Tool Assignment in the CAM Manager

The tool assignment creates a link between the applied tools and the imos machining.
By not selecting principles, imos CAM refers to the default-tools if these have been defined.

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However, due to the continuous development of described software, it is not possible to guarantee up to date and accurate information, integrity or quality of the content at all times.
As far as we are able to detect errors or omissions or those, which have been reported to us, our attempt is to correct these with the following versions. imos is not responsible for any direct or indirect damages caused by the use or non-use of the presented information or through the use of faulty and incomplete information. The descriptions in this document can be changed at any time without prior notice.

Creation date: November 2015
Used Version: 12.0; Standard CAM Installation with an CNC Weeke Venture machine

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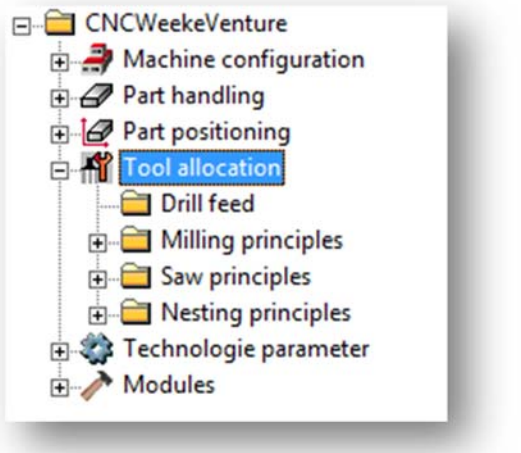
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1. Navigation

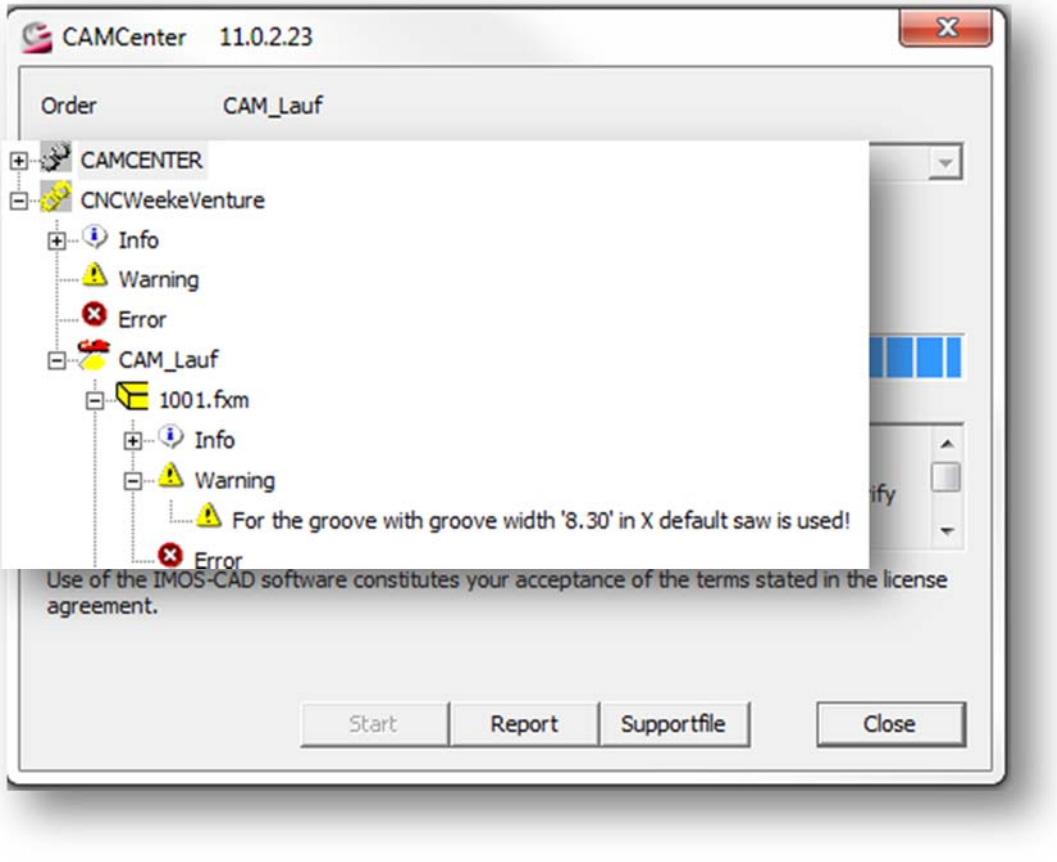
In the respective machine is the profile class of the **tool allocation** where the suitable tools for the imos machining can be allocated.



2. Identification tools

2.1 Set the default- tool

After running the APG, the tool, which has been allocated to each part, can easily be traced by the report.
If imos CAM does not find a suitable principle, then it is checked if a **default-tool** in the **CAM Manager** has been defined. This is shown as an appearing warning in the CAMCenter and the part is displayed in **yellow** in the report.

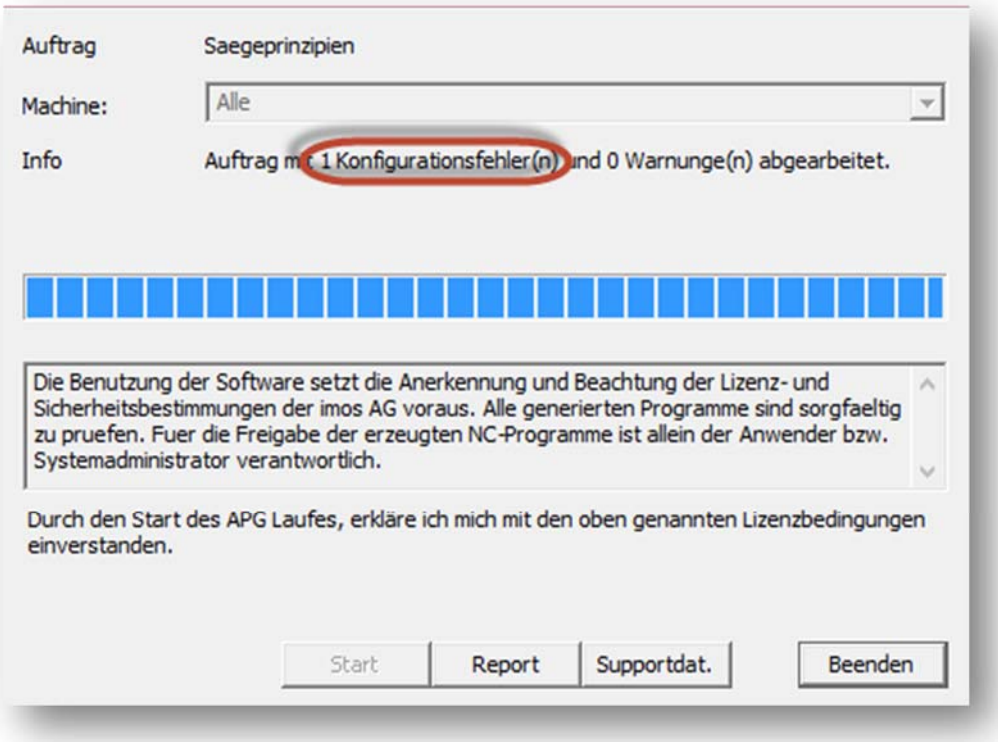


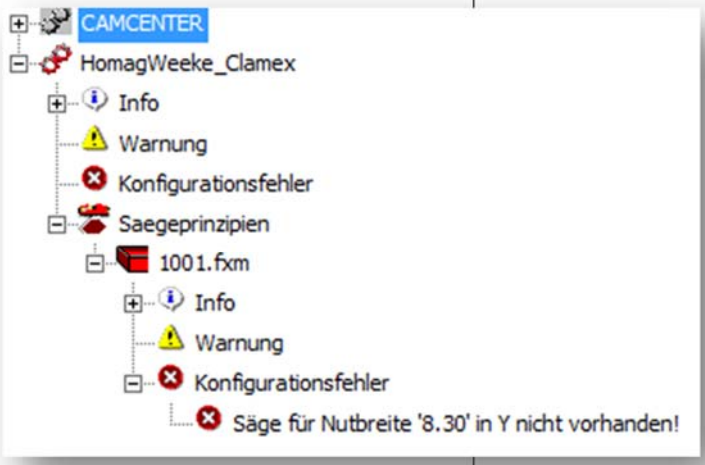
Tool assignment in the CAM Manager

2.2 No Default- tool available

If no **default-tool** has been defined in the **CAM Manager** and no principle can be found in the **tool database**, then **configuration errors** are shown after the run of the APG. This indicates that no tools could be assigned.

For recognizing which machining is affected, the parts are displayed in **red** in the **report** and then the not found machining is shown under the respective configuration error.

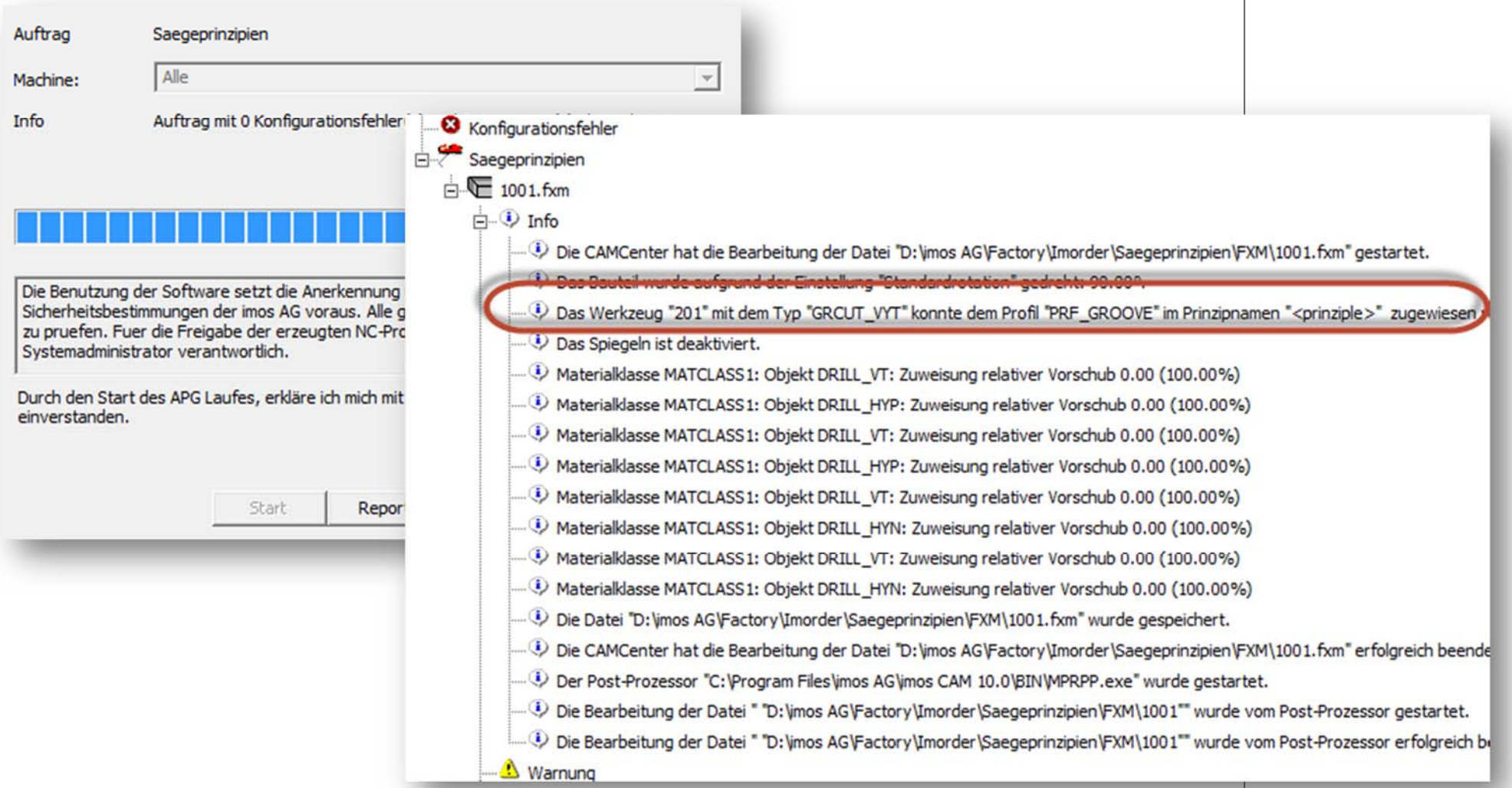




Tool assignment in the CAM Manager

2.3 Assigment via the tool allocation

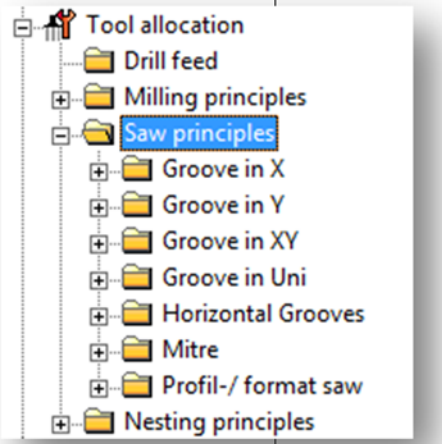
If a tool is found via the **tool allocation**, then this is shown under the suitable part in the **report**.



Tool assignment in the CAM Manager

3. Assign saw principles

In the **tool allocation** different machining types can be assigned under the **saw principles**.

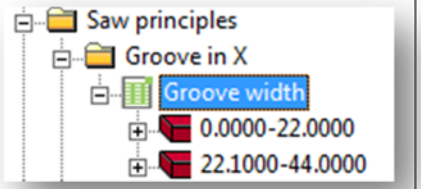


3.1 Grooves in X, Y, XY, Uni and horizontal grooves

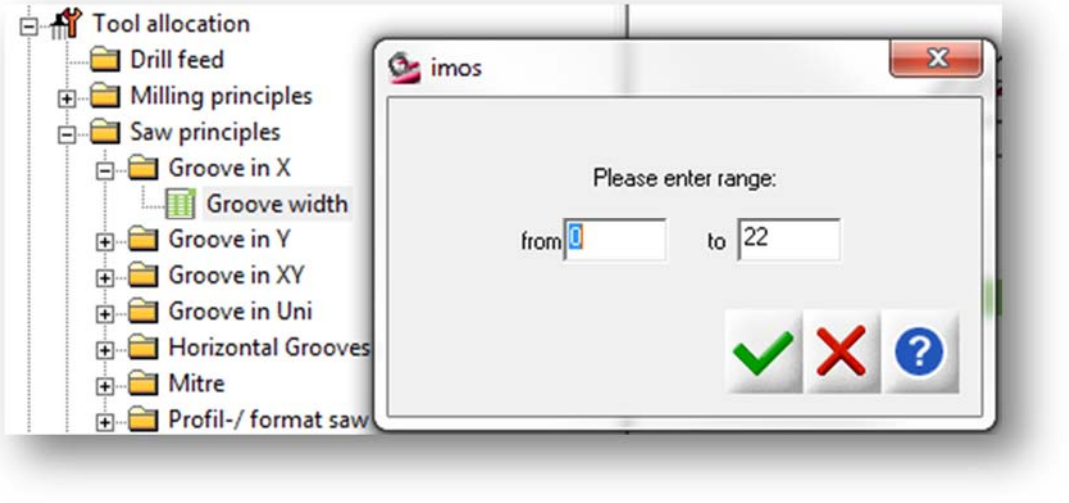
3.1.1 Define value range

If the desired machining type is opened via the plus sign in the **tool allocation**, the desired range for the respective tool can be defined by calling the context menu.
In the displayed example the allowed width for the saw principle in X-direction is defined.

On the basis of the defined groove width here, CAMCenter checks later if this range is suitable and if this tool should be applied.



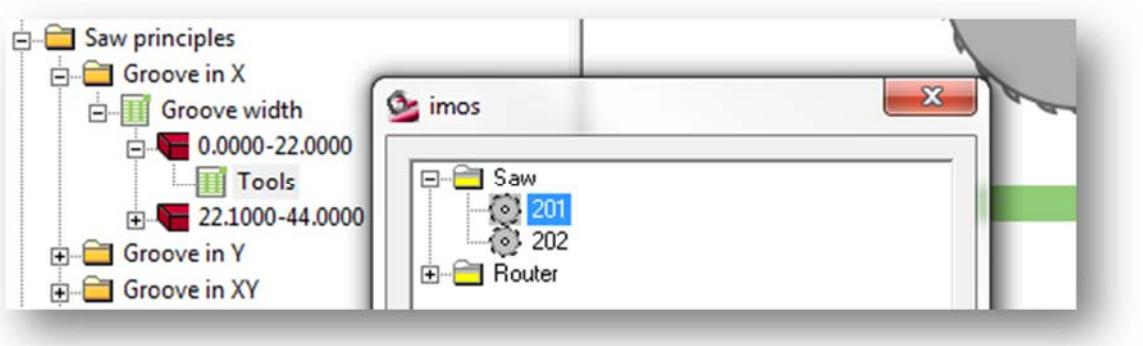
Additionally, several tools can be defined as well.



Tool assignment in the CAM Manager

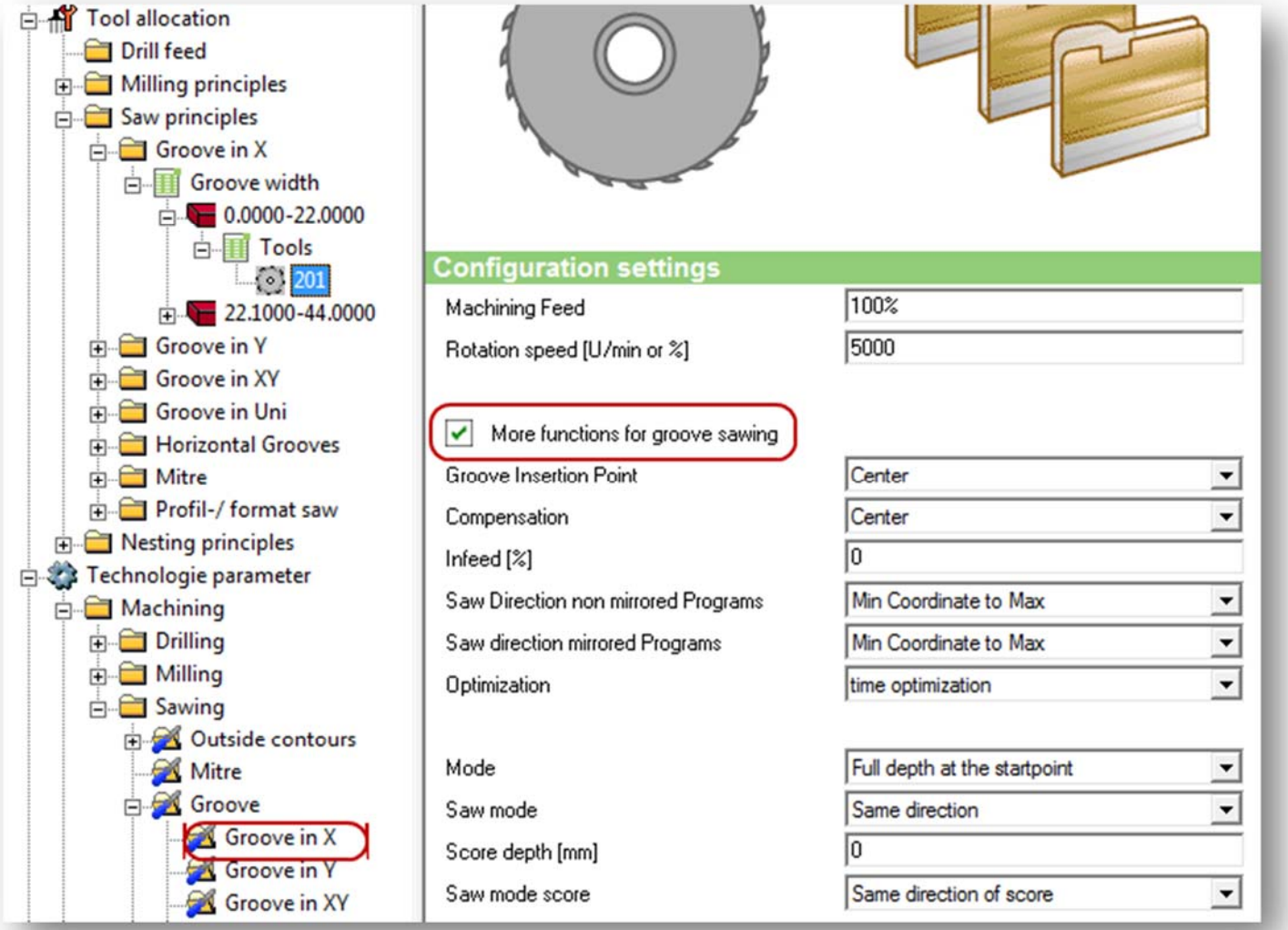
3.1.2 Assign tools

If a created profile class is marked by clicking the right mouse button, the function **add** can be called via the context menu. Afterwards the suitable tool must be selected from the **tool database**.



If the new assigned tool is marked, special properties can be defined for this on the right side via the **configuration parameter**.

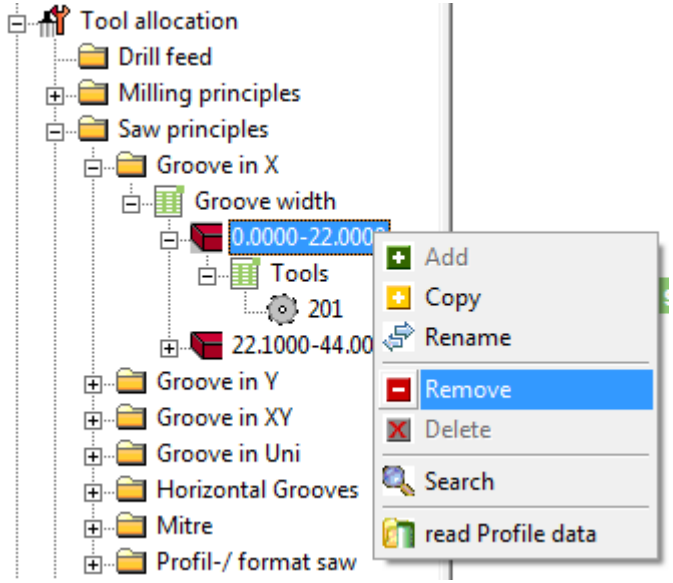
If the checkbox **extra functions for groove sawing** is activated, then the settings from the **technology parameter** for the tool is not used anymore, but only the applied settings for this special situation.



Tool assignment in the CAM Manager

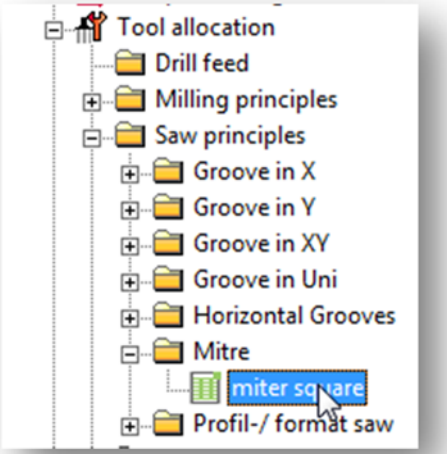
3.1.3 Modify and Delete

For modifying or deleting a profile class, this must be called by right clicking and then the necessary function is selected in the context menu.
This means that if a profile class has to be deleted, then **delete** must be selected in the context menu.



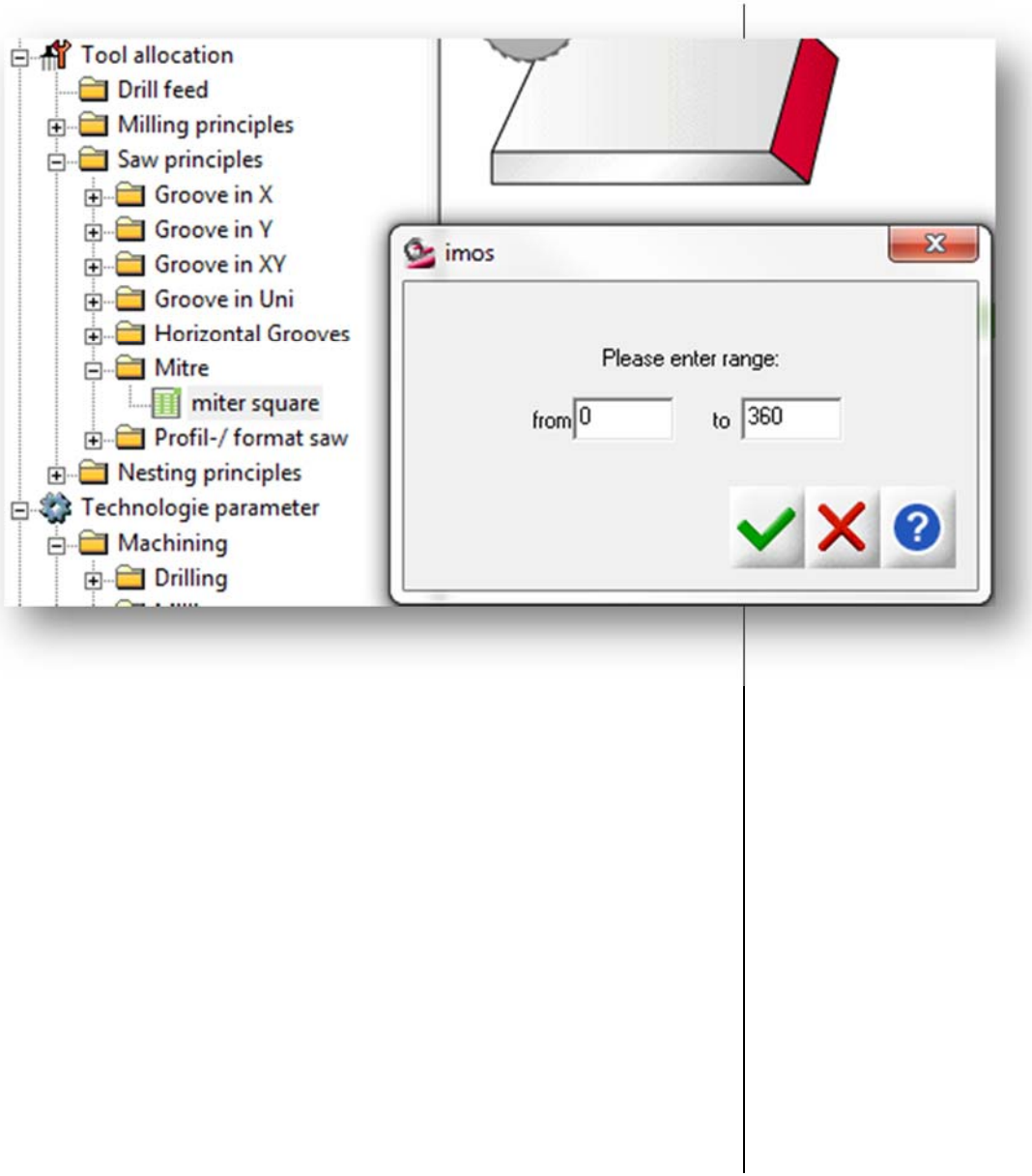
3.2 Mitre

.Different saws can be assigned with the support of the **mitre angle**.



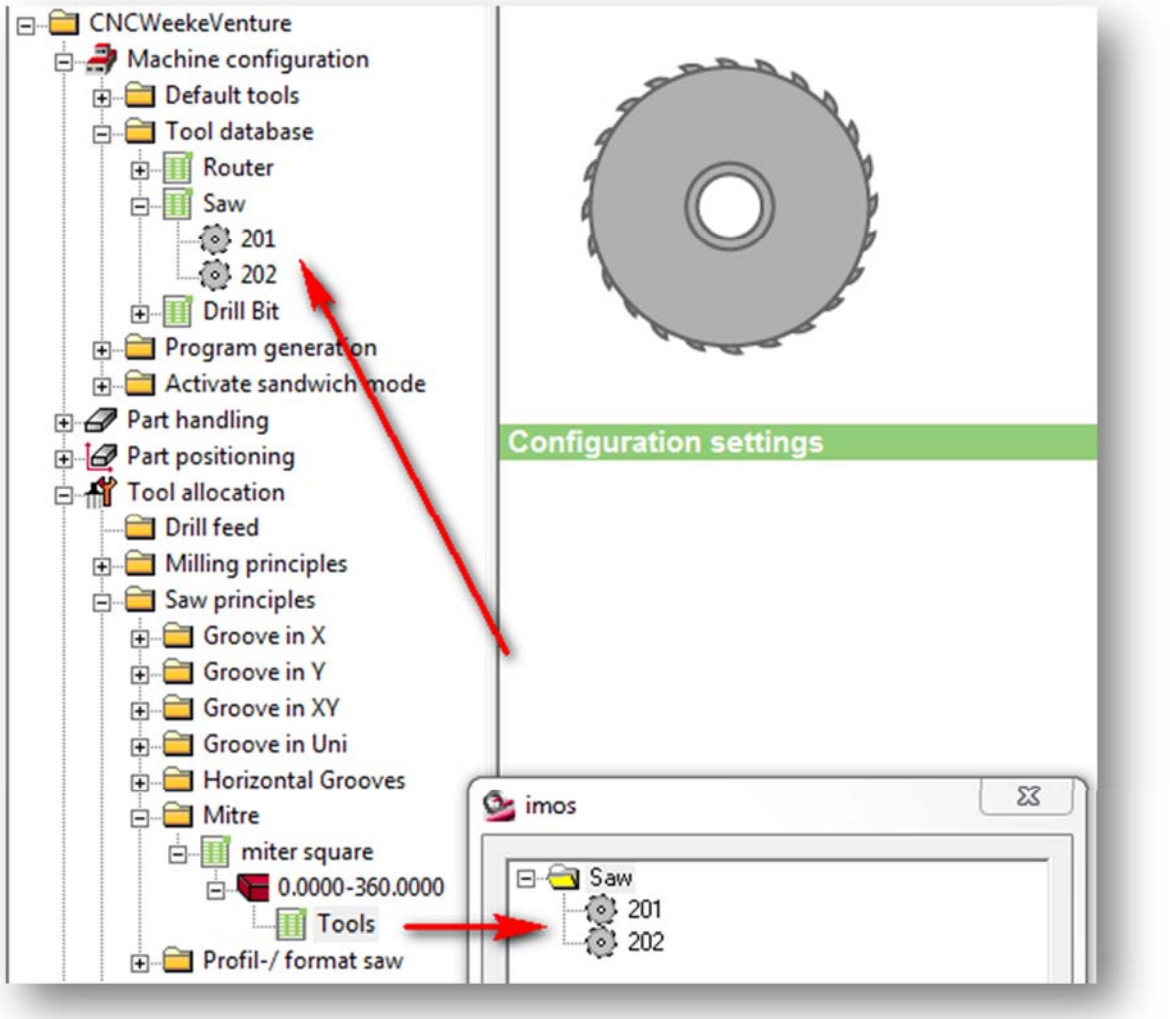
Before assigning the tool, a profile class must be created first. In order to do this, the entry **mitre angle** must be marked by clicking the right mouse button and the function **add** must be selected in the context menu. In the following dialog enter the profile class for the defined saws to be applied later.

The data is shown later with the assignment in degrees.



