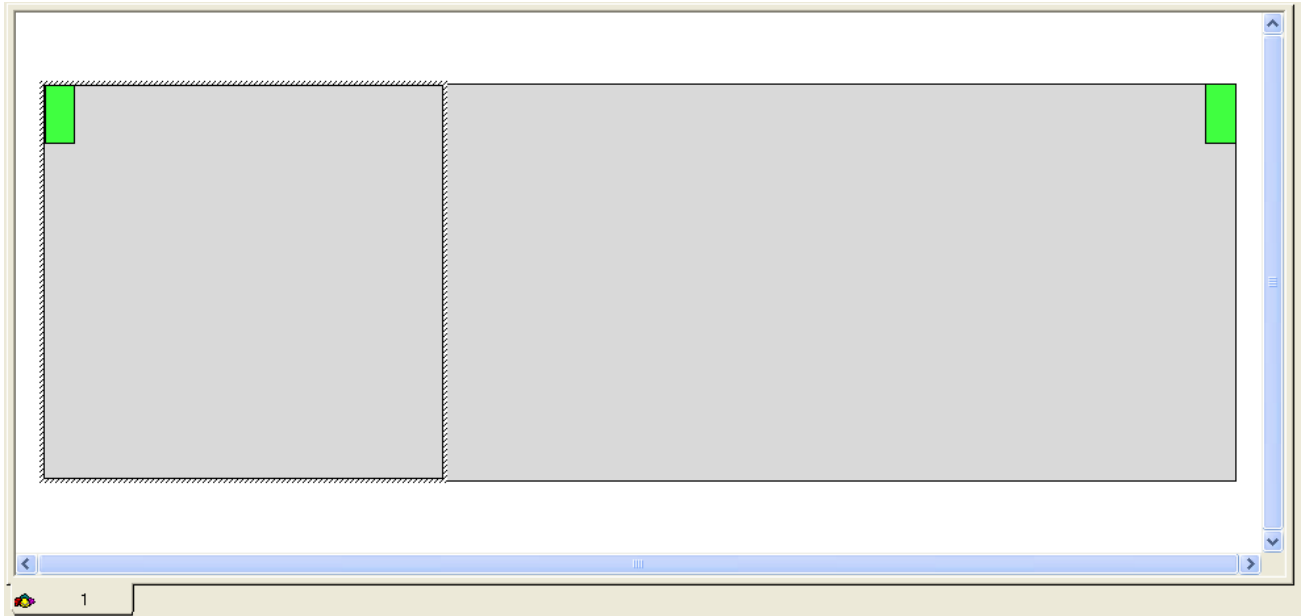


Fig. 3.4.7 - One FICEP Zone


We can see the first zone (empty for the moment) on the plate (format n°1, as shown in the tab). The green rectangles represent the clamp areas in which no processing is possible.

3.4.3 Filling the zones with parts – Automatic nesting


Now you have to nest the parts in the zones.



Use these icons to do it .

Click on this icon  to run automatic nesting. The program will nest the parts on the active zone of the current plate.

Click on  to run automatic nesting on all formats.

Click on  to set a time limitation for calculation.

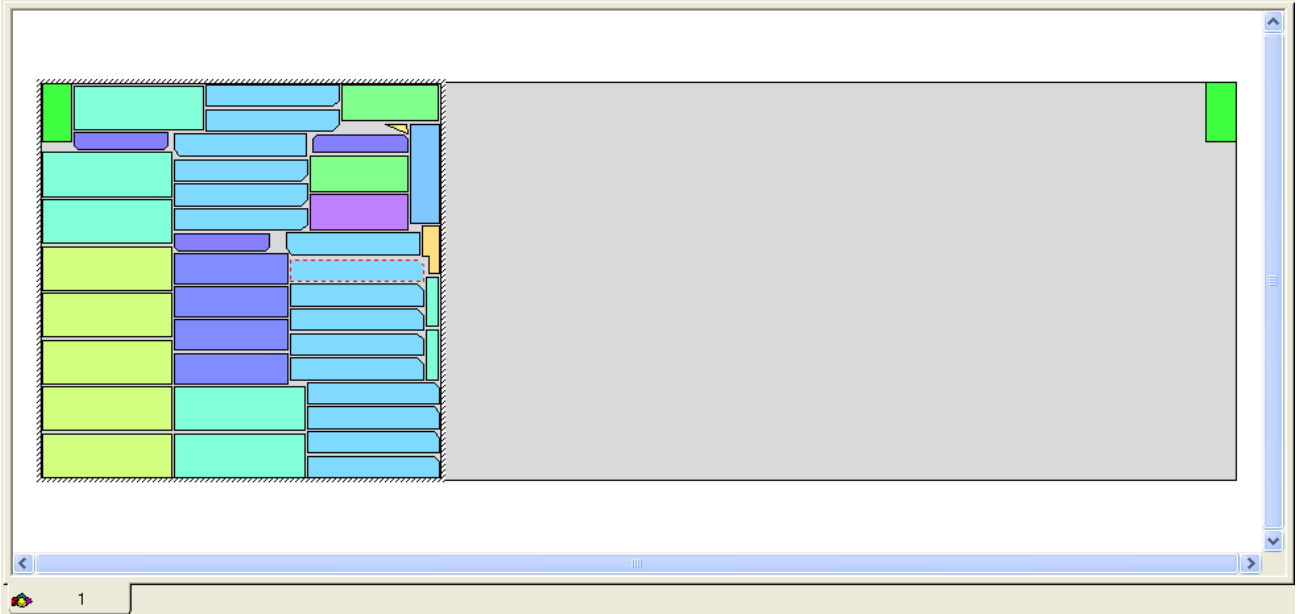


Fig. 3.4.8 - Plate with 1 zone full

This is how the plate should look like after nesting the first Zone.

Now, create as many zones as needed and nest the parts inside them. Note that for the last zone, you can enter a Width value greater than the remaining room so the last zone will automatically fit it.

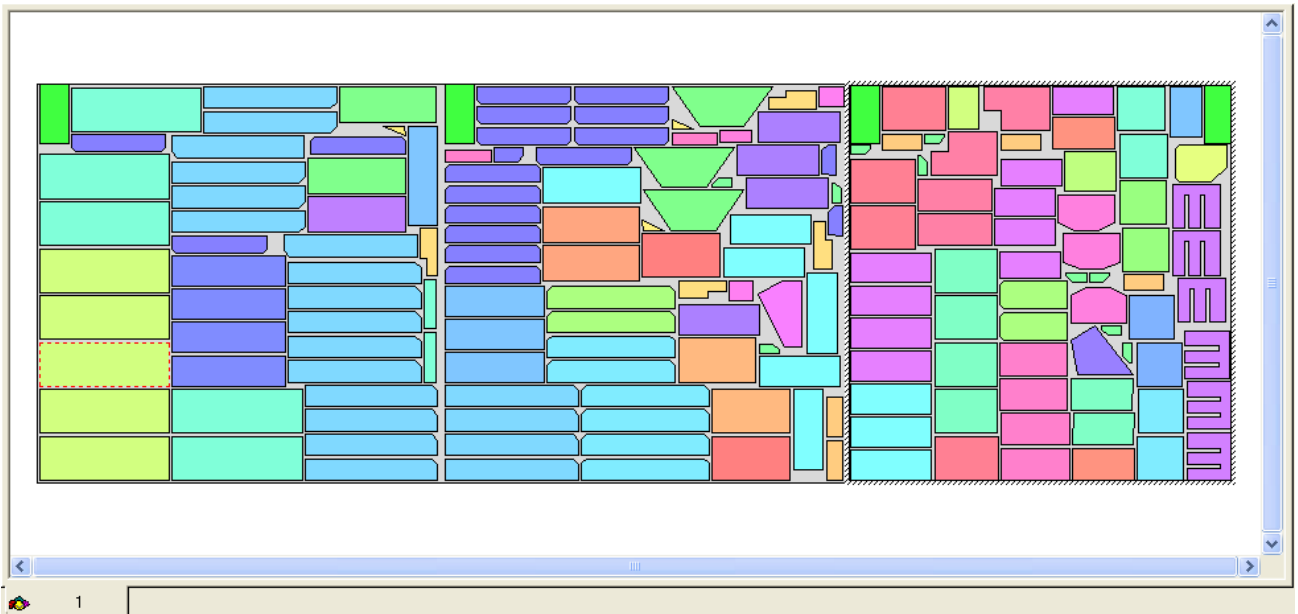


Fig. 3.4.9 - Plate Full

When the first plate is full and parts are still available to be nested, you need to use a new plate. To do so, click on the *Format* tab, in the bottom side of the screen and double click on the plate you want to use.

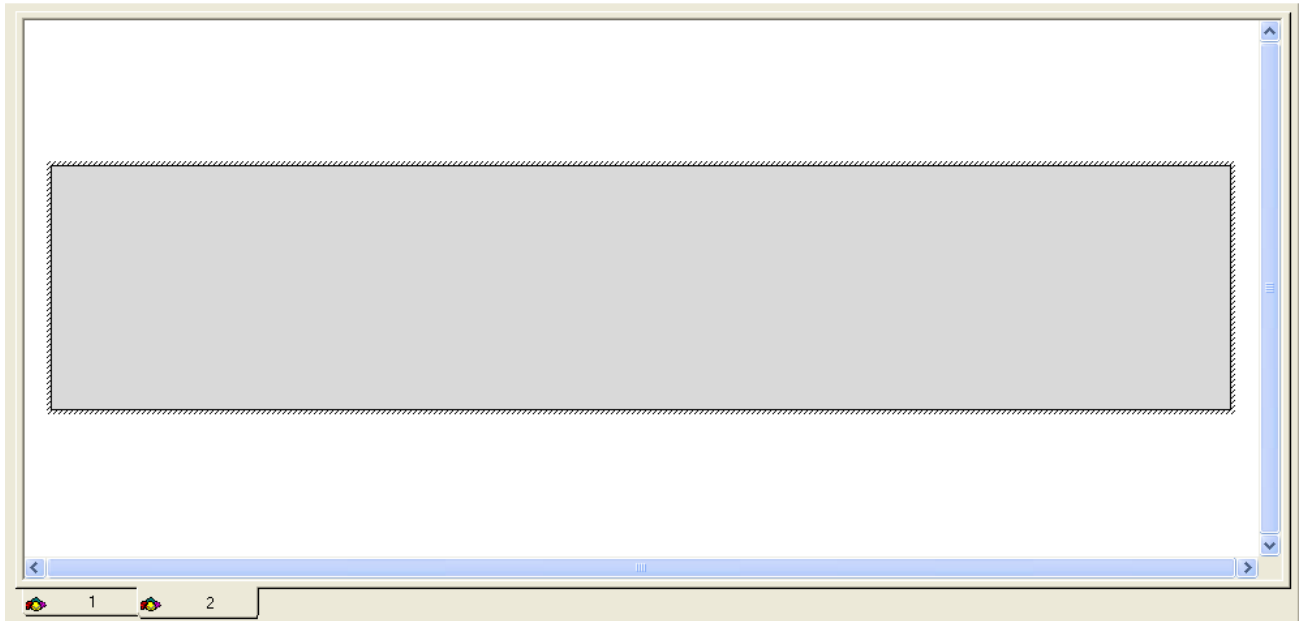


Fig. 3.4.8 - New Plate

You can see the first plate in background (Tab 1) and the new empty plate is ready to receive parts.

3.4.4 Filling the zones with parts – Manual Nesting

It's possible to nest manually each part. To do so, select the Hand tool ([Ctrl]+[X]), click once on a part to grab it, place the part on the plate and click again to release the part.

Nester helps you to know if a part is correctly placed regarding the gap left around this part. If you can move the part closer than its actual position, the contour line of the part is thin. If the part is placed correctly, the contour line turns thick and its color is red, you can release the part.

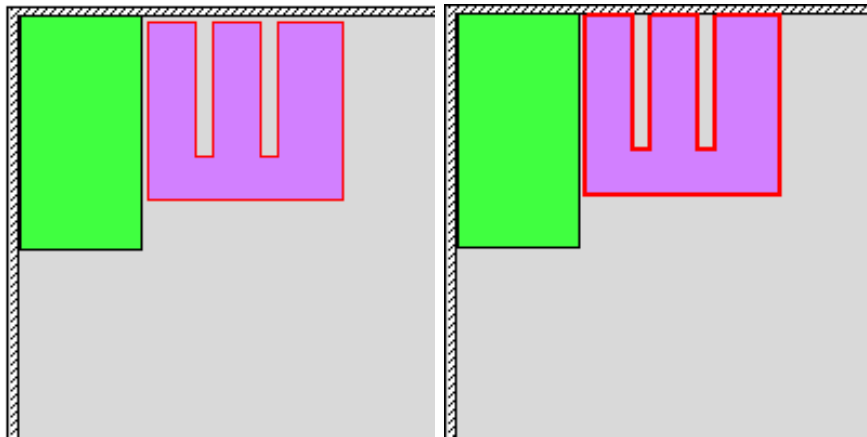


Fig. 3.4.9 - Manual Positioning

While holding a part, you can either rotate or flip it or both.

Here is a list of shortcuts you can use to do so :

| Key | Description |
|-----|---------------------------|
| 9 | Rotation 90° |
| 5 | Rotation 5° |
| - | Invert rotation direction |
| 1 | Rotation 1° |
| T | Rotation 30° |
| Q | Rotation 45° |
| X | X Symmetry |
| Y | Y Symmetry |

After nesting a part, you can copy it by pressing [Ctrl]+[C]. Then click once on the part to create a copy of this part which you can release by clicking again.

3.4.5 Common Cut

On various machines, parts can be cut in *Common Cut Mode*. Common cut means one single cut between two parts instead of two cuts : no skeleton is left between parts.

If you want to nest two parts in common cut, place the first part manually and then

click on  to activate the common cut mode and place the second part as

seen before.

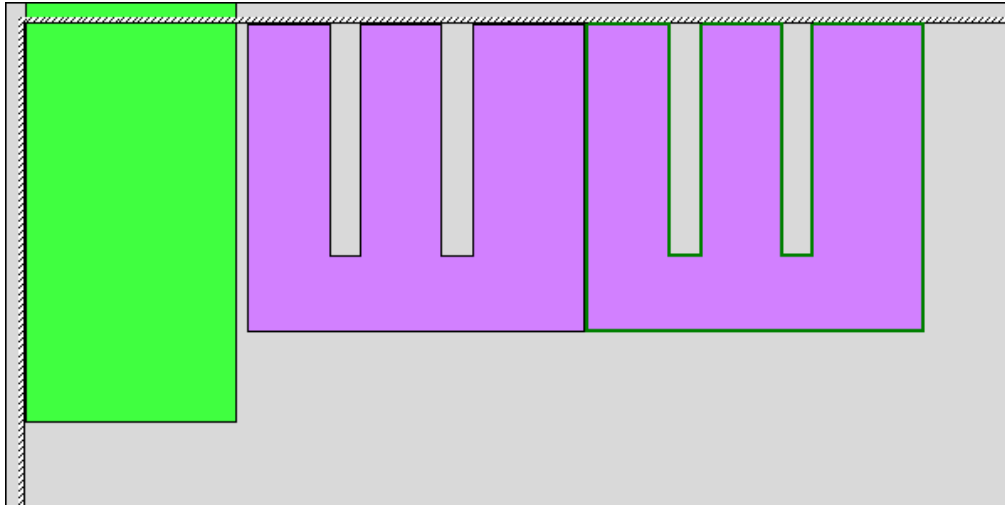


Fig. 3.4.10 - Common Cut

In case of common cut, when the part is correctly placed, the contour line turns thick and its color is green.

ATTENTION : Common cutting is not recommended for plasma cutting due to the asymmetrical edges it generates. However, oxy cutting is well adapted for common cutting.

3.4.6 Multi Torch

Some machines can perform multi torch cutting. To enable this feature in the Nester, go to Technology/Flames settings.

| Property | Value |
|--|-------------------------------------|
| <input type="checkbox"/> Current number* | 2 |
| Current gap (mm) | 367.00 |
| Automatic correction | <input checked="" type="checkbox"/> |
| | |
| | |
| | |
| | |
| | |
| | |
| Apply | |

Fig. 3.4.11 - Flame Settings

Current number is the number of torches you want to use at the same time. Put the value you want and click on Apply. You'll then have new parameters:

Current Gap (mm) corresponds to the distance between each torch. Act Cut will calculate it with the values of the selected part in the list. This value can be set up manually. Then, you can nest the parts manually or automatically.

3.4.7 Generating the Front Cut

After having nested all the parts in a plate, if there is remaining room, you can generate a front cut([ctrl]+[r]). It means that the machine will cut the plate in order to have a straight cut and so be able to reuse the remnant in WinNEST for another nesting.

Select the tool named *Enable / Disable Clamps* in the *Working Areas* menu and click on the square green area on the right hand side of the plate. The plate should then look like this :

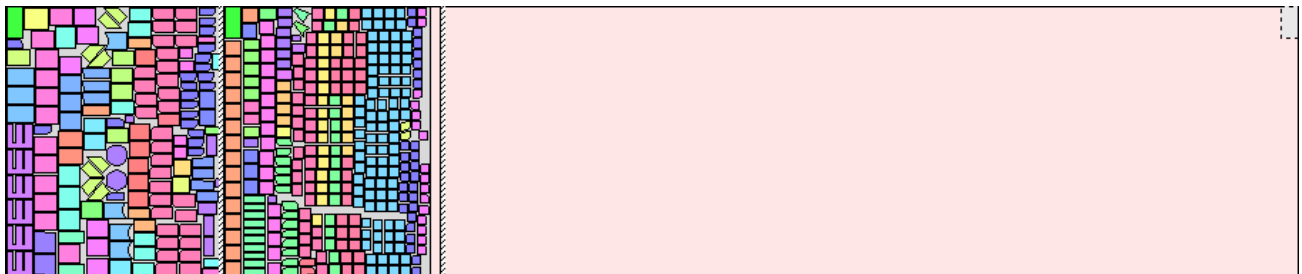


Fig. 3.4.12 - Front Line

If nothing happens when you deactivate the clamp, press [Ctrl]+[T].

3.4.7.1 Front cut with steps

Some machines allow you to generate the front cut with step, Gemini machine for example.