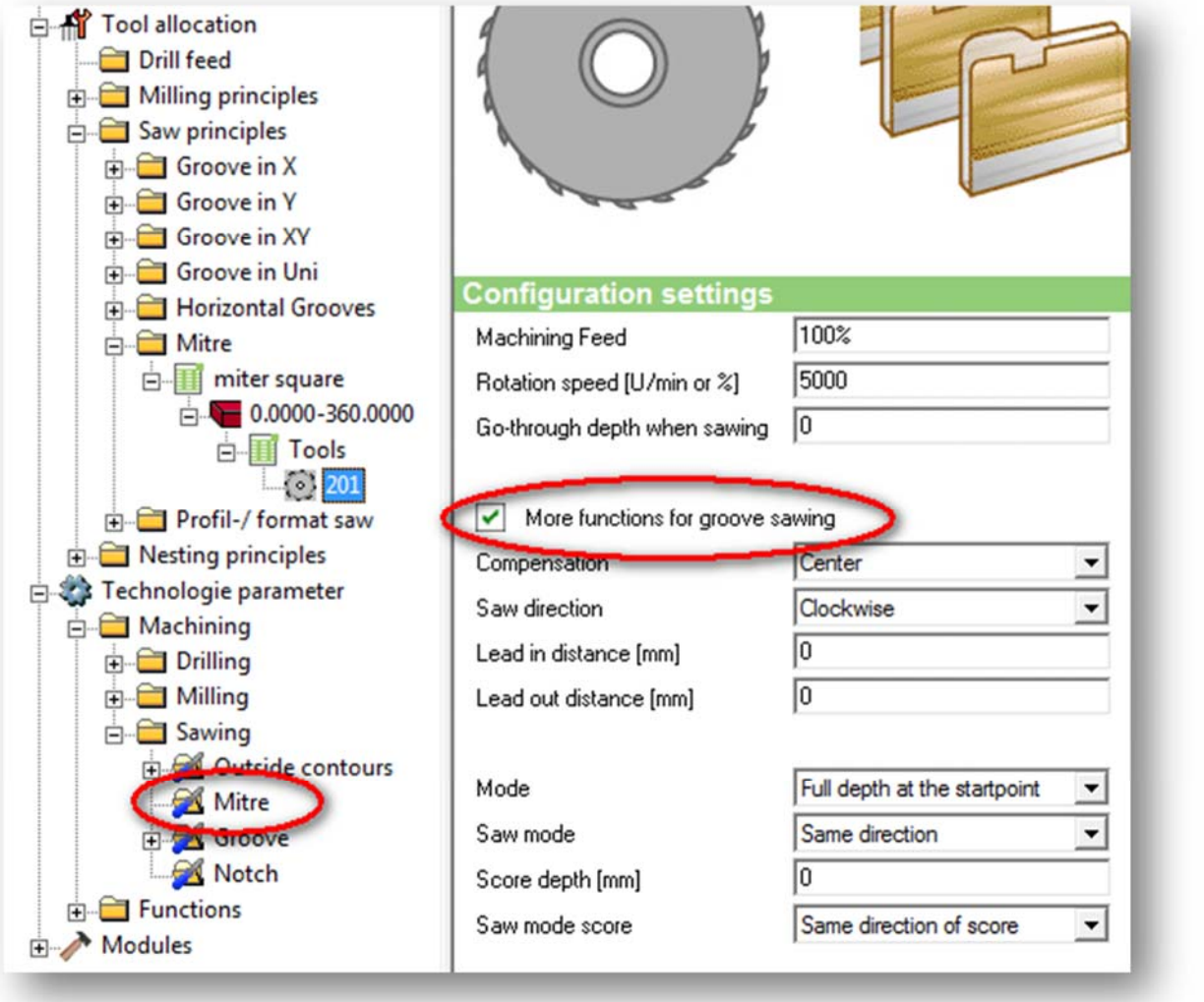
Tool assignment in the CAM Manager

After creating the profile class, this must be opened via the **plus sign** and the entry **tools** marked by clicking the right mouse button. Then in the context menu **add** must be selected and afterwards the suitable tool can be selected from the **tool data base.**



Tool assignment in the CAM Manager

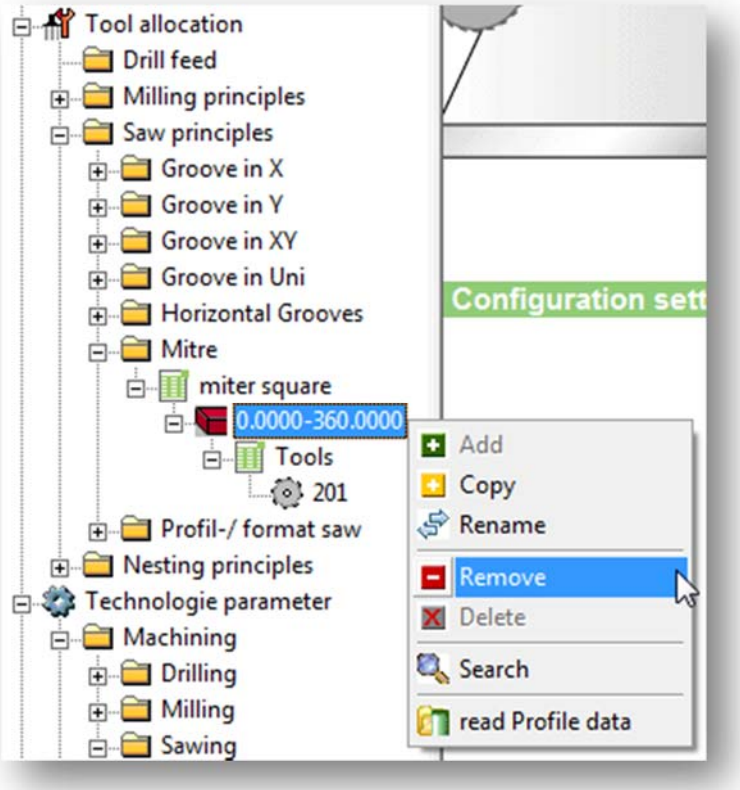
If the assigned saw is marked, the settings can be made for this special situation in the **configuration parameter**. For this purpose, the checkbox **extra functions for mitre sawing** must be activated. The parameter set as the default value here originates from the **technology parameter** and can be adjusted for this special situation.



Tool assignment in the CAM Manager

3.2.1 Modify and delete

For modifying or deleting a profile class, this must be called by right clicking and then the necessary function is selected in the context menu.
This means that if a profile class has to be deleted, then **delete** must be selected in the context menu.



3.3 Format-/Profile sawing

3.3.1 Data system in CAD

Before creating a profile in the **CAM Manager**, the required settings should be made in CAD first.

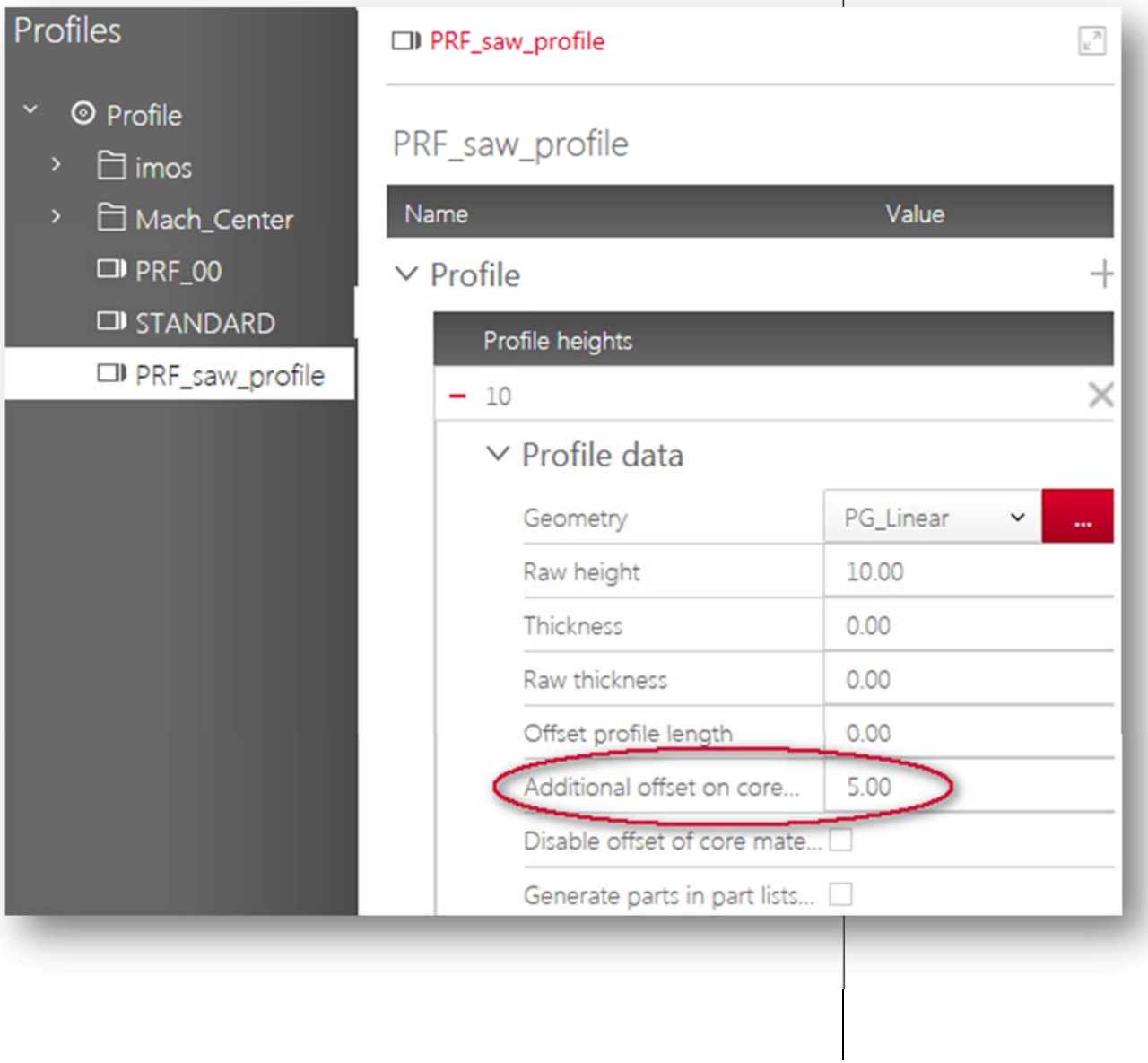
In order to do this, **a new profile** must be created in **CAD** first.

Note that there is an **oversize** on the edge, which is calculated to the material later.

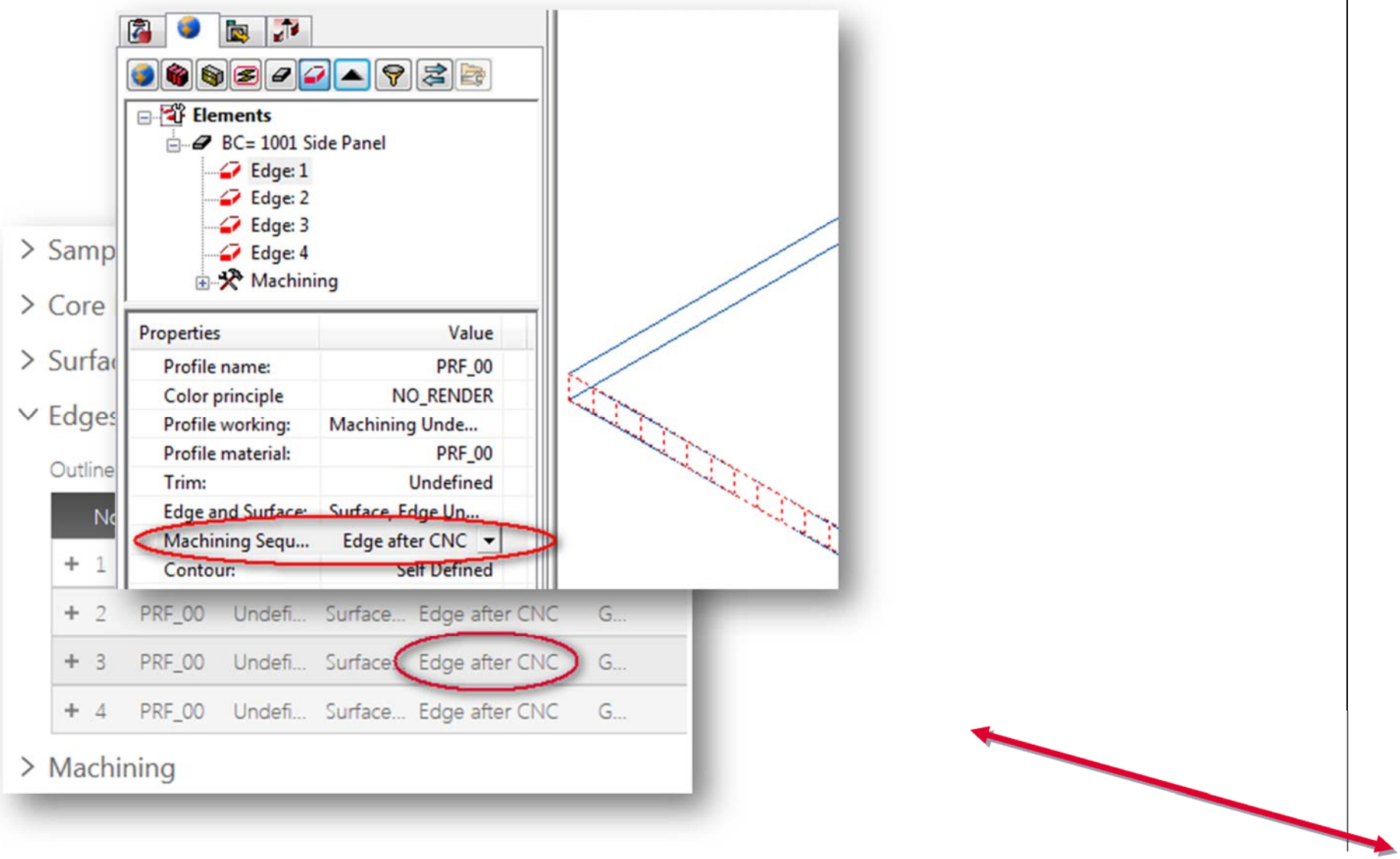
In addition the profile machining must be on **machining + edging** or **machined in profile**.

If the part has to be formatted in the material via the **machining class**, then the profile machining must be set on **edgebanded profile**.

Furthermore, it is important that there is an oversize in the material, otherwise it cannot be formatted.



After creating the profile in the Element Manager, it must be assigned to a part then and convert the **machining sequence** to **edge after CNC**.

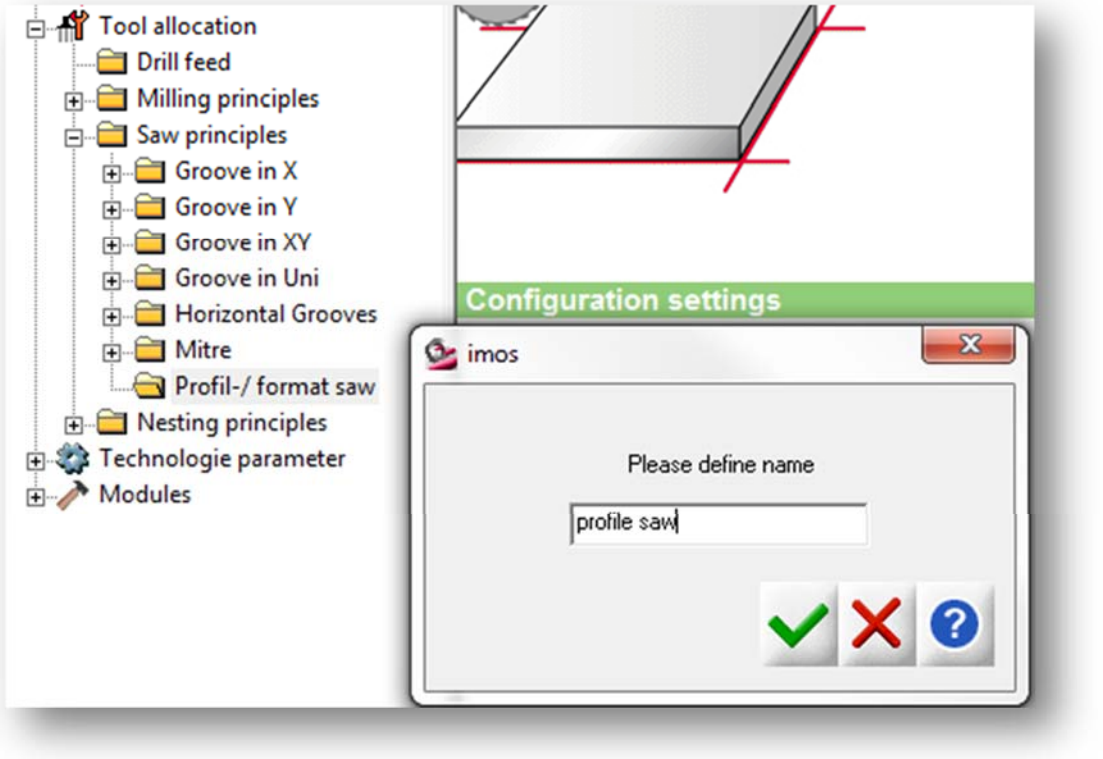


Tool assignment in the CAM Manager

3.3.2 Data system in CAM Manager

When assigning **format and profile sawing**, several principles with different settings can be created and with the support of **profiles** and **machining class** assigned.

For creating a new principle, the entry **format-/profile sawing** must be marked by right clicking and select **add** in the appearing context menu and then a freely definable name can be entered.

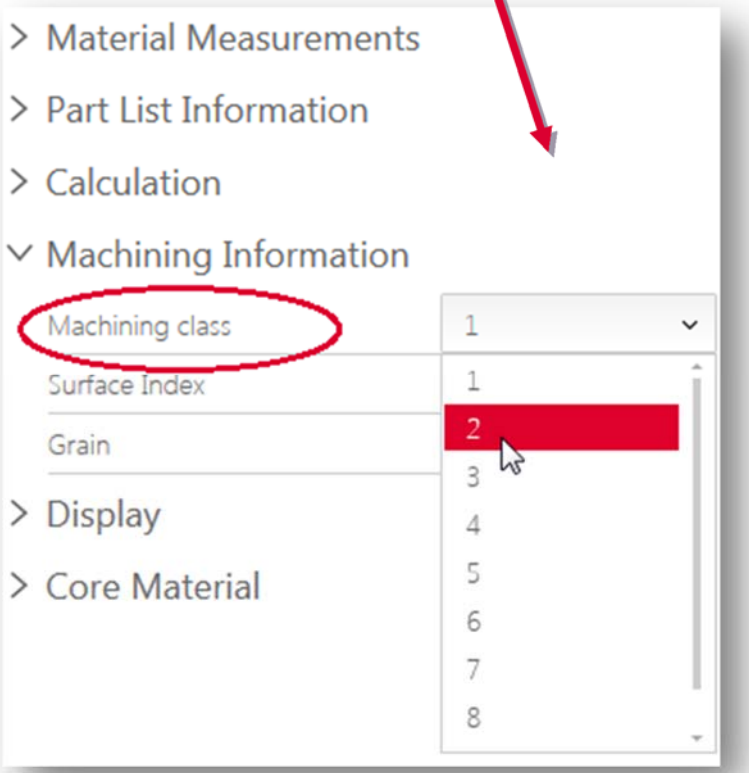


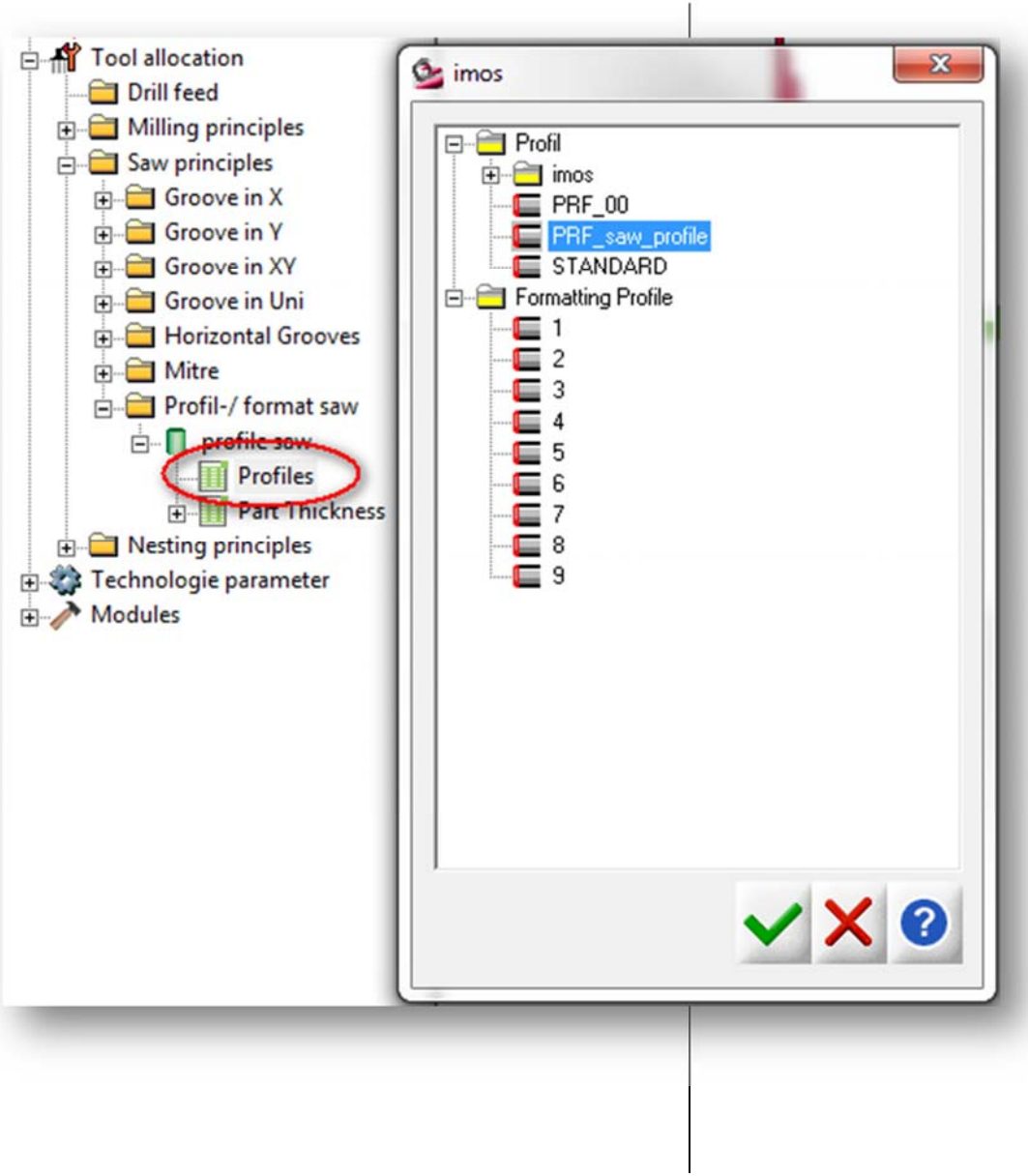
Afterwards a profile can be assigned to the new created principle for which the saw should be applied. Here you can select between **format profiles** and the **standard profiles**.



In the folder **profiles** are all profiles created in the **Element Manager**.

All machining classes from the material are stored in the folder **format profiles.**

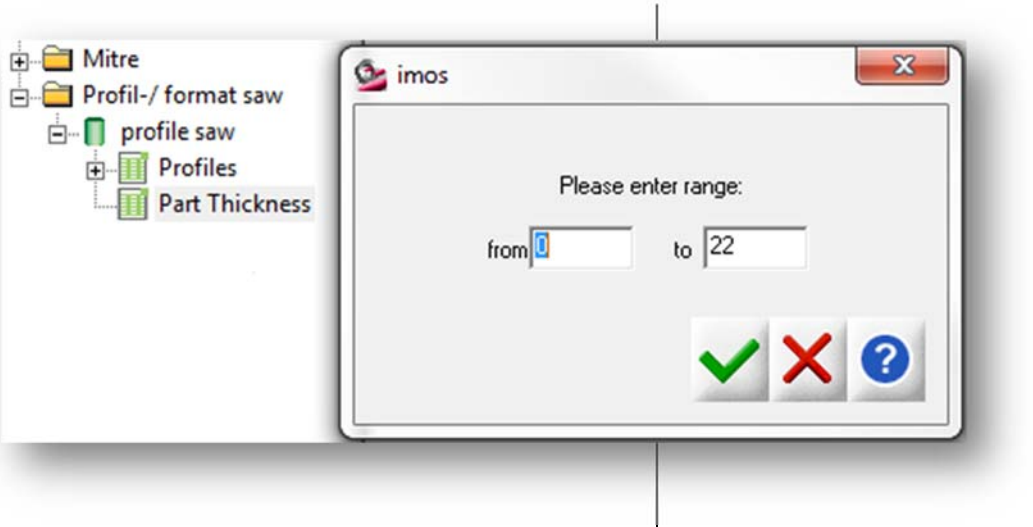




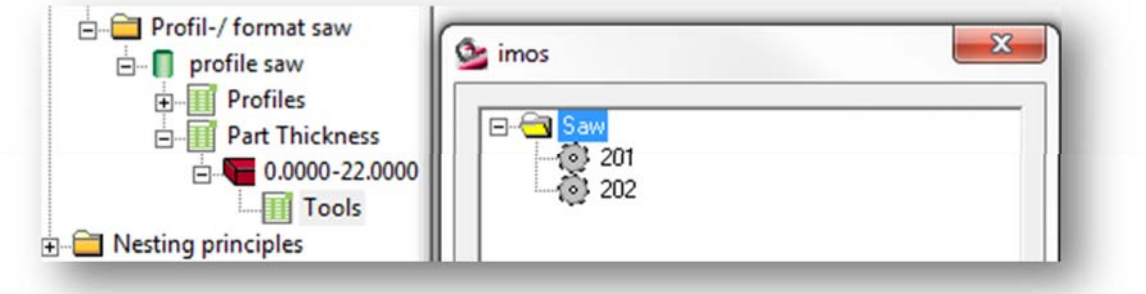
Tool assignment in the CAM Manager

In the next step a profile class must be defined for the part thickness of the new principle for which the saw should be applied. Additionally, the entry **part thickness** must be marked by clicking the right mouse button and then select the function **add** in the appearing context menu.

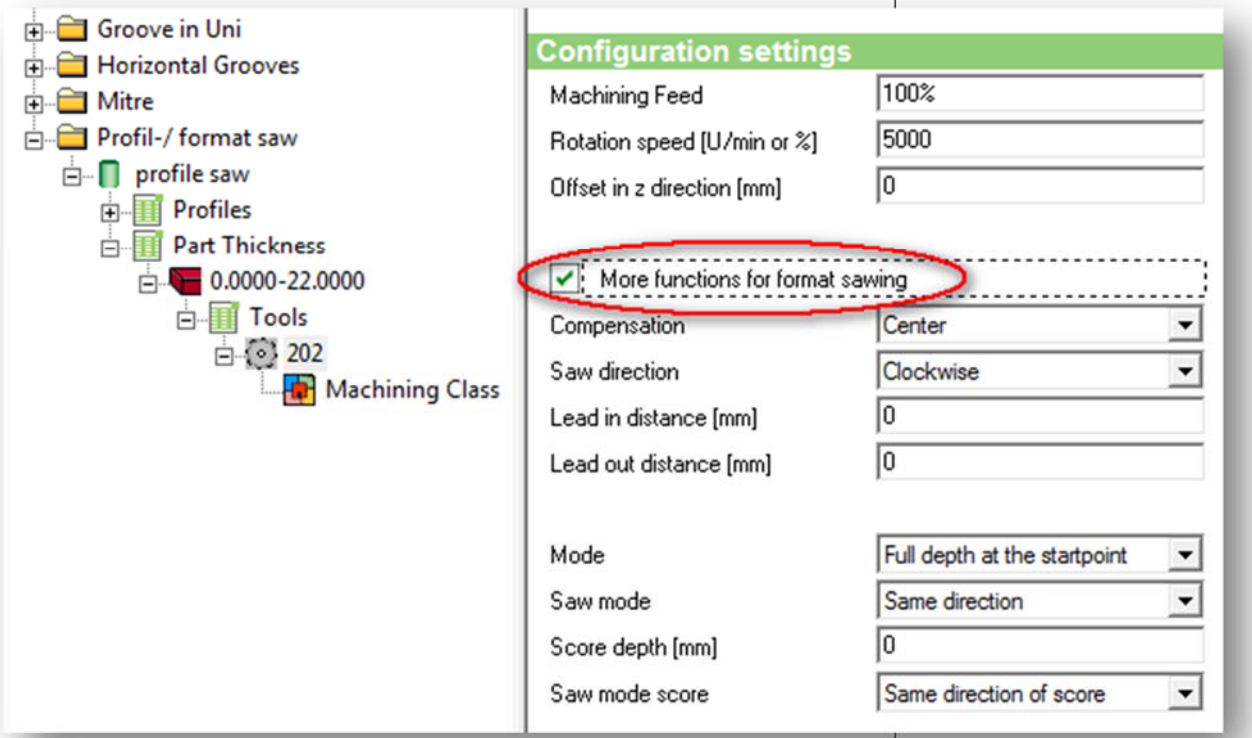
Note, if the saw has an oversize at the bottom, then this must be considered. (e.g. if the panel is 19mm thick and the saw should plunge 3mm through the panel, then the profile class must be set up to 22).



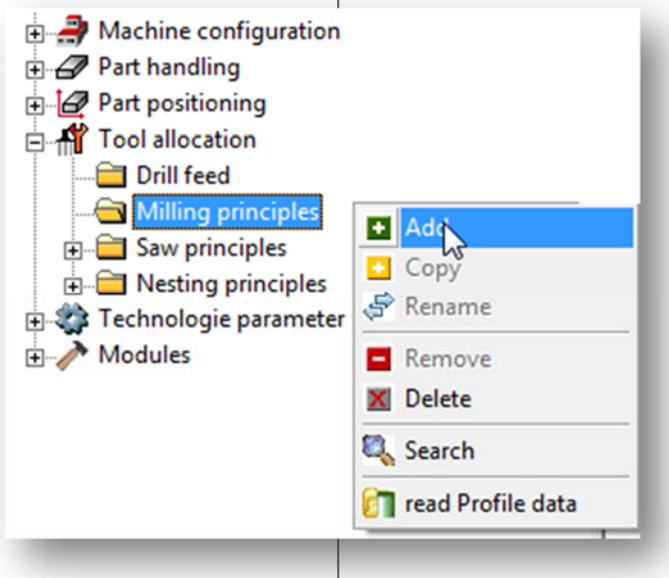
After defining the profile class, the tree can be opened further via the plus sign. The entry **tools** can be selected with a right mouse click and then select **add** in the appearing context menu. In the appearing dialog the desired saw can be selected from the **tool database**.



If the new assigned saw has been marked in the tree, then the situation specific settings for the saw can be made on the right side via the **configuration parameter**.



Functions	Explanation
Shift in Z- direction[mm]	Via the **Shift in Z- direction [mm]** the extra through depth can be defined. If a **0** is entered, then the saw goes through the complete material thickness. With a **negative value** the saw goes through the material and extra deeper than the entered value. With a **positive value** the saw does not run through the material thickness (e.g. if the value is 5 and the material thickness is 19mm, then the saw only runs 14mm through the material).



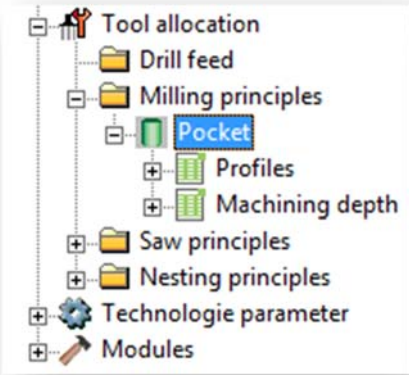
Extra functions for format sawing	If the checkbox **extra functions for format sawing** is activated, then settings can be made for this special situation. If the checkbox is not activated, then the settings from the **technology parameter** are applied.