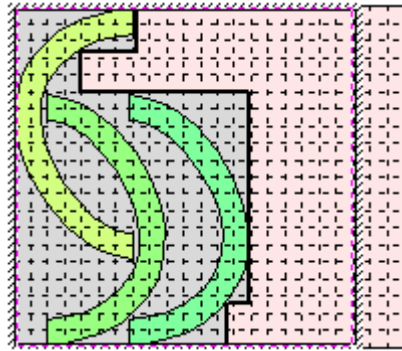
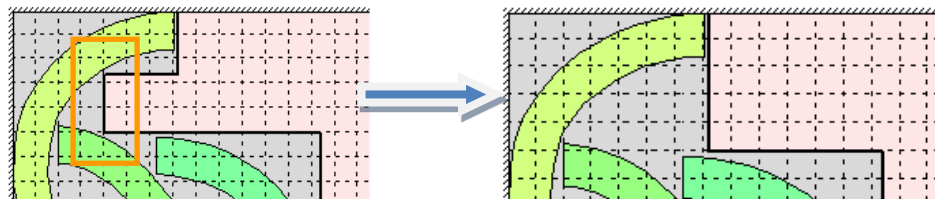


Fig 3.4.13- front cut with steps

The dimension of the steps is done in the ressources editor . In expert mode, select your machine and the section 'final cut', here you can select the dimension of the steps :little, standard, big or deactivate this option by selecting 'no steps'.

3.4.7.2 Move the cutting line

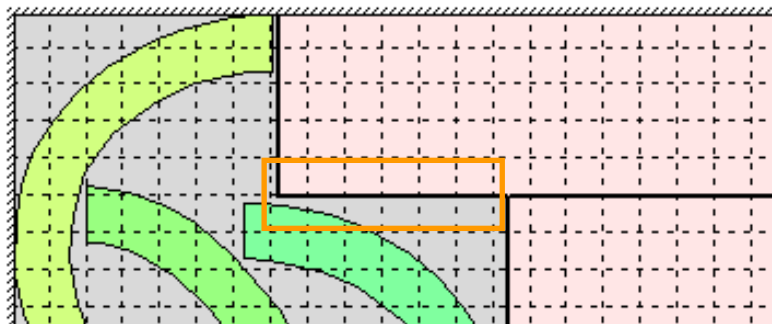
You can redraw the final cut using the function 'move cutting line' from the menu technology. To do so click on the line you want to move and place it where you want.

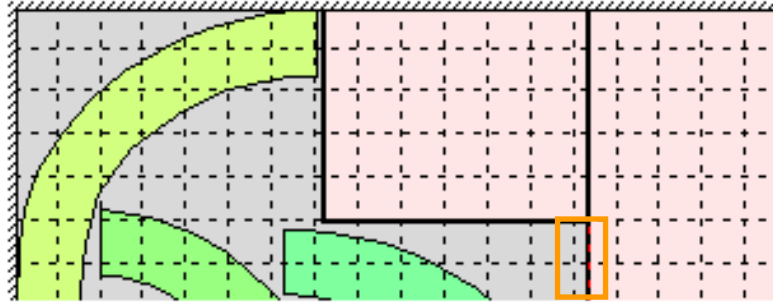


3.4.7.3 Extend cutting line


If the cutting line is done with steps, you can extends lines in order to get more rectangular remnants.

To do so use the function 'extend cutting line' from the technology menu and click in the horizontal or vertical line you want to extend.





Once your nesting is ok, save it and quit the nester to return in WinNEST.

Note that you can go back to this module at anytime to modify the nesting, by clicking in .

3.5 Sequence edition and CNC program creation

3.5.1 Pathfinder Overview

In the WinNEST screen, click on  to open the Pathfinder, which will help you to edit the cutting sequence, create bridges between parts, generate the CNC program, ...

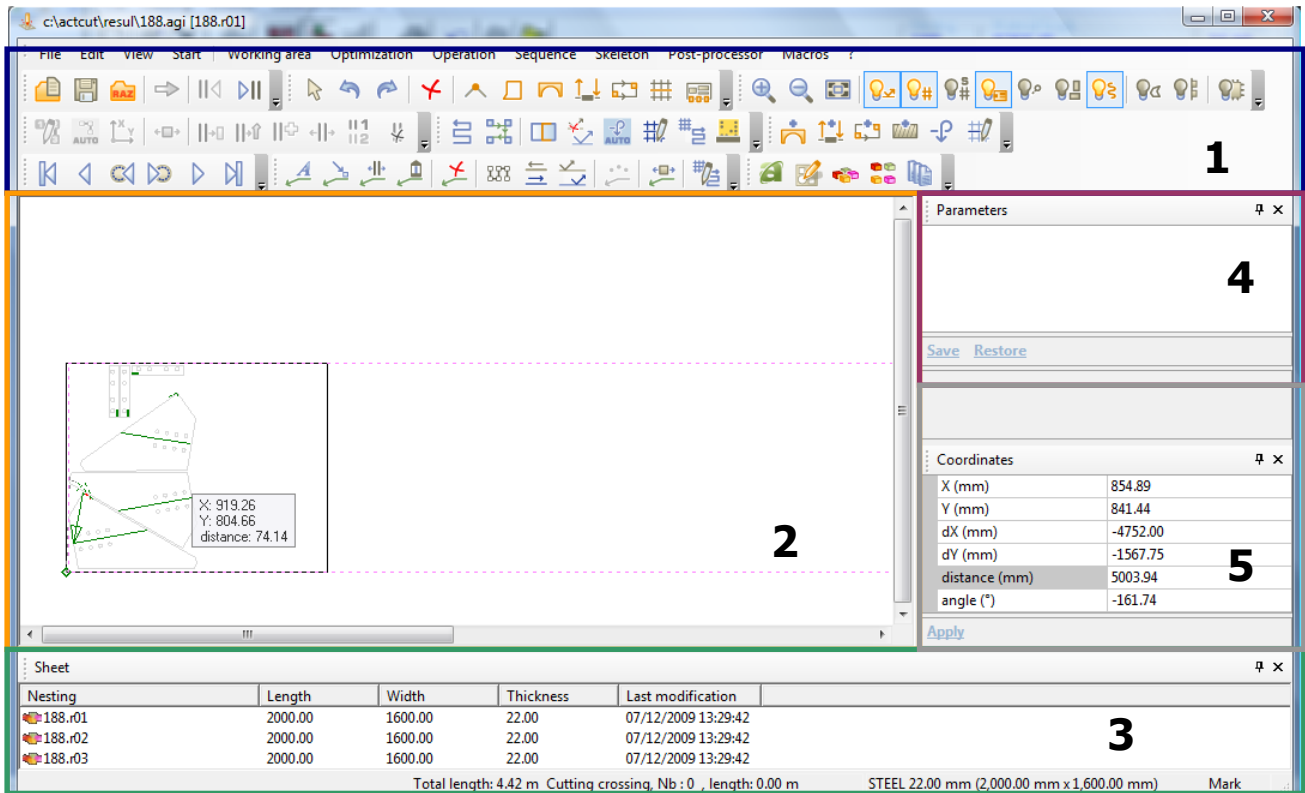




Fig. 3.5.1 - Pathfinder Overview

| Zone | Description |
|------|---|
| 1 | Toolbar. The layout may be different on your workstation but all the items can be reached through the menu. |
| 2 | Main working zone |
| 3 | Nesting information zone. |
| 4 | Properties box. Will be used for data input. |
| 5 | Coordinates box. |

As we have seen before, the plate is divided in zones (FICEP Zones). Each zone contains 3 tooling sequences : Marking, Drilling/Punching and cutting. To browse the sequences, just press [PgDn] and [PgUp] or click .

On each sequence, you can browse the tooling path using the left and right direction keys or by clicking .

3.5.1.1 Toolbars

Here is a description of the items you can find in the toolbar. In the *Used* column, the tools you may use with FICEP TIPO machines are marked with a green mark. Items with a red cross won't be used.



Fig. 3.5.2 - Selection Toolbar











| Item | Description | Used |
|---|--------------------------------------|------|
|  | Selection. This is the default tool. | ✓ |
|  | Undo / Redo | ✓ |
|  | Delete | ✓ |
|  | Loop selection | ✗ |
|  | Contour selection | ✓ |
|  | Bridge selection | ✓ |
|  | Connection selection | ✗ |
|  | Split selection | ✗ |
|  | Skeleton Element selection | ✗ |
|  | Clamp selection | ✗ |



Fig. 3.5.3 - Sequence Toolbar


| Item | Description | Used |
|------|-------------------------------|------|
| | Order adding | ✗ |
| | Crossing adding | ✗ |
| | Moving of working area adding | ✗ |
| | Trap adding | ✗ |
| | Remove instruction | ✗ |
| | Sequence modification | ✓ |
| | Inverse sequence | ✗ |
| | Starting Point moving | ✓ |
| | Work Holder moving | ✗ |
| | Clamp Moving | ✗ |
| | Modify the skeleton way | ✗ |



Fig. 3.5.4 - Operation Toolbar

| Item | Description | Used |
|------|------------------------------------|------|
| | Bridge creation | ✓ |
| | Connection creation | ✓ |
| | Split creation | ✓ |
| | Cutting element creation | ✗ |
| | Automatic loop creation | ✗ |
| | Creation of an element of skeleton | ✗ |

3.5.1.2 Starting with the Pathfinder

When opening a nesting in the pathfinder, click on  ; this window should appear :

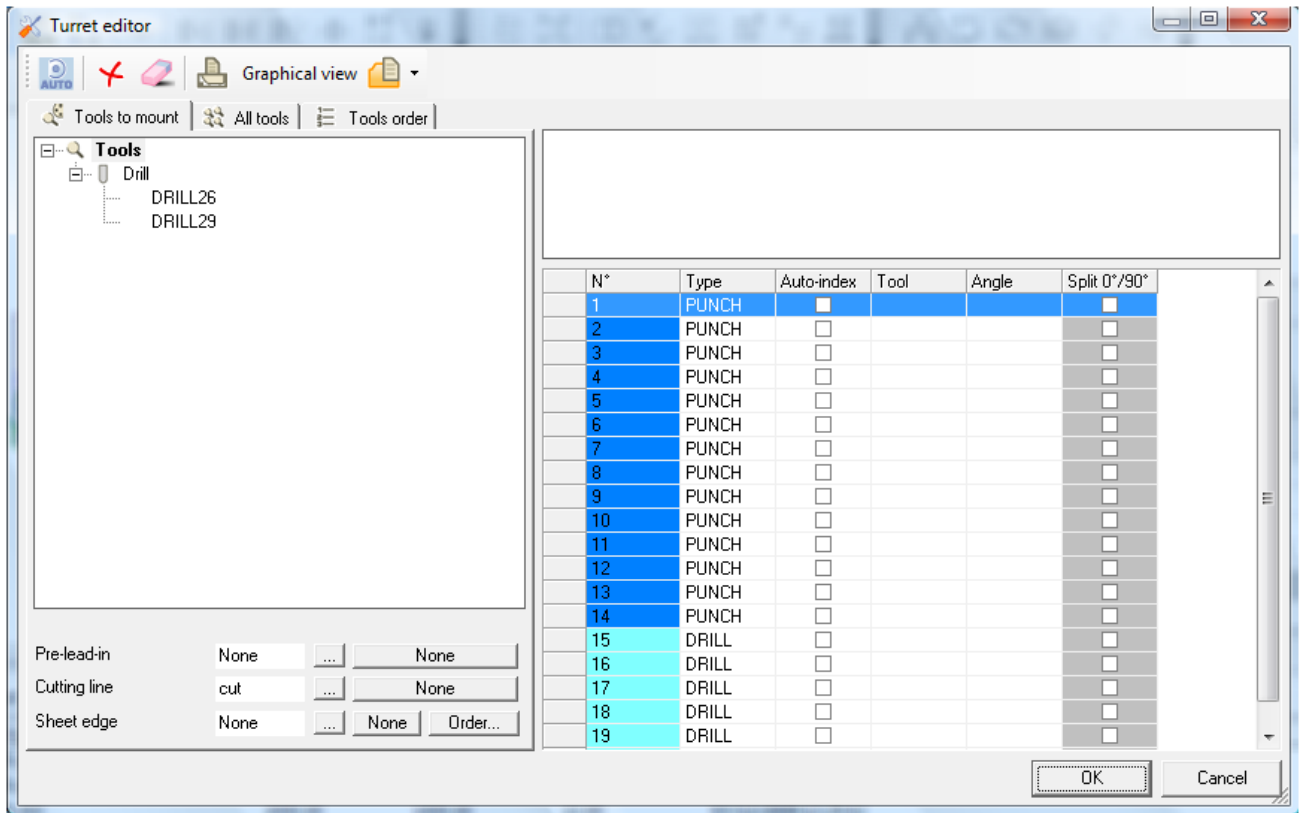



Fig. 3.5.5 - Empty Turret

This represents the tools needed to operate the plate. In this window, just click  to automatically dispatch the needed tools in their respective position in the machines turret.

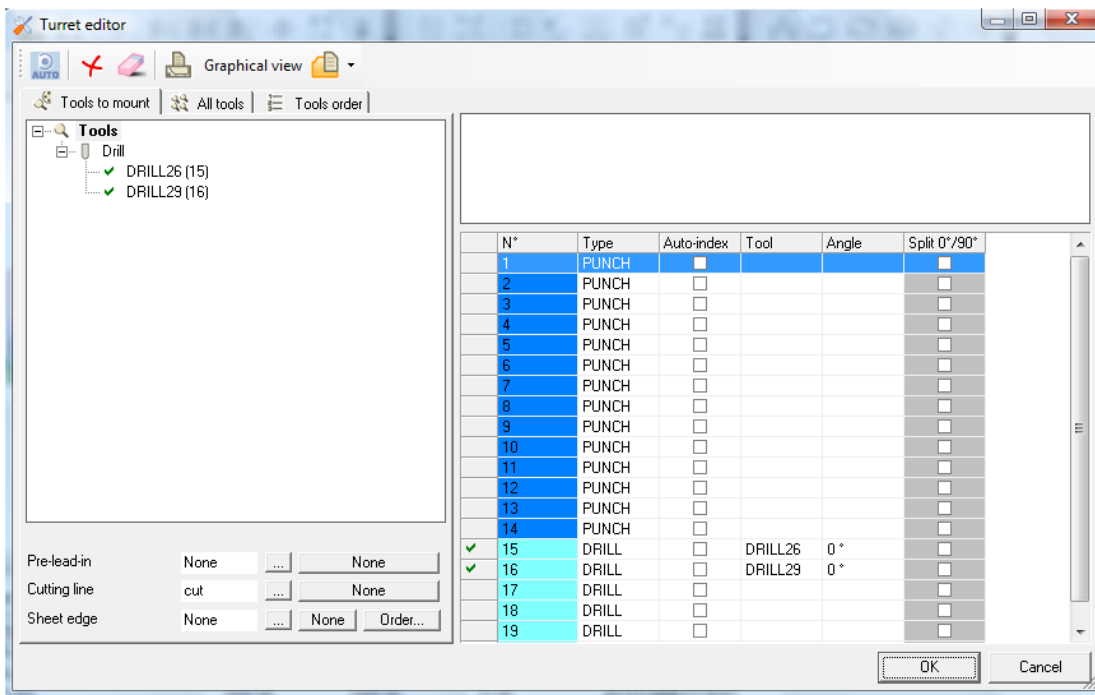


Fig. 3.5.6 - Full Turret

Then, click OK to display the plate.

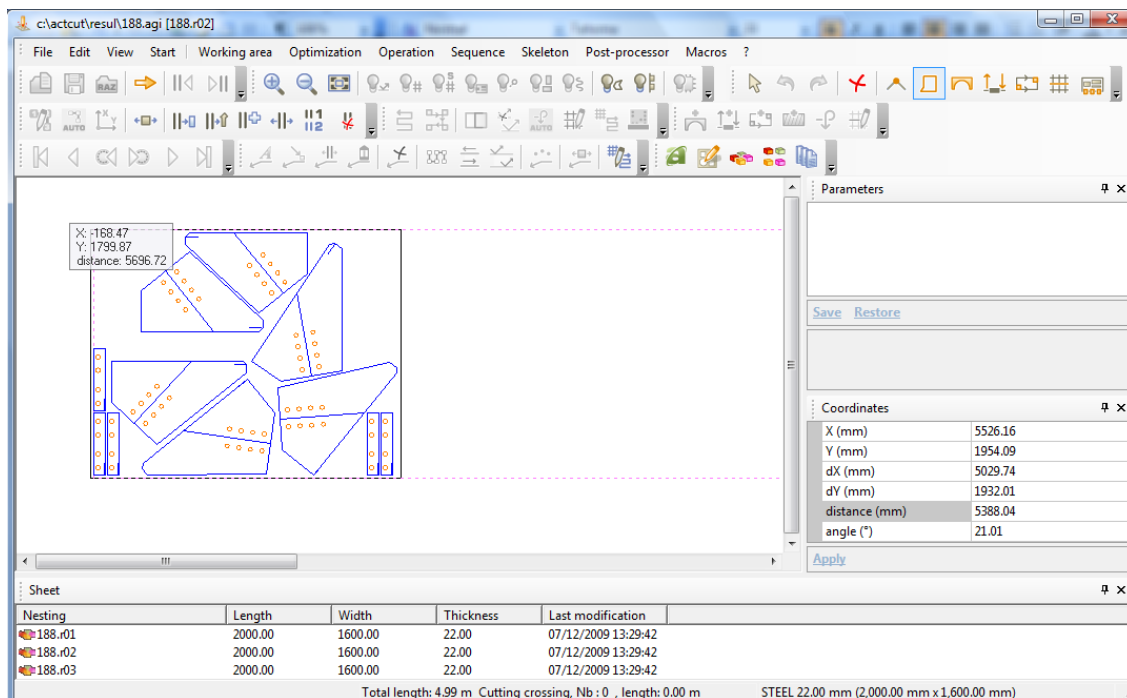



Fig. 3.5.7 - Pathfinder before starting

In order to start working on the nesting, click on the yellow arrow  or on the menu item *Start | Continue | Next*.

3.5.2 Marking Sequence

All the toolings related to marking (hard stamping, scribing) are displayed here.

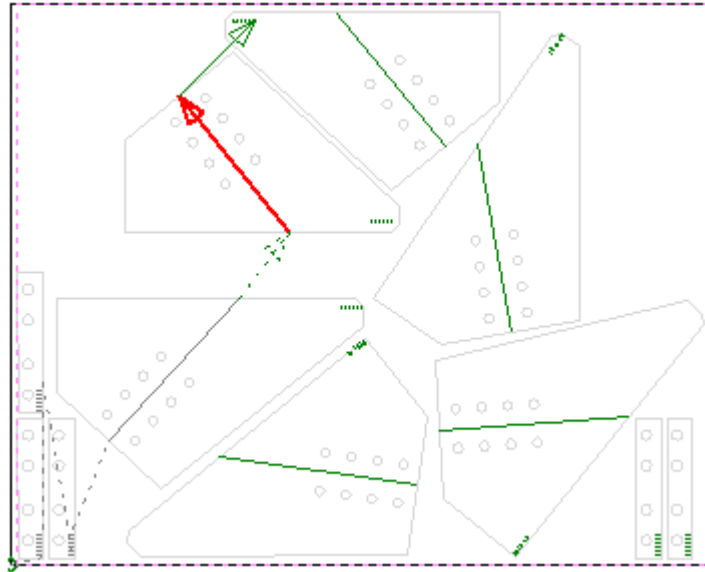


Fig. 3.5.8 - Marking Sequence

The only thing you can do in the marking sequence is to discard a mark.

To do so, click on the mark you don't want to be stamped and click on *Don't Cut* in the properties box. Then click on [Space] to apply the changes. Unprocessed marks will turn light blue.

| Property | Value |
|------------------------|-------------------------------------|
| ☐ Properties | |
| Apply on | internal profiles |
| ☐ Kerf | with |
| Side of matter | right |
| ☐ Starting poi... | open |
| Starting poi... | ↑ Point point |
| Starting point t... | Standard |
| ☐ Starting poi... | <input type="checkbox"/> |
| Connection... | 0.00 |
| Don't cut | <input checked="" type="checkbox"/> |
| Perimeter (mm) | 34.80 |
| Name of the part | Parts\156-44 |
| Apply | |
| Don't cut this contour | |

Fig. 3.5.9 - Don't Mark

3.5.3 Drilling / Punching Sequence

This tolling sequence groups all the perforation toolings such as punching and drilling. If your machine doesn't have such tools or if the holes have been set up as thermal cut, they will appear in the next sequence.

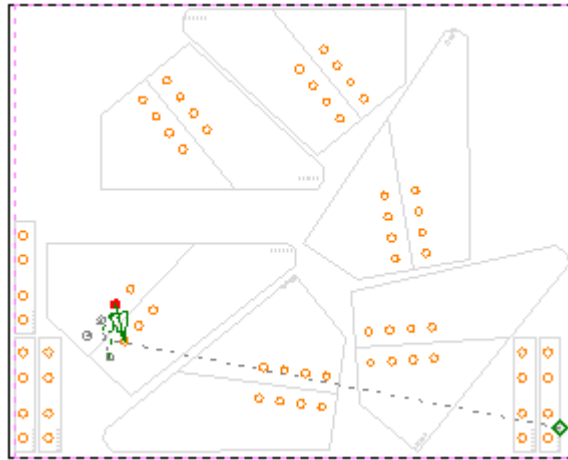


Fig. 3.5.10 - Drilling and Punching Sequence

As well as for the marking sequence, you can tell the Pathfinder not to process some holes. To do so, act like for the marking sequence : select the holes you want to discard and click *Don't Cut* in the properties box.

You can also see the tooling sequence by pressing the right and left direction keys on your keyboard. This sequence is optimized in order to take less time as possible.

3.5.4 Cutting Sequence

In this sequence, you can see the part's contours and their sequence. Note that on FICEP TIPO machines, the sequence ends between the clamps in order to keep the skeleton rigidity while moving the plate.

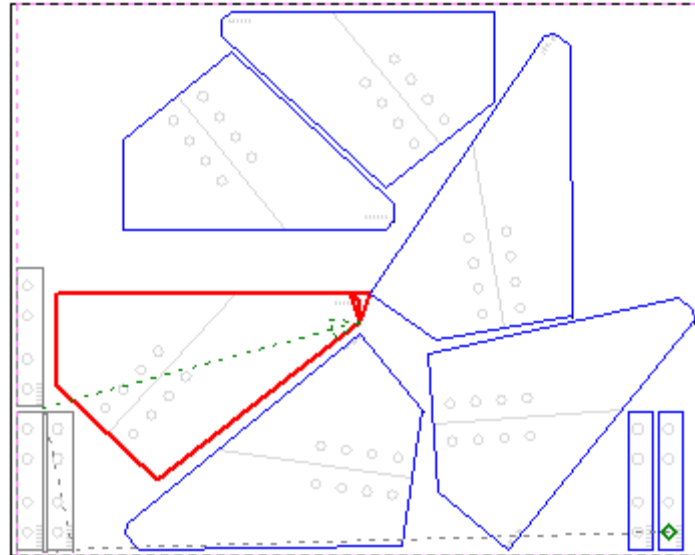


Fig. 3.5.11 - Cutting Sequence

3.5.4.1 Moving Starting Points

The thin black lines in some corners represent the starting points. You can move

them using this tool :  (Move Starting Point).

Before using it, discard the *Duplication Mode* by pressing [Ctrl]+[D] and turning the duplication mode OFF in the properties box :

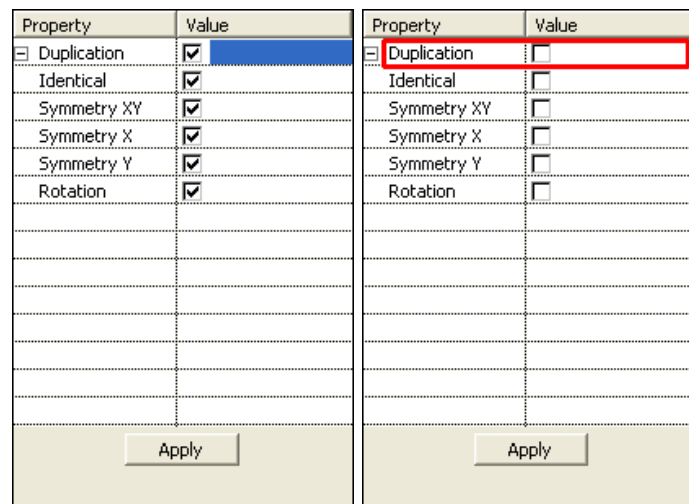


Fig. 3.5.12 - Duplication Mode ON / OFF

When you select the *Move Starting Point* tool, you just need to click on a part in order to move its starting point, which new position is materialized by the red point.



Fig. 3.5.13 - Moving Starting Point

3.5.4.2 Changing Starting Point Properties

Sometimes, especially in common cutting, some red crosses may appear on your plate. They tell you that a problem has been detected in the starting point shown by the cross.

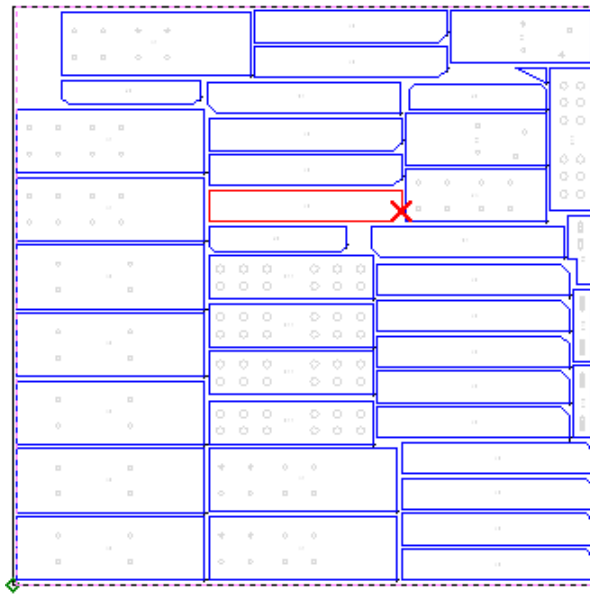


Fig. 3.5.14 - Starting Point Error

In this case, you have to change the starting point properties (in feed length, position, ...) in order to discard the error. Click on the part on which the red cross is positioned. Now, in the properties box, you can adjust the starting point's parameters. When finished, press [Enter] to confirm the changes.



| Property | Value |
|--------------------------------------|---|
| [-] Properties | |
| Apply on | external profiles |
| [-] Kerf | with |
| Side of matter | right |
| [-] Starting point* | external |
| [-] Starting point type |  Straight straight |
| Entry length* (mm) | 8.00 |
| Entry prolongation* (mm) | 0.00 |
| Entry angle* (°) | 45.00 |
| Exit length* (mm) | 7.00 |
| Exit prolongation* (mm) | 0.00 |
| Exit angle* (°) | 45.00 |
| Starting point type | Standard |
| [-] Starting point with connection | <input type="checkbox"/> |
| Connection width (mm) | 0.00 |
| Don't cut | <input type="checkbox"/> |
| Perimeter (mm) | 1098.57 |
| Name of the part | Parts\156-47 |
| <input type="button" value="Apply"/> | |

Fig. 3.5.15 - Part Properties

Steel Projects doesn't recommend you to change any other parameter in this properties box.

3.5.5 Generating the CNC file

After having checked all the zones, you can now generate the CNC file which will be ready to import on your machine.

To do so, just click on the *Save* button () and the CNC program will be generated in the folder specified in WinNEST (Configuration / Machine / Directory / Export).

On some machines you may be prompted for choosing plasma or oxy, scribing or hard stamping, etc. Please refer to Steel Projects.

When the CNC program has been generated, a small pencil is added to the plate icon in the lower section. The CNC program will be named regarding the nesting number (188 in our example) and the plate number in this nesting (2 in this case).




| Nesting | Length | Width | Thickness | Last modification |
|---|---------|---------|-----------|---------------------|
|  188.r01 | 2000.00 | 1600.00 | 22.00 | 07/12/2009 13:29:42 |
|  188.r02 | 2000.00 | 1600.00 | 22.00 | 07/12/2009 15:29:05 |
|  188.r03 | 2000.00 | 1600.00 | 22.00 | 07/12/2009 13:29:42 |


Fig. 3.5.16 - CNC Program Generated

Now, if you have another plate constituting your nesting, double click on it in the lower section and start working on it.

3.6 Workshop Document

The last step to do is to print the workshop document.

3.6.1 Printing the workshop document

To do so, click on  in WinNEST. The workshop document interface opens :

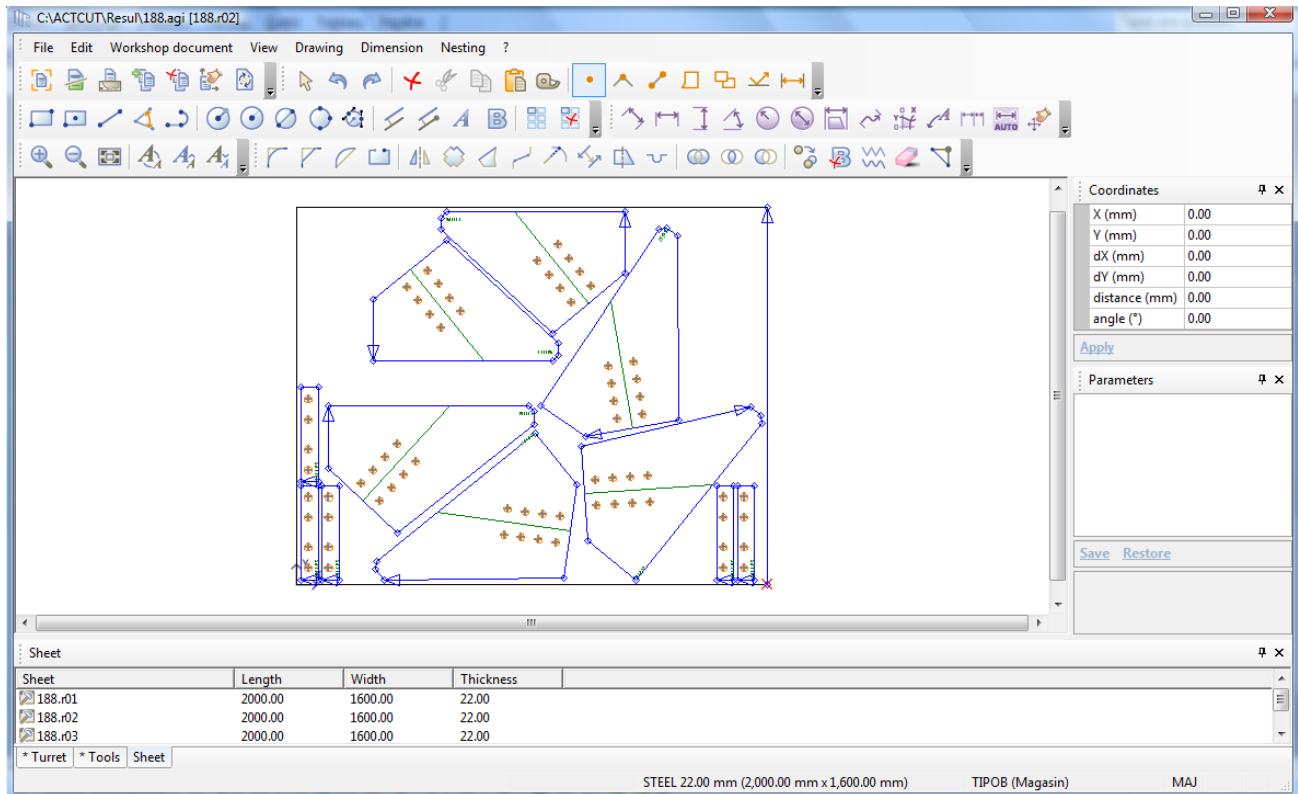




Fig. 3.6.1 - Workshop Document

Click on  in order to prepare the report. A pdf document will be opened displaying the infos of your nesting.

The fields of this report are automatically translated to your language. They are managed by the file c:\actcut\models\reports_xx.properties where xx represents your language. You can edit this file to customize the fields.

3.6.2 Saving the remnant plate

The remnant plates creating by the cutting lines in the nester module can be save for a further use.

After the edition of the workshop document, go back in the 'drafer' and click on 'create scrap'  in the menu bar. Now, left click on the plate you want to re-use (it turns green), then right click in order to save it.

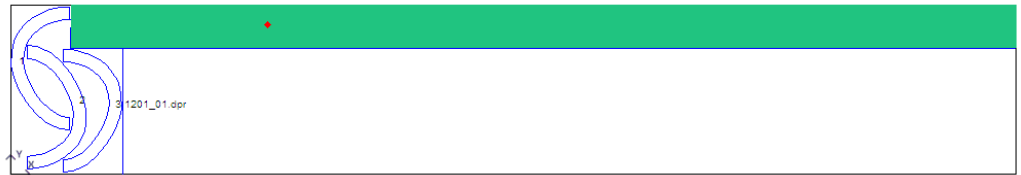


Fig 3.6.2 Saving the remnant

Repeat the operation for every scrap you want to keep. It is also possible to save the skeleton with the same method.

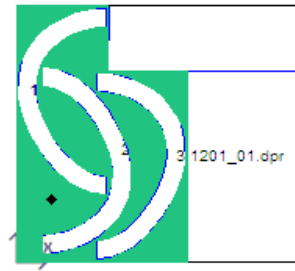


Fig 3.6.3 Keeping the skeleton

4. Advanced Use of WinNEST

4.1 Standard Flats

WinNEST can be used to cut standard flats as well as plates. The difference is in the way the cuts are coded to the machine : instead of sending LEAD/CUT instructions, WinNEST will send SKEL instructions. That's the reason why you can only nest rectangular parts in standard flat mode.

You have so change some settings before doing a nesting for standard flat :

Set the common cut gap properly by double clicking on the nesting number and changing the value of the gap regarding the specifications of your machine.

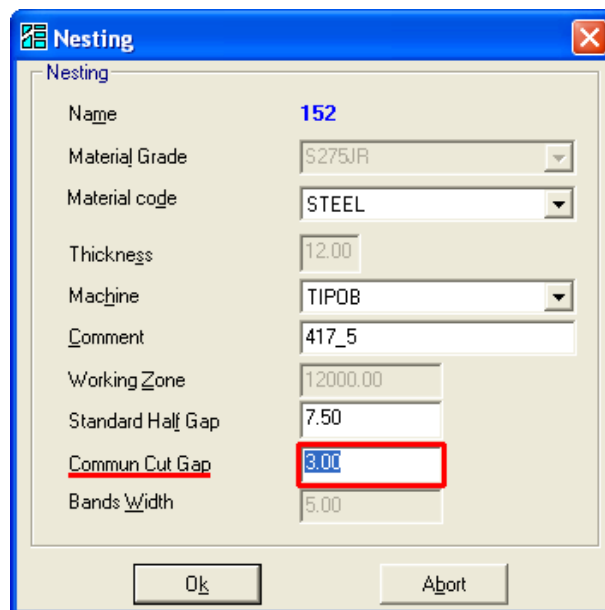


Fig. 4.1.1 - Changing The Common Cut Gap

Then, in the Stock tab, change the margin gap values as shown below.

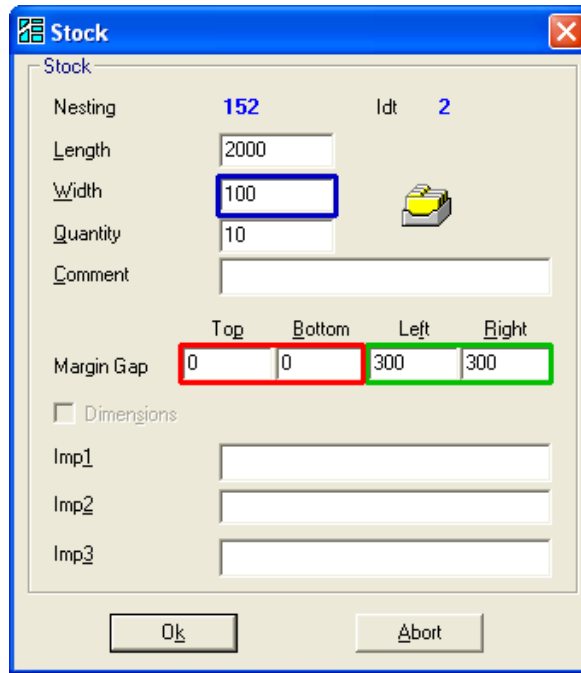


Fig. 4.1.2 - Adjusting the plates margin gaps

The plates width (blue) is equal to your parts width. The top and bottom margin gaps (red) are set to zero and the left and right margin gaps (green) represent the pinchers overall dimensions.