4. Assign milling principles

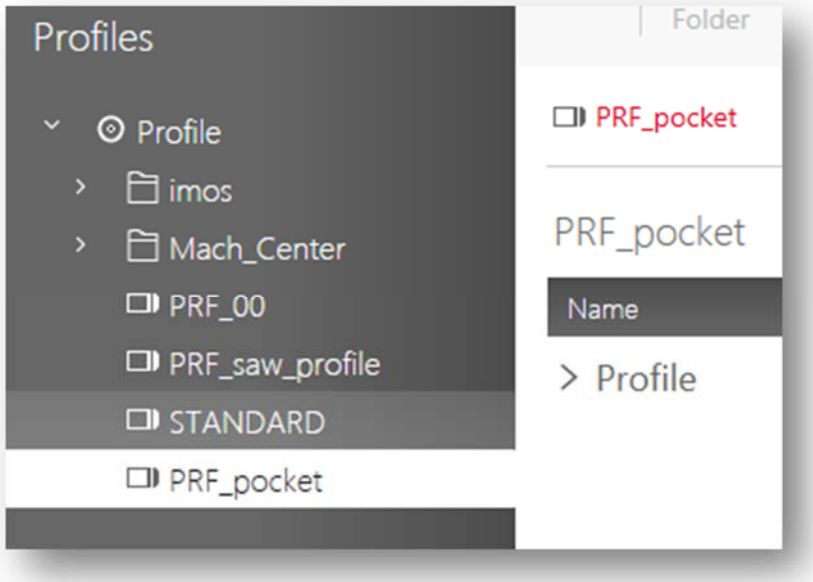
4.1 Create a pocket

For assigning the correct tool for pockets, a new milling principle must be created first. To do this, the entry **milling principle** must be marked by clicking with the right mouse button and select **add** in the context menu. Then the name for the new milling principle must be entered which can be freely selected!

If the new created milling principle is selected and the tree is opened further via the plus, then the entries **profiles** and **machining depth** appear.



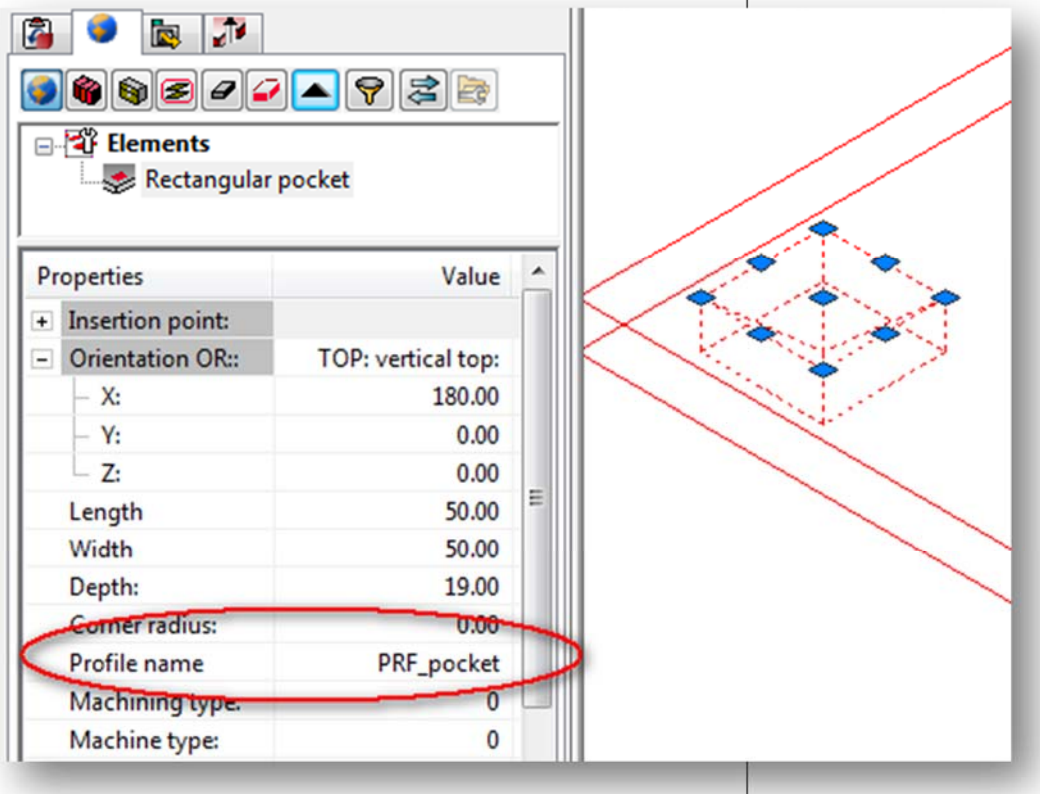
For assigning the tools to the correct pockets, a new profile must be created in the imos **Element Manager**.



Tool assignment in the CAM Manager

4.1.1 Assign profile in CAD to a pocket

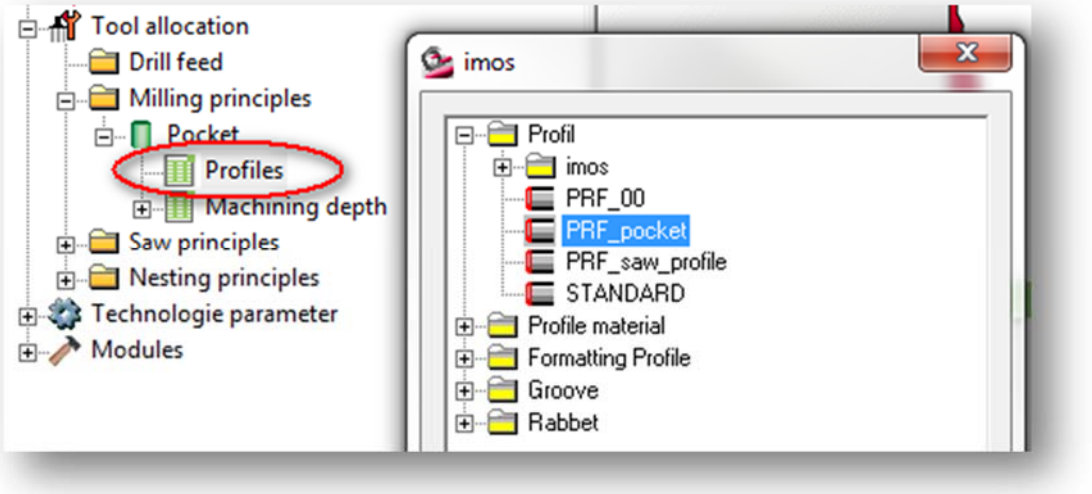
After creating a profile, it must be assigned to the pocket. This assignment takes place on the pocket via the **profile names**.



4.1.2 Data system in the CAM Manager

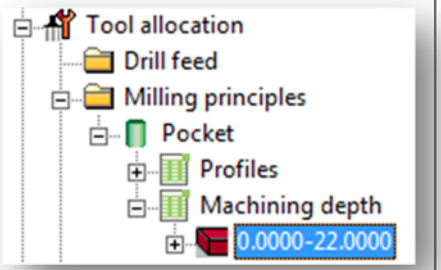
Creating the profile in the CAD is finally completed. Now it must be assigned to the milling principle. In order to do this, the entry **profile** in the required milling principle must be marked by clicking the right mouse button and to select **add** in the appearing context menu.
Thereby the dialog for the **profiles** appears. The required profile can be selected here.

A detailed description of the **profile** dialog is in chapter **4.2. Explanation of the profile dialog**

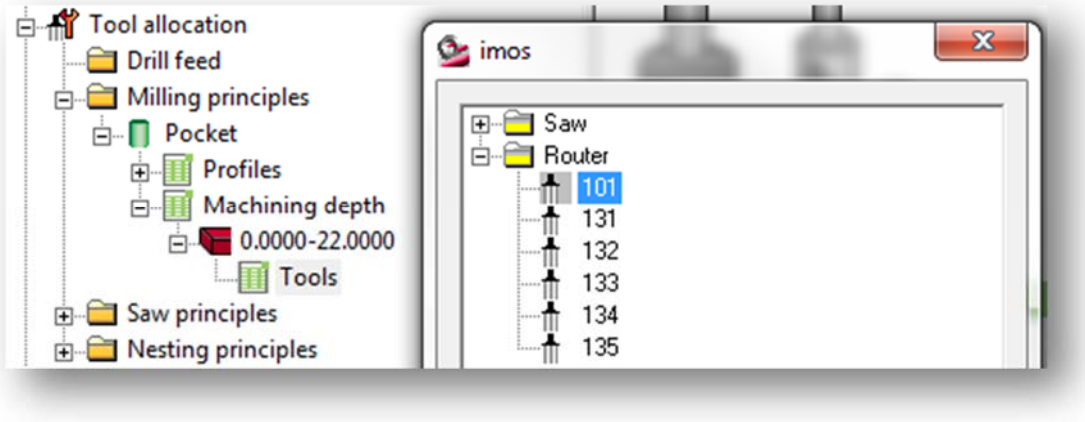


In the next step a **profile class** must be defined for the milling principle. The profile class for pockets always refers to the **pocket depth**.
For creating a profile class proceed in the same way as in chapter **Fehler! Verweisquelle konnte nicht gefunden werden. Define value sections.**

Always ensure to consider this when the router runs through the panel.



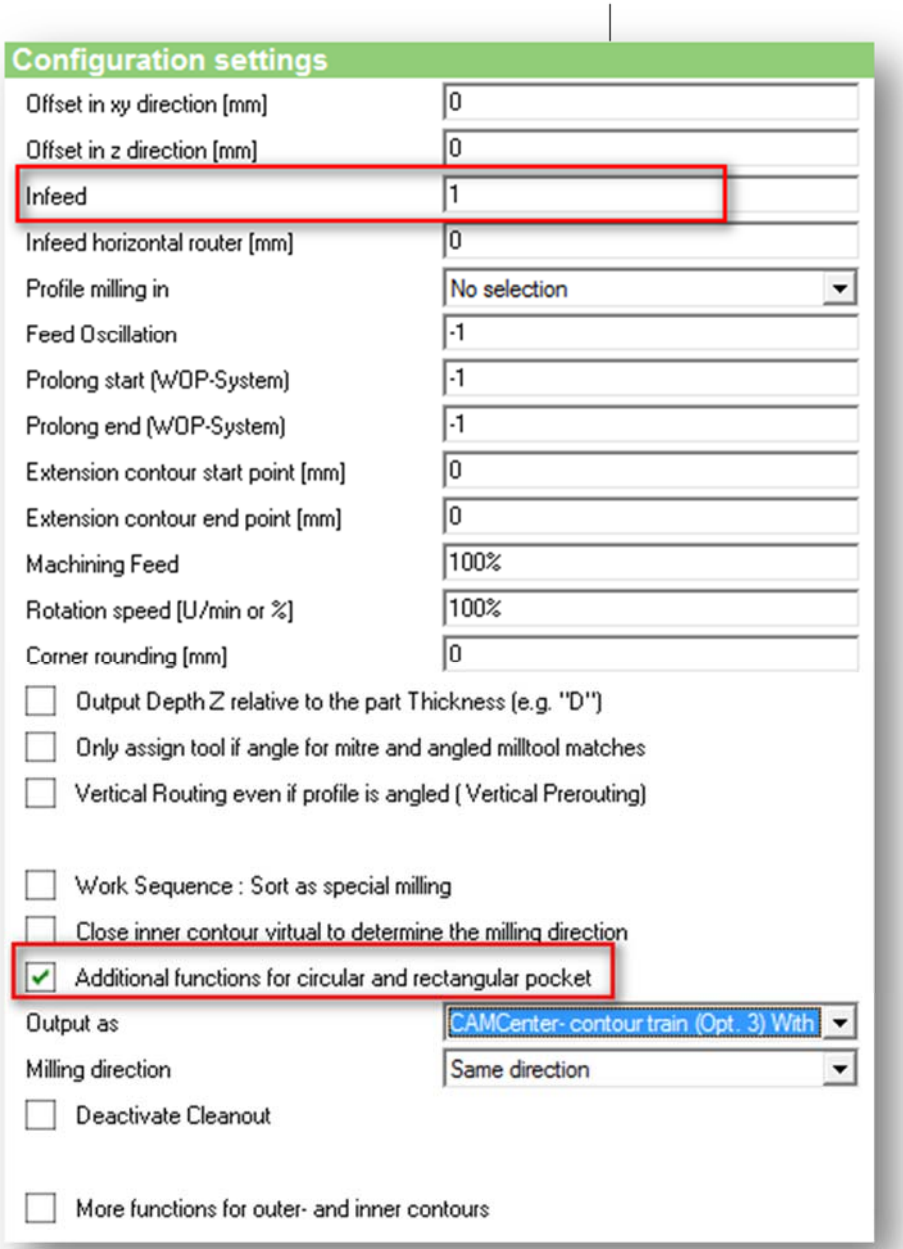
After defining the first profile class the tool must be stored for this profile class now. (See chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** Assign tools).



After assigning the tool, additional settings can be made on the right side via the **configuration parameter**.

Tool assignment in the CAM Manager

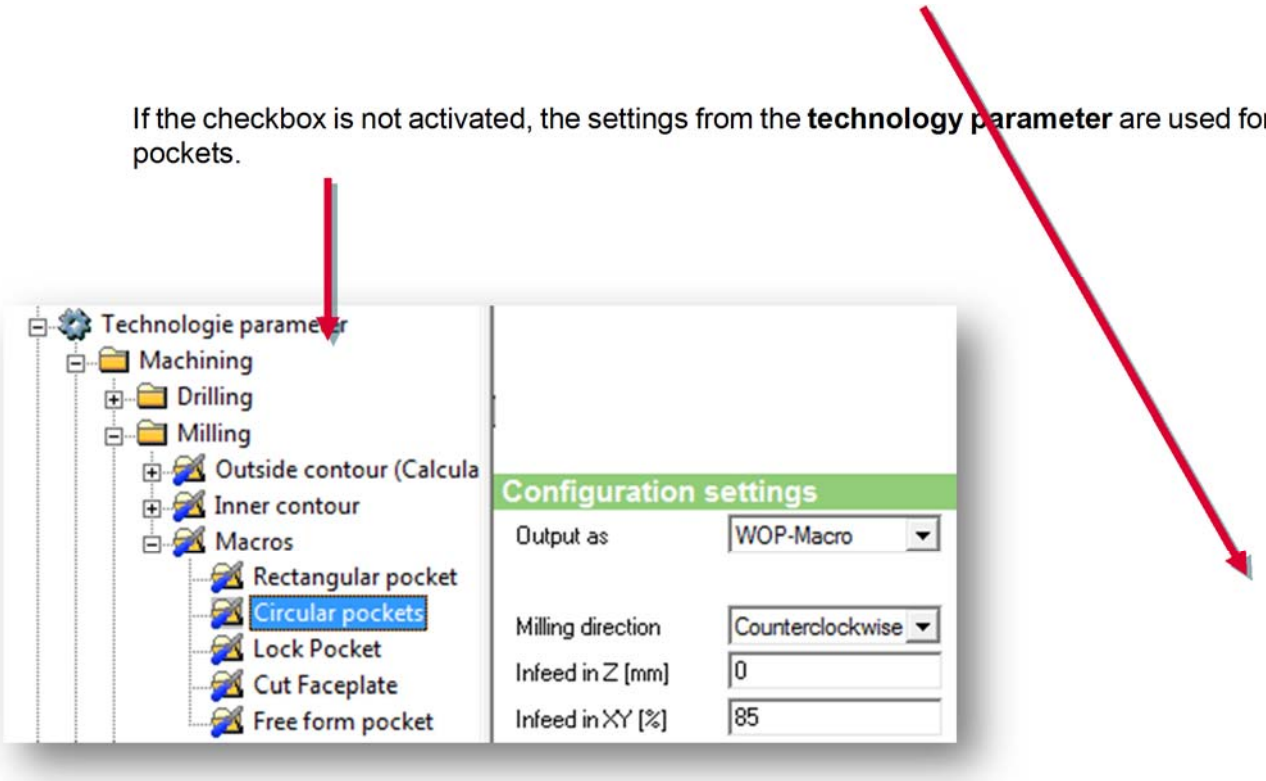
The **infeed** is always evaluated if the pockets are output as contour lines in the program. If the output takes place via the **Wop Macro**, then the data is taken from the **technology-parameter** or from the **CAD**.



Tool assignment in the CAM Manager

The settings for this situation can be modified via the checkbox **extra functions for macros rectangular pockets and circular pockets.**

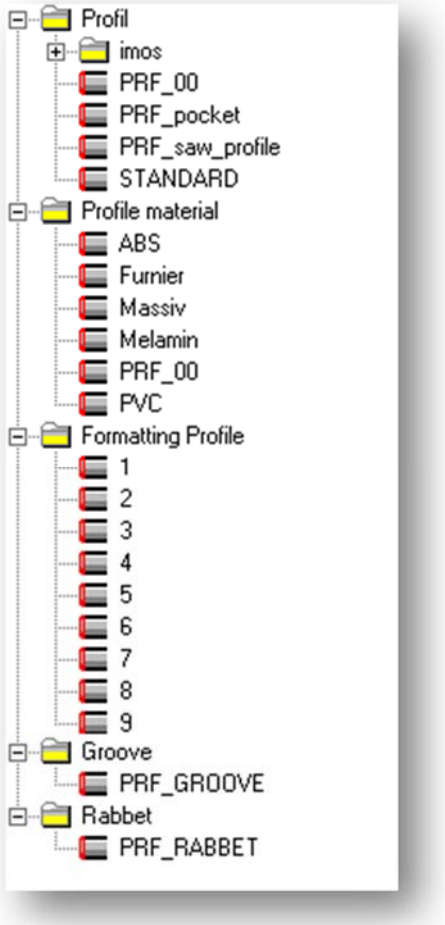
If the checkbox is not activated, the settings from the **technology parameter** are used for the circular pockets and rectangular pockets.



Description	Explanation
Infeed	The machining in Z can be divided in several poly contours via the infeed.
Output as	The output can define if **contour train (Opt.3)** or **contour train (Opt.4)** should be output for this situation.
Milling direction	Defines if the pocket should be cleaned out in down cut milling or up cut milling.
Deactivate clean out	An activated checkbox enables to circle the contour for this situation.

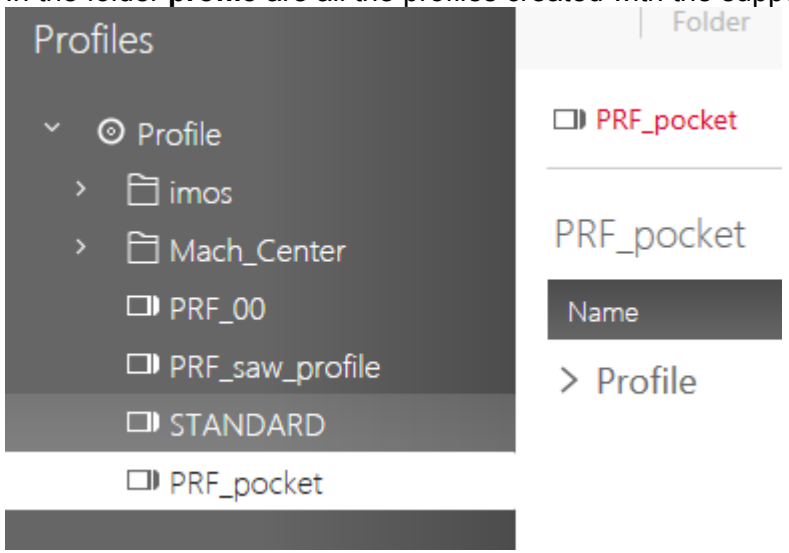
4.2 Explanation of the profile dialog

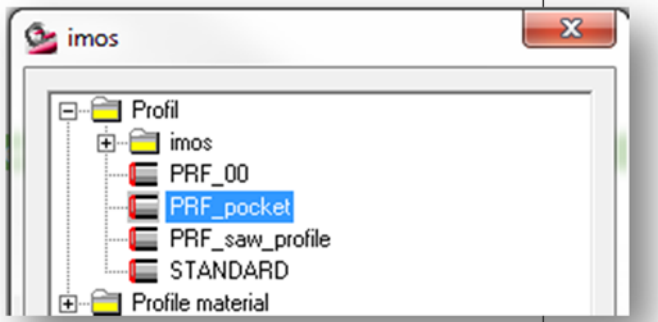
The profile dialog lists all profiles stored in the **imos database**. The structure is displayed as follows:



4.2.1 Profiles

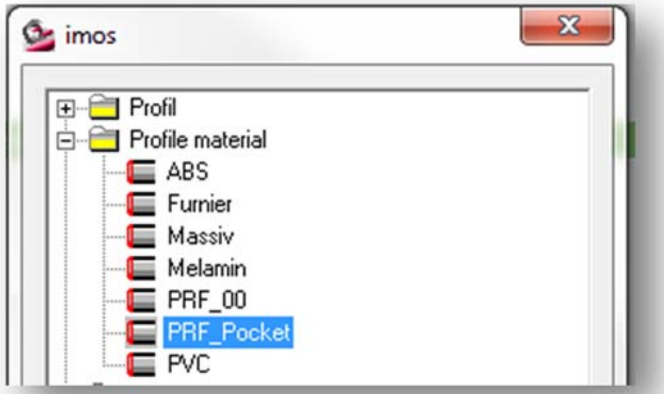
In the folder **profile** are all the profiles created with the support of the **element name** in the **Element Manager.**

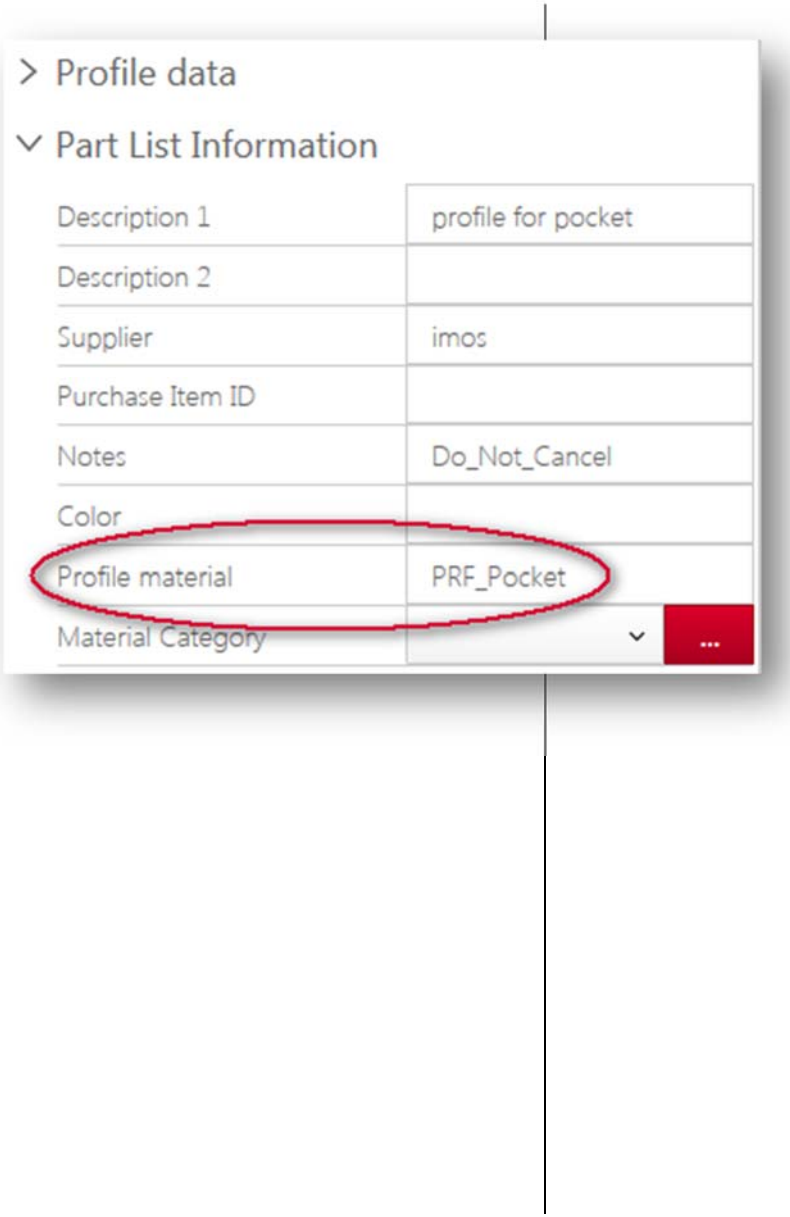




4.2.2 Profile material

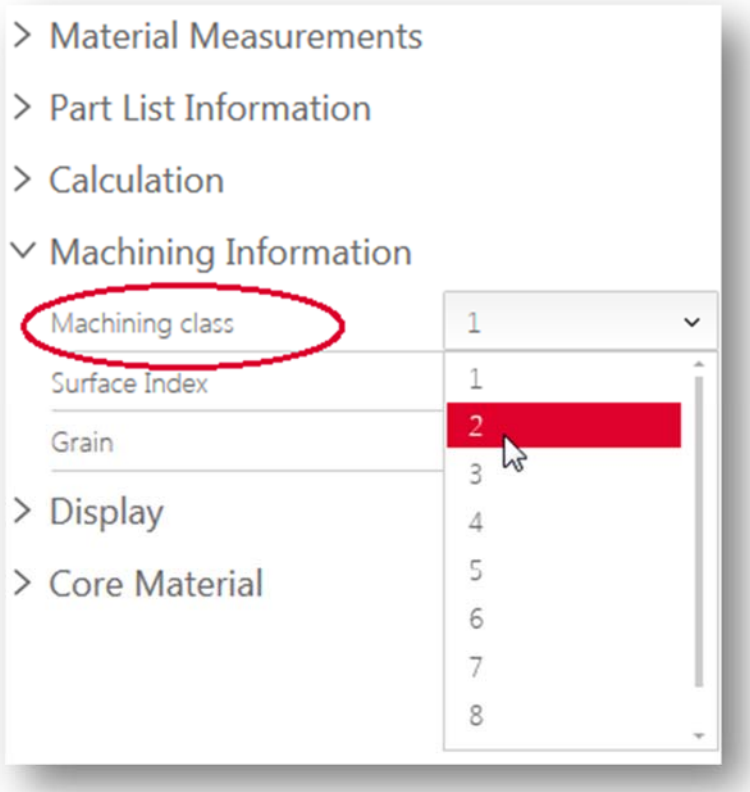
All profile materials created with the support of the profile material in a profile are in the folder **profile material**. These can always be then applied if the same tool should be assigned, but the element name in imos is not the same.

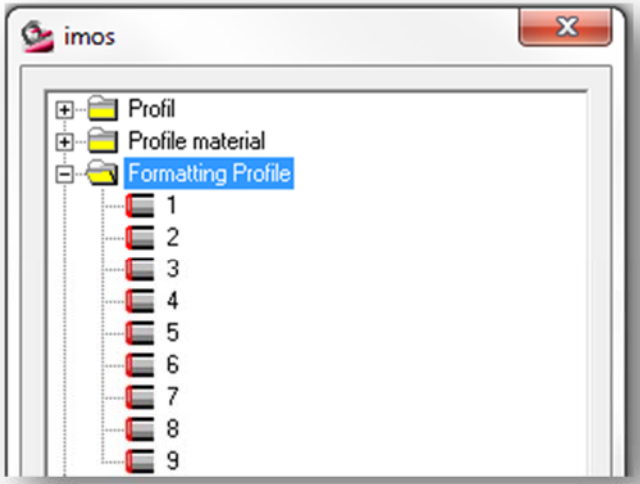




4.2.3 Format profiles

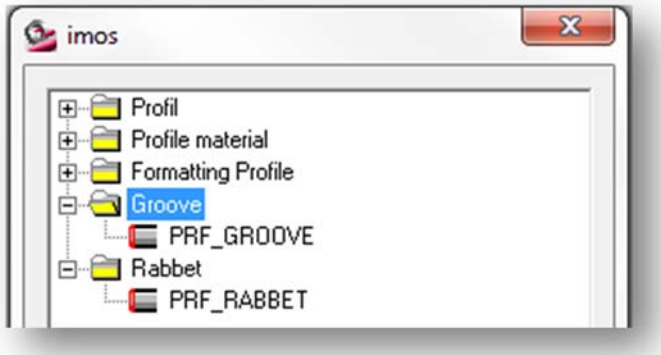
All **machining classes** from the **material** are stored in the folder **format profiles.**





4.2.4 Groove and rabbet

The profile **PRF_RABBET** for rabbets and the profile **PRF_GROOVE** for grooves are imos **internal names**. These are always then assigned if no profile has been stored on rabbet or on groove in imos.

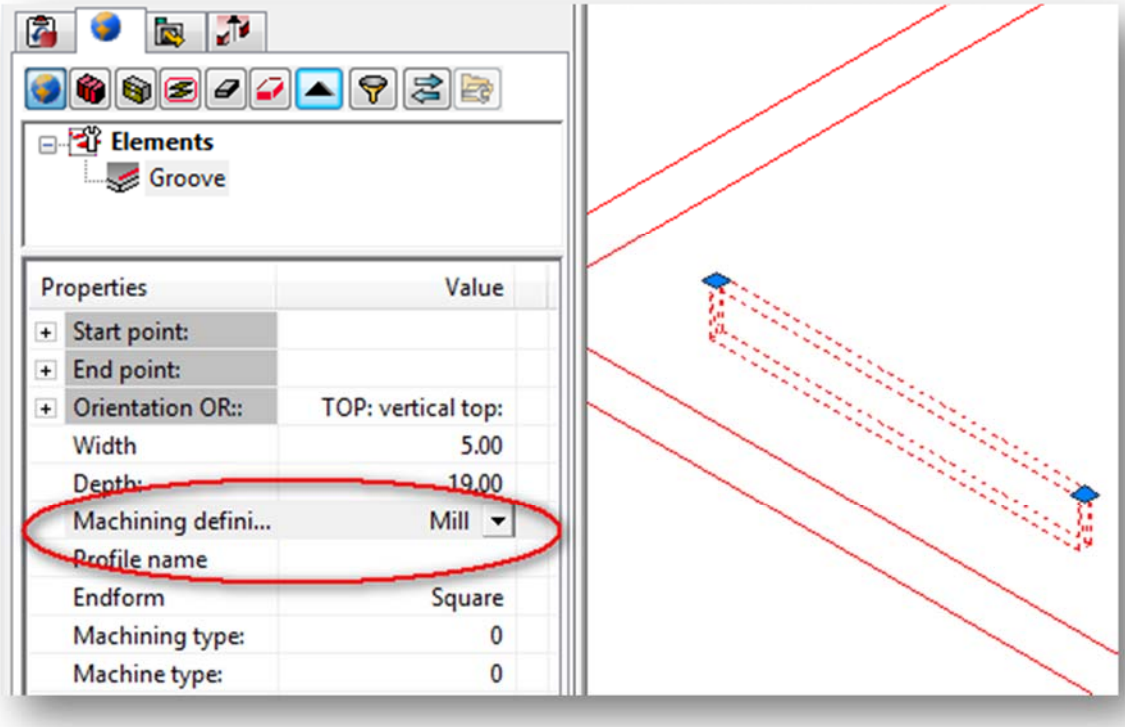

imos
Profil
Profile material
Formatting Profile
Groove
PRF_GROOVE
Rabbet
PRF_RABBET

4.3 Rabbet

If rabbet has to be created, then this should always be created with the machining type **groove**. Additionally, it is important that the machining cuts the outer edge of the part, because the machining is only then recognized as rabbet by **imos CAM**.