Now, you can nest your parts in the standard flat, using the common cut .



Fig. 4.1.3 - Common Cut on Standard Flat

Then, in the pathfinder, just save your nesting in order to generate the FNC file. Note the SKEL instructions instead of LEAD/CUT instructions.

```
[ [MAT] ]
[MAT] M:STEEL W38
[ [PCS] ]
[HEAD]
C:417_5 N:152-01
CP:P P:PLATE12 M:STEEL
LP2000 SA100 TA12
QI1
[MISC] M51
[SKEL] T851 X300
[SKEL] T851 X450
[SKEL] T851 X603
[SKEL] T851 X756
[SKEL] T851 X909
[SKEL] T851 X1062
[SKEL] T851 X1215
[SKEL] T851 X1368
[SKEL] T851 X1521
[SKEL] T851 X1674
```

Fig. 4.1.4 - Common Cut FNC Program

4.2 Bridges

Bridging two (or more) parts together consists in linking them in the corners to avoid multiple arcs striking. Some machines have restrictions (TIPO). Due to the moving plate on TIPO machines, bridges can only be done on the Y axis on the right hand side of the parts. Also on TIPO machines, it's strongly discouraged to nest parts on the whole width in order to maintain the skeleton rigidity.

4.2.1 Nesting parts to prepare bridging

As I said before, some nesting rules must be followed when bridging parts on TIPO machines: the parts must be strictly lined up on the right hand side and the last cut between bridged parts must be a straight line. Otherwise, the parts previously cut may fall between the rollers and cause severe damages to the machine.

Here are some situations where you can or not bridge parts together.

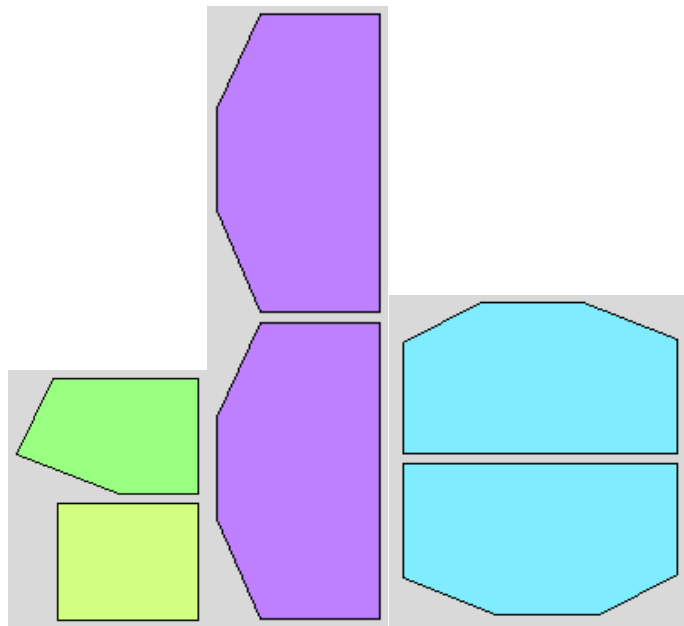


Fig. 4.2.1 - Conditions for bridging are OK

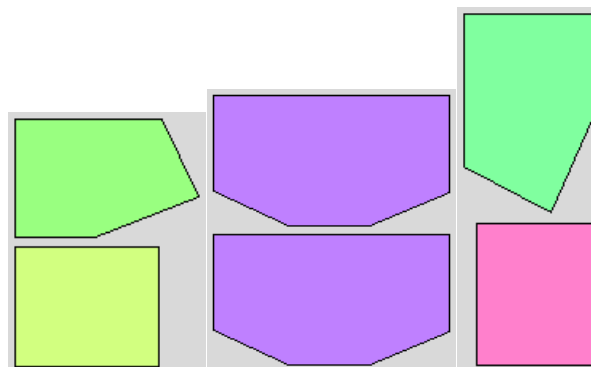


Fig. 4.2.2 - Conditions for Bridging are not OK

4.2.2 Creating bridges in the Pathfinder

In the pathfinder, there are some operations to do in order to create a bridge.

4.2.2.1 Clearing the angles

We want to create a bridge between the parts corners, so we have to remove any starting point from these corners (see 3.5.4.1 *Moving Starting Points* for more information).

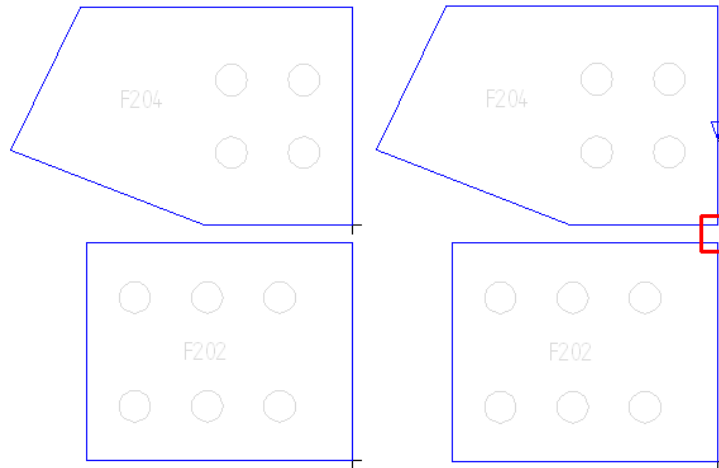



Fig. 4.2.3 - Setting the angles free

4.2.2.2 Linking the parts

Now the angles are free of starting points, let's select the bridge tool  and set its parameters:

| Property | Value |
|--------------------------------------|--------------|
| <input type="checkbox"/> Type bridge | on extremity |
| Sign of the bridge | positive |
| Bridge width (mm) | 3.00 |

Fig. 4.2.4 - Bridges Parameters

The bridge must be set *on extremity* otherwise you won't be allowed to plate it on the corner. The sign must be positive for plasma, you can set it up to negative in case of Oxycutting. The bridge width is automatically set up regarding the bridge sign you choose (3mm for positive, 5mm if negative). You can adjust these parameters if you want.

Here is the difference between positive and negative bridge:

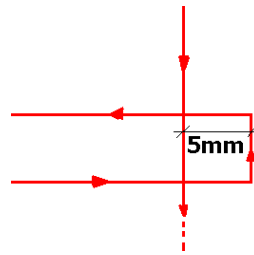


Fig. 4.2.5 - Negative bridge

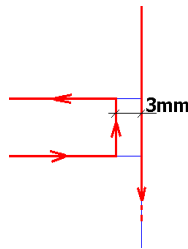


Fig. 4.2.6 - Positive bridge

Now, you can bridge the parts by clicking on both corners, starting by the lower. If you start by the upper one, you will have to replace the starting point at its original place, i.e. in the bottom right corner.

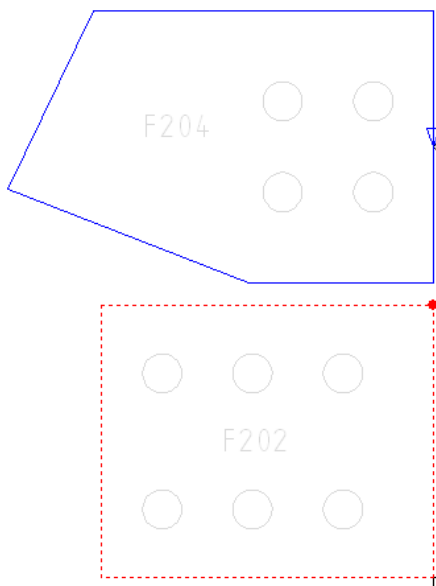


Fig. 4.2.7 - Bridging, Click 1

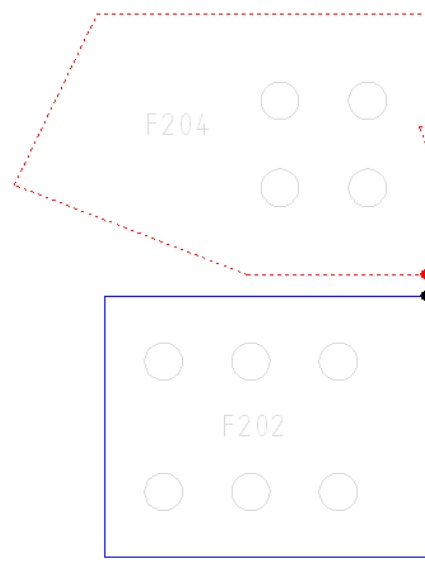


Fig. 4.2.8 - Bridging, Click 2

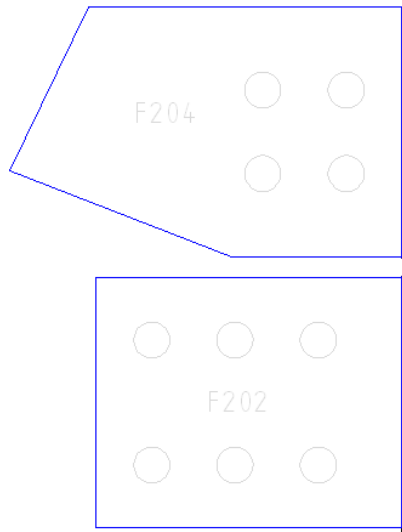
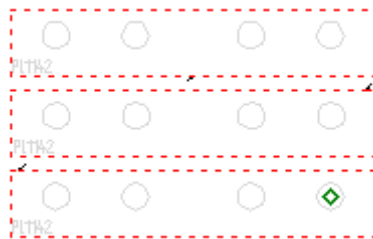


Fig. 4.2.9 - Bridging, Final Result

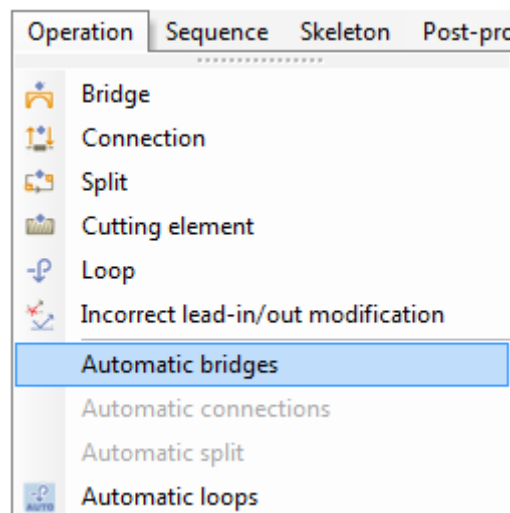
4.2.2.3 Automatic bridges

If you want to bridge several elements do as follow:

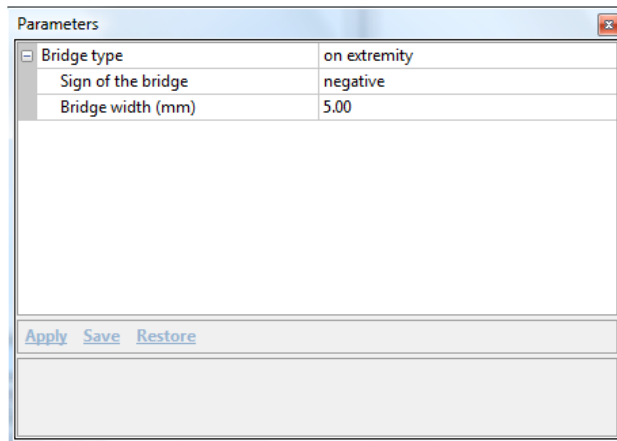
- Select the parts you want to bridge



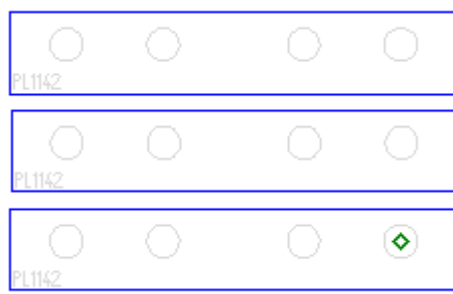
- Select automatic bridge operation



- In the properties window insert the values of the bridges



- Press *Apply*



Result of automatic bridges

4.3 Changing the tooling sequence

WinNEST allows you to change the tooling sequence. It's not recommended to do it on TIPO machines. On these, the parts placed between the clamps must be cut at the end of the sequence in order to keep the rigidity of the skeleton.

When in the pathfinder, press [**<**-] in order to browse the cutting sequence:

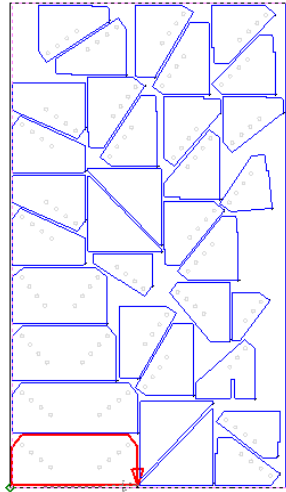



Fig. 4.3.1 - First part to be cut



Then, click on  to activate the tooling sequence changing tool and in its parameters box, you can choose if you want to redefine the sequence from the beginning or from the current part (after browsing the sequence with the arrow keys).

| Property | Value |
|-----------------|-------------------------------------|
| From the origin | <input checked="" type="checkbox"/> |
| | |

Fig. 4.3.2 – Sequence Parameters

Now, just click on the parts in the order you want them to be cut:

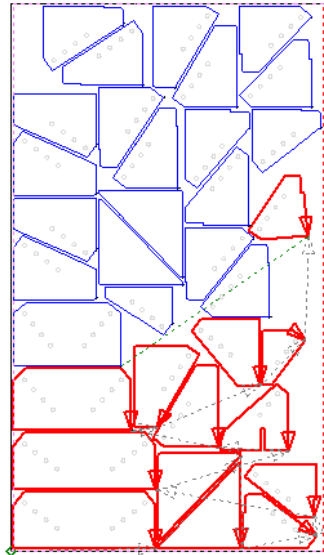


Fig. 4.3.3 - Sequence Modified

Finish the operation by pressing space bar.

4.4 Moving stamping position / Changing stamped mark

If the stamped (scribed) mark is not placed as you want or if you want to change the text on the plate, you can do it easily as shown below.

First, click on the part you want to modify in the part tab of the selected nesting

and click on the *shop drawing* button  in order to open the drafter.

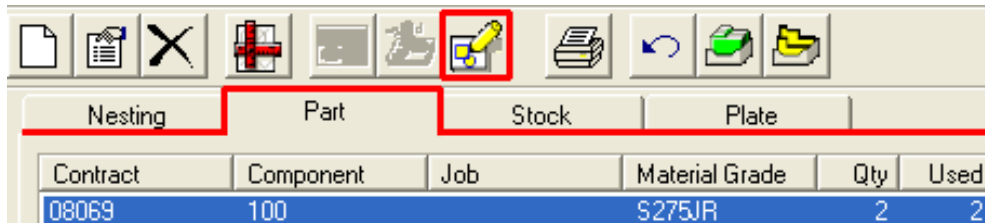


Fig. 4.4.1 – Drafter button

The window layout is almost the same as the pathfinder's one. We have the same properties box and measurement box.

4.4.1 Moving the text

Select the manual nesting tool, click on the marking text and drop it where you want.

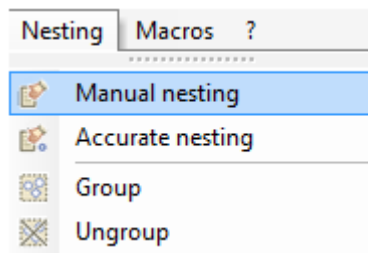


Fig. 4.4.2 - Manual Nesting Tool

4.4.2 Editing the text

You have to use the select tool in mode contour



Fig. 4.4.3 - Contour Selection Tool

Now, click on the text you want to edit and change it in the properties box.

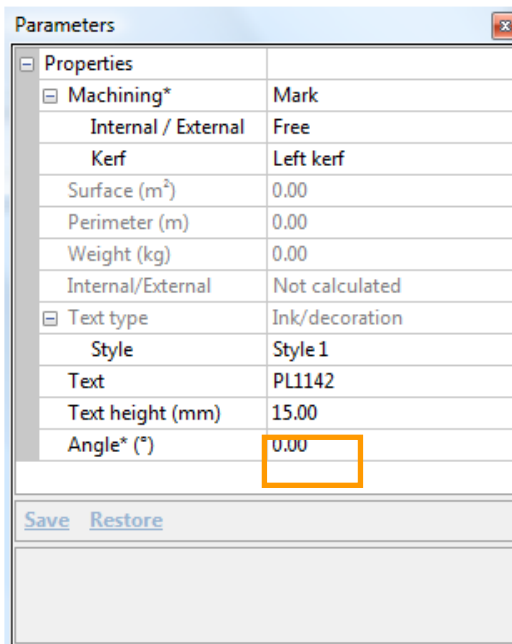


Fig. 4.4.4 - Text Editing 1

Type the new text in this window and click OK to confirm.

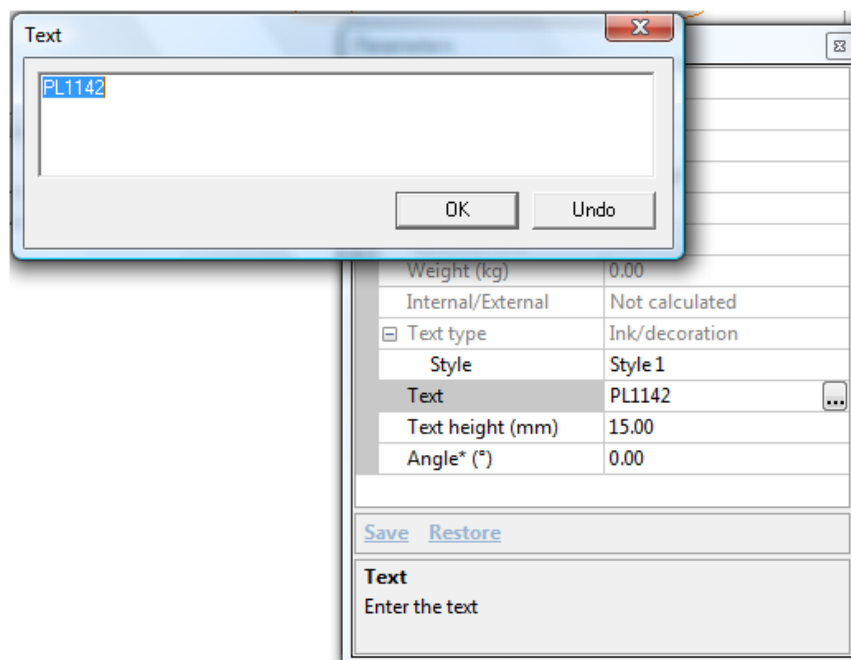


Fig. 4.4.5 - Text Editing 2

The new text is in the text field, just click on an empty area of the part to apply changes.