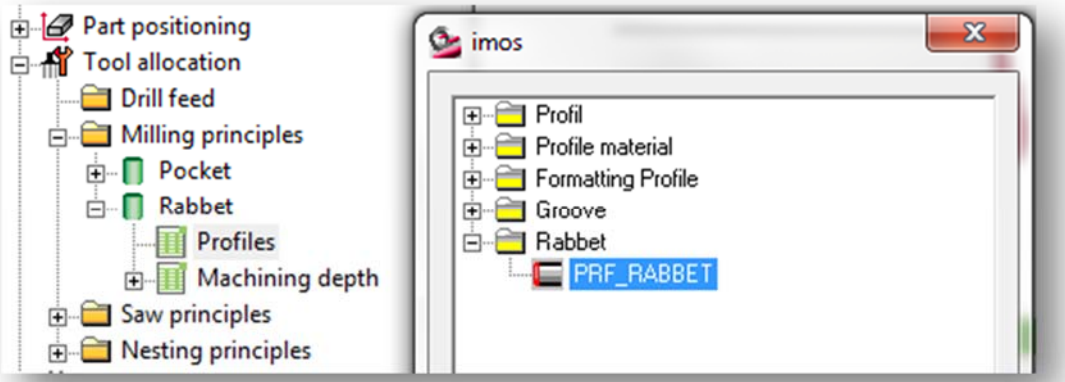
4.3.1 Standard system for rabbet in CAD

For creating a normal rabbet, the machining must be set on **mill** in imos first.
Besides, the **profile machining** must remain empty so that the profile **PRF_RABBET** can be assigned. This profile is an internal profile, which is assigned, if no profile has been stored.



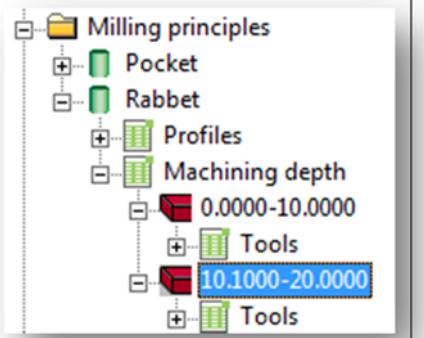
4.3.2 Create the profile PRF_RABBET for the rabbet in the CAM Manager

For applying the profile **PRF_RABBET** for rabbet, it is necessary to change in the CAM Manager to the **tool allocation** for creating a new milling principle there. Afterwards you have to click on **profile** in this new principle and select **add** via the context menu.
Then in the appearing dialog the profile **PRF_RABBET** can be selected from the folder **rabbet**.

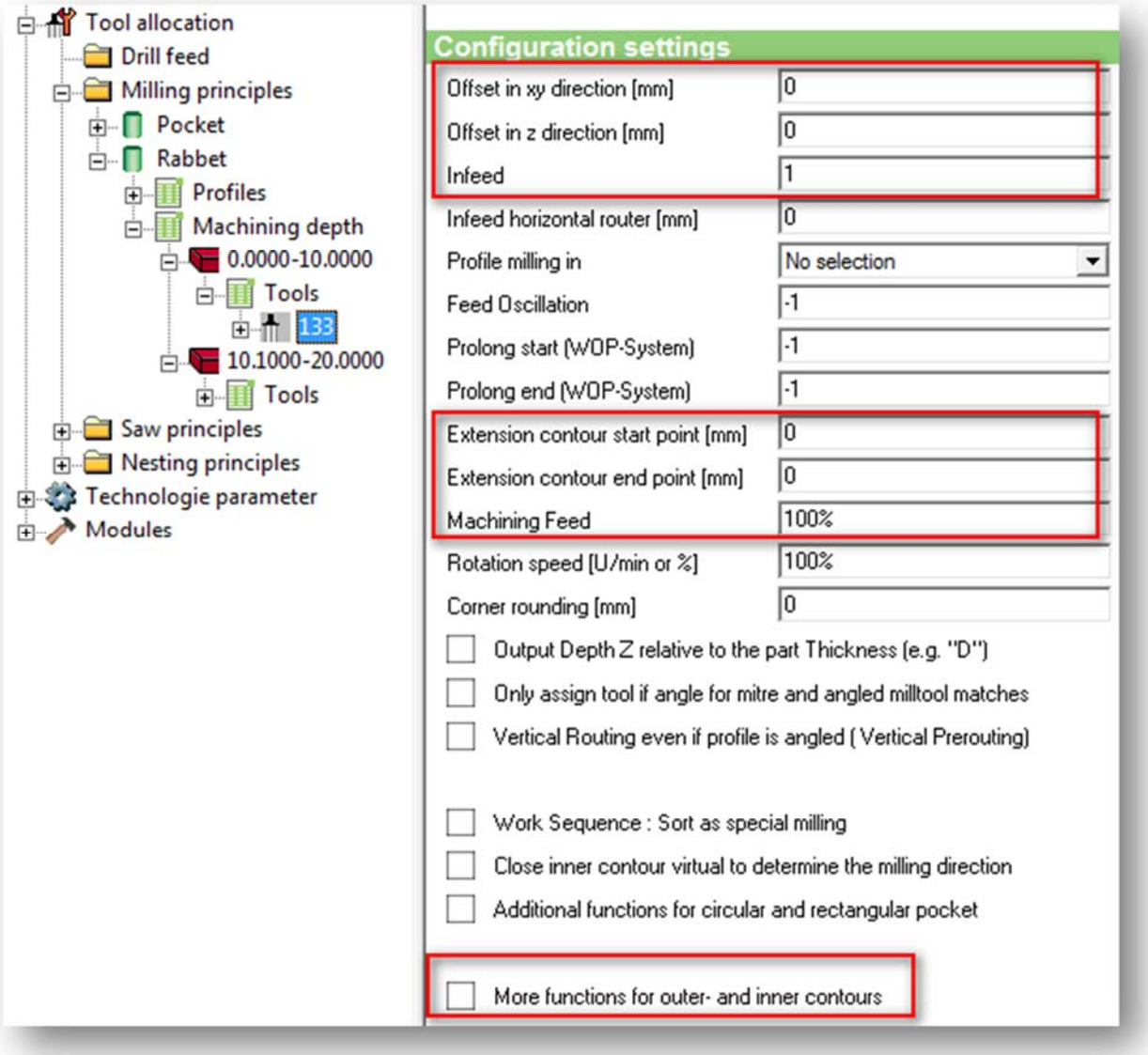


Now the profile classes must be assigned to the router.

It is important to note that it is not the rabbet depth here, but the **rabbet width**.
The profile classes must be defined so that the router can clean out the complete rabbet on the basis of the router diameter. The profile class is created by right clicking once on the machining depth and then selecting **add** in the context menu.
Afterwards enter the profile class of the first rabbet width!



Finally, a tool can be assigned to the value sections. How to proceed, see chapter **Fehler! Verweisquelle konnte nicht gefunden werden. Assign tools**)



Tool assignment in the CAM Manager

4.3.2.1 Basic settings of the configuration parameter

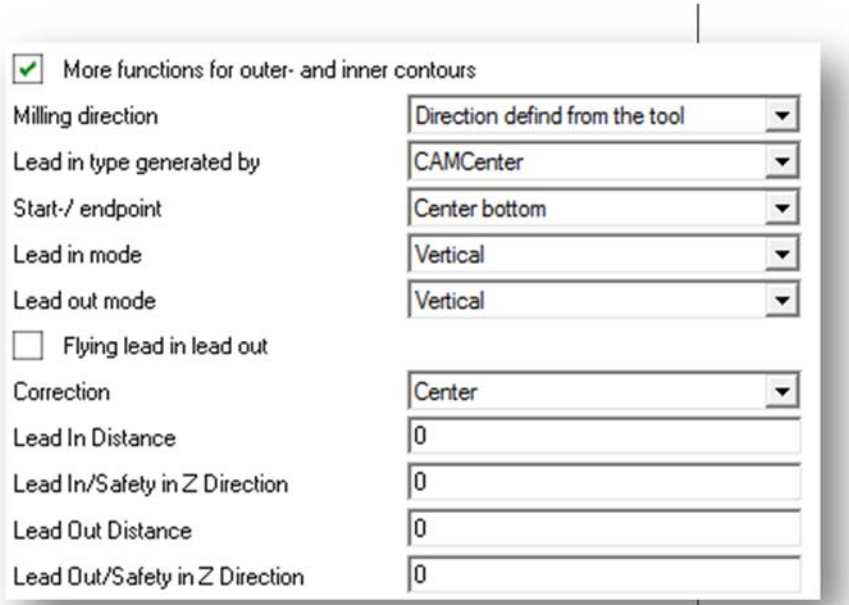
In the **configuration parameter** special settings can be made for this router (red marking in the picture above).

Description	Explanation
Offset in XY- direction [mm]	Via the **offset in XY** the machining can be moved into the part (plus) or away from the part (minus). The zero point is always the starting position of the machining.
Offset in Z- direction [mm]	Via the **offset in Z** the machining can be moved in the height. **Minus** is always to the bottom and **plus** to the top.
Infeed	Via the **infeed** the machining in Z can be divided in several poly contours.
Extension contour start point [mm]	Via the extension the machining can be extended at the contour start point. This is only evaluated if the **lead-in** and **lead-out** are controlled via the **Wop-Mode**.
Extension contour end point [mm]	Via the extension the machining can be extended at the contour end point. This is only then evaluated if the **lead-in** and **lead-out** are controlled via the **Wop-Mode**.
Machining feed rate [m/min]	Via the **machining feed rate** the router for this situation can be lower regulated. The full value can be defined or the feed rate is defined in percent. If the feed rate is defined in percent, then the zero point of the tool database is taken.
Spindle speed [U/min or %]	Via the **rotation speed** the router for this situation can be decreased. The full value can be set or the rotation speed is defined in percent. If the rotation speed is defined in percent, then the zero point of the tool database is taken.
Extra functions for outer contour and inner contour	With an activated checkbox the lead-in and the lead-out, the compensation and the mode for this situation can be defined.

4.3.2.2 More functions for outer and inner contours

Special properties for only this situation can be stored under the function **more functions for outer and inner contours**.

If this function is not activated, then the general setting from the **technology-parameter** for outer and inner contours are applied. (See chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **5.4**).



Description	Explanation
Milling direction	The milling direction can define how the router should be driven. If the setting **direction defined from tool** is set, then the setting from the tool database is applied.
Lead-in type generated by	If the value is on **CAMCenter**, then a lead-in and lead-out distance is created by contours. The lead-in and lead-out is always on **perpendicular** in the Wop program.
Start-/ Endpoint	Here the start and end point can be defined for a closed contour.
Lead-in mode	If **lead-in type generated by** is on **CAMCenter**, then the lead-in mode exists of contours. If this is on **Wop Mode**, then the normal lead-in mode is taken from the Wop Program.

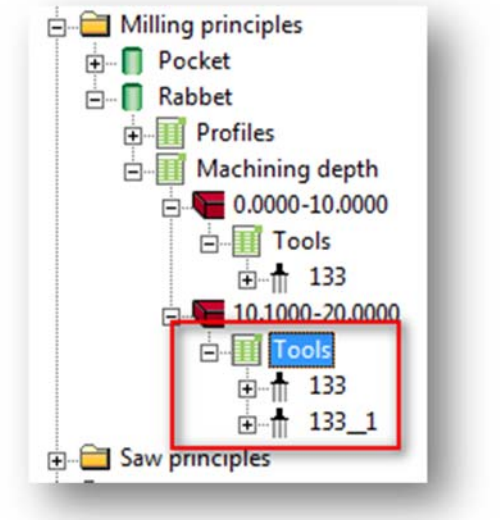
Lead-out mode	If **lead-out type generated by** is on **CAMCenter**, then the lead-out mode exists of contours. If this is on **Wop Mode**, then the normal lead-out mode is taken from the Wop Program.
Flying lead-in/lead-out	With an activated checkbox the **flying lead-in/lead-out** is initiated in the **Wop-mode**.  If the **lead-in type generated by** is on **CAMCenter**, this should always be activated so that a tangential lead-in and lead-out is possible.
Lead-in distance [mm]	Here the extensions for the lead-in distance of the contour can be defined. This is only evaluated if the **lead-in type generated by "CAMCenter"**has been selected.
Lead-out distance in Z [mm]	The height for the contour extension of the contour can be set here.  This is only evaluated if the **lead-in type generated by "CAMCenter"** has been selected and if the checkbox **flying lead-in and lead-out** is activated.
Lead-out distance [mm]	Here the extensions for the lead-out distance of the contour can be defined.  This is only evaluated if the **lead-in type generated by "CAMCenter"** has been selected.
Lead-out distance in Z [mm]	The height for the contour extension of the contour can be set here.  This is only evaluated if the **lead-in type generated by "CAMCenter"** has been selected and if the checkbox **flying lead-in and lead-out** is activated.

4.3.2.3 Define second router for wide rabbet

As described above, the same procedure applies for the tool definition of the second value range.

However, if it is not possible to clean out the complete range with a tool, then the same tool must be assigned a second time. By assigning, a **_1** is set behind the router name. The _1 is always automatically created if the router already exists in a range.

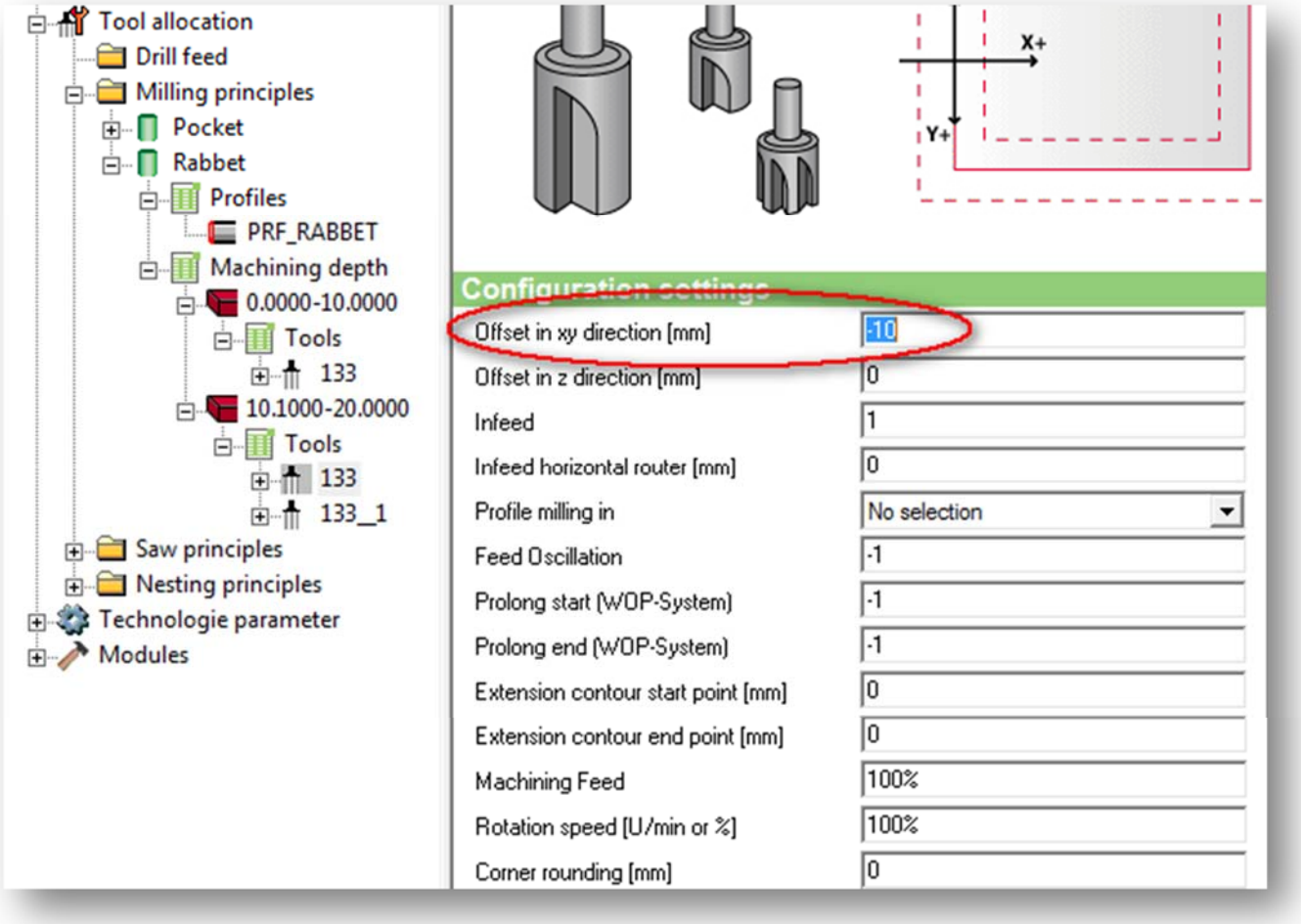
If further tools are created, then the number is always increased by one.



The routers should never be renamed! If so, then they have to be deleted and renewed added.

Since the complete range cannot be processed with a router, the first router must be moved by a **diameter minus 1mm** so that an overlapping of both routers is formed. (The 11mm router is shown in the displayed example.)

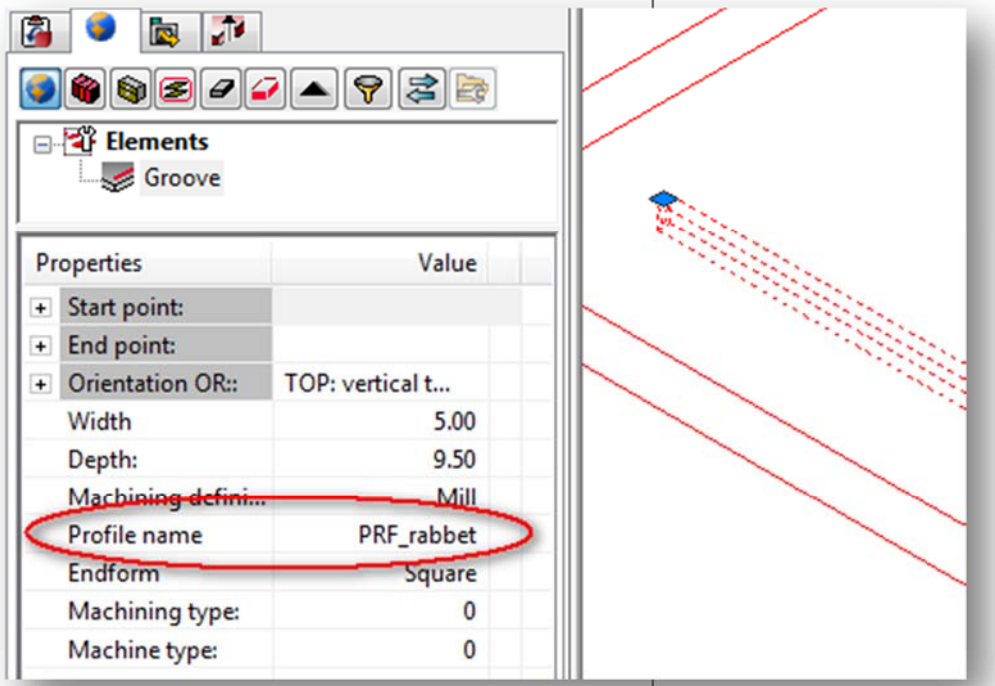
The router is always processed how it has been created. The top one is always the first.



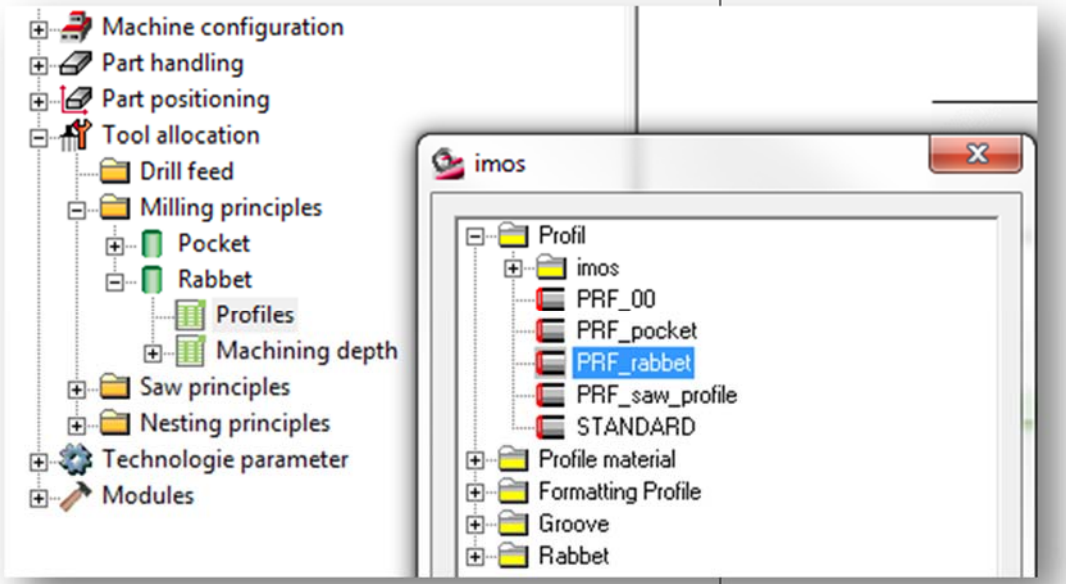
Tool assignment in the CAM Manager

4.3.3 Special profiles for rabbet

For creating an individual profile principle for rabbet, a fixed profile must be assigned to the rabbet in **imos CAD.** The assignment takes place via the **profile name**.



Afterwards the profile must be created in the **CAM Manager.**
See **4.3.1 Standard system for rabbet in CAD** .
The difference here is that the individual profile **PRF_rabbet** is used instead of the profile **PRF_RABBET.**

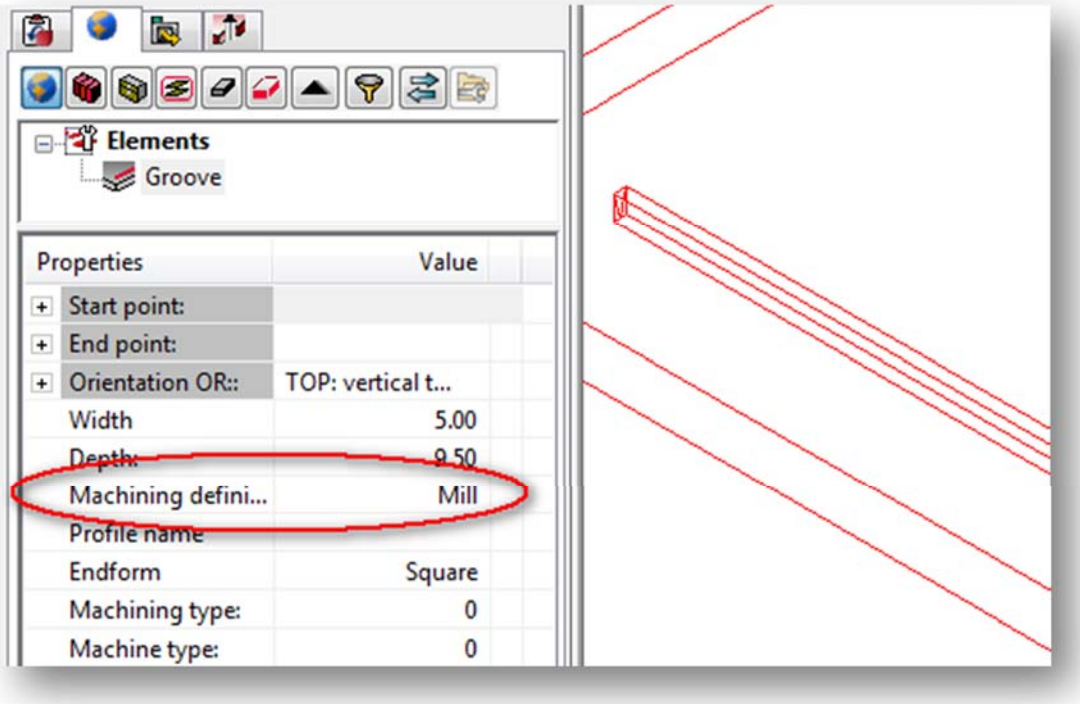


Tool assignment in the CAM Manager

4.4 Groove

4.4.1 Standard system for a groove in CAD

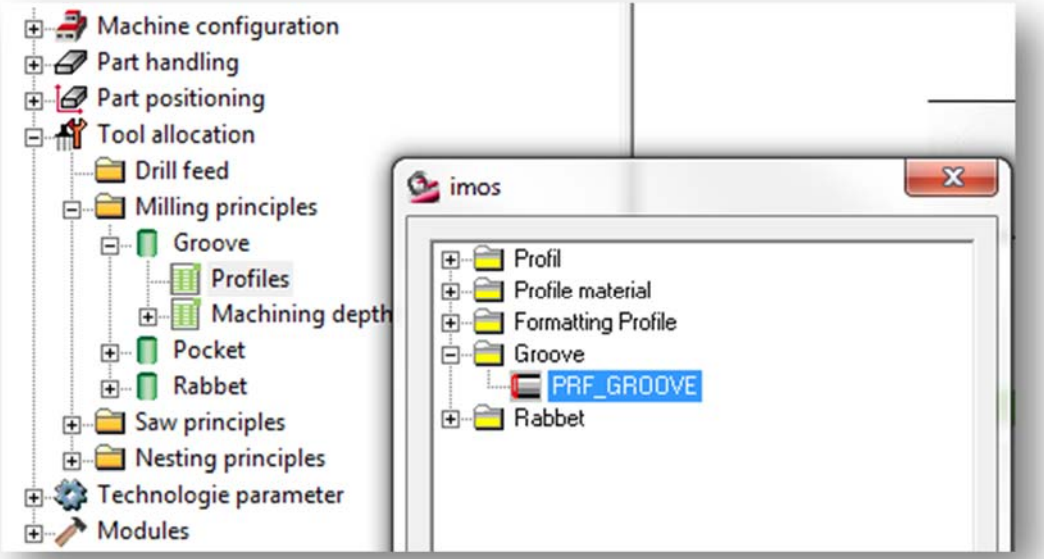
If a groove has to be output as milled machining, make sure that the machining is always on **milling**. A groove is only then output as milled machining. It is also important that no profile is assigned, because the profile **PRF_GROOVE** is only then effective.



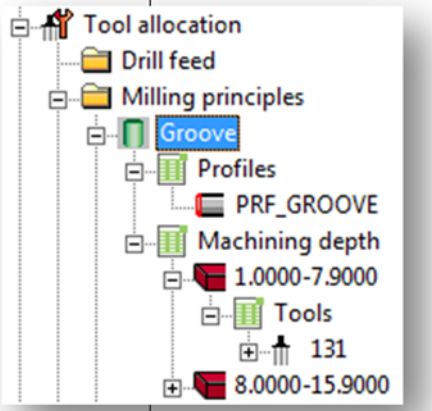
4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager

For applying the profile **PRF_GROOVE** for a groove, you must change to the **tool allocation** in the CAM Manager and create a new **milling principle** there.(Name for the principle is freely selectable.)

Afterwards **profile** must be clicked in this new principle and select **add** via the context menu. In the appearing dialog the profile **PRF_ GROOVE** can be selected from the folder **rabbet**.

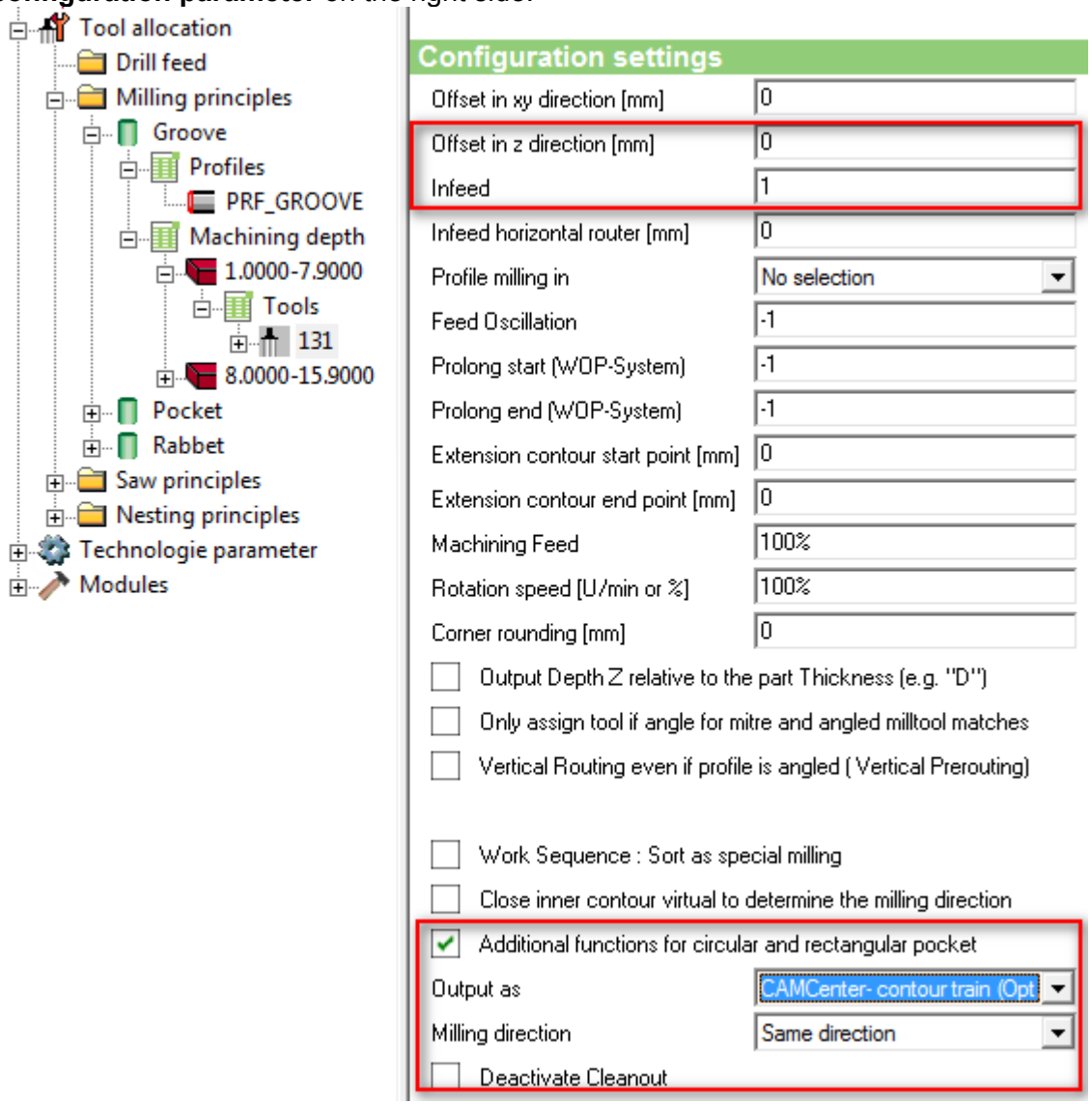


For creating different groove widths, several profile classes must be created next. The profile class is created by right clicking once on the **machining depth** and selecting **add** in the context menu.
In this example the router **131** has a diameter of 6mm and the next largest router has a diameter of 8mm so that the first profile class is from **6.000 – 7.900** and the second profile class is from **8.000 – 15.900**.