Note: after editing / moving the text, the preview in WinNEST won't be refreshed.

4.5 Creating / Editing tools

For TIPO machines, WinNEST comes with a ready-to-use tools database. But in some cases, you could have to change some tools properties or just add new tools.

Here are the steps to follow in order to create/edit tools.

First of all, you have to open the resource editor, i.e. the interface to edit the machine settings. To do so, open the configuration / machine menu in WinNEST

and click on . This Window should appear:

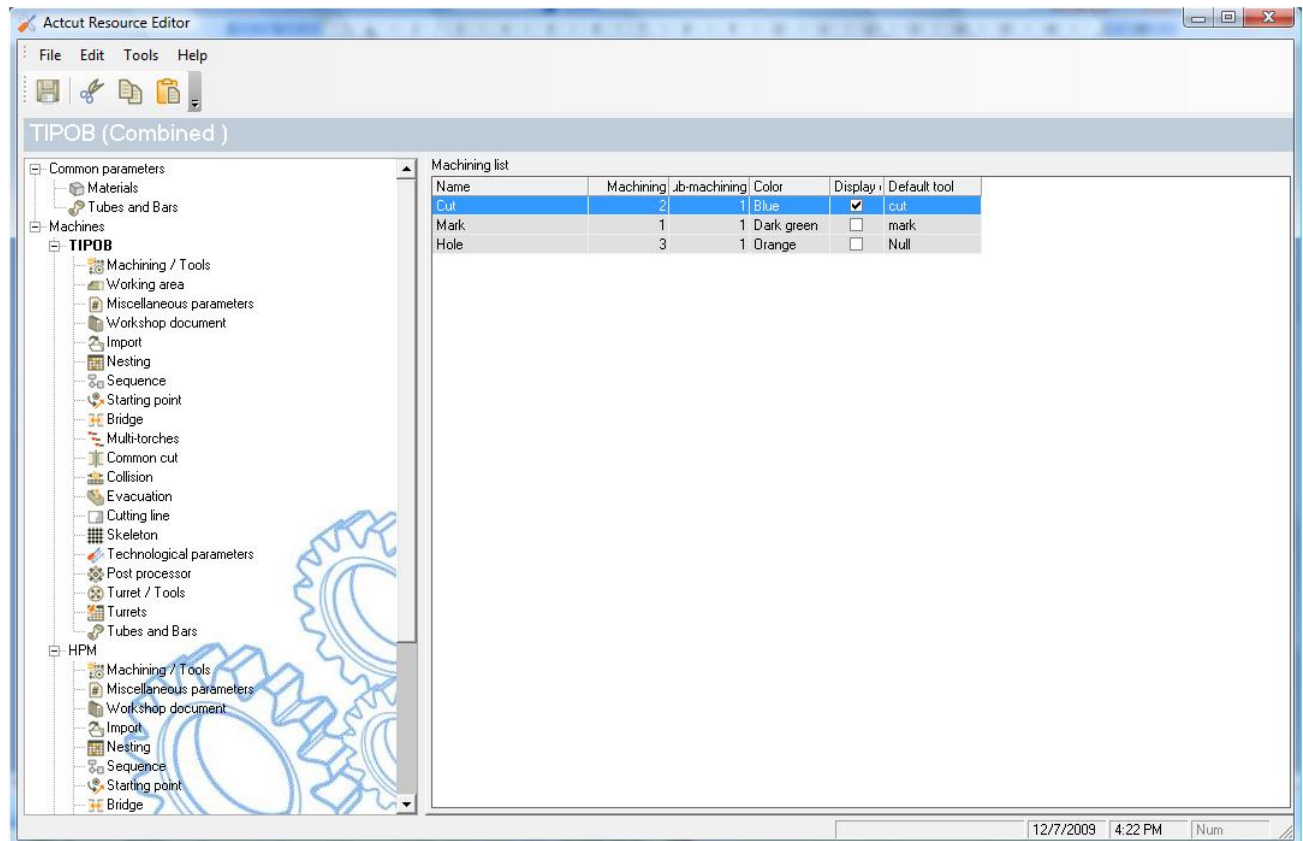


Fig. 4.5.1 - Resource Editor Main Screen

The left hand part of the screen contains the machines, and the parameters categories and the right hand part, the parameters.

In order to activate the expert mode, press [Ctrl]+[Alt]+[Shift]+[I].

Now, in the parameters tree, go to *Turret/Tools* and to the *Tool List* Tab.

In this chapter, we will show you the parameters needed to create new tools in each of these tabs: Info, Post-Processor, Mounting and Expert. For each tool, a caption will show you in which tabs you have to go.

4.5.1 Drill

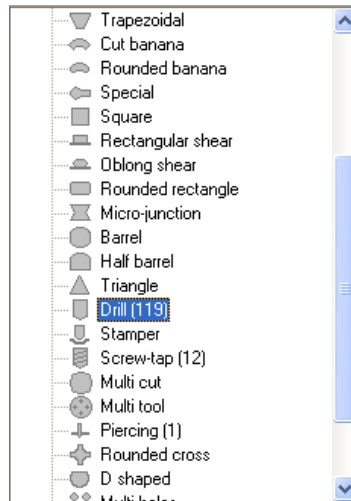


Fig. 4.5.2 – Drills



Fig. 4.5.3 - Drill Tabs

4.5.1.1 Info

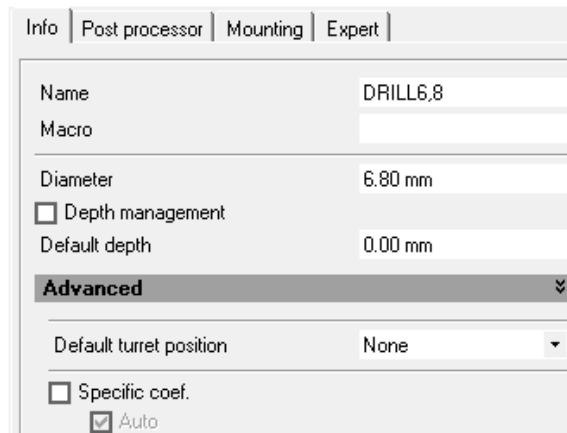


Fig. 4.5.4 - Drill Info Tab

| Field | Value |
|-------------------------|---|
| Name | Name of the Drill tool. When you create a new Drill tool, the name is automatically generated according to the value in the Diameter field |
| Macro | Not used |
| Diameter | Drill bit diameter (in millimeters) |
| Depth Management | Not used for drills |
| Default Turret Position | None |

4.5.1.2 Post-Processor

| | |
|----------------------|-------------------------------------|
| parameter Post PC 1 | <input type="text" value="0"/> |
| parameter Post PC 2 | <input type="text" value="97,261"/> |
| parameter Post PC 3 | <input type="text" value="4"/> |
| parameter Post PC 4 | <input type="text" value="2"/> |
| parameter Post PC 5 | <input type="text" value="130"/> |
| parameter Post PC 6 | <input type="text" value="0"/> |
| parameter Post PC 7 | <input type="text" value="0"/> |
| parameter Post PC 8 | <input type="text" value="0"/> |
| parameter Post PC 9 | <input type="text" value="0"/> |
| parameter Post PC 10 | <input type="text" value="0"/> |

Fig. 4.5.5 - Drill Post Processor Tab

| Field | Value |
|-------|--|
| PPC1 | If PPC1 = 0 the program will write TS31 for the normal drill otherwise if PPC1 = 33 the program writes TS33 (High Speed Drill) |
| PPC2 | Speed in mm/min |
| PPC3 | Start hole in mm |
| PPC4 | End hole in mm |
| PPC5 | Tool angle |
| PPC6 | Maximum thickness for the drill |

4.5.1.3 Expert

| | |
|-----------|----------------------------------|
| Classtool | <input type="text" value="51"/> |
| StTool1 | <input type="text" value="180"/> |

Fig. 4.5.6 - Drill Expert Tab

| Field | Value |
|-----------|------------------------------|
| Classtool | 51 |
| StTool1 | Drill bit diameter in 1/10mm |

In the tool summary section, underneath the tool list, DRILL must be ON.

4.5.2 Punch

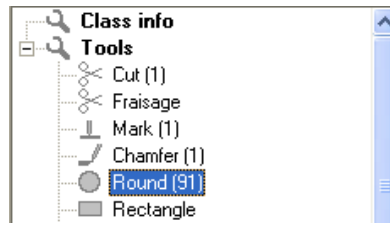


Fig. 4.5.7 – Punches



Fig. 4.5.8 - Punches Tabs

4.5.2.1 Info

| | |
|---|----------|
| Name | PUNCH20 |
| Macro | |
| Diameter | 20,00 mm |
| Advanced | |
| <input type="checkbox"/> Specific min. recovery | |
| Minimum recovery (% thickness) | 100,00 |
| <input type="checkbox"/> Specific min. step | |
| Min. step (% length) | 30,00 |
| Default turret position | None |

Fig. 4.5.9 - Punches Info Tab

| Field | Value |
|----------|----------------------|
| Name | Punch Tool Name |
| Diameter | Punch diameter in mm |

4.5.2.2 Expert

| | |
|-------------------|--------------|
| IdentString | 10051_20_0_1 |
| Additional string | |
| Nomtool | punch20 |
| Numtool | 220 |
| Postool | 0 |
| Toutool | 1 |
| Classtool | 57 |
| StTool1 | 200 |
| StTool2 | 0 |
| StTool3 | 0 |
| Clampstool | -1 |

Fig. 4.5.10 - Punches Expert Tab

| Field | Value |
|-----------|--------------------------------------|
| Nomtool | Punch Tool Name |
| Numtool | Automatically generated punch number |
| Tourtool | 1 |
| Classtool | 57 |
| StTool1 | Punch Diameter in 1/10 mm |

In the tool summary, PUNCH must be ON.

4.5.3 Slots

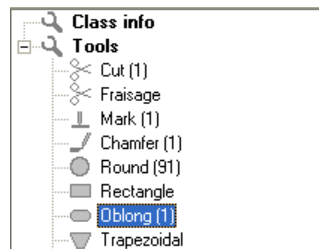


Fig. 4.5.11 – Slots

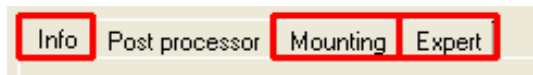


Fig. 4.5.12 - Slots Tabs

4.5.3.1 Info

| | |
|---|------------|
| Name | SLOT107x14 |
| Macro | |
| Width | 30,00 mm |
| Height | 14,00 mm |
| Advanced | |
| Setting | 0 ° |
| <input type="checkbox"/> Specific min. recovery | |
| Minimum recovery (% thickness) | 100,00 |
| <input type="checkbox"/> Specific min. step | |
| Min. step (% length) | 30,00 |
| Default turret position | None |

The diagram shows a blue oval-shaped slot. A horizontal dimension line at the top is labeled 'L', representing the width. A vertical dimension line on the left is labeled 'H', representing the height. The slot is centered within a light-colored rectangular area.

Fig. 4.5.13 - Slot Info Tab

| Field | Value |
|-------|-----------------------|
| Name | Slot Tool Name |
| Width | L value on the schema |

Height

H value on the schema

4.5.3.2 Mounting

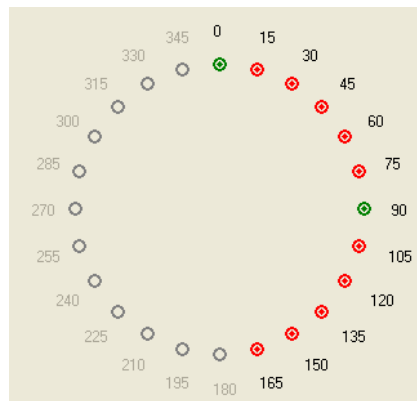


Fig. 4.5.14 - Slots Mounting Tab

Specify here the orientation possibilities of the tool on the machine. In this case, the slot tool can be mounted at 0° and 90°. All other angles are forbidden.

4.5.3.3 Expert

Classtool must be 53.

In the tool summary, PUNCH must be ON.

4.5.4 Rectangle Punch

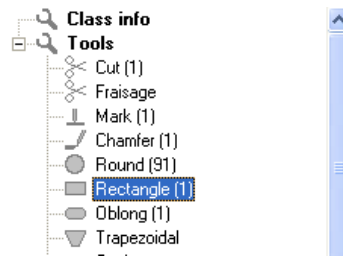


Fig. 4.5.15 - Rectangle Punches



Fig. 4.5.16 - Rectangle Punches Tabs

4.5.4.1 Info

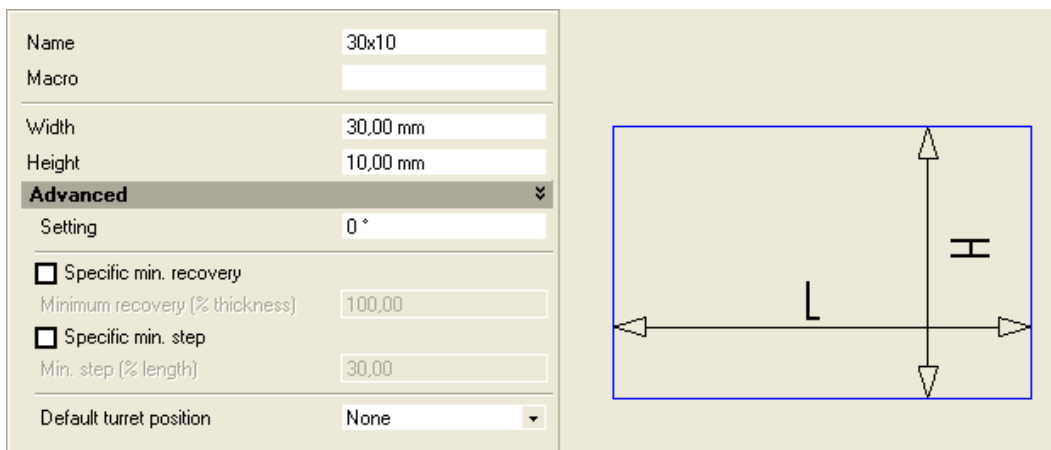


Fig. 4.5.17 - Rectangle Info Tab

| Field | Value |
|--------|---------------------------|
| Name | Rectangle Punch Tool Name |
| Width | L value on the schema |
| Height | H value on the schema |

4.5.4.2 Mounting

This feature is the same as the Slots one. Please refer to the Slots section for more information.

4.5.4.3 Expert

Classtool must be 52 and in the tool summary, PUNCH must be ON.

4.5.5 Square Punches

The settings are exactly the same as for rectangle punches except the dimensions : there is only one value, the square side. ALL other parameters must be set up as a rectangle punch.

4.5.6 Tapping Tool



Fig. 4.5.18 - Tapping Tool



Fig. 4.5.19 - Tapping Tool Tabs

4.5.6.1 Info

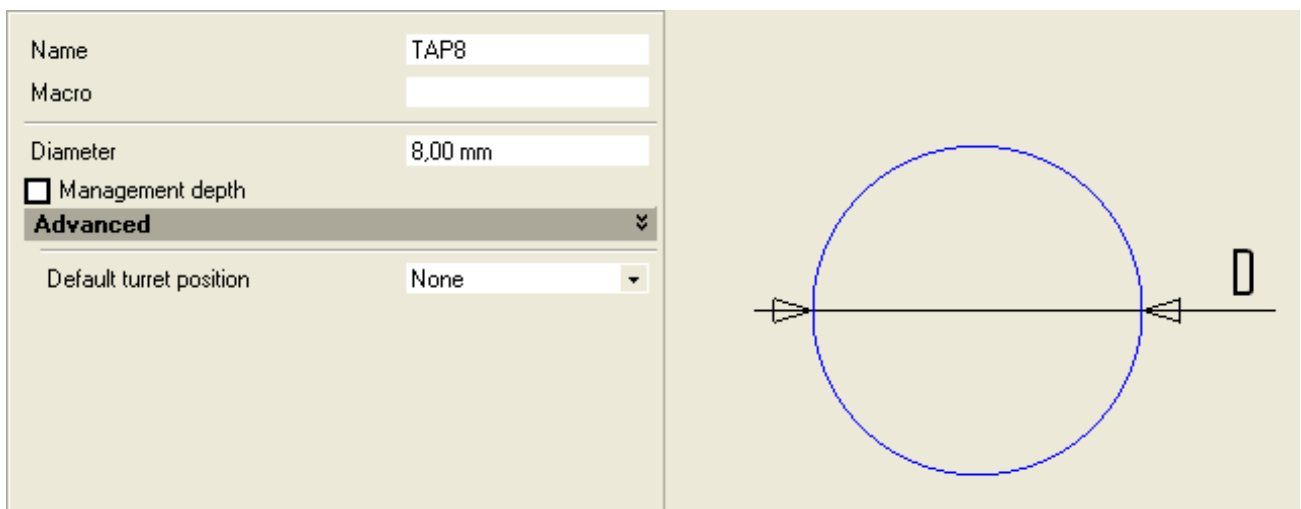


Fig. 4.5.20 - Tapping Tool Info Tab

| Field | Value |
|----------|--------------------------------------|
| Name | Tapping Tool Name, includes diameter |
| Diameter | Tapping Tool Diameter, in mm |

4.5.6.2 Post Processor

If the PPC1 = 0, the program will generate a TS41 code (Isometric). Otherwise, if the PPC1 = 47, the program will generate a TS47 code (UNC).