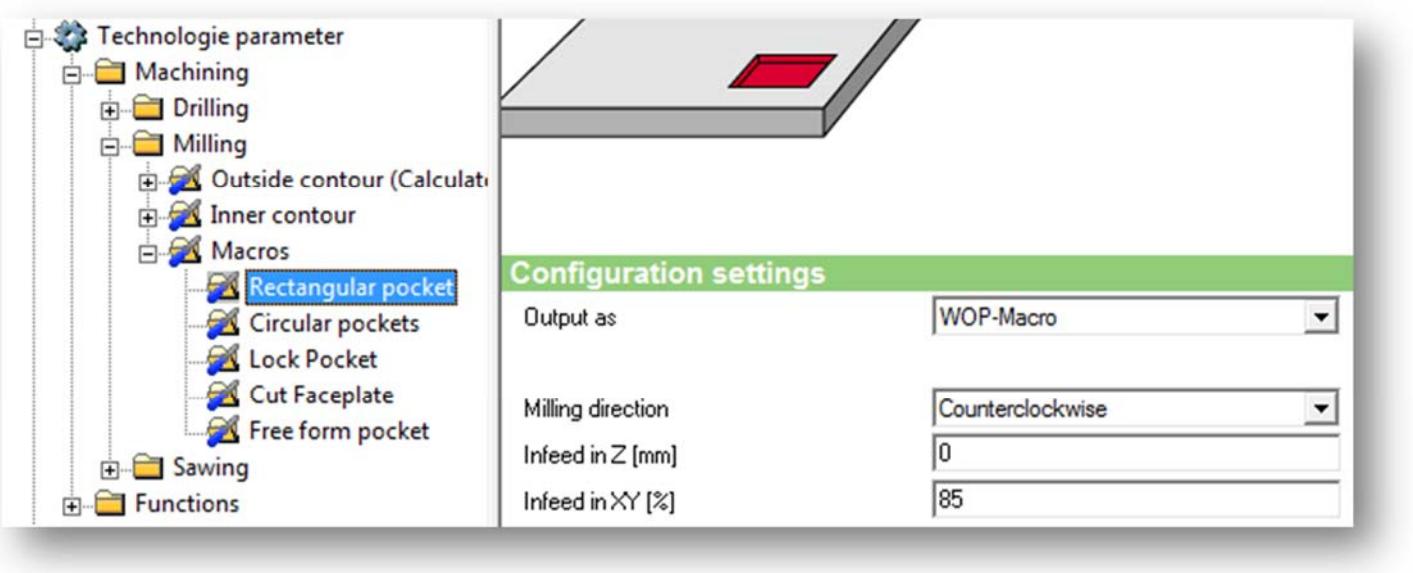
Tool assignment in the CAM Manager

If a tool has been assigned to a value range (in this example 131), additional settings can be made for the tool via the **configuration parameter** on the right side.



Tool assignment in the CAM Manager

The **infeed** is always evaluated if the pockets have to be output as contours in the program.
If the **output** takes place via the **Wop Macro**, then the data is transferred from the **technology parameter** or from the **CAD**.
The settings for this situation can be modified via the checkbox **extra functions for macro rectangle pocket and circular pocket**. If the checkbox is not activated, the settings from the **technology parameter** are taken for the circular pocket and rectangle pocket.



4.4.2.1 Basic settings of configuration settings

Description	Explanation
Offset in Z-direction[mm]	Via the **offset in Z** the machining is always moved in the height. **Minus** is always to the bottom and **plus** to the top.
Infeed	Via the **infeed** the machining in Z can be divided in several contours.

4.4.2.2 Extra functions for macro rectangle pocket and circular pocket

Special properties can be stored for this single situation under the function **extra functions rectangle pocket and circular pocket.**

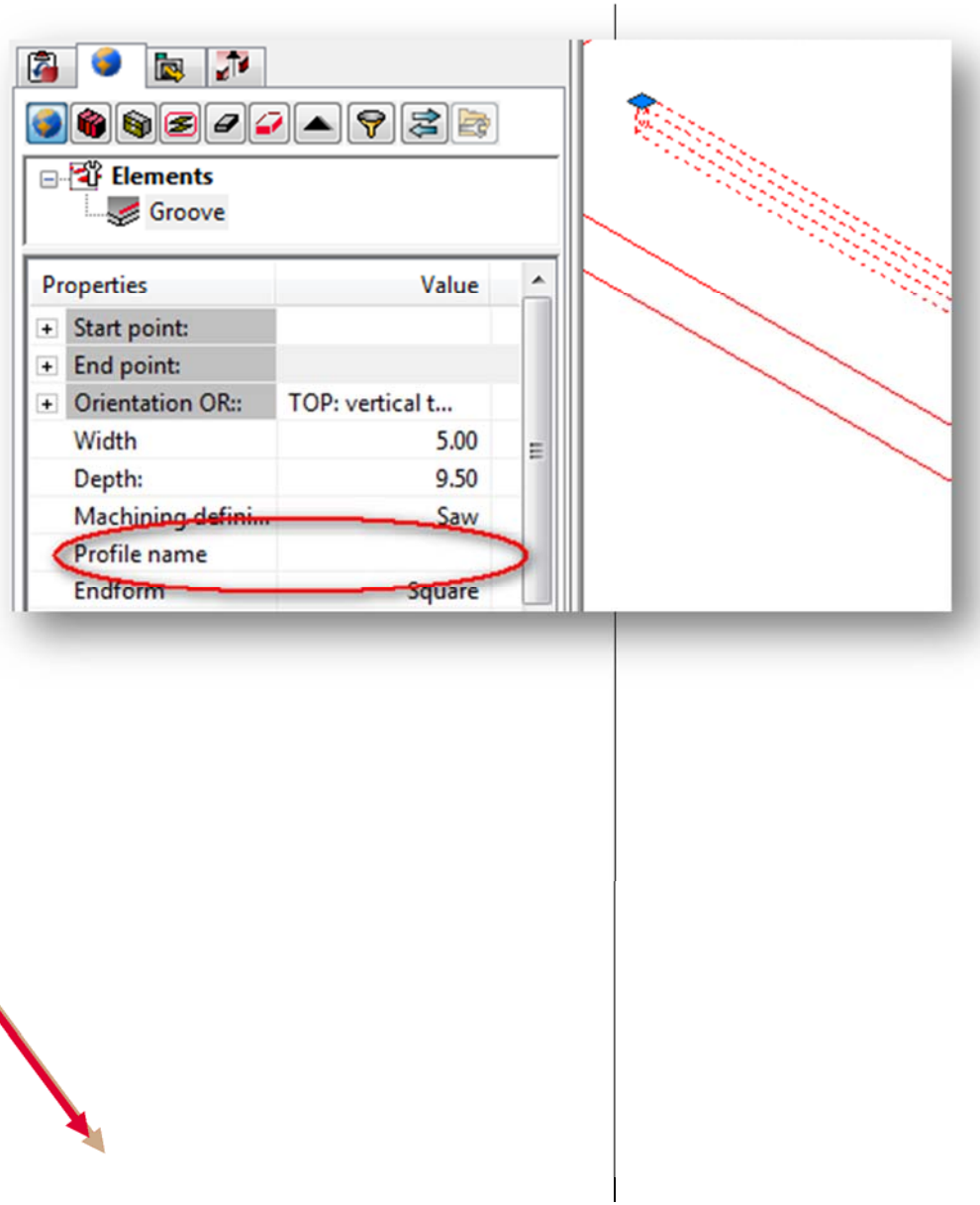


If this function is not activated, then the general settings from the **technology parameter** are applied for rectangle pockets and circular pockets (See chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **Fehler! Verweisquelle konnte nicht gefunden werden.**)

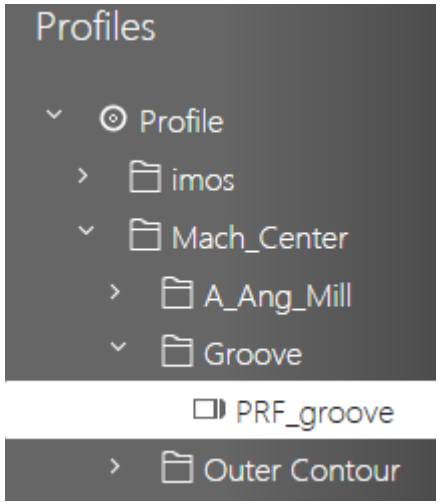
Description	Explanation
Output as	Here it can be decided if the **contour (Opt.3)** or the **contour (Opt.4)** should be output for this single situation.
Milling direction	There are two options to select if the pocket should be cleaned out in the **same direction** or in the **contour direction**.
Deactivate clean out	If the checkbox is activated, then only circling the contour is output for this situation.

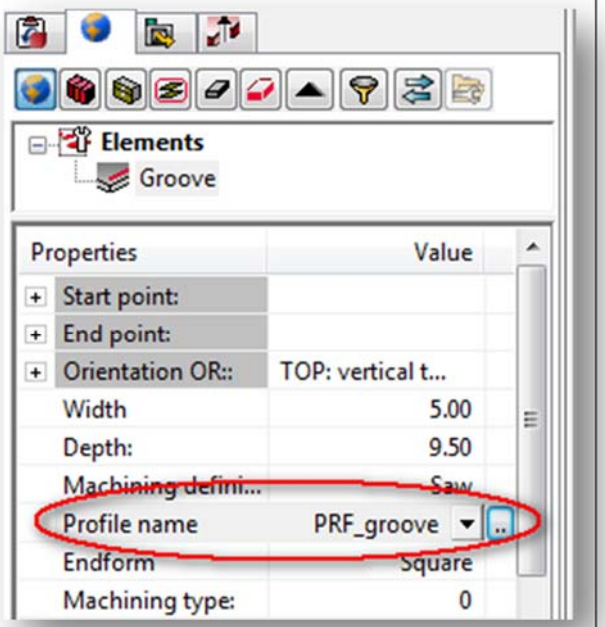
4.4.3 Create a profile with a self-defined name in CAD

For creating a groove with a user-defined name, a profile name must be assigned to the groove first.



If the profile does not exist, then this must be created in the profile database in the **Element Manager** first and afterwards assigned to the groove. .

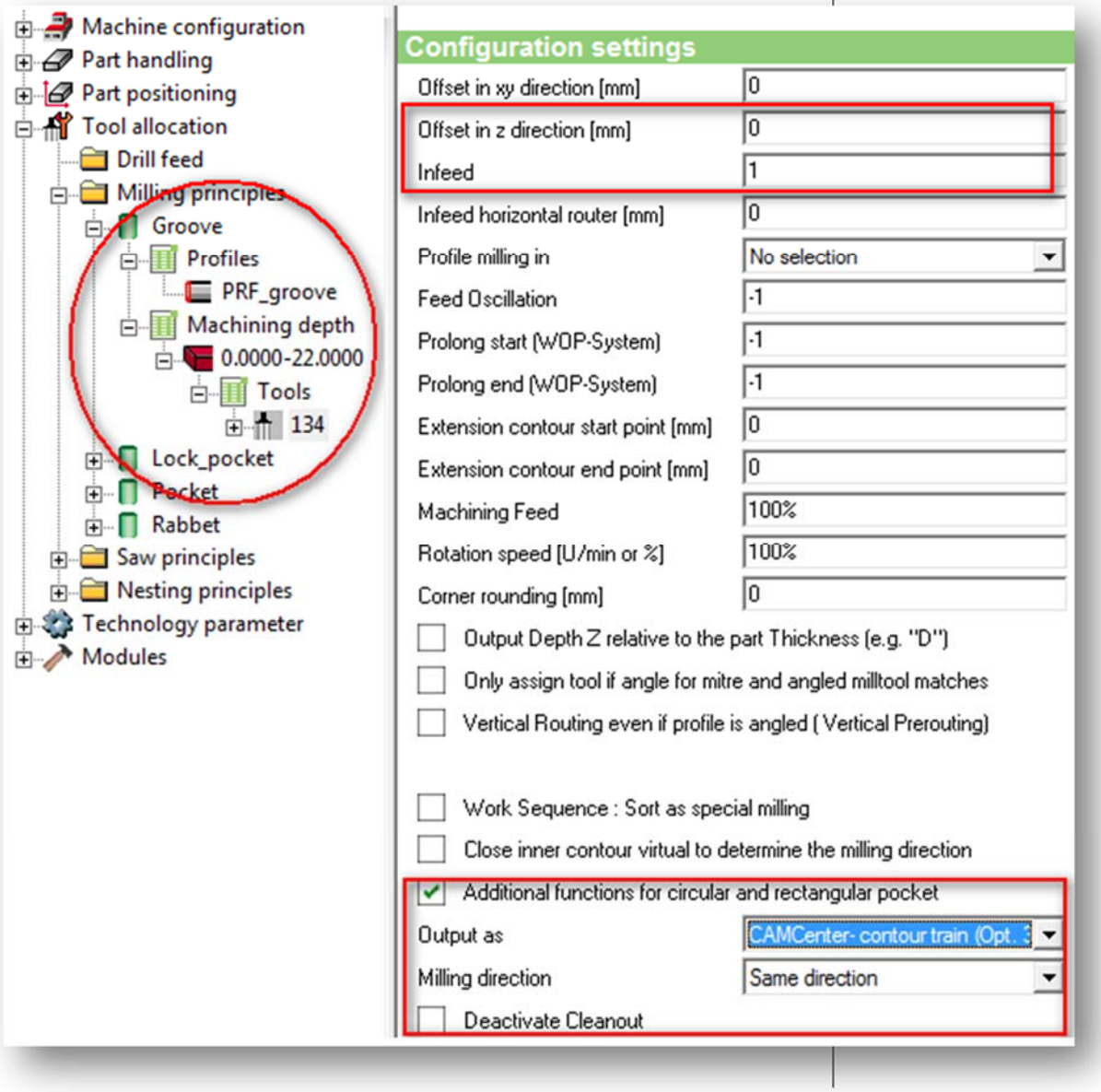




Tool assignment in the CAM Manager

4.4.3.1 Data system in CAM Manager

First a new profile principle must be created for the data system of the groove in the CAM Manager. (See **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager**).



Tool assignment in the CAM Manager

After creating the new milling principle, the self-defined profile must be added in the profile class and after that the range including tools has to be defined.



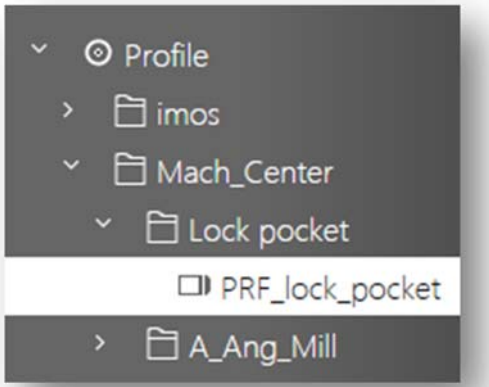
It is important to note that the **machining depth** is mentioned here and not the width, which is the case with the data system **PRF_GROOVE**.

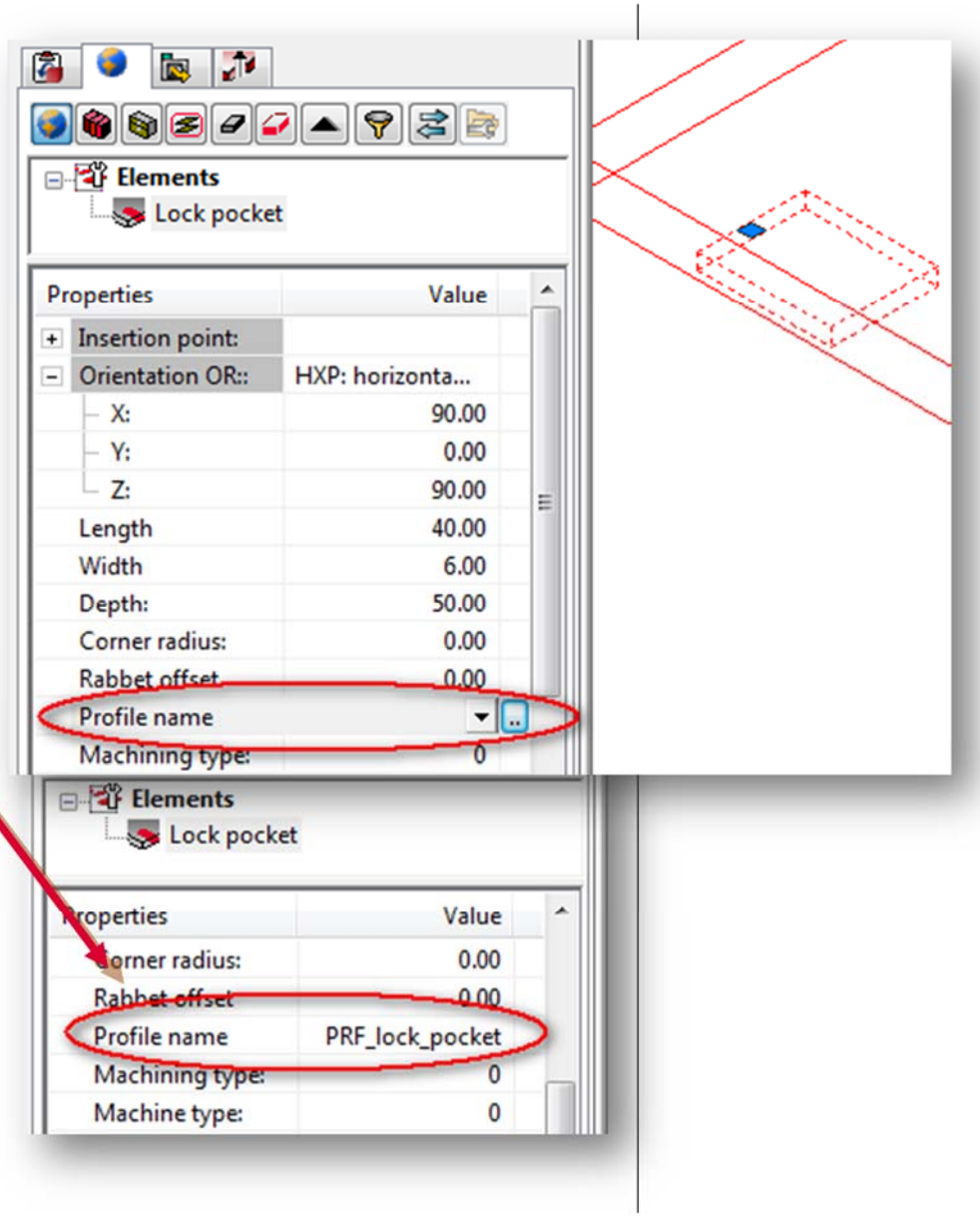
4.5 Lock pocket

4.5.1 Data System in CAD

For creating a lock pocket, a profile name must be assigned for the lock pocket after creating the lock pocket in CAD.

If the profile does not exist yet, this must be created in the profile database in the Element Manager first and then assigned to a groove.

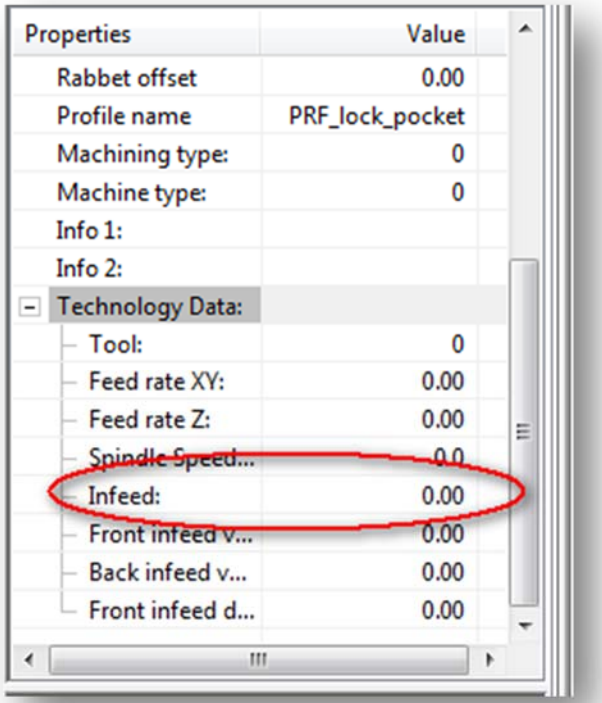




Tool assignment in the CAM Manager

Additionally, an infeed can be assigned via the **Technology-Parameter.**

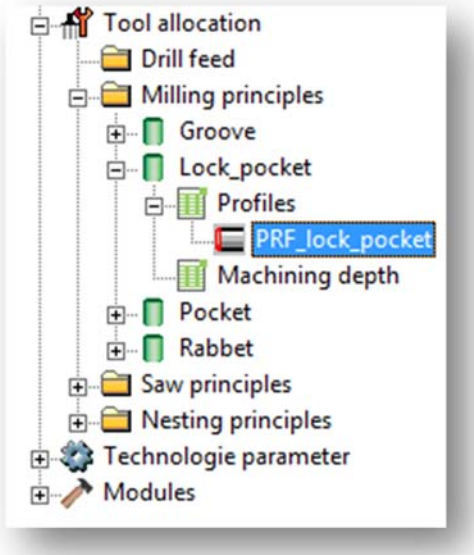
This infeed is only transferred if imos CAM supports **WOP- Macros**.



Tool assignment in the CAM Manager

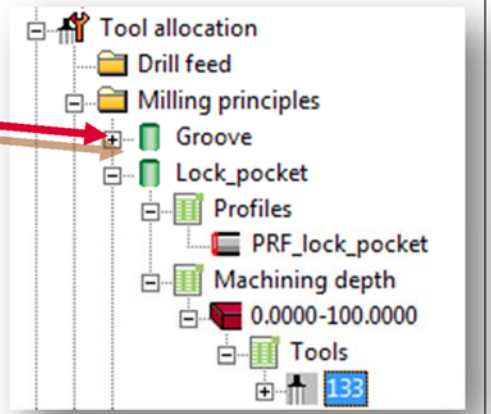
4.5.2 Data system in the CAM Manager

First a new milling principle must be created in the CAM Manager. (See also **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager**)
Afterwards the new created profile in imos must be assigned to the new created milling principle (in this example lock pocket). (**PRF_Lock_pocket**)



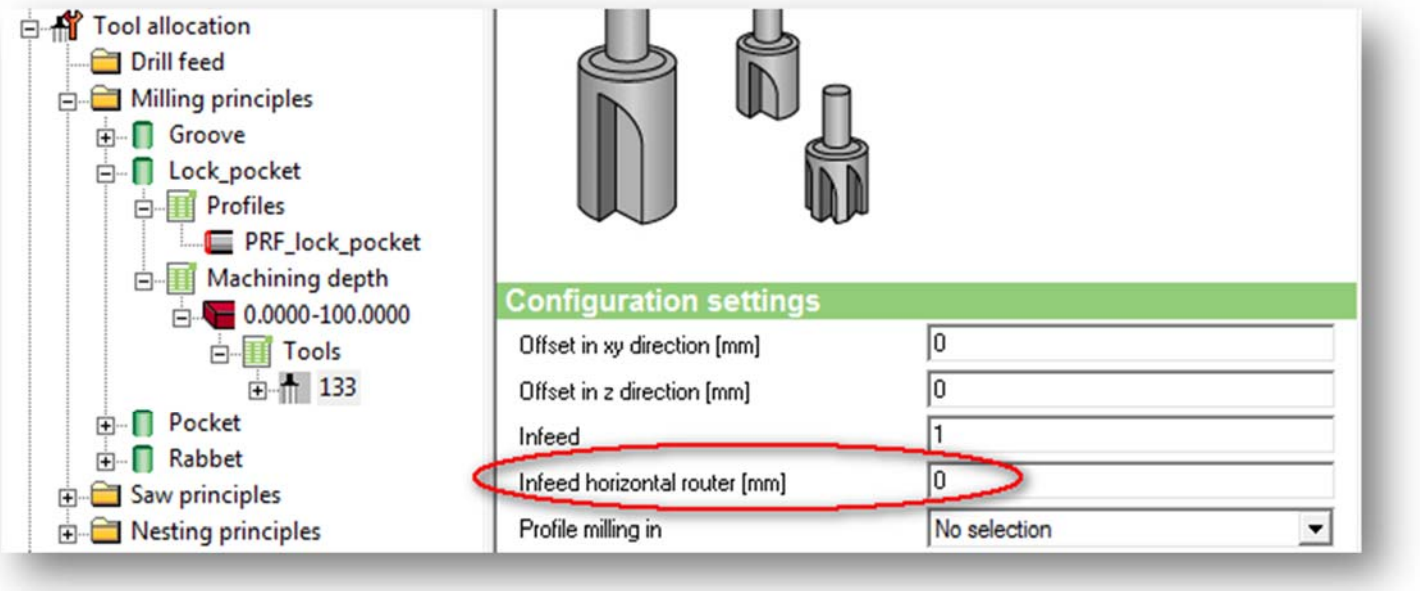
Then a **machining depth** for the milling principle must still be defined.

Several depths can be defined as well.



Tool assignment in the CAM Manager

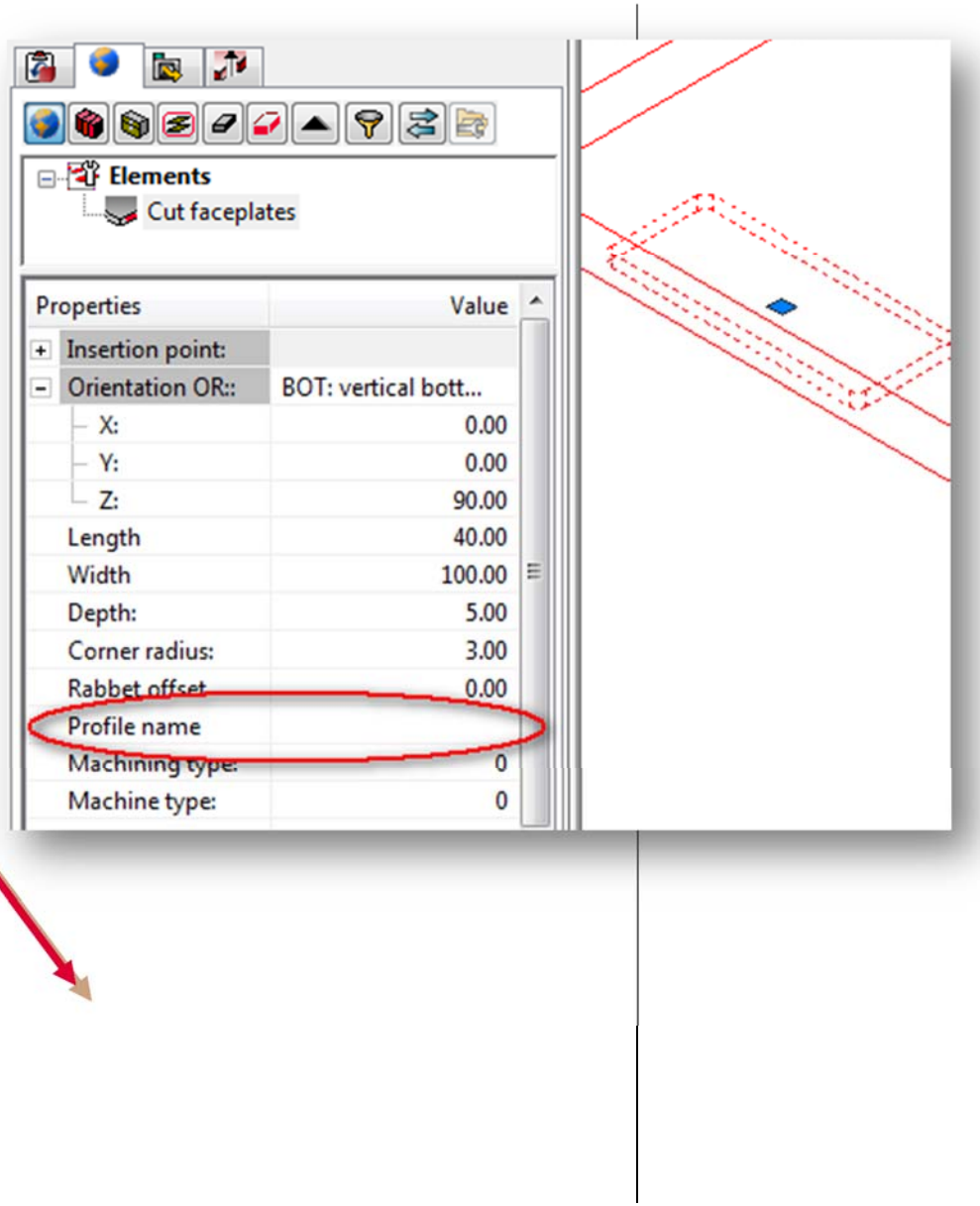
When assigning a **tool** for the machining depth, it is necessary to ensure that if the lock pocket is transferred as a contour train, an infeed has to be supplied for the machining via **infeed horizontal router [mm]**.



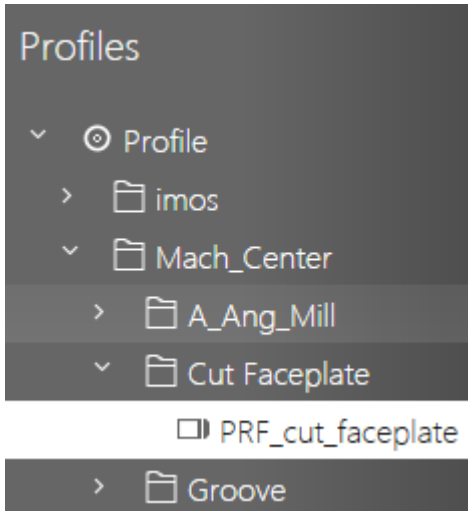
4.6 Cut faceplate

4.6.1 Data system of a cut faceplate in CAD

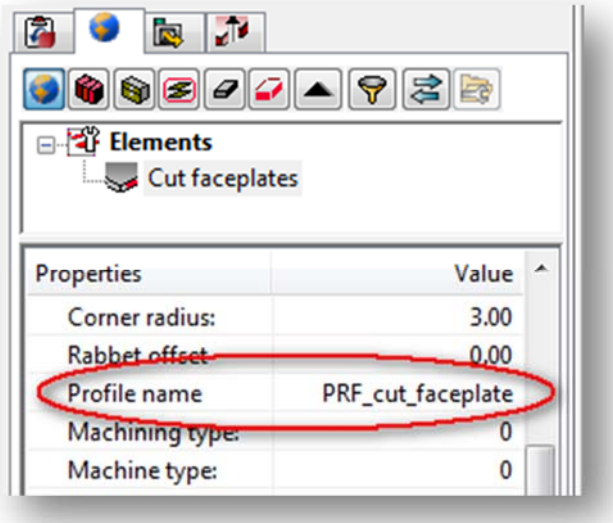
For creating a cut faceplate, a profile name must be assigned to the cut faceplate afterwards.



If the profile does not exist yet, this must be created in the profile database in the Element Manager first and then assigned to the cut faceplate (in this example **PRF_faceplate**).

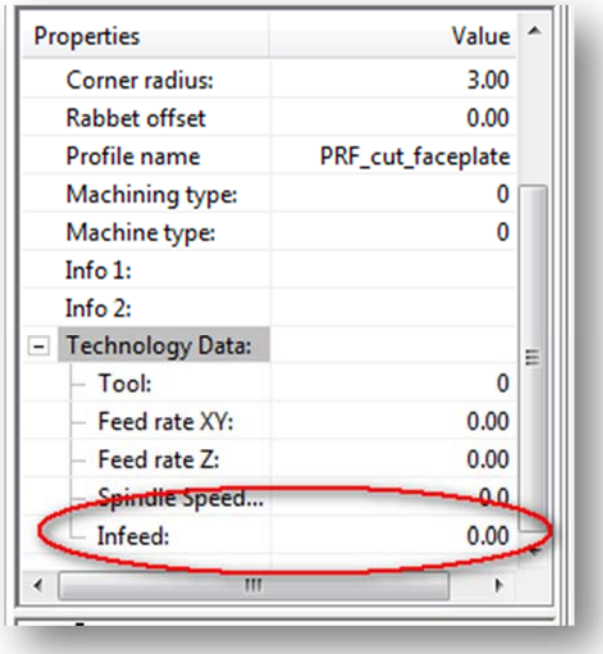


Tool assignment in the CAM Manager


Elements
Cut faceplates
Properties
Value
Corner radius:
3.00
Rabbet offset:
0.00
Profile name
PRF_cut_faceplate
Machining type:
0
Machine type:
0

Additionally, an infeed can be assigned via the **Technology-Parameter**.

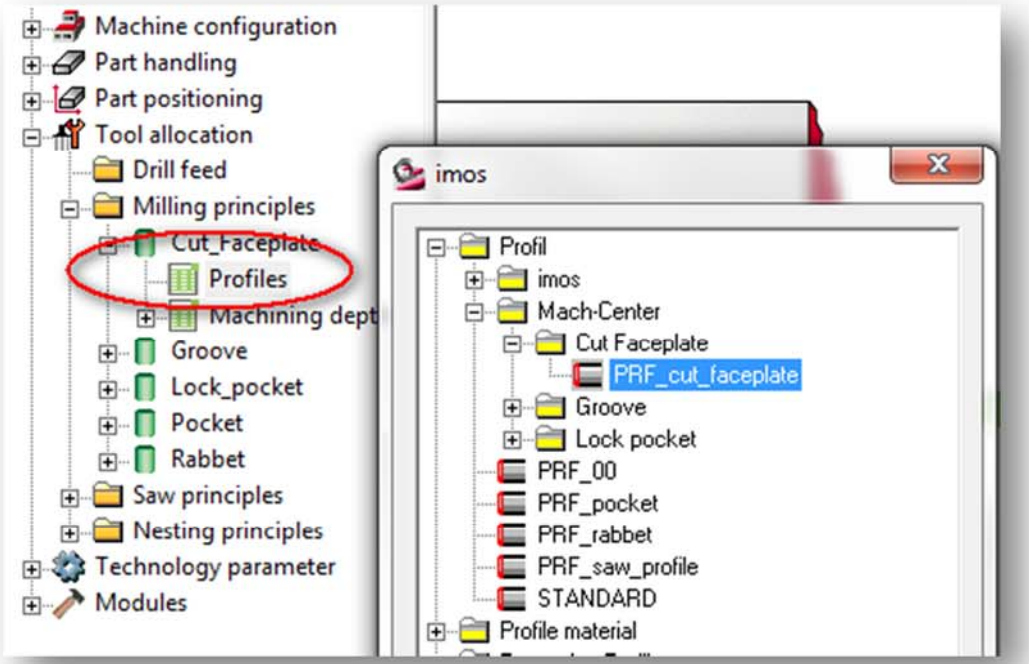
This infeed is only transferred if imos CAM supports **WOP- Macros**.



4.6.2 Data system in the CAM Manager

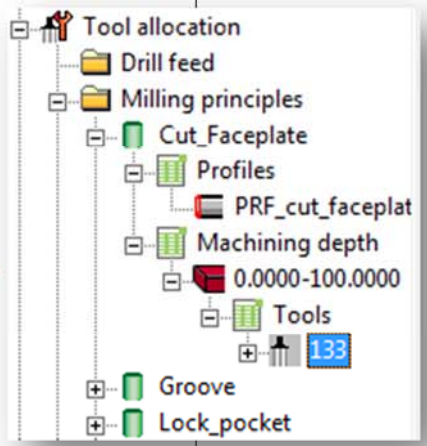
First a new milling principle must be created in the CAM Manager. (See also **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager**)

Afterwards the new created profile in imos must be assigned to the new created milling principle (in this example cut faceplate). (**PRF_Cut_faceplate**)



Then a **machining depth** for the milling principle must still be defined.

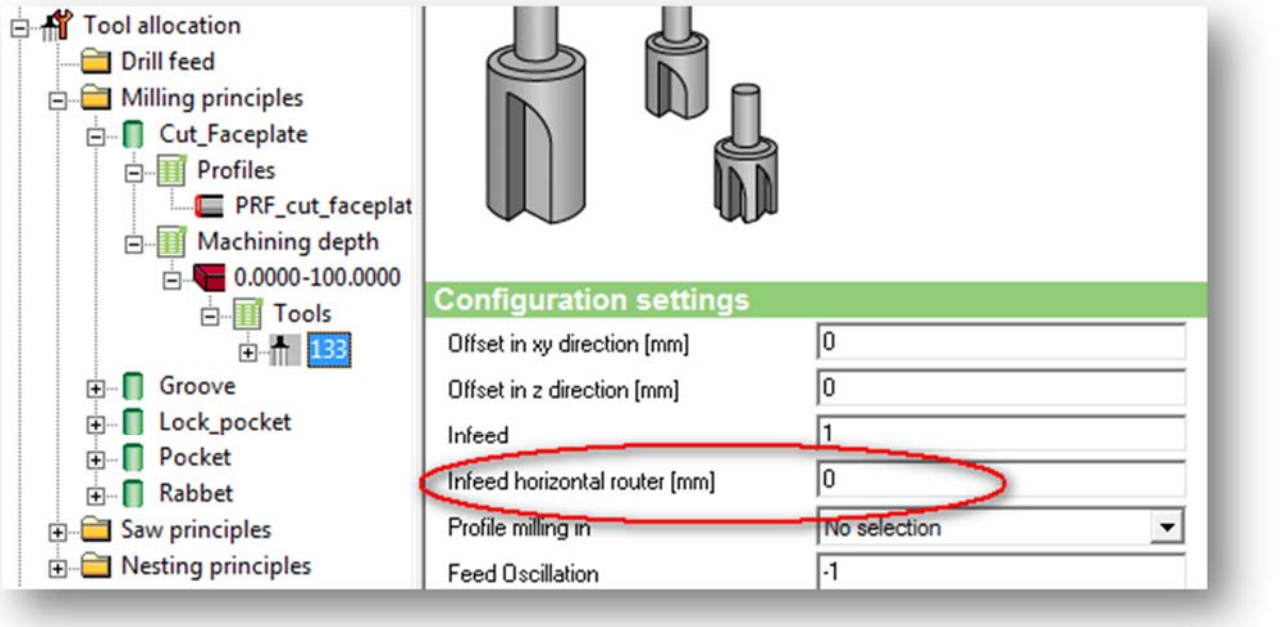




Several depths can be defined as well.

Tool assignment in the CAM Manager

When assigning a **tool** for the machining depth, it is necessary to ensure that if the cut faceplate is transferred as a contour train, an infeed has to be supplied for the machining via **infeed horizontal router [mm]**.



Tool assignment in the CAM Manager

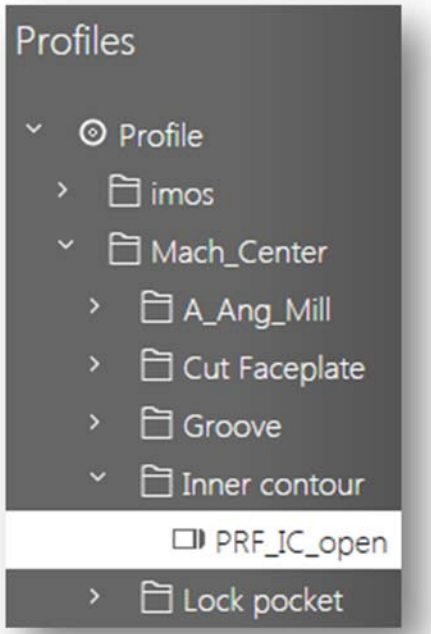
4.7 Inner contour

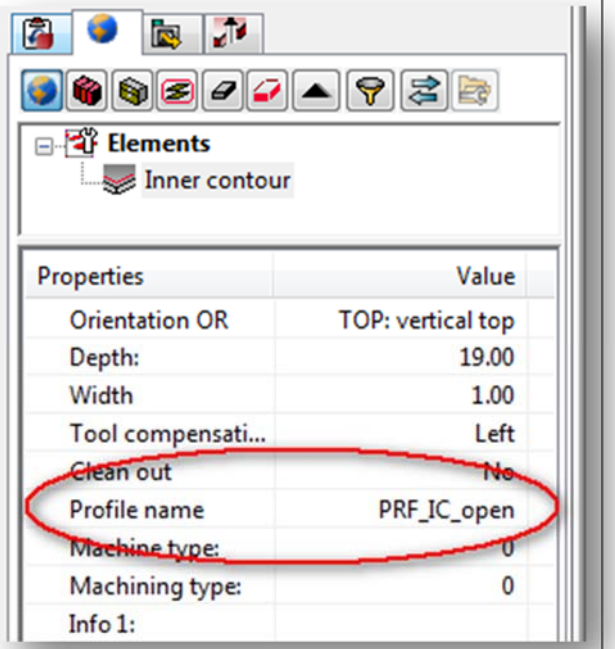
It is important with the inner contour to define the difference between **open** and **closed inner contours** with imos CAM and therefore at least one milling principle should be created for open and one for closed inner contours.
The following pages describe how to create opened and closed inner contours.

4.7.1 Opened inner contours

4.7.1.1 Data system in CAD

As mentioned before in chapter milling principles, it is necessary to create a suitable profile for the machining.
First a new profile must be created via the **Element Manager**. (in this example **PRF_IK_Open**).



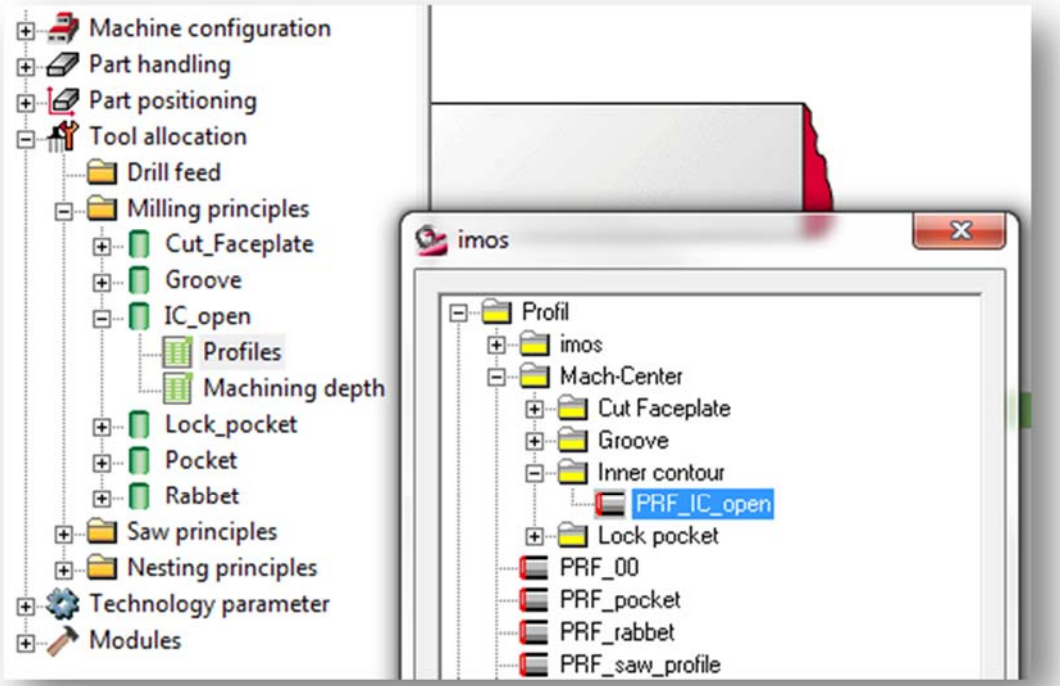


Afterwards the new created principle must be assigned to the opened inner contour.

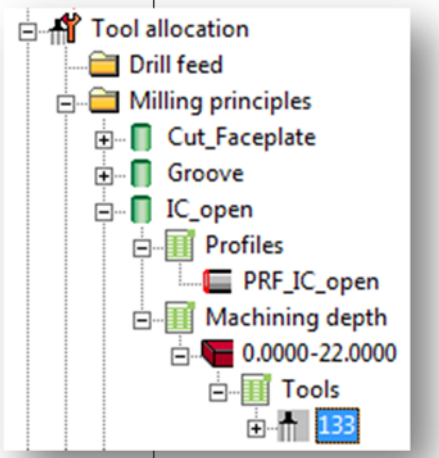
4.7.1.2 Data system in the CAM Manager

First a new milling principle must be created in the CAM Manager. (See also **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager**).

Then the new created profile **PRF_IC_Open** in imos CAD must be assigned to the new created milling principle (in this example **IC_Open**).

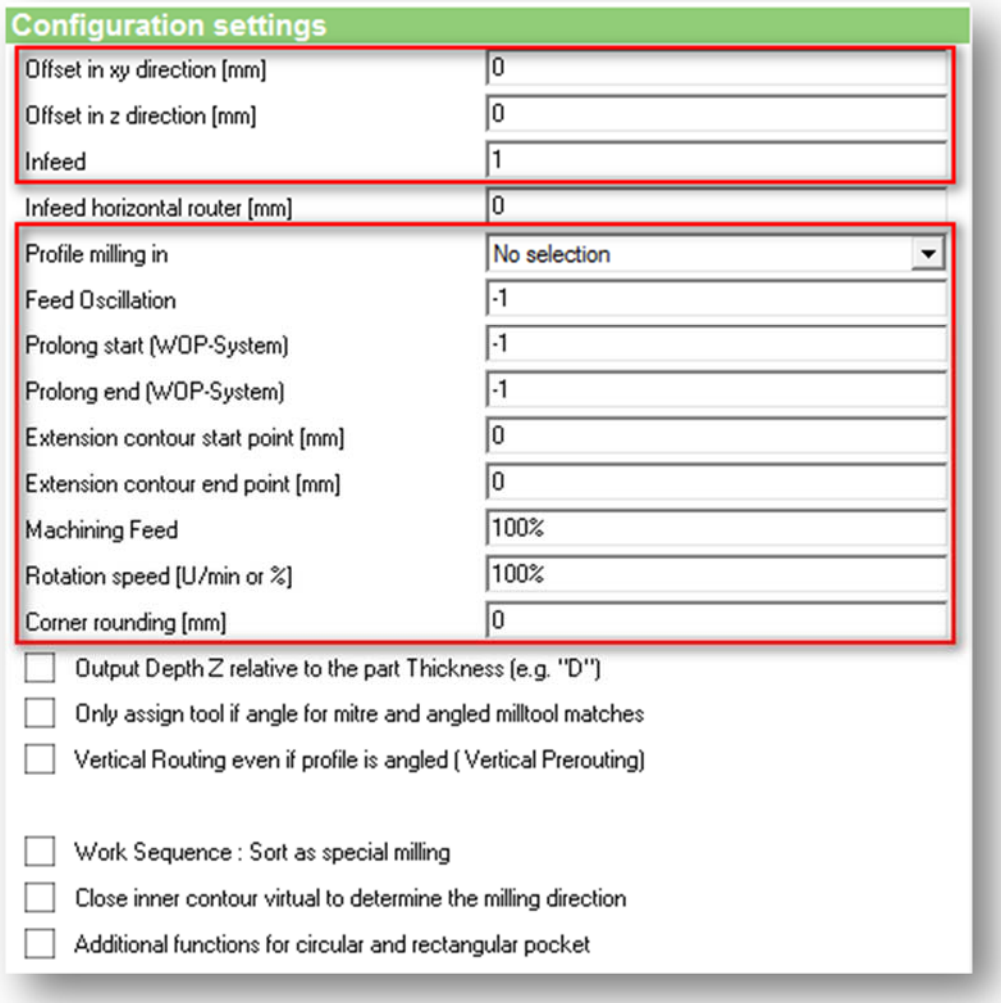


Afterwards a value range for the **machining depth** must be defined for the milling principle and then a router has to be assigned to the machining depth. In this example it is a router with a **diameter of 11mm**.

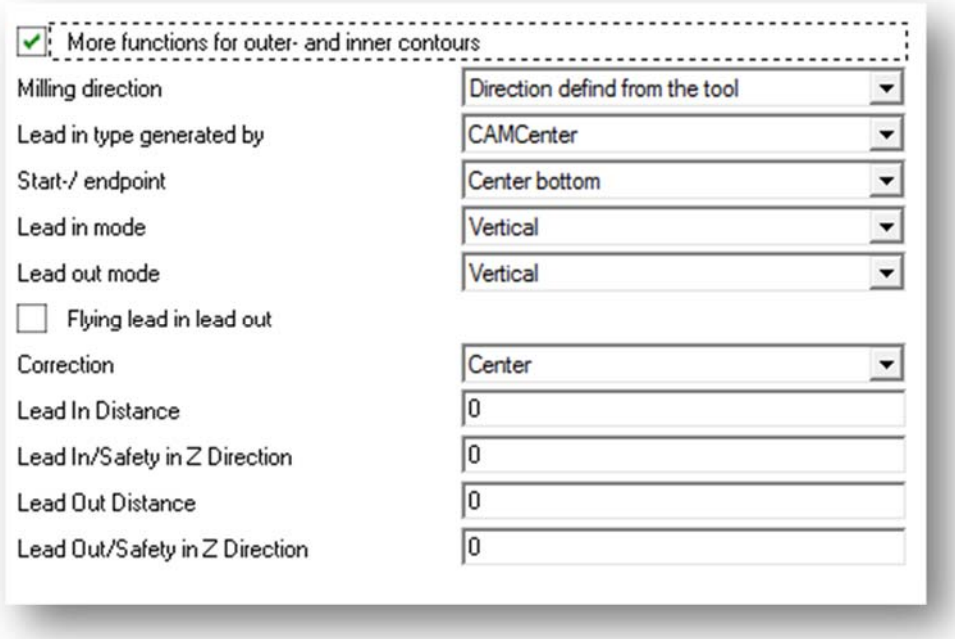


Tool assignment in the CAM Manager

After defining the tool, the **configuration parameter** can be defined on the right side by clicking the tool in the structure tree. Following parameters can be defined there:



If the checkmark is activated next to **extra functions for outer-and inner contours**, then following parameters for the inner contour can be defined:



4.7.1.2.1 Basic settings

In the following is the explanation of the configuration parameter marked in red:

Description	Explanation
Offset in XY- Direction [mm]	The machining can be moved into the part or away from the part (plus) or away from the (minus) via the offset in XY. The zero point is always the starting position of the machining.
Offset in Z- Direction [mm]	The machining can be moved in the height via the offset in Z. **Minus** is always **to the bottom** and **Plus to the top**.
Infeed	Via the infeed the machining in Z can be divided into several contours.
Extension contour start point [mm]	Via the extension the machining can be extended on the contour start point. This is only then evaluated if the lead in and the lead out are controlled via the **Wop- Mode**.
Extension contour end point[mm]	Via the extension the machining can be extended on the contour end point. This is only then evaluated if the lead in and the lead out are controlled via the **Wop- Mode**.
Feed rate [m/min]	Via the feed rate the router can be regulated lower for this situation. The full value can be defined here or the feed rate set in percent. If the feed rate is set in percent, then the zero point is taken from the tool database.
Speed [U/min oder %]	Via the speed the router can be regulated lower for this situation. The full value can be defined here or the speed set in percent. If the speed is set in percent, then the zero point is taken from the tool database.
Extra functions for outer and inner contours	With an activated checkbox the lead in and the lead out, the compensation and the mode can be defined for this situation.

4.7.1.2.2 Extra functions for outer and inner contours

Special properties can be filed for this certain situation under the functions **extra functions for outer and inner contours**.

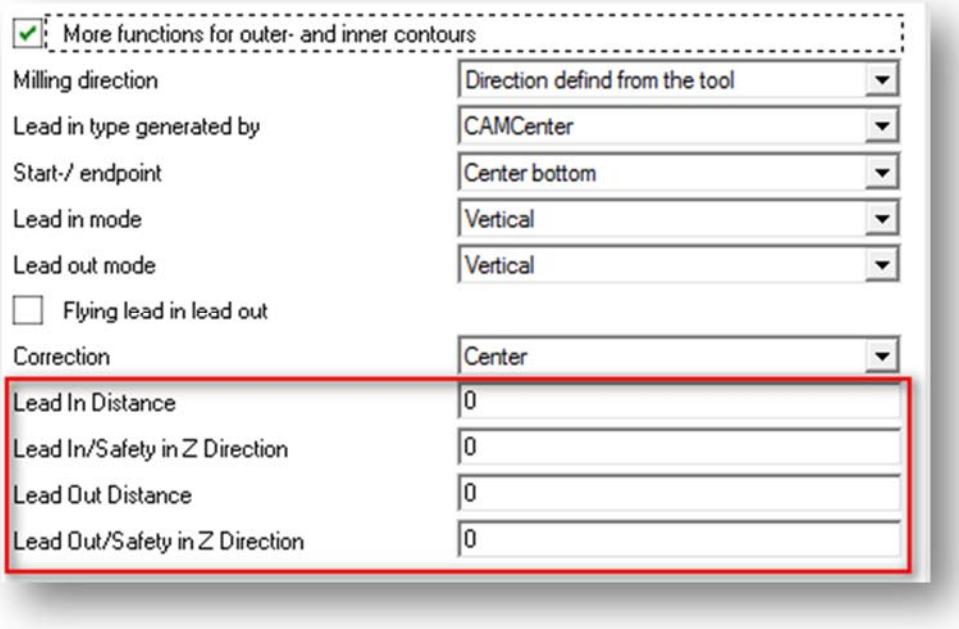
If this function is not activated, then the general settings from the **Technology-Parameters** for outer and inner contours are applied. (See Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **5.4**)

Description	Explanation
Milling direction	The router can be set how it should run via the milling direction. When set on **direction defined from tool**, the setting is applied from the tool database.
Create lead in mode by	If **CAMCenter** is selected as the value here, then a lead in and lead out is created by contours. The lead in and lead out is always **vertical** in the Wop Program.
Start-/ End point	The position of the start and end point can be selected here with a closed inner contour
Lead in mode	If the **create lead in mode by** is on **CAMCenter**, then the lead in mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead in mode from the Wop Program is used.
Lead out mode	If the **create lead in mode by** is on **CAMCenter**, then the lead out mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead out mode from the Wop Program is used.

Flying lead in/lead out	With an activated checkbox the flying lead in/lead out is initiated in the Wop-Mode. If the **create lead in mode by** is on **CAMCenter**, then this should always be activated so that a tangential lead in and lead out is possible.
Lead in distance [mm]	Here the extensions for the lead in distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**". See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**" and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.
Lead out distance [mm]	Here the extensions for the lead out distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**". See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**" and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.

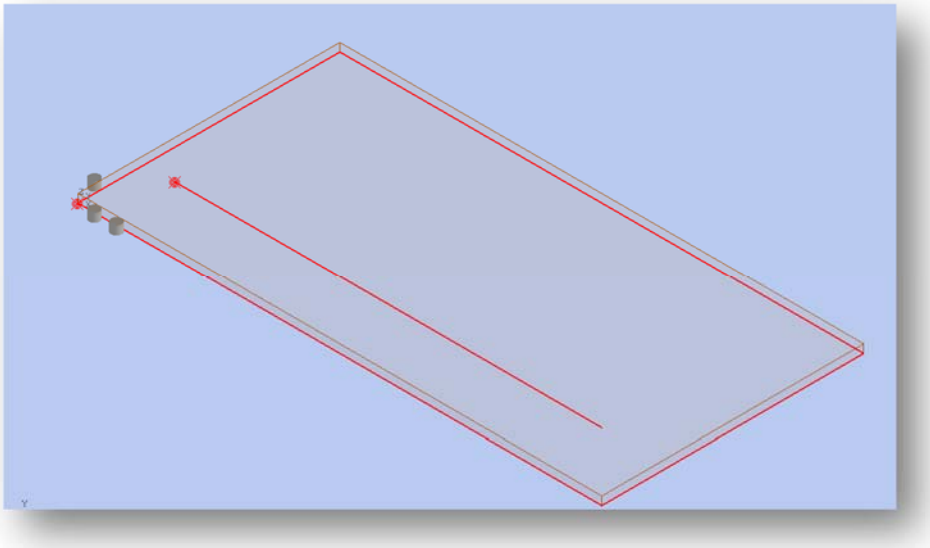
4.7.1.3 CAMCenter Mode

For calculating the lead out distance correctly, it is important that a suitable definition is made for the lead in and lead out distance.
If no lead in and lead out are required, then the values must remain on 0.
This is also important when creating a vertical lead in and lead out. At the same time ensure that the lead in and lead out mode is on vertical.



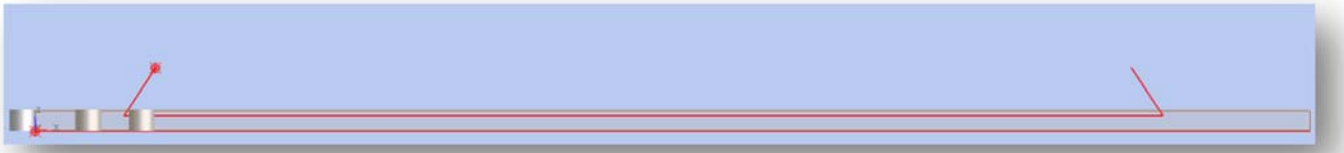
4.7.1.3.1 Vertical lead in and lead out

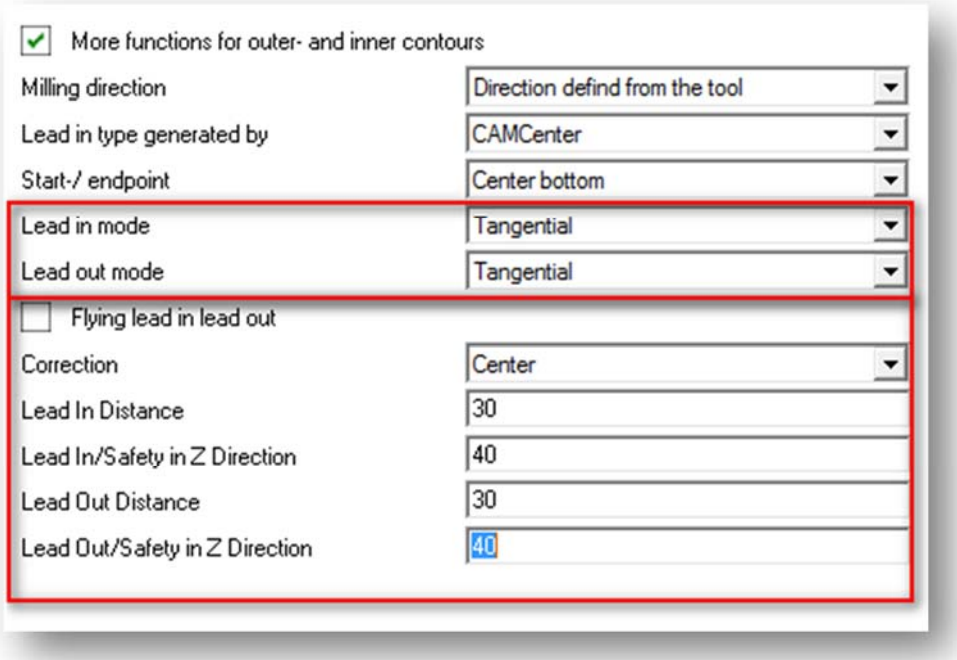
For obtaining a vertical lead in and lead out, it is important that the values for the lead in and lead out distances remain set on 0. In addition the **lead in and lead out mode** should be set on **vertical**. (See picture below **4.7.1.3**)



4.7.1.3.2 Tangential lead in and lead out

For creating a tangential lead in approach, the **lead in and lead out mode** must be set on **tangential**.
Additionally, you must ensure that the values for the lead in and lead out distance are defined and the checkbox **flying lead in/lead out** is activated.

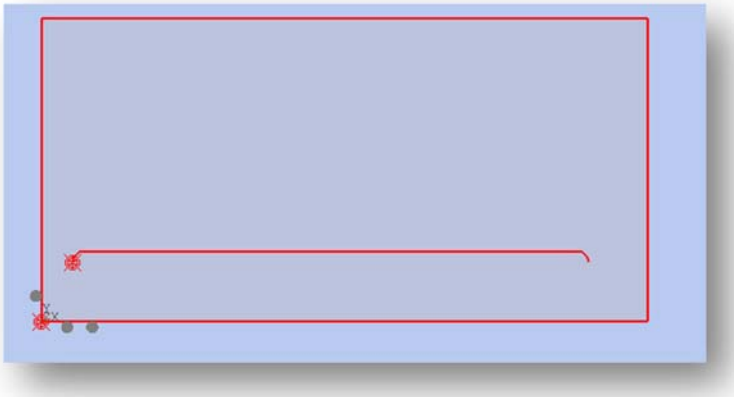


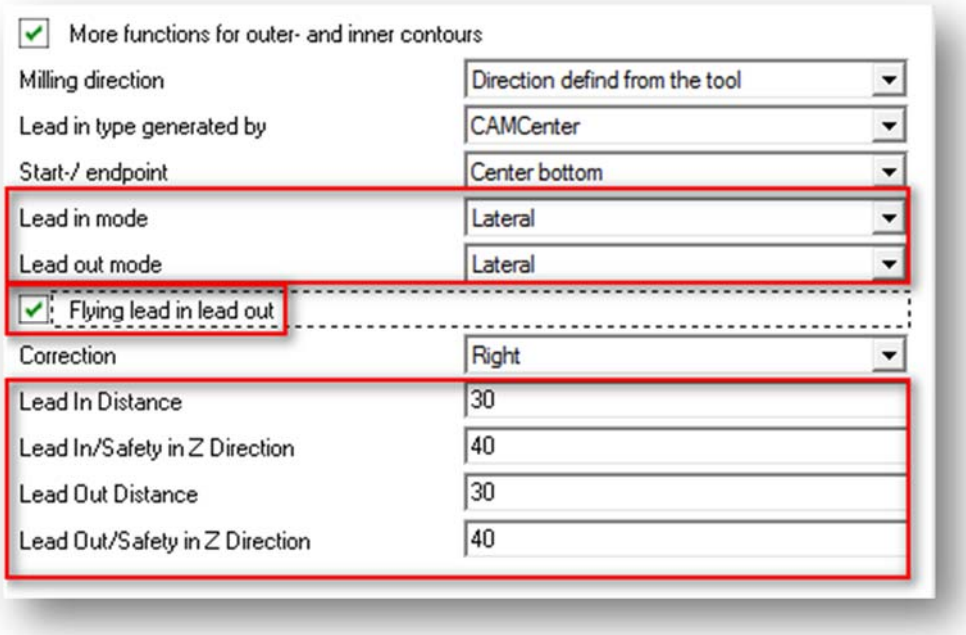


4.7.1.3.3 Lead in and lead out of a lateral approach

For creating a lead in and lead out of a lateral approach, the **lead in and lead out mode** must be set on **lateral**.
The checkbox **flying lead in and lead out** must always be activated so that the lead in can be flying as well.
It is important for the definition that the value is defined for the lead in and lead out distance.

If the lead in and lead out is **not flying** for the distance, then the distances should be set on **in Z on 0**.



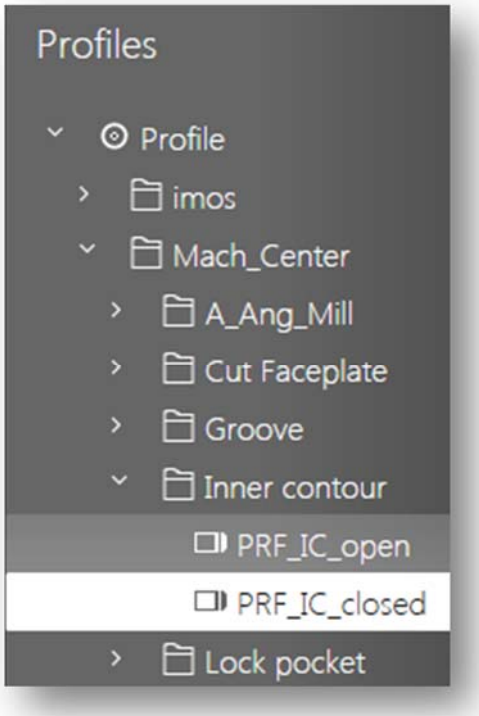


Tool assignment in the CAM Manager

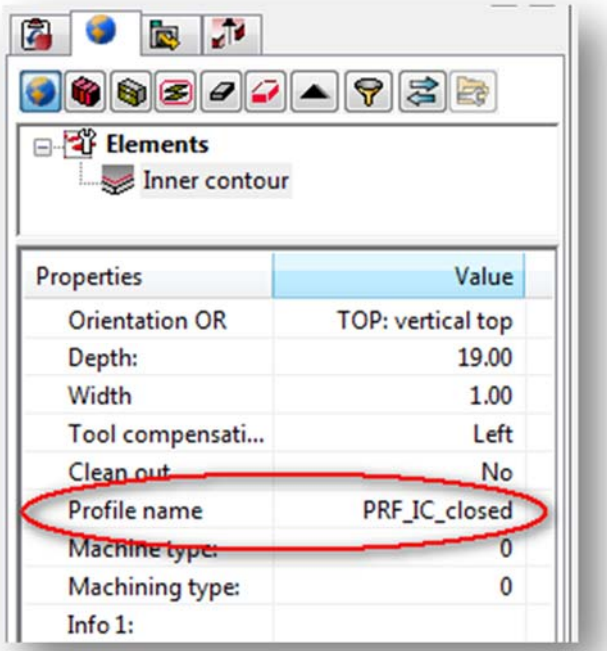
4.7.2 Closed inner contours

4.7.2.1 Data system in CAD

As mentioned before in chapter milling principles, it is necessary to create a suitable profile for the machining. First a new profile must be created via the Element Manager. (in this example **PRF_IC_closed**).