4.5.6.3 Expert

| | |
|-----------|-----|
| Classtool | 59 |
| StTool1 | 100 |

Fig. 4.5.21 - Tapping Expert Tab

| Field | Value |
|-----------|--------------------------|
| Classtool | 59 |
| StTool1 | Tool diameter in 1/10 mm |

In the tool summary, DRILL must be ON and the drilling tool needed for this tapping diameter must be selected in Slave Tool. In Father Tool, select the current tapping tool.

| Name | Macro | Diameter | Management depth | All | PUNCH | DRILL | Slave tool | Father tool |
|-------|-------|----------|--------------------------|--------------------------|--------------------------|-------------------------------------|------------|-------------|
| TAP8 | | 8,00 mm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | DRILL6,8 | TAP8 |
| TAP10 | | 10,00 mm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | DRILL8,5 | TAP10 |
| TAP12 | | 12,00 mm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | DRILL10,5 | TAP12 |
| TAP14 | | 14,00 mm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | DRILL12 | TAP14 |
| TAP16 | | 16,00 mm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | DRILL14 | TAP16 |
| TAP18 | | 18,00 mm | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | DRILL16 | TAP18 |

Fig. 4.5.22 - Tapping Tool Summary

4.5.7 Flare Tool

Flare tools are listed in the same category as drill tools, i.e. the DRILL category. After creation you should change the order in *Tools Order* list to have the flare after the Drill.

| | | | |
|------|----------------|----------|--------|
| Info | Post processor | Mounting | Expert |
|------|----------------|----------|--------|

Fig. 4.5.23 - Flare Tool Tabs

4.5.7.1 Info

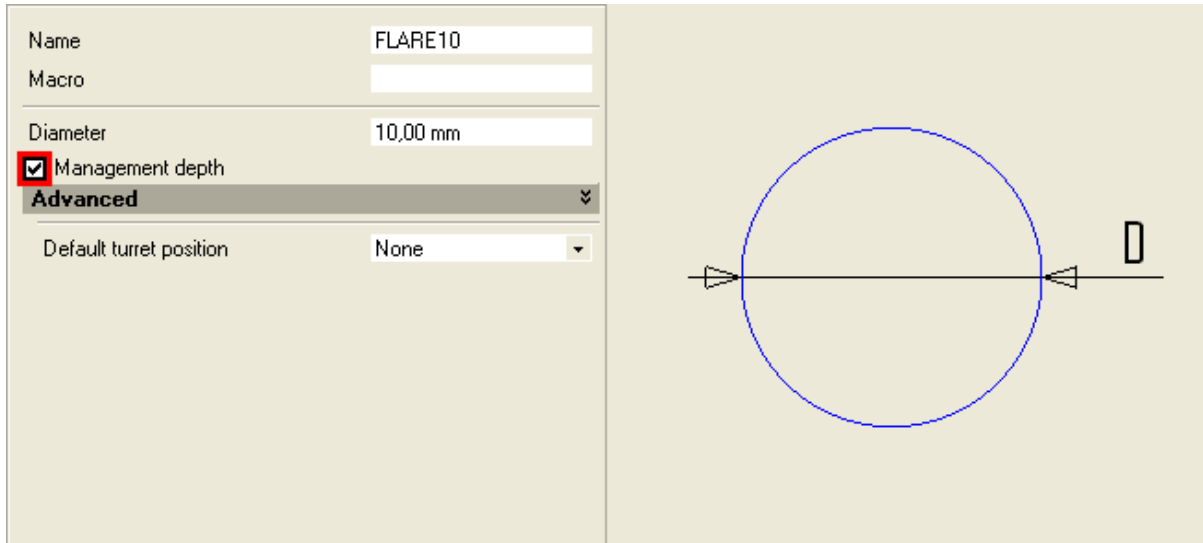


Fig. 4.5.24 - Flare Tool Info Tab

| Field | Value |
|------------------|---|
| Name | Tool Name |
| Diameter | Tool diameter. It's the same diameter as the pre-drill diameter |
| Depth Management | Must be ON |

4.5.7.2 Expert

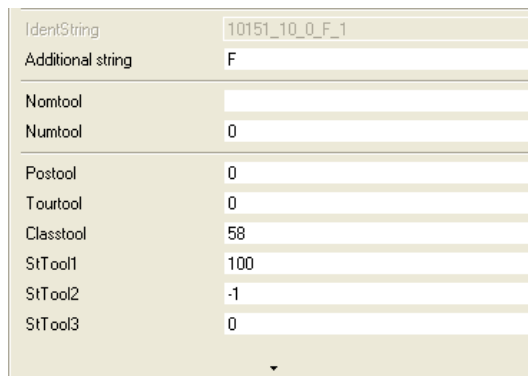


Fig. 4.5.25 - Flare Tool Expert Tab

| Field | Value |
|-------------------|---------------------|
| Additional String | F |
| Classtool | 58 |
| StTool1 | Diameter in mm * 10 |
| StTool2 | -1 |

In the Tool Summary, the Slave Tool must be a Drill Tool which diameter equals the flare tool diameter. The father tool must be the Flare tool itself.

4.5.8 Chamfer Tool

In WinNEST, you have to go to the *Configuration / Machine* screen and activate Chamfer and Cutting.

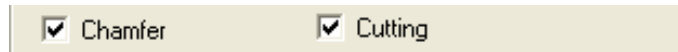


Fig. 4.5.26 - Chamfer option in WinNEST

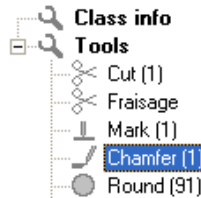


Fig. 4.5.27 - Chamfer Tool



Fig. 4.5.28 - Chamfer Tool Tabs

4.5.8.1 Info

| | |
|-----------------|---------|
| Name | CHAMFER |
| Macro | |
| Dim 1 | 65 |
| Dim 2 | 0 |
| Advanced | ▼ |

Fig. 4.5.29 - Chamfer Tool Info Tab

| Field | Value |
|-------|-----------------------------------|
| Name | Tool Name |
| Dim1 | Tool Diameter (see picture below) |

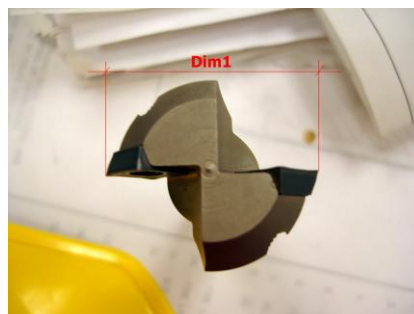


Fig. 4.5.30 - Chamfer Tool Image

4.5.8.2 Post Processor

The PPC1 parameter must be 63 or 65.

4.5.9 Milling / Pocketing

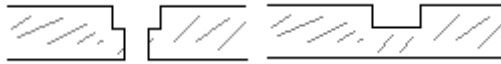


Fig. 4.5.31 - Mill / Pock

In WinNEST, you have to go to the *Configuration / Machine* screen and activate the *Milling* checkbox and insert the *step* value, which is the distance between each pass. The method to create a pocketing tool is the same as for creating a milling tool, except in the expert section.



Fig. 4.5.32 - Milling Option in WinNEST

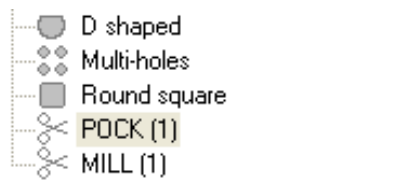


Fig. 4.5.33 - Milling / Pocketing



Fig. 4.5.34 - Mill / Pock Tabs

4.5.9.1 Info

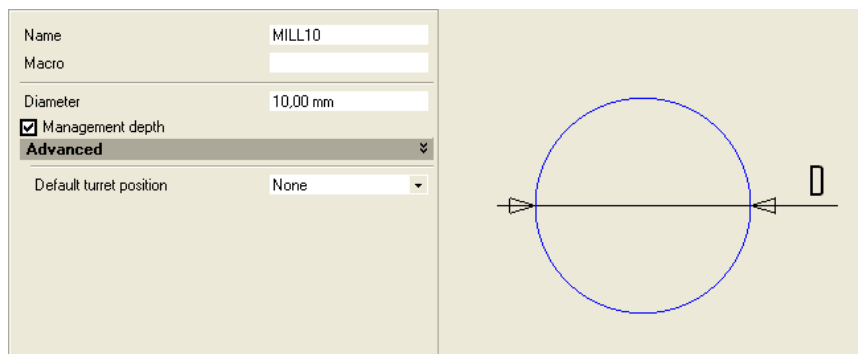


Fig. 4.5.35 - Mill / Pock Info Tab

| Field | Value |
|------------------|-----------------------------------|
| Name | Tool Name |
| Diameter | Tool diameter (see picture below) |
| Depth management | Must be ticked |



Fig. 4.5.36 - Milling Tool Picture

4.5.9.2 Expert

| Field | Value |
|-----------|-----------------------------------|
| Classtool | 2 for Milling 3 for Pocketing |
| StTool2 | -1 for both milling and pocketing |

4.5.10 Helicoidal mill (Gemini 25 and 32 machines)

As these machines can't do punching, the tool type 'round' is used to defined helicoidal mills.

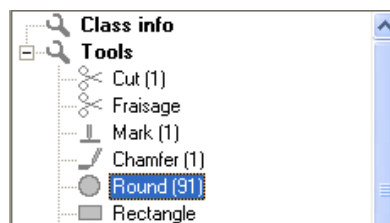


Fig. 4.5.37 – Punches

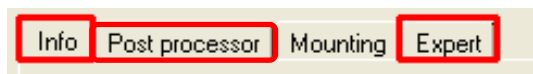


Fig. 4.5.38 - Punches Tabs

4.5.10.1 Info

| | |
|---|----------|
| Name | PUNCH20 |
| Macro | |
| Diameter | 20,00 mm |
| Advanced | |
| <input type="checkbox"/> Specific min. recovery | |
| Minimum recovery (% thickness) | 100,00 |
| <input type="checkbox"/> Specific min. step | |
| Min. step (% length) | 30,00 |
| Default turret position | None |

Fig. 4.5.39 - Punches Info Tab

| Field | Value |
|----------|------------------------------|
| Name | Tool Name, must begin by 'H' |
| Diameter | End hole diameter in mm |

4.5.10.2 Post-Processor

| | | | |
|----------------------|------------------------|---------|--------|
| Info | Post-processeur | Montage | Expert |
| Paramètre Post PC 1 | 2 | | |
| Paramètre Post PC 2 | 25 | | |
| Paramètre Post PC 3 | 40 | | |
| Paramètre Post PC 4 | 0 | | |
| Paramètre Post PC 5 | 0 | | |
| Paramètre Post PC 6 | 0 | | |
| Paramètre Post PC 7 | 0 | | |
| Paramètre Post PC 8 | 0 | | |
| Paramètre Post PC 9 | 0 | | |
| Paramètre Post PC 10 | 0 | | |

- PPC1 : 0 no pre-hole, 1 prehole in Cut Before, 2 drilled prehole
- PPC2 : Diameter of pre hole (if 1 or 2 in PPC1)
- PPC3 : Diameter of the milling tool, if empty, the one set in Minosse will be used.

4.5.10.3 Expert

| | |
|-------------------|--------------|
| IdentString | 10051_20_0_1 |
| Additional string | |
| Nomtool | punch20 |
| Numtool | 220 |
| Postool | 0 |
| Tourtool | 1 |
| Classtool | 57 |
| StTool1 | 200 |
| StTool2 | 0 |
| StTool3 | 0 |
| Clampstool | -1 |

Fig. 4.5.40 - Punches Expert Tab

| Field | Value |
|-----------|--------------------------------------|
| Nomtool | Tool Name |
| Numtool | Automatically generated punch number |
| Tourtool | 1 |
| Classtool | 57 |
| StTool1 | End hole Diameter in 1/10 mm |

4.5.11 Tools Order

After creating a tool, you must set up his order in the tool list. Basically, the standard tool order is the following:

Mark->CutBefore->Chamfer->Punch->Slot->Drill->Tapping->Flare->Pock->Mill->Cut.

When you create a tool, it comes to the first position in the tool order list :

| Turret Avoiding areas Tool list Tools order Symbology | | | |
|---|-------|-----------|--|
| Name | Macro | Class | |
| 30x10 | | Rectangle | |
| mark | | Mark | |
| cutBefore | | Cut | |
| CHAMFER | | Chamfer | |
| PUNCH1 | | Round | |
| PUNCH1,5 | | Round | |
| PUNCH2 | | Round | |

Fig. 4.5.41 - Tools Order

You have to move it to its position, dragging and dropping it using the grey square on the left hand side.

| Turret Avoiding areas Tool list Tools order Symbology | | | |
|---|-------|-----------|--|
| Name | Macro | Class | |
| 30x10 | | Rectangle | |
| mark | | Mark | |
| cutBefore | | Cut | |
| CHAMFER | | Chamfer | |
| PUNCH1 | | Round | |
| PUNCH1,5 | | Round | |
| PUNCH2 | | Round | |

Fig. 4.5.42 - Tools Order While Changing

| | | |
|------------|--|-----------|
| PUNCH46 | | Round |
| 30x10 | | Rectangle |
| SLOT107x14 | | Oblong |
| DRILL6,8 | | Drill |
| DRILL8 | | Drill |

Fig. 4.5.43 - Tools Order After Changing

4.6 Time management for TIPO machines

4.6.1 Rapid length

In the *Technological Parameters* category, select the *Parameters Of the Machine* tab and change the Approach Speed Head Down value, in mm/min to adjust the rapid length time.



Fig. 4.6.1 - Technological Parameters

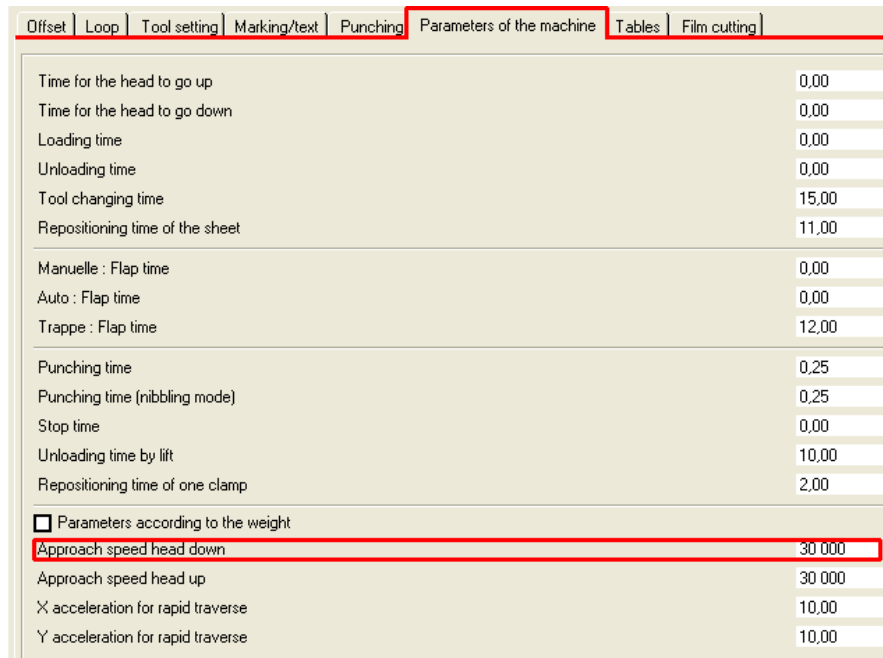


Fig. 4.6.2 - Rapid Length Parameter

4.6.2 Marking time

The marking time is calculated regarding the sensing process and the effective stamping process, for each character.

4.6.2.1 With a disc

| Machining | | |
|----------------|-------|------|
| | | Time |
| Nb marking | 20 | |
| Marking length | 0.466 | 0.2 |

Fig. 4.6.3 - Hard Stamping Time

| Label | Description |
|-------|-------------|
|-------|-------------|

| | |
|--------------|---|
| Nb marking | Number of characters to stamp |
| Marking Time | 4 s for sensing + nb of characters * 1,2. |

These parameters are in the post processor file TIPOB251.ppc in the resource folder of the machine.

$$\text{TEMP_MK_DISK}=\text{TEMP_MK_DISK}+(1.2*\text{STRLEN}(\text{TEXTE}))+4$$

4.6.2.2 With scribing

| Machining | | |
|----------------|-------|------|
| | | Time |
| Nb marking | 20 | |
| Marking length | 0.466 | 0.2 |

Fig. 4.6.4 - Scribing Text Time

| Label | Description |
|------------|--|
| Nb marking | Number of marking lines |
| Time | 3s. sensing + 3 s. fixed time + Number of characters * 3.4 |

In the post-processor:

$$\text{TEMP_MK_DISK}=\text{TEMP_MK_DISK}+(3.4*\text{STRLEN}(\text{TEXTE}))+3+3$$

4.6.2.3 Scribing lines

| Machining | | |
|----------------|-------|------|
| | | Time |
| Nb marking | 20 | |
| Marking length | 0.466 | 0.2 |

Fig. 4.6.5 - Scribing Lines Time

| Label | Description |
|----------------|--|
| Nb marking | Number of marking lines |
| Marking length | Length of all the lines |
| Time | 3s sensing + marking length * speed (3000) |

In the post-processor:

$$\text{TEMP_SCRIBING}=\text{TEMP_SCRIBING}+((\text{ATCTR}(11)/3000)*60)+3$$

4.6.3 Starting Point Time

| Machining | | |
|--------------------|----|------|
| | | Time |
| Nb starting points | 20 | 0.7 |

Fig. 4.6.6 - Starting Point Time

| Label | Description |
|---------------|------------------------------------|
| Starting Time | Starting point time for Oxycutting |

Remark: It is necessary to add extra parameters when this time is calculated : sensing time and time for the torch to go up and down.

| Quality | Thickness | Tool | Starting time | Speed | Vitesse Plasma | Amo Plasma |
|---------|-----------|------|---------------|-------|----------------|------------|
| STEEL | 5,00 | Cut | 5 | 600 | 3000 | 2 |
| | 6,00 | Cut | 5 | 600 | 3000 | 2 |
| | 8,00 | Cut | 5 | 520 | 2500 | 2 |
| | 10,00 | Cut | 10 | 490 | 2000 | 2 |
| | 12,00 | Cut | 15 | 460 | 1500 | 2 |
| | 15,00 | Cut | 20 | 430 | 1250 | 2 |
| | 20,00 | Cut | 25 | 400 | 750 | 2 |
| | 25,00 | Cut | 30 | 375 | 600 | 2 |
| | 30,00 | Cut | 35 | 330 | 375 | 2 |
| | 35,00 | Cut | 35 | 300 | 270 | 2 |
| | 40,00 | Cut | 40 | 270 | 0 | 2 |
| | 45,00 | Cut | 45 | 250 | 0 | 2 |
| | 50,00 | Cut | 50 | 230 | 0 | 2 |
| | 55,00 | Cut | 55 | 215 | 0 | 2 |
| 60,00 | Cut | 60 | 200 | 0 | 2 | |

Fig. 4.6.7 - Starting Point Parameters

4.6.4 Cutting Time

| Machining | | |
|----------------|--------|------|
| | | Time |
| Cutting length | 16.300 | 8.2 |

Fig. 4.6.8 - Cutting Time

| Label | Description |
|----------------|--------------------------|
| Speed | Speed for Oxycutting |
| Vitesse plasma | Speed for Plasma cutting |

| Quality | Thickness s | Tool | Starting time | Speed | Vitesse Plasma | Amo Plasma |
|---------|----------------|------|---------------|-------|----------------|------------|
| STEEL | 5,00 | Cut | 5 | 600 | 3000 | 2 |
| | 6,00 | Cut | 5 | 600 | 3000 | 2 |
| | 8,00 | Cut | 5 | 520 | 2500 | 2 |
| | 10,00 | Cut | 10 | 490 | 2000 | 2 |
| | 12,00 | Cut | 15 | 460 | 1500 | 2 |
| | 15,00 | Cut | 20 | 430 | 1250 | 2 |
| | 20,00 | Cut | 25 | 400 | 750 | 2 |
| | 25,00 | Cut | 30 | 375 | 600 | 2 |
| | 30,00 | Cut | 35 | 330 | 375 | 2 |
| | 35,00 | Cut | 35 | 300 | 270 | 2 |
| | 40,00 | Cut | 40 | 270 | 0 | 2 |
| | 45,00 | Cut | 45 | 250 | 0 | 2 |
| | 50,00 | Cut | 50 | 230 | 0 | 2 |
| | 55,00 | Cut | 55 | 215 | 0 | 2 |
| | 60,00 | Cut | 60 | 200 | 0 | 2 |

Fig. 4.6.9 - Cutting Time Parameters

4.6.5 Drill / Punch and Tool Changing Time

4.6.5.1 Tool Changing Time

The time needed by the machine to change its tool is defined in seconds by the *Tool Changing Time* parameter in the *Parameters of the Machine* tab.

| | |
|--------------------|-------|
| Tool changing time | 15,00 |
|--------------------|-------|

Fig. 4.6.10 - Tool Changing Time

4.6.5.2 Drilling Time

This time is grouped with the punching time. Please refer to section 4.5.1.2 for post processor parameters.