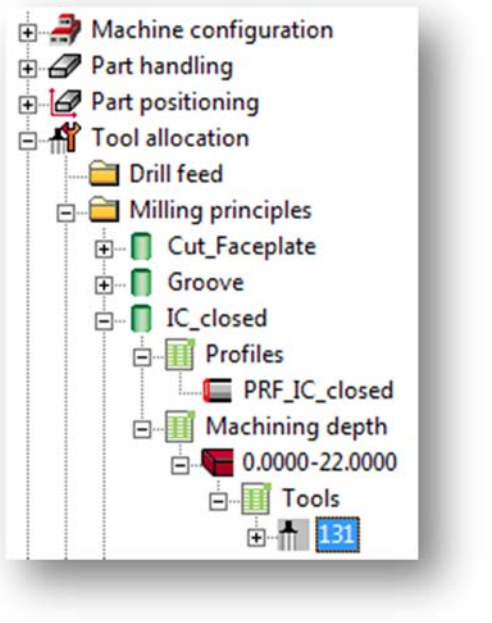
Afterwards the new created principle **PRF_IC_Closed** must be assigned to the closed inner contour.



4.7.2.2 Data system in the CAM Manager

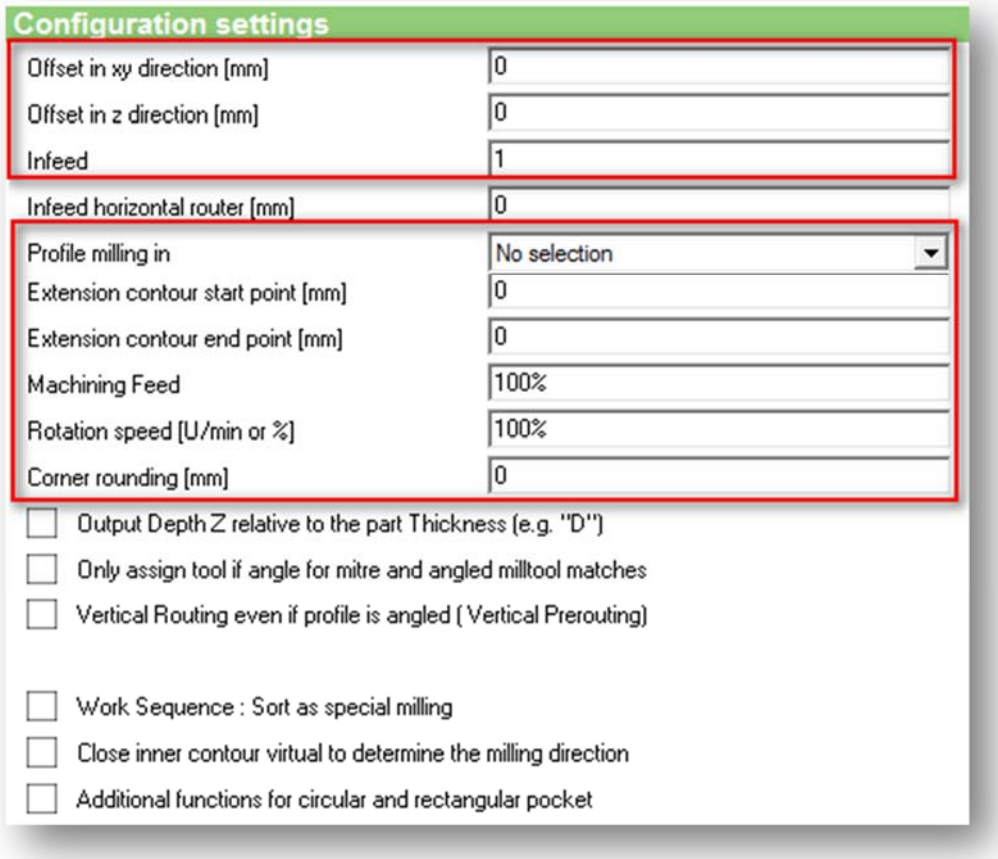
First a new milling principle must be created in the CAM Manager. (See also **4.4.2 Creating the profile "PRF_GROOVE" for the groove in CAM** Manager)
Then the new created milling principle (in this example **IC_Closed** must be assigned to the new created profile **PRF_IC_Closed**.

Afterwards a value range for the **machining depth** must be defined and then this machining depth must be assigned to a router. In this example it is a router with the **diameter of 11mm**.



Tool assignment in the CAM Manager

After defining the tool, the **configuration setting** can be defined on the right side. In order to do this, the tool must be clicked in the structure tree:



4.7.2.2.1 Basic settings

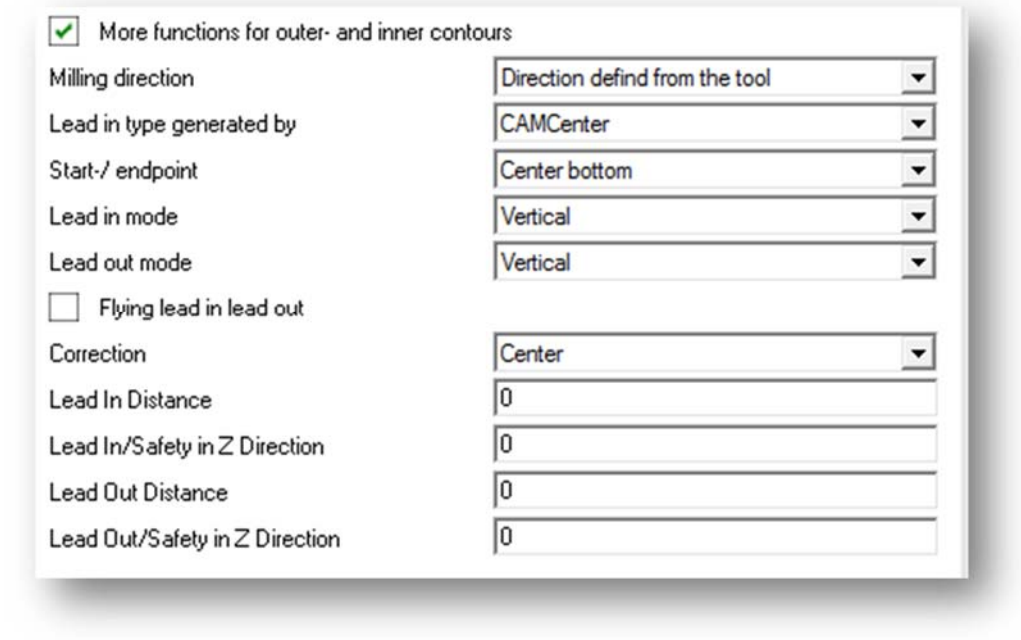
In the configuration settings a few special settings can be made for the router (red marking in the picture above).

Description	Explanation
Offset in XY- Direction [mm]	The machining can be moved into the part or away from the part (plus) or away from the (minus) via the offset in XY. The zero point is always the starting position of the machining.
Offset in Z- Direction [mm]	The machining can be moved in the height via the offset in Z. Minus is always to the bottom and plus to the top.
Infeed	Via the infeed the machining in Z can be divided into several contours.
Extension contour start point [mm]	Via the extension the machining can be extended on the contour start point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Extension contour end point [mm]	Via the extension the machining can be extended on the contour end point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Feed rate [m/min]	Via the feed rate the router can be regulated lower for this situation. The full value can be defined here or the feed rate set in percent. If the feed rate is set in percent, then the zero point is taken from the tool database.
Speed [U/min oder %]	Via the speed the router can be regulated lower for this situation. The full value can be defined here or the speed set in percent. If the speed is set in percent, then the zero point is taken from the tool database.
Extra functions for outer and inner contours	With an activated checkbox the lead in and the lead out, the compensation and the mode can be defined for this situation.

4.7.2.2.2 More functions for outer and inner contours

Special properties can be filed for this certain situation under the functions **extra functions for outer and inner contours**.

If this function is not activated, then the general settings from the **Technology-Parameters** for outer and inner contours are applied (see chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **5.4**).



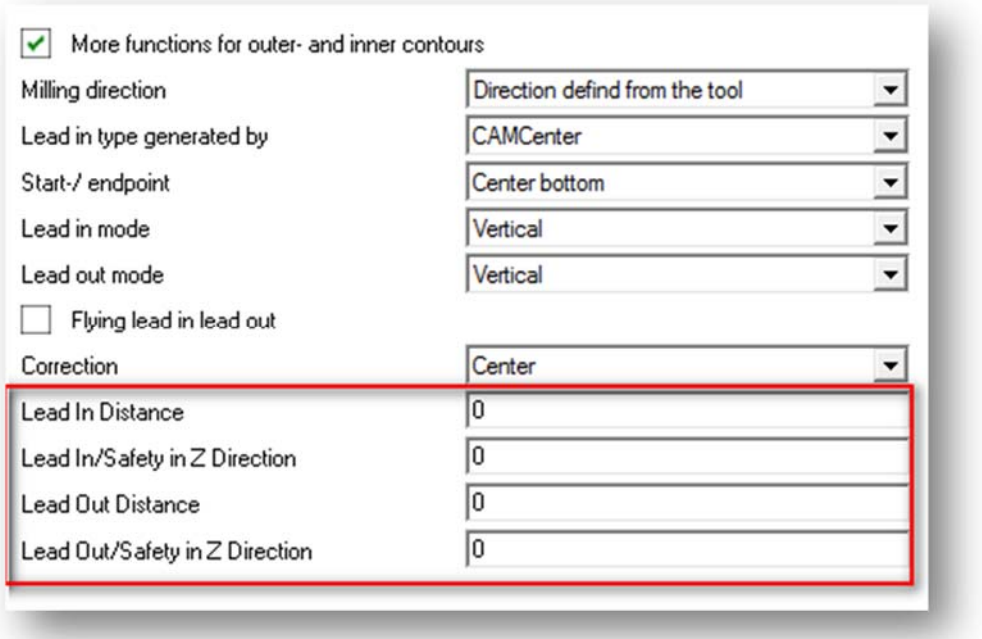
Description	Explanation
Milling direction	The router can be set how it should run via the milling direction. When set on **direction defined from tool**, the setting is applied from the tool database.

Create lead in mode by	If **CAMCenter** is selected as the value here, then a lead in and lead out is created by contours. The lead in and lead out is always **vertical** in the Wop Program.
Start-/ End point	The position of the start and end point can be selected here with a closed inner contour
Lead in mode	If the **create lead in mode by** is on **CAMCenter**, then the lead in mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead in mode from the Wop Program is used.
Lead out mode	If the **create lead in mode by** is on **CAMCenter**, then the lead out mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead out mode from the Wop Program is used.
Flying lead in/lead out	With an activated checkbox the flying lead in/lead out is initiated in the Wop-Mode. If the **create lead in mode by** is on **CAMCenter**, then this should always be activated so that a tangential lead in and lead out is possible.
Lead in distance [mm]	Here the extensions for the lead in distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with “**create lead in mode by**“. See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with “**create lead in mode by**“ and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.

Lead out distance [mm]	Here the extensions for the lead out distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**". See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**" and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.

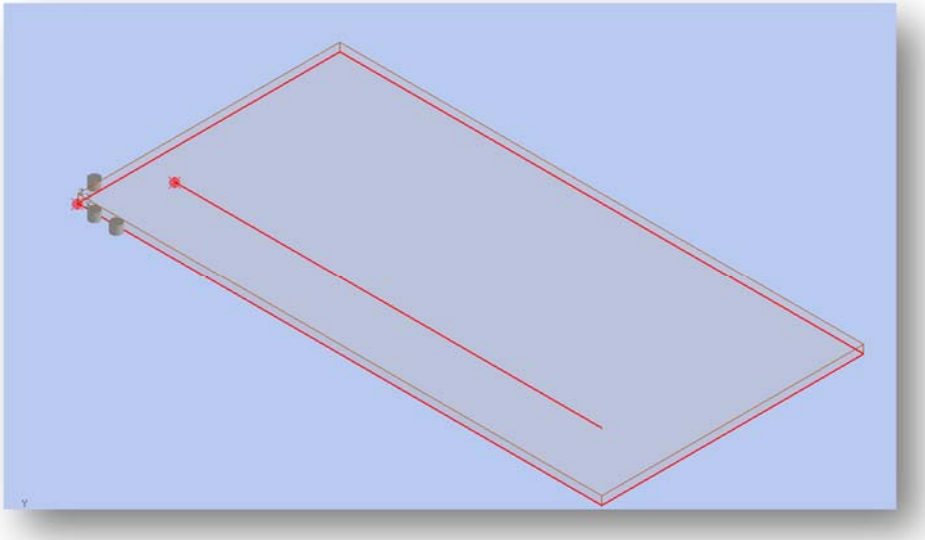
4.7.2.3 CAMCenter Mode

For calculating the lead out distance correctly, it is important that a suitable definition is made for the lead in and lead out distance.
If no lead in and lead out are required, then the values must remain on 0.
This is also important when creating a vertical lead in and lead out. At the same time ensure that the lead in and lead out mode is on vertical.



4.7.2.3.1 Vertical lead in and lead out

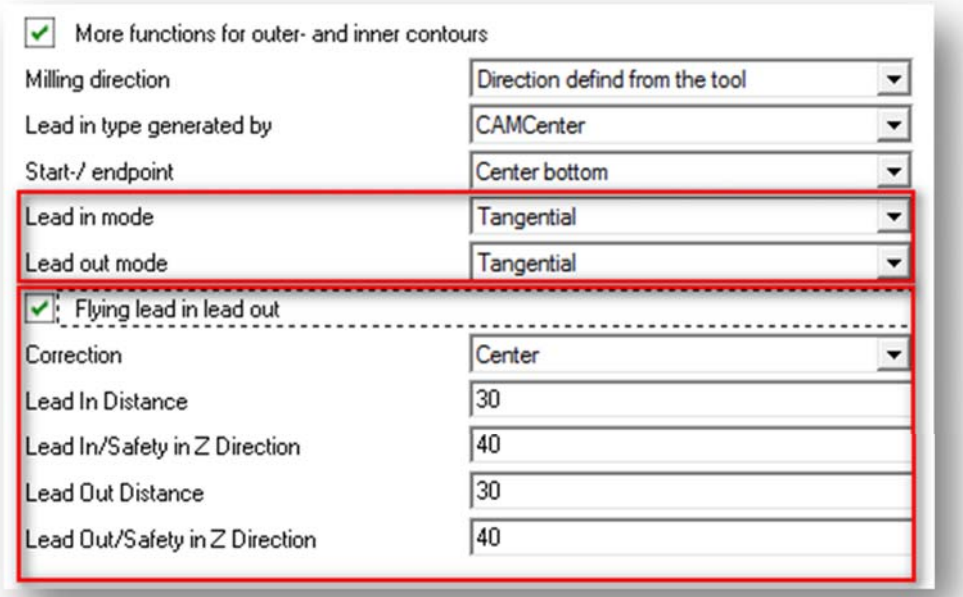
For creating a vertical lead in and lead out, it is important that the values for the **lead in and lead out distances** remain set on 0. In addition the **lead in and lead out mode** should be set on **vertical**. (See picture below **4.7.1.3**)



4.7.2.3.2 Tangential lead in and lead out

For creating a tangential lead in approach, the **lead in and lead out mode** must be set on **tangential**.
Additionally, you must ensure that the values for the lead in and lead out distance are defined and the checkbox **flying lead in/lead out** is activated.

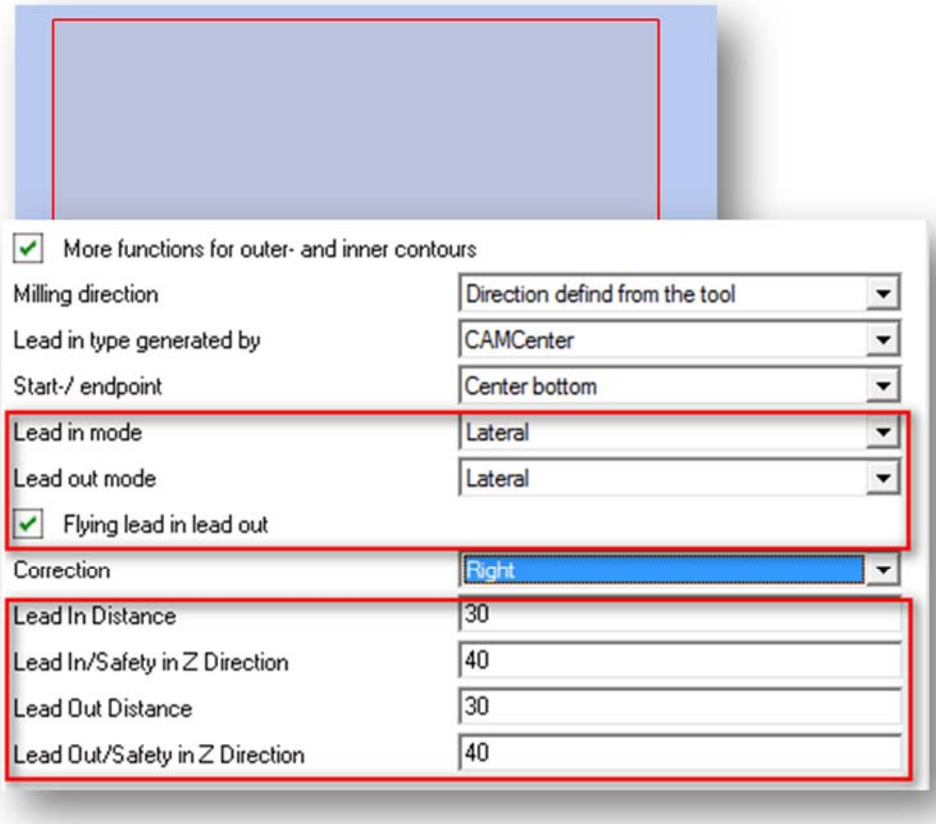




4.7.2.3.3 Lead in and lead out of a lateral approach

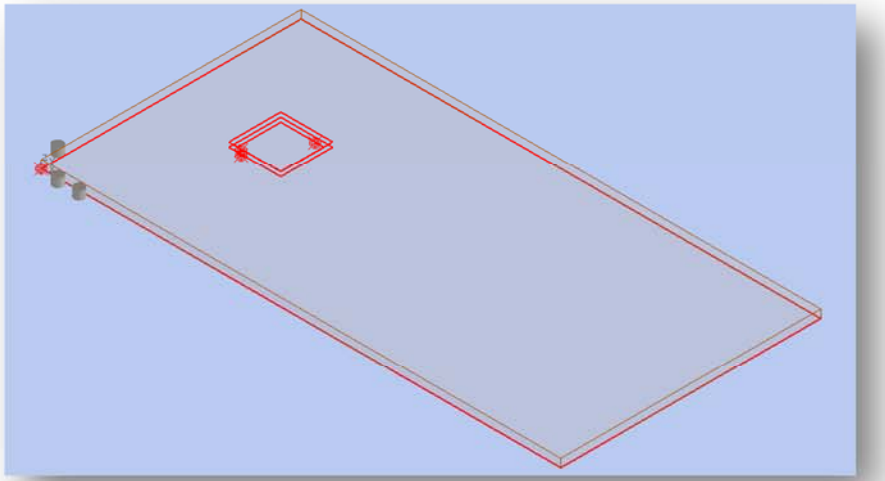
For creating a lead in and lead out of a lateral approach, the **lead in and lead out mode** must be set on **lateral**.
The checkbox **flying lead in and lead out** must always be activated so that the lead in can be flying as well.
It is important for the definition that the value is defined for the lead in and lead out distance.

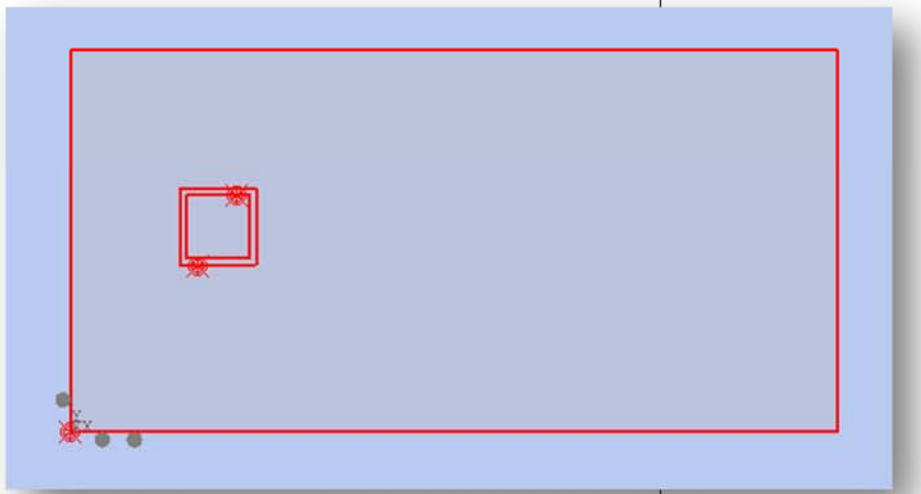
If the lead in and lead out is **not flying** for the distance, then the distances should be set on **in Z on 0**.



4.7.2.4 Prerouting and infeed routing

If a prerouting is required, for example, to prevent the main edge from shifting, then this can be configured in the CAM Manager.

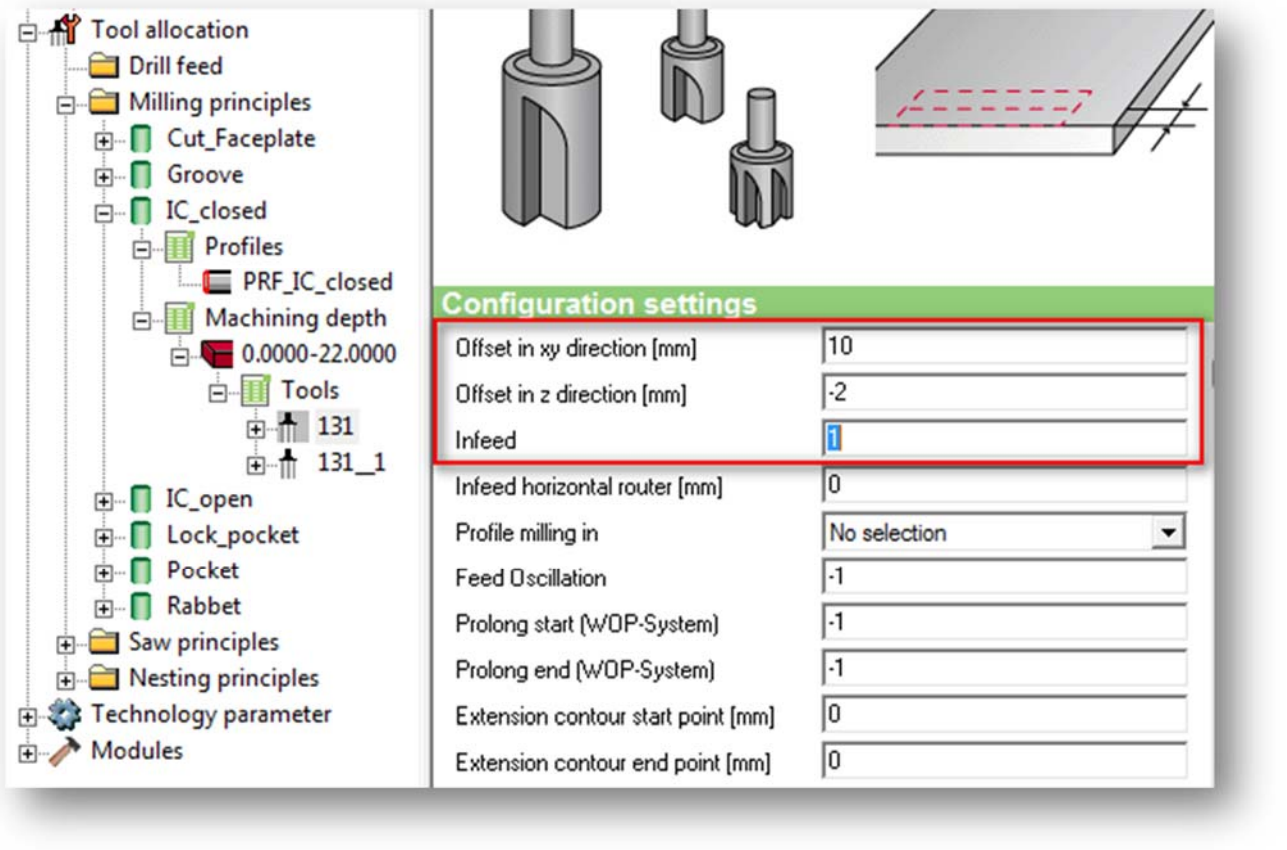




First a **second tool** for the value range of the machining depth must be defined.
If the same router is selected here again, then this is inserted **_1** with in the tree.

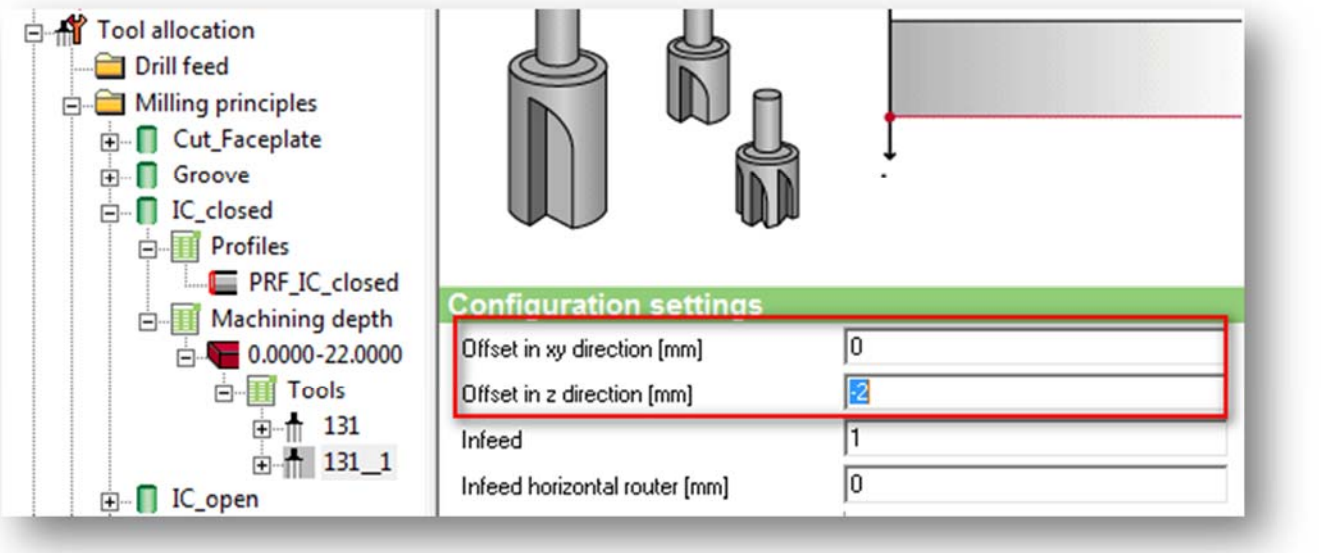
The routers are lead out in the sequence how they were created in the range (first **131** and then **131_1**).

The first router can be moved via the offset in XY- direction. In this example it has to be milled through and the router must plunge 2mm under the panel and therefore an offset in **Z-direction** of **-2** must be entered.
Furthermore, the router must be led in two work steps through the panel and therefore a division of **1:1** must be entered with **infeed**. 1:1 means that the contours are divided in 2 equal high work steps in Z.



Tool assignment in the CAM Manager

If the main contour has to be milled, (_1) a **Z-Offset** of **-2** must be entered for the second router (_1) so that the router can mill through.



4.8 Outer contour

Imos CAM distinguishes between various types of outer contours. For example, there is the outer contour where a profile is milled and then there are edges where a plastic edge is glued later or there are edges where a solid wood edge is glued and then later this is milled with a finish.

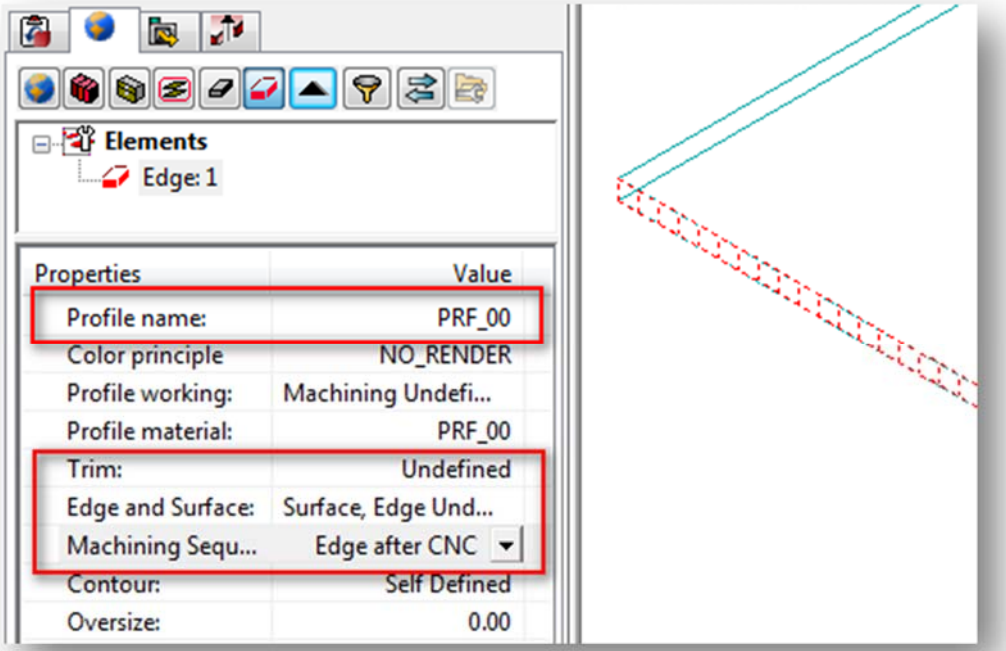
The following pages describe how these edges are correctly created.

4.8.1 Milling profile edges

For example, if a radius has to be rounded with a profile router on a MDF board, data must be created as follows:

4.8.1.1 Data system in CAD

For milling a profile, the machining sequence must be set on **edge after CNC** first.
If the edge is on **edge before CNC**, no milling is initiated.
In addition the trims have to be defined.


Elements
Edge: 1
Properties
Value
Profile name:
PRF_00
Color principle
NO_RENDER
Profile working:
Machining Undefi...
Profile material:
PRF_00
Trim:
Undefined
Edge and Surface:
Surface, Edge Und...
Machining Sequ...
Edge after CNC
Contour:
Self Defined
Oversize:
0.00

Definition of the trims:

Description	Explanation
Undefined	If the edge is on **undefined**, then the edge is combined with the following edge.
Long	If the edge is on **long**, then the short edge is milled first and then the long edge.
Short	If the edge is on **short**, then this edge is milled first and then the long edge.

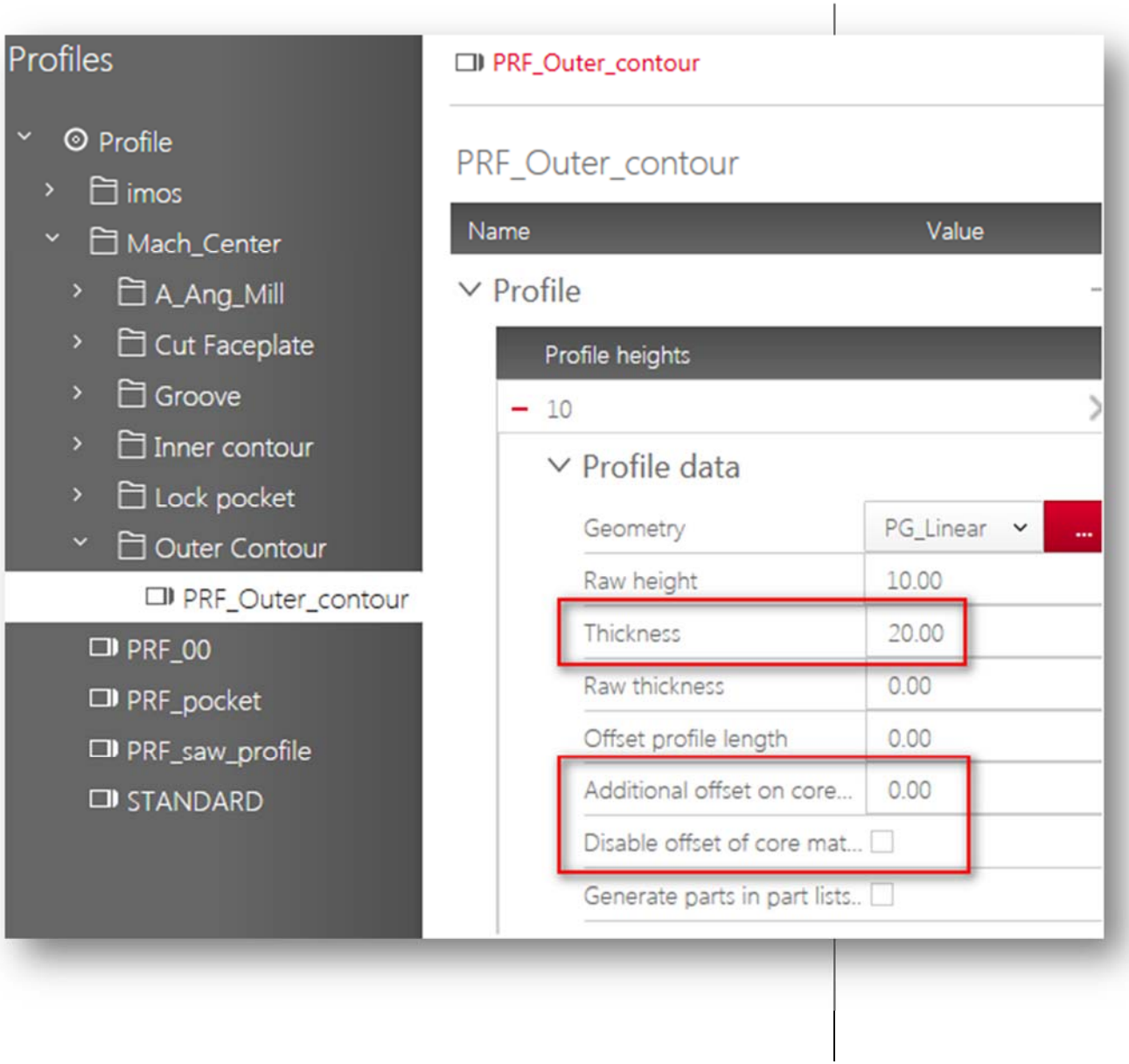
After defining **trims** for the edges, the profile must be assigned.

First a new profile must be created via the Element Manager.
In this example the profile is named **PRF_Outer_Contour**.

If a profile is milled, then the complete profile cross section should always be defined for the value of the thickness.

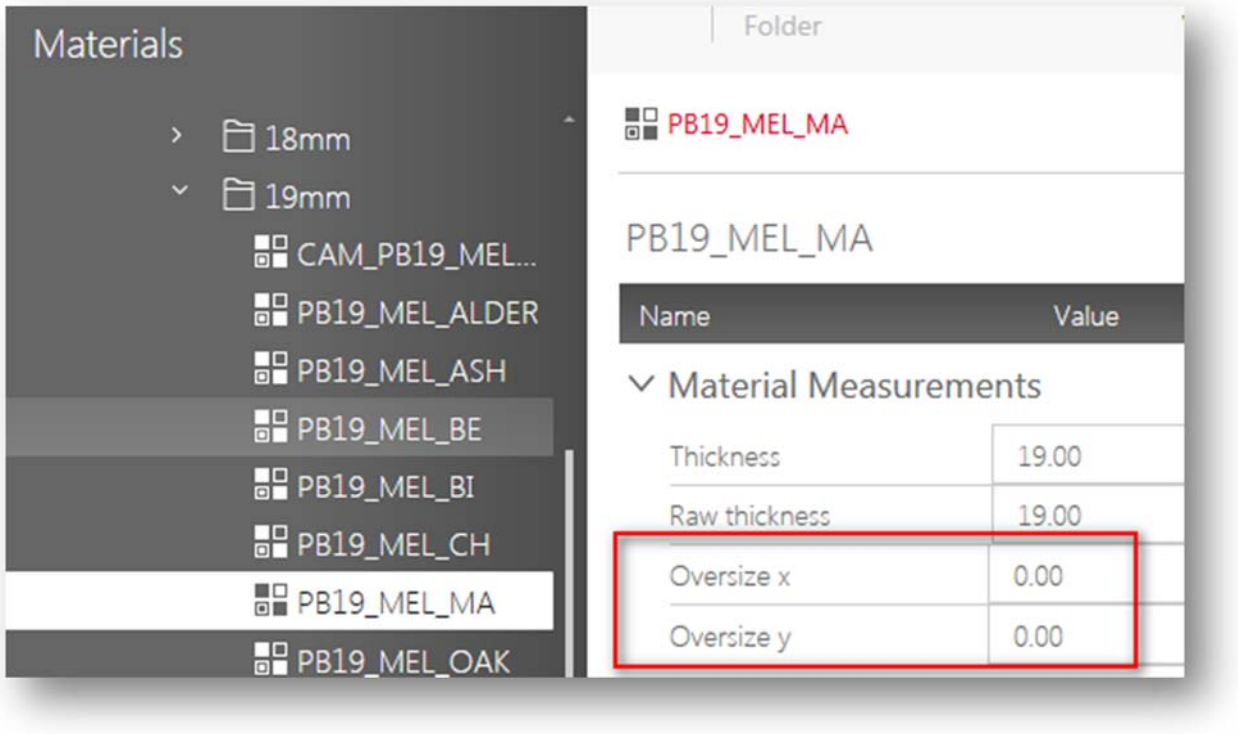
If an oversize is required, because the panel should be formatted first, then the oversize can be defined on the profile. For this purpose, a value must be defined with **additional oversize on base material**.

It is important here to set the **profile machining** on **machined profile**. If an oversize has been defined, then this can be deactivated by activating the checkbox **suppress oversize of the base material**.

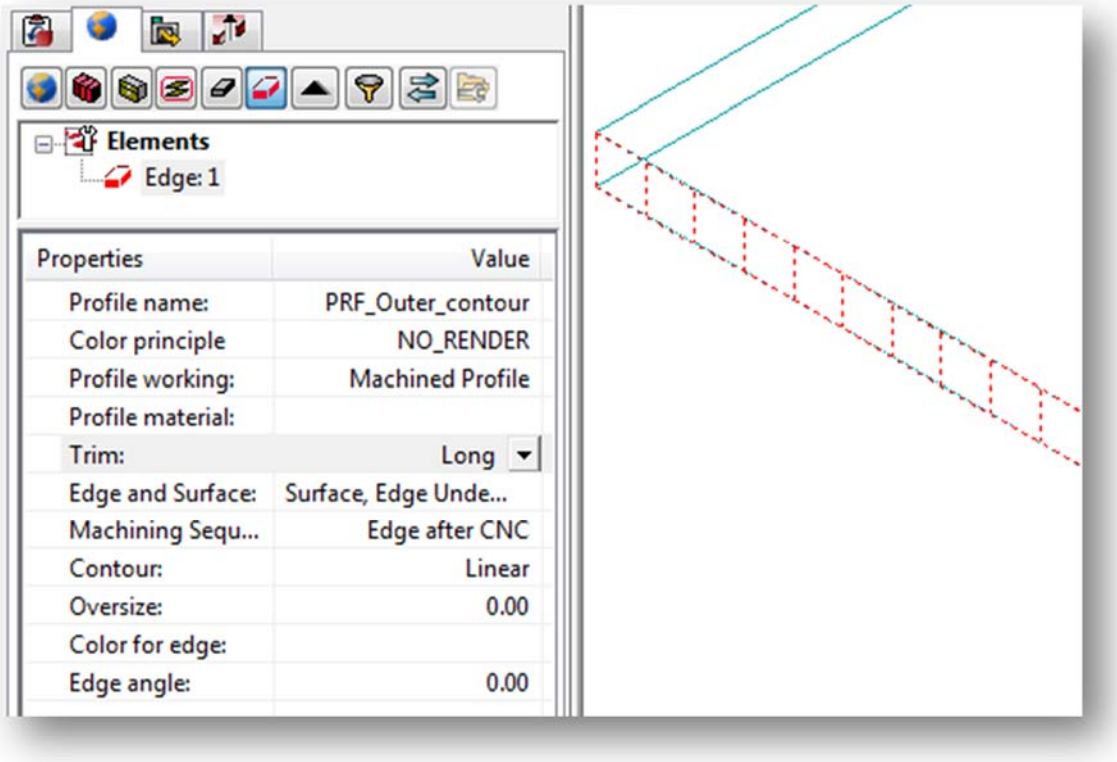


Tool assignment in the CAM Manager

If the **profile machining** is set on machining undefined, then the milling is only then initiated if an oversize has been stored on the material.



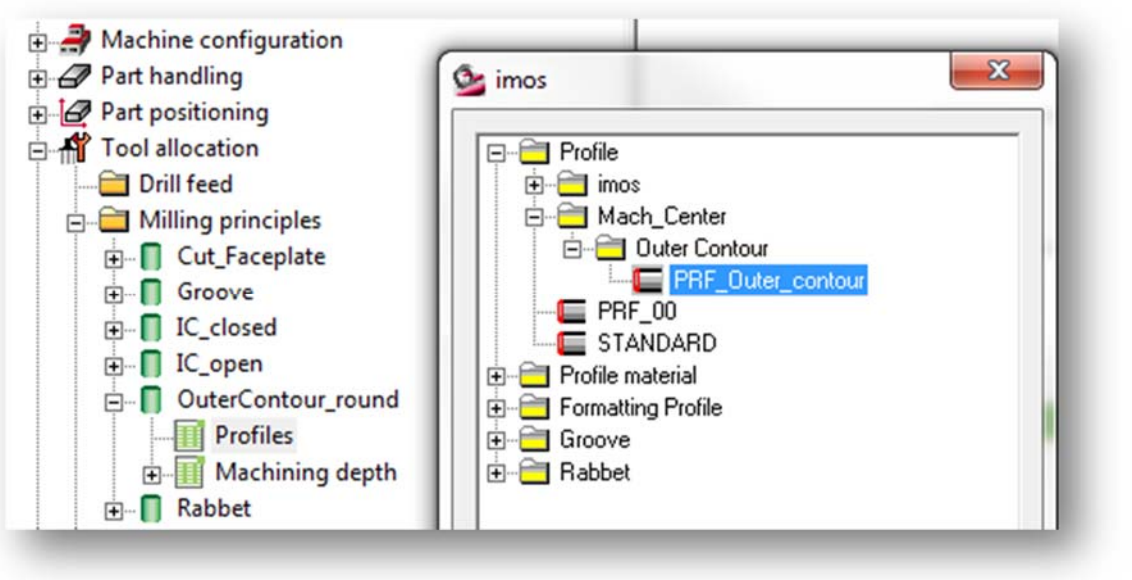
After creating the profile, it must be assigned to the suitable edge.



4.8.1.2 Data system in the CAM Manager

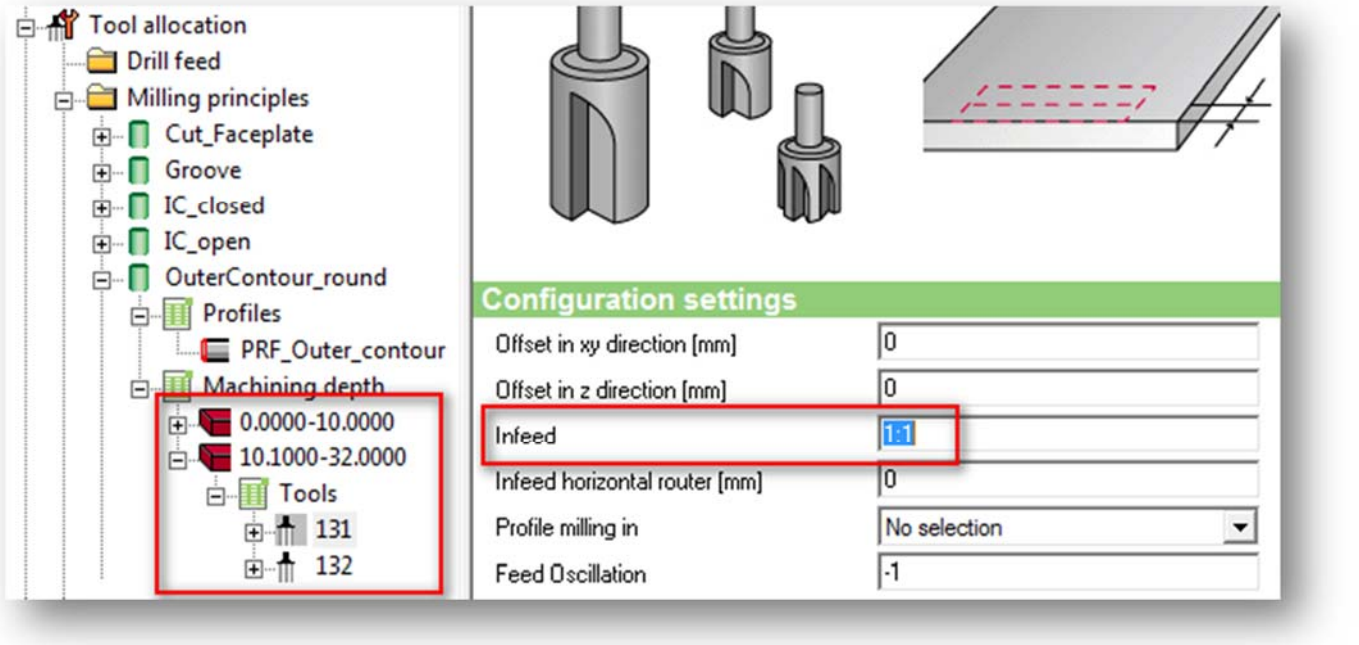
First a new milling principle must be created in the CAM Manager. (See also **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager**)

Afterwards the new created profile **PRF_Outercontour** in imos CAD must be assigned to the new created milling principle.



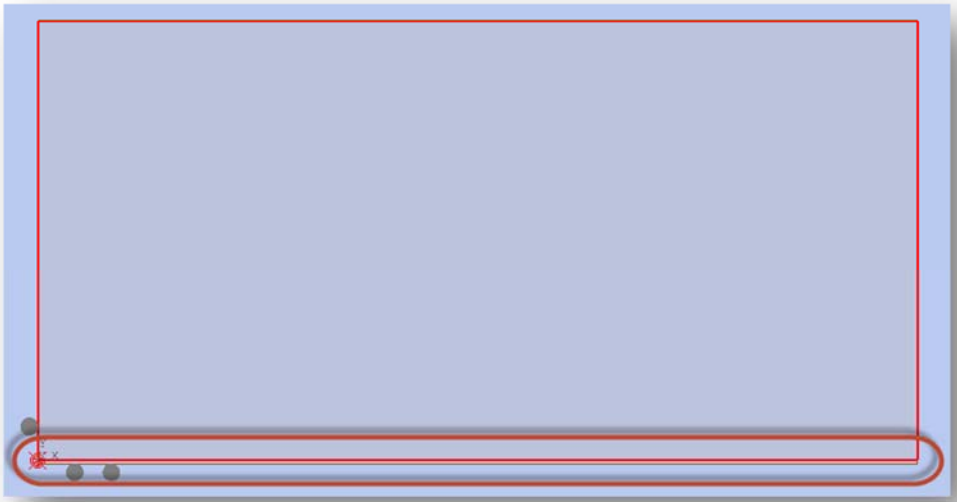
Afterwards a **value range** for the **machining depth** must still be defined for the milling principle and then assigned to a router.

In this example the **Router 131** should mill the oversize defined in imos CAD away and then the **Router 132** mills the bottom rounding on the panel.

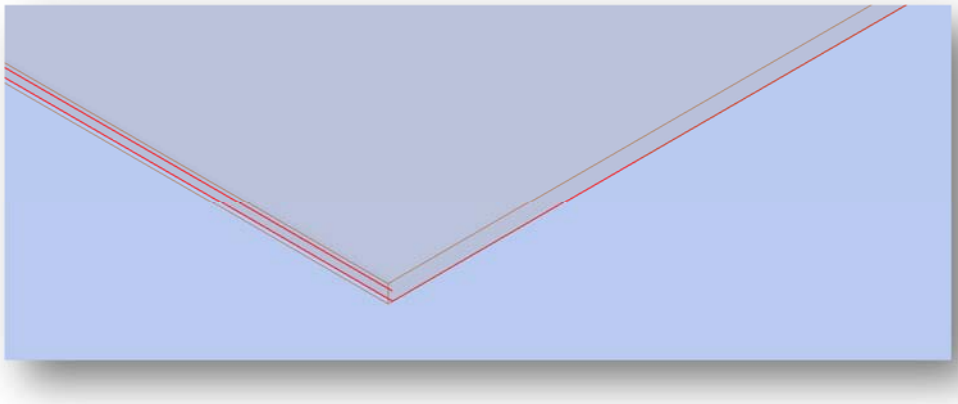


Tool assignment in the CAM Manager

The output shows the display of the oversize on the front edge:

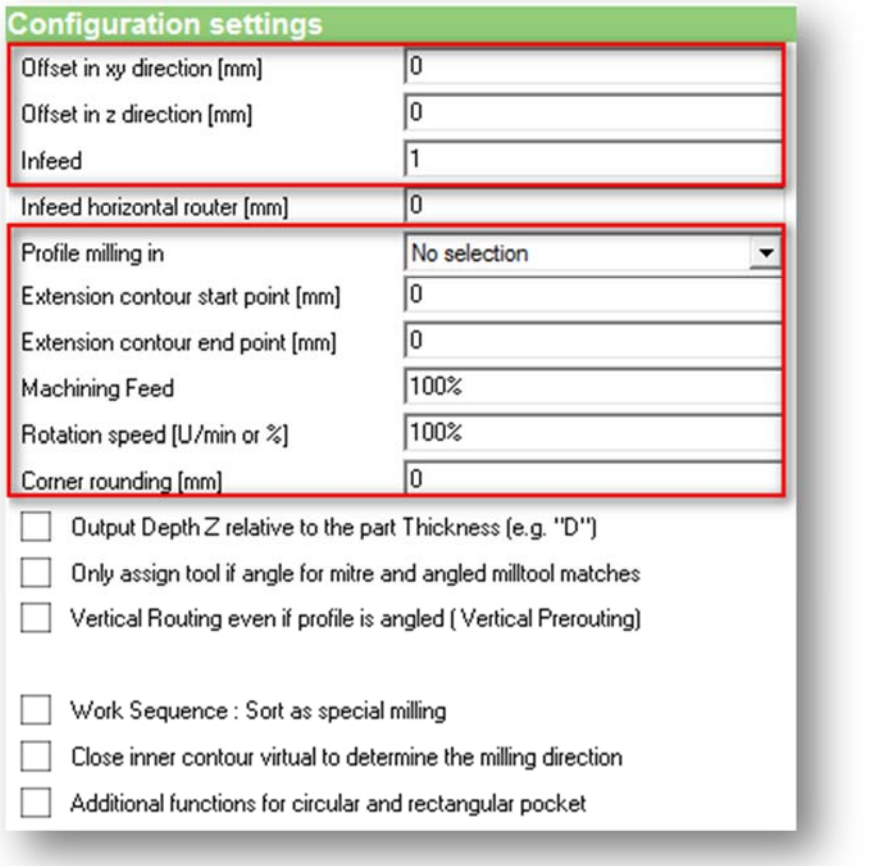


Furthermore, you can see how an infeed milling emerges as set in the CAM Manager.



Tool assignment in the CAM Manager

After defining the tool, the **configuration setting** can be defined on the right side. For this purpose, the tool must be clicked in the structure tree. Following parameters can be defined there:



4.8.1.2.1 Basic settings

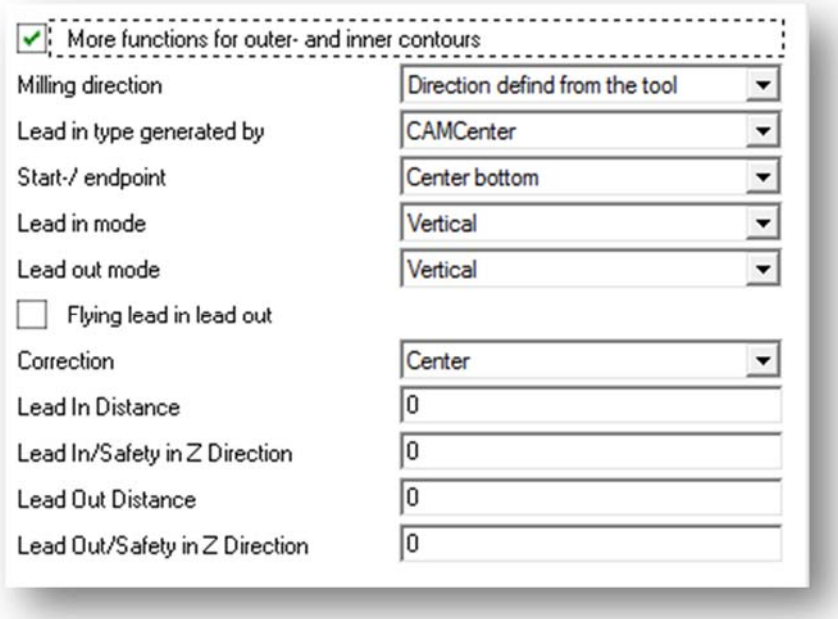
In the configuration settings a few special settings can be made for the router (red marking in the picture above).

Description	Explanation
Offset in XY- Direction [mm]	The machining can be moved into the part or away from the part (plus) or away from the (minus) via the offset in XY. The zero point is always the starting position of the machining.
Offset in Z- Direction [mm]	The machining can be moved in the height via the offset in Z. Minus is always to the bottom and plus to the top.
Infeed	Via the infeed the machining in Z can be divided into several contours.
Extension contour start point [mm]	Via the extension the machining can be extended on the contour start point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Extension contour end point [mm]	Via the extension the machining can be extended on the contour end point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Feed rate[m/min]	Via the feed rate the router can be regulated lower for this situation. The full value can be defined here or the feed rate set in percent. If the feed rate is set in percent, then the zero point is taken from the tool database.
Speed [U/min oder %]	Via the speed the router can be regulated lower for this situation. The full value can be defined here or the speed set in percent. If the speed is set in percent, then the zero point is taken from the tool database.
Extra functions for outer and inner contours	With an activated checkbox the lead in and the lead out, the compensation and the mode can be defined for this situation.

4.8.1.2.2 Extra functions for outer and inner contours

Special properties can be filed for this certain situation under the functions **extra functions for outer and inner contours**.

If this function is not activated, then the general settings from the **Technology-Parameters** for outer and inner contours are applied. (See Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **5.4**)



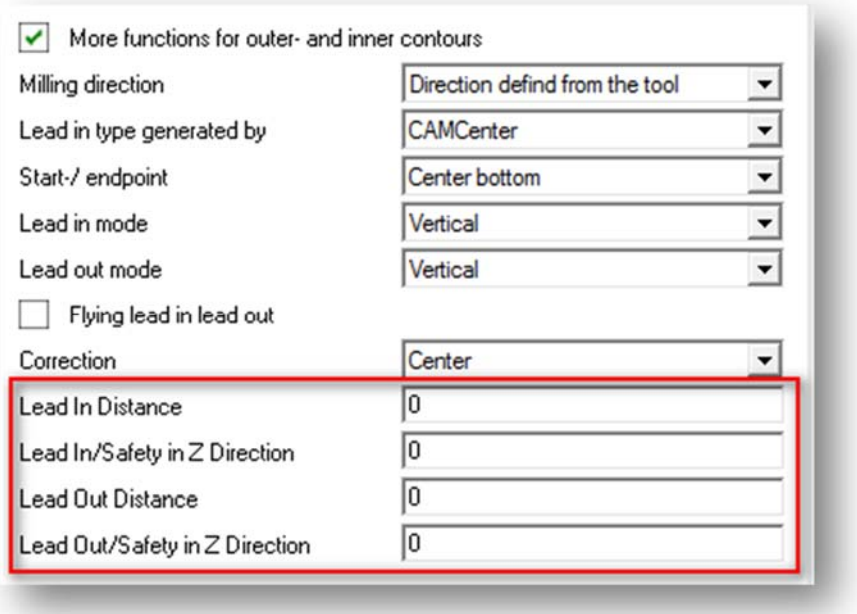
Description	Explanation
Milling direction	The router can be set how it should run via the milling direction. When set on **direction defined from tool**, the setting is applied from the tool database.

Create lead in mode by	If **CAMCenter** is selected as the value here, then a lead in and lead out is created by contours. The lead in and lead out is always **vertical** in the Wop Program.
Start-/ End point	The position of the start and end point can be selected here with a closed inner contour
Lead in mode	If the **create lead in mode by** is on **CAMCenter**, then the lead in mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead in mode from the Wop Program is used.
Lead out mode	If the **create lead in mode by** is on **CAMCenter**, then the lead out mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead out mode from the Wop Program is used.
Flying lead in/lead out	With an activated checkbox the flying lead in/lead out is initiated in the Wop-Mode. If the **create lead in mode by** is on **CAMCenter**, then this should always be activated so that a tangential lead in and lead out is possible.
Lead in distance[mm]	Here the extensions for the lead in distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with “**create lead in mode by**“. See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.

	 This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**" and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.
Lead out distance [mm]	Here the extensions for the lead out distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**". See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by"** and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.

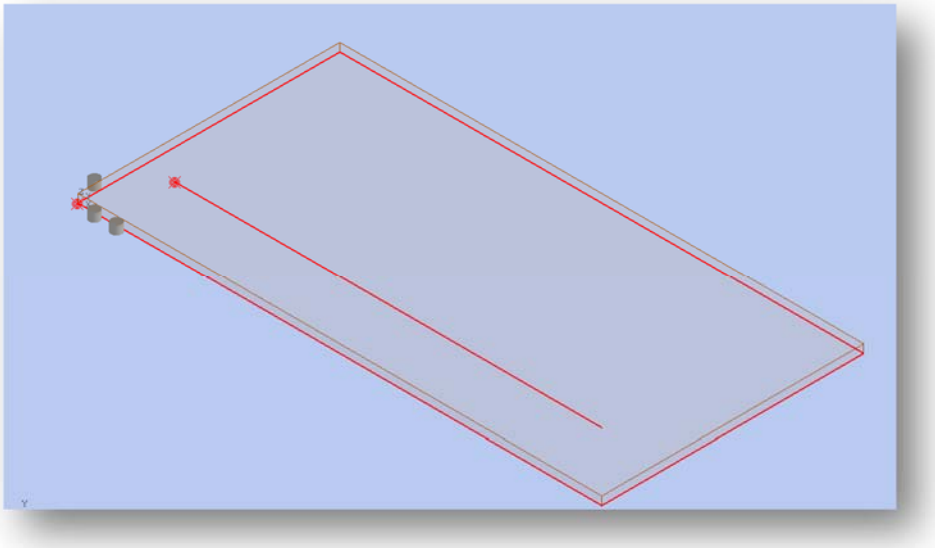
4.8.1.3 CAMCenter Mode

For calculating the lead out distance correctly, it is important that a suitable definition is made for the lead in and lead out distance.
If no lead in and lead out are required, then the values must remain on 0.
This is also important when creating a vertical lead in and lead out. At the same time ensure that the lead in and lead out mode is on vertical.



4.8.1.3.1 Vertical lead in and lead out

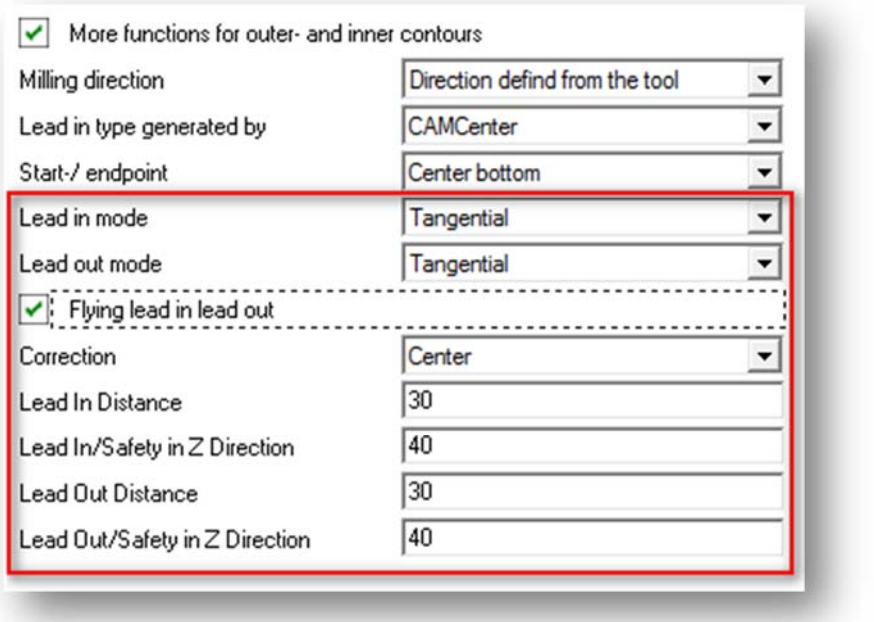
For obtaining a vertical lead in and lead out, it is important that the values for the **lead in and lead out distances** remain set on 0. In addition the **lead in and lead out mode** should be set on **vertical**. (See picture below **4.7.1.3**)



4.8.1.3.2 Tangential lead in and lead out

For creating a tangential lead in approach, the **lead in and lead out mode** must be set on **tangential**.
Additionally, you must ensure that the values for the lead in and lead out distance are defined and the checkbox **flying lead in/lead out** is activated.

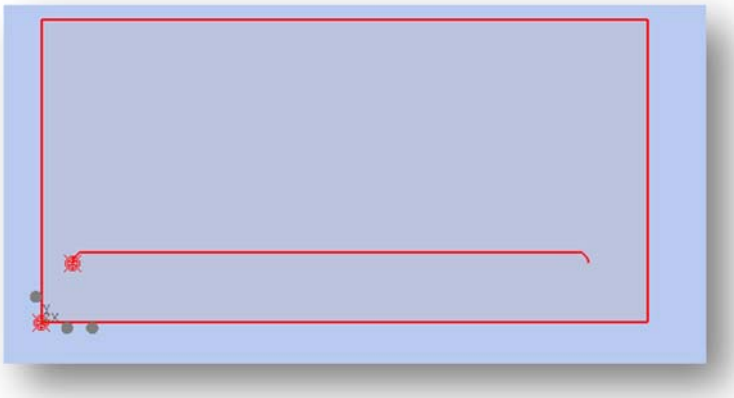