The formula used to calculate the drilling time is : $(Start\ Hole + End\ Hole + Thickness + Over\ length) / Speed$ according to the diameter) * 60 to get the time in seconds.

The parameters are in the file TIPOB251.ppc :

```

/* Calcul du temps de perçage
IF CALC_TPSP0I(2)=10151 THEN /* PERÇAGE
IND=CALC_TPSP0I(3)
IF TTOOL_NEW(IND 28)>0 THEN
EP_PIECE=SHEET(5)+TTOOL_NEW(IND 29)+TTOOL_NEW(IND 30)
SUR_LG=TAN(90-(TTOOL_NEW(IND 31)/2))*CALC_TPSP0I(1)/2
EP_PIECE=EP_PIECE+SUR_LG
PAR_TPSP0I=EP_PIECE/TTOOL_NEW(IND 28)
PAR_TPSP0I=PAR_TPSP0I*60
ENDIF
TTOOL_NEW(IND 28) " " TTOOL_NEW(IND 29) " " TTOOL_NEW(IND 30)
" " TTOOL_NEW(IND 31) " EP=" EP_PIECE " SUR_LG=" SUR_LG)
ENDIF
    
```

4.6.5.3 Punching Time

The formula used is: $Thickness * 0.0675 + 0.93$

The parameters are in the file TIPOB251.PPC:

```
/* Calcul du temps de poinçonnage
IF CALC_TPSPOI(2)=10051 THEN /* POICONNAGE
PAR_TPSPOI=(SHEET(5)*0.0675)+0.93
```

4.6.6 Unloading Time

There are 3 unloading times which can be set in the resource editor / technological parameters / parameters of the machine:

| | |
|----------------------|-------|
| Manuelle : Flap time | 10.00 |
| Auto : Flap time | 3.00 |
| Trappe : Flap time | 30.00 |

Fig. 4.6.11 - Unloading Times

| Item | Description |
|----------|---|
| Manuelle | Estimated manual unloading time (small parts) |
| Auto | Automatic (M15) unloading time |
| Trappe | Estimated manual unloading time (big parts) |


4.6.7 Plate Loading / Unloading Time

This time is not displayed on the workshop document but is added to the total time.

| | |
|----------------|------|
| Loading time | 0.00 |
| Unloading time | 0.00 |

Fig. 4.6.12 - Plate Loading / Unloading Time

4.7 Part Editing

In WinNEST, when in the part list, you can click on  to open the drafter which allows you to edit the parts.

4.7.1 Changing Hole Properties

You can change a hole diameter and its tooling (DRILL <-> PUNCH).

Select the manual contour allocation tool :

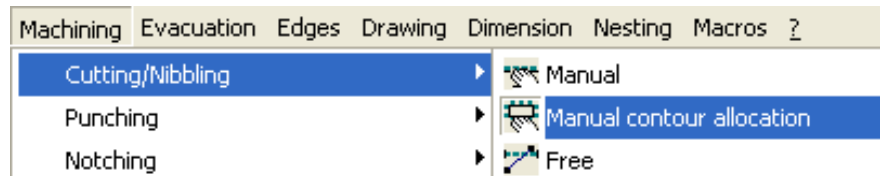


Fig. 4.7.1 - Manual Contour Allocation Tool

In the properties box, select the tool family and the tool (here, Drill / DRILL20):

| Property | Value |
|-----------------------|-------------------------------------|
| ☐ Tool* | Drill |
| Drill | ● DRILL20 |
| Control the attrib... | <input checked="" type="checkbox"/> |
| Shortening in corn... | <input checked="" type="checkbox"/> |
| Maximum overlap ... | 5.00 |

Fig. 4.7.2 - Choosing the Tool Properties

Click on the hole you want to change its properties and press spacebar to exit.

Then, to check if the modification has been set correctly, go to Machining / Visualization / Elements according to tools :

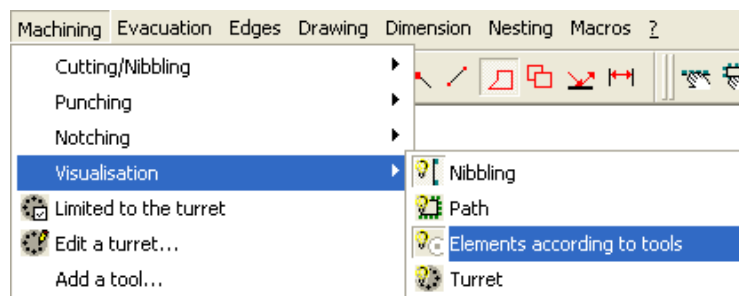


Fig. 4.7.3 - Tooling Visualization Menu

Then, in the properties box, you can choose a color for each tool and check the tick box to visualize it on the part :

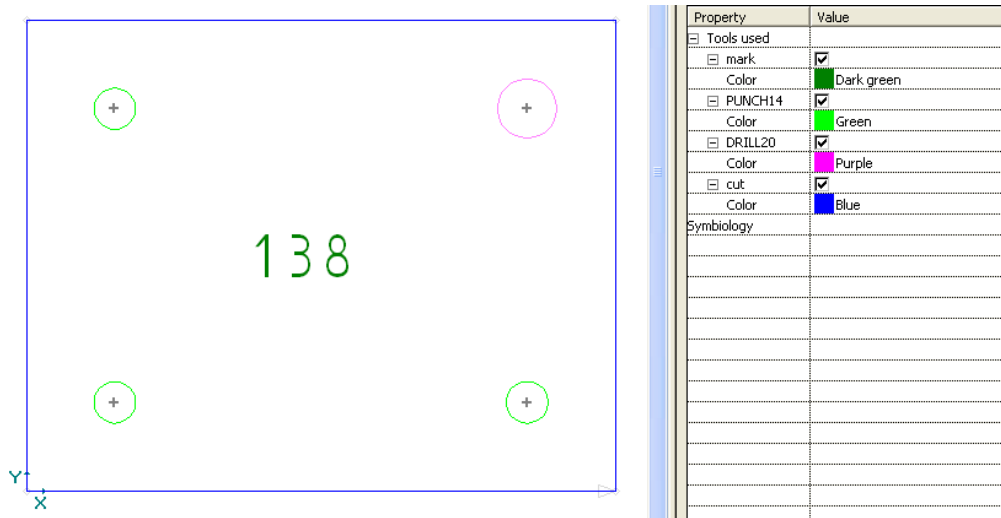


Fig. 4.7.4 - Toolings Visualization

4.7.2 Changing a Cut Hole to a Drilled / Punched Hole

Select the Machining / Punching / Manual menu and select the tool you want to use, as on Fig.4.76. Then, just click on the center of the cut hole (there is a magnetic locking system to help you pointing the center) to place the tooled hole. Then, delete the cut hole.

4.8 Milling

In this section, we will see how to add milling to an internal contour.

Select the Offset tool in the Drawing / Technology menu :

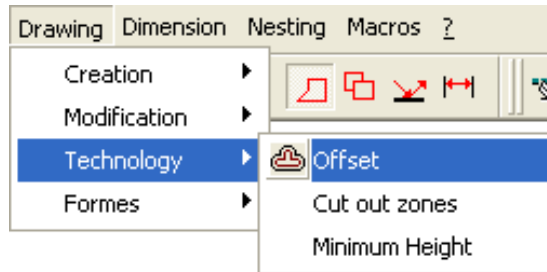


Fig. 4.8.1 - Offset Tool

Set its properties to adjust the shoulder width (Multiplicity * Movement):

| Property | Value |
|----------------|--------------------------|
| Movement* (mm) | 1.00 |
| Multiplicity | 5 |
| Round | <input type="checkbox"/> |

Fig. 4.8.2 - Offset Properties

Click on the internal contour, the arrow facing toward outside:

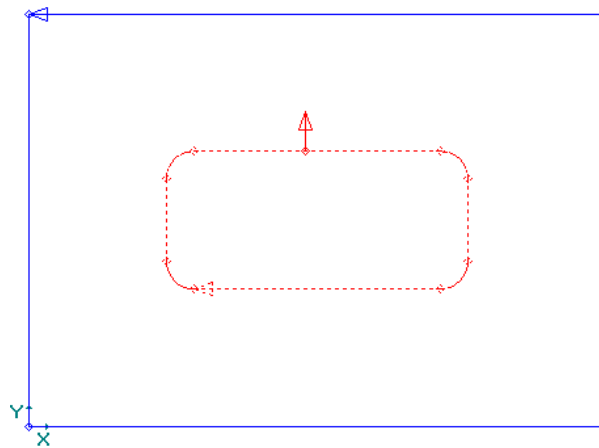


Fig. 4.8.3 - Offset

The result should be, in our example, 5 more lines, parallel to the line you clicked on, spaced by 1mm each other:



Fig. 4.8.4 - Offset Result

Now, set all these internal lines to "Forced internal" in their properties.

| Property | Value |
|---------------------------|-----------------|
| Properties | |
| Machining* | Cut |
| Internal / E... | Forced internal |
| Roughness ... | 0.10 |
| Kerf | Free |
| Surface (m ²) | -0.04 |
| Perimeter (m) | 1.91 |
| Weight (kg) | -2.92 |

Fig. 4.8.5 - Internal Lines Properties

We have to change the tooling sequence, so the machine will first cut and then mill from the center to outside. Select the Machining / Contour Sequence / Define Sequence tool and click on the lines from the center to outside; finish by pressing spacebar:

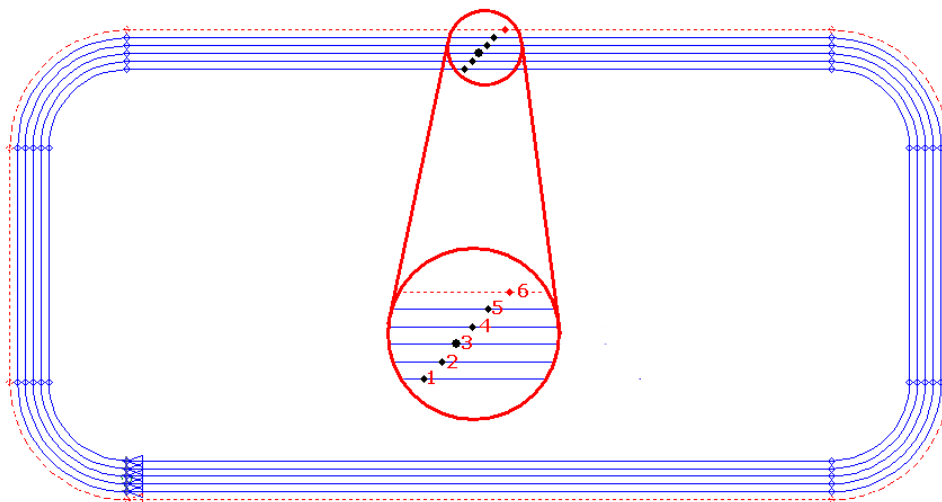


Fig. 4.8.6 - Sequence Definition

The last step is to assign the milling operation to the lines, except the first one. Select the manual contour allocation (in Machining / Cutting Nibbling), select the milling tool and set its depth:

| Property | Value |
|-----------------------|-------------------------------------|
| ☐ Tool* | MILL |
| ☐ MILL | ● MILL10 |
| Depth (mm) | 5.00 |
| Control the attrib... | <input checked="" type="checkbox"/> |
| Shortening in corn... | <input checked="" type="checkbox"/> |
| Maximum overlap ... | 5.00 |

Fig. 4.8.7 - Milling Tool Properties

Then, click on the lines to assign the milling tool. You should obtain this result:

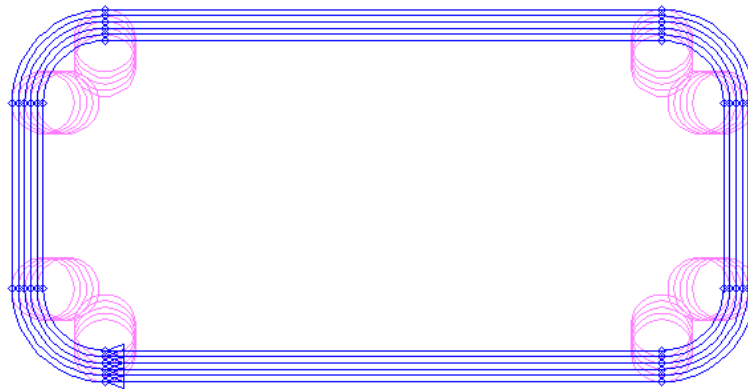


Fig. 4.8.8 - Internal Lines With Milling

We recommend you to use the Visualization According to Tools to check if all the toolings are OK (c.f. Fig.4.7.4).

4.9 Pocketing

Select the Manual Contour Allocation tool and in the properties box, select the pocketing tool and the depth of the pocketing:

| Property | Value |
|--------------------------------|---|
| <input type="checkbox"/> Tool* | POCK |
| <input type="checkbox"/> POCK | <input checked="" type="radio"/> POCK10 |
| Depth (mm) | 5.00 |
| Control the attribution | <input checked="" type="checkbox"/> |
| Shortening in corners | <input checked="" type="checkbox"/> |
| Maximum overlap (...) | 5.00 |

Fig. 4.9.1 - Pocket Tool Parameters

Click on the internal contour you want to transform to pocketing:

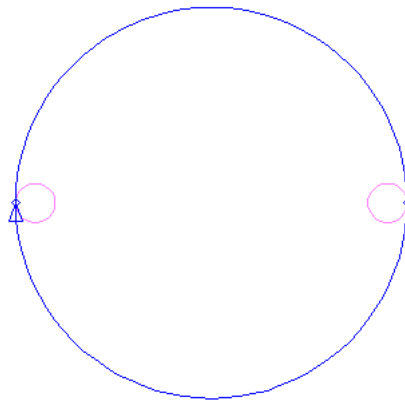


Fig. 4.9.2 - First Line Pocketing

Then, go to the menu Drawing / Technology and select the Trepanning tool:

| Property | Value |
|-------------------|-------------------------------------|
| 1st diameter (mm) | 10.00 |
| Diameter std (mm) | 10.00 |
| Finish | <input checked="" type="checkbox"/> |

Fig. 4.9.3 - Trepanning Tool Parameters

Fill the diameters fields with the tool diameter and click on the finish tick box.

Then, click on the contour with the arrow pointing to the center:

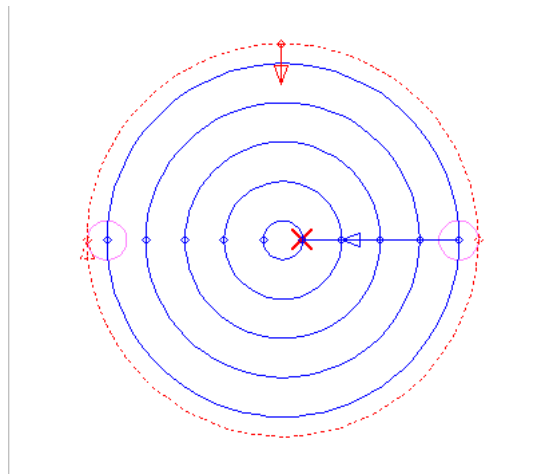


Fig. 4.9.4 - Trepanning Operation

You may need to select the manual contour operation and add the POCKET tool to the inner lines:

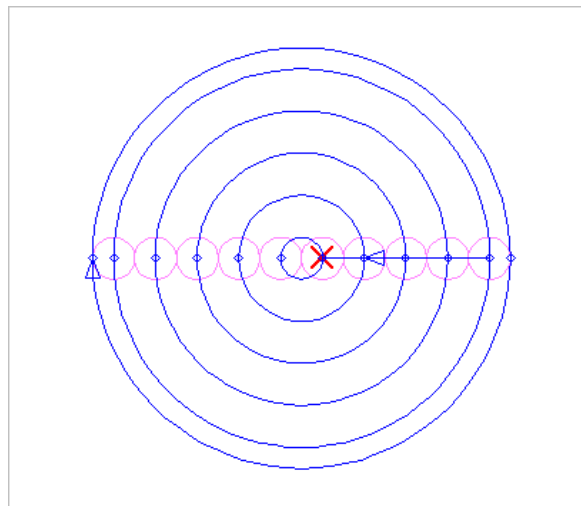


Fig. 4.9.5 - Pocketing Finish

4.10 Chamfer

In this section, we are going to create a chamfer on the edge of a part or a plate. It is advised to place chamfers in the Y direction (vertically). This is because if the plate needs to move in X there are risks that the chamfer is not correct because of the hole that might have left some steel under the plate that can lift the steel when going over the rollers.

4.10.1 Chamfer on a part

4.10.1.1 Creating room for the chamfer tool

In order to chamfer parts, it is necessary to create a hole on the side of the part for the chamfering tool to be able to access the edge of the part. This hole will be cut before the outline of the part.

DN is the Chamfer tool diameter

Select the Parallel Copy tool in the Drawing / Creation menu to create construction lines around the right hand side edge of the part:

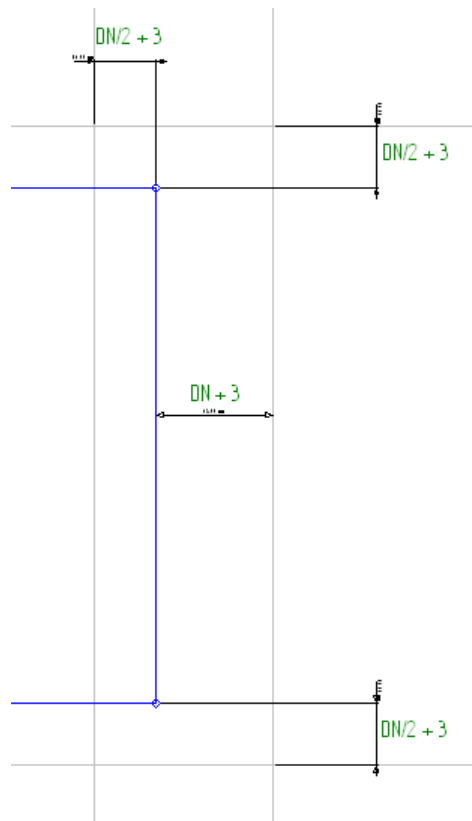


Fig. 4.10.1 - Creating Construction Lines

Now, we have to split the parts contour, using the Add Points On Element tool in the Drawing / Modification menu:

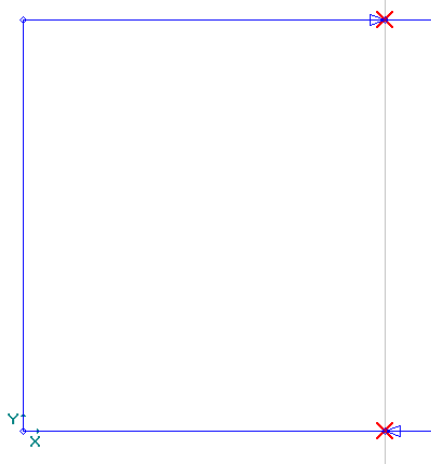


Fig. 4.10.2 - Adding Point To Element

Select the Polyline tool in the Drawing / Creation menu and draw the extra room by clicking on all points. Don't forget to activate the Follow Profile tick box in the properties box:

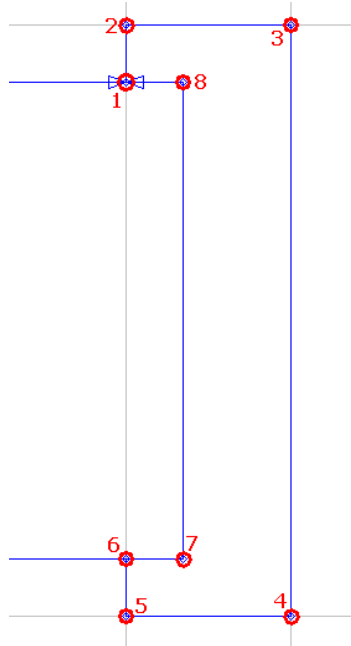


Fig. 4.10.3 - Creating Polyline

Select the Manual Contour Allocation tool and affect the CutBefore tooling to this polyline you created:

| Property | Value |
|-------------------------|--|
| [-] Tool* | Cut |
| Cut | <input checked="" type="radio"/> cutBefore |
| Control the attribution | <input checked="" type="checkbox"/> |
| Shortening in corners | <input checked="" type="checkbox"/> |
| Maximum overlap (...) | 5.00 |

Fig. 4.10.4 - Cut Before

Select the Polyline and change its Kerf to Right Kerf in the properties box:

| Property | Value |
|---------------------------|-----------------|
| [-] Properties | |
| [-] Machining* | Cut |
| Internal / Ext... | Forced internal |
| Roughness (...) | 0.10 |
| Kerf | Right kerf |
| Surface (m ²) | -0.03 |
| Perimeter (m) | 1.02 |
| Weight (kg) | -2.19 |
| Internal/External | Interior |

Fig. 4.10.5 - Changing the Kerf

4.10.1.2 Removing the Cut operation from the lines already cut

Now, we need to affect the Null tooling to the lines underneath the polyline. To do it, we first have to hide the polyline (View / Mask Contour or press [!] and click on the polyline; to unhide, press [*]) and then add the Null tooling, via the menu Machining / Cutting Nibbling / Manual:

| Property | Value |
|-------------------------|---------------------------------------|
| [-] Tool* | Null |
| Null | <input checked="" type="radio"/> Null |
| Control the attribution | <input checked="" type="checkbox"/> |
| Shortening in corners | <input checked="" type="checkbox"/> |
| Maximum overlap (...) | 5.00 |

Fig. 4.10.6 - Manual Parameters

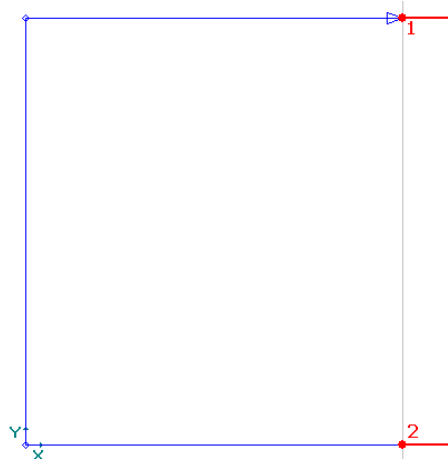


Fig. 4.10.7 - Adding Null Tooling

4.10.1.3 Adding the Chamfer attribute to the line

We need to add the chamfer type and value to the segment we want to add a chamfer to. In the Edges menu, select the Chamfer operation and set its parameters in the parameter box:

| Property | Value |
|------------------|---------|
| Bevel type* | Thick Y |
| High angle* (°) | 45.00 |
| Heel height (mm) | 2.00 |

Fig. 4.10.8 - Chamfer Properties

Then, click on the ends of the segment you want to add the chamfer to:

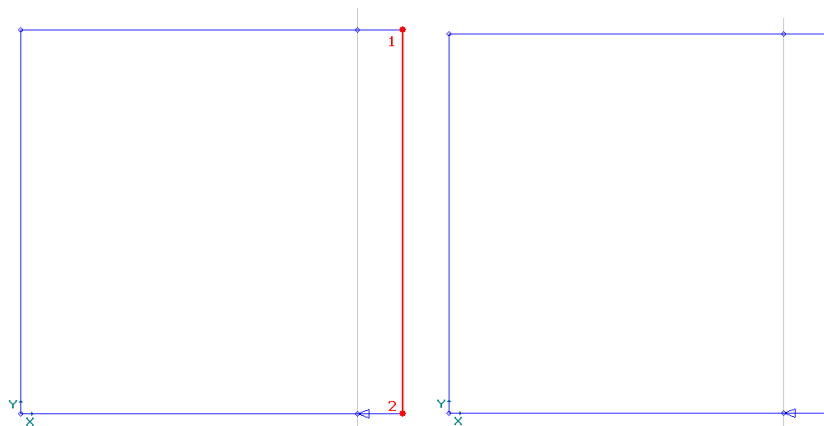


Fig. 4.10.9 - Adding Chamfer Information

Affect the Chamfer Tool to the line, using the Manual Tooling item and selecting the Chamfer Tool in the properties box.

4.10.1.4 Checking the Toolings

Go to the Machining / Visualization menu and select the Elements According to Tools item to check all the toolings are Ok:

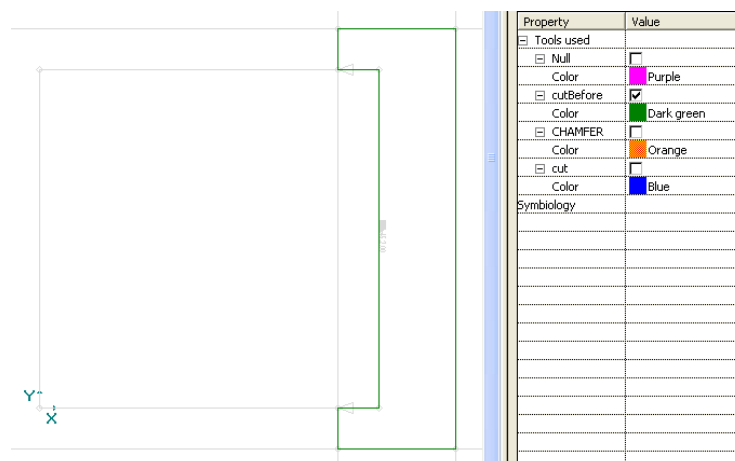


Fig. 4.10.10 - Cutting the Extra Room

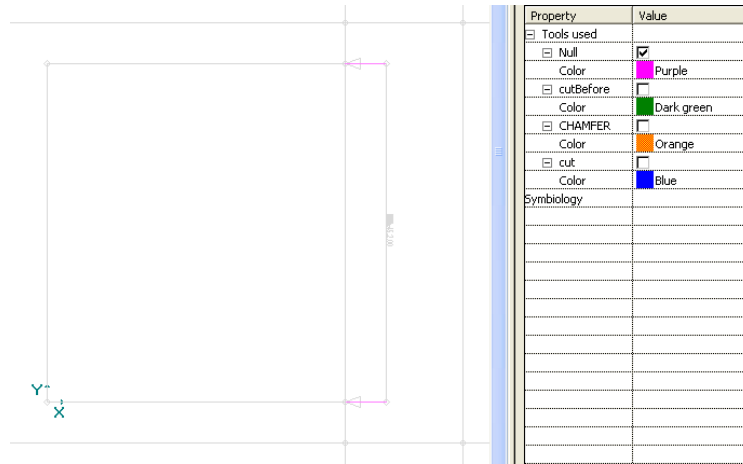


Fig. 4.10.11 - Segment Already Cut

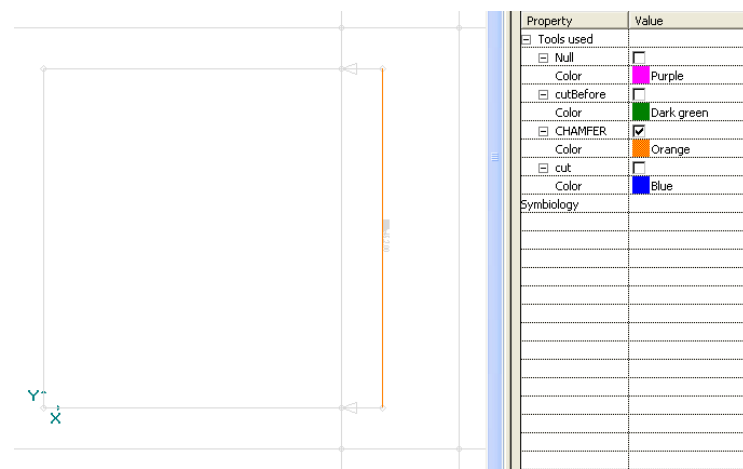


Fig. 4.10.12 – Chamfering

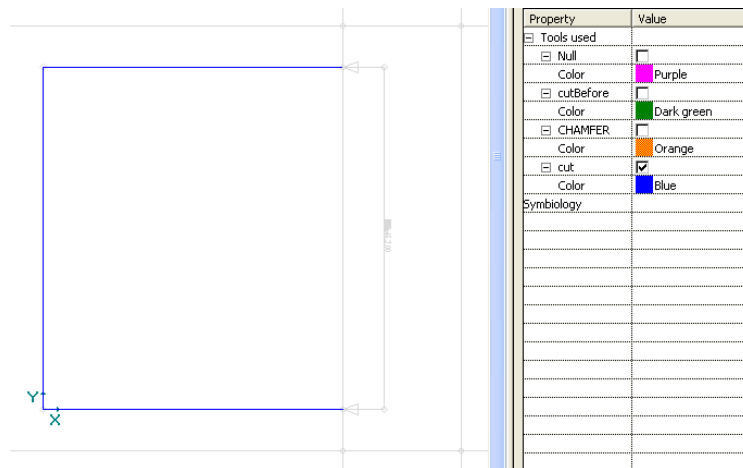


Fig. 4.10.13 - Cutting the Rest Of The Part

4.10.2 Chamfer on the Edge of the Sheet

Normally toolings on the edge of the sheet are automatically deleted in order to avoid useless cuts. In order to use the chamfer it is necessary to change some parameters to be able to work on the left hand side of the sheet.

4.10.2.1 Preparing the Chamfer

Go to the Resource Editor and press [Ctrl]+[Alt]+[Shift]+[E] to activate expert mode and in Other Parameters, select the Pathfinder tab and assign the value 111 to the parameter PFI_38.

In order to nest the part on the edge of the sheet it is necessary to reduce the margin gap on the left to 0 (in WinNEST, Plate Properties).

4.10.2.2 Nester

The chamfer is added after the nesting is done but is not added on the parts.

Open the nester from WinNEST in order to nest the parts in the sheet and click on the menu File / Launch / Drafter to open the whole nesting in the Drafter:

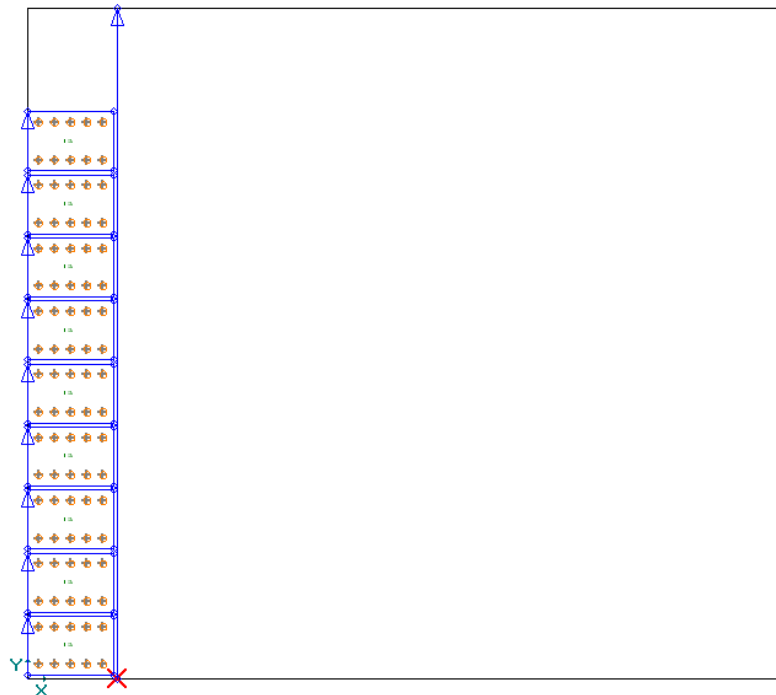


Fig. 4.10.14 - Nesting In Drafter

4.10.2.3 Deleting the Cut Tooling

Using the Manual Tooling item, assign the Null operation to the left hand side edges of the parts:

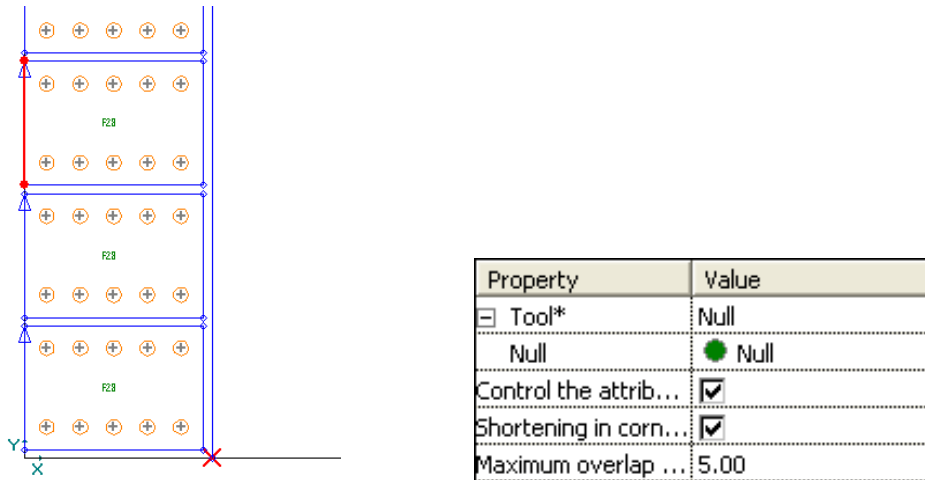


Fig. 4.10.15 - Removing the Cut Tooling

4.10.2.4 Adding the Chamfer Line

Draw a line (Drawing / Creation / Line) from the bottom left corner to the upper left corner of the last part and hide the parts outlines:

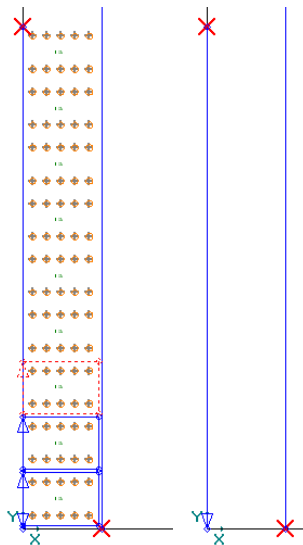


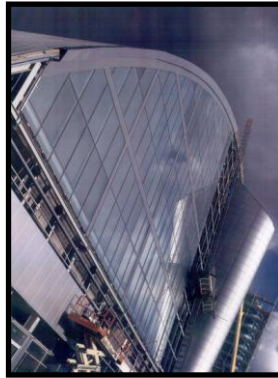
Fig. 4.10.16 - Creating a Line and hiding the Parts

Now, add the Chamfer Tool to the line you added, using the Manual Tooling Item and the Chamfer Tool. Check the tools with the Visualization according To Tools. Save and exit the drafter. Close the nester and check the sequence in the Pathfinder.

Chamfer should be the first tool. If not, change the sequence manually to place it first.



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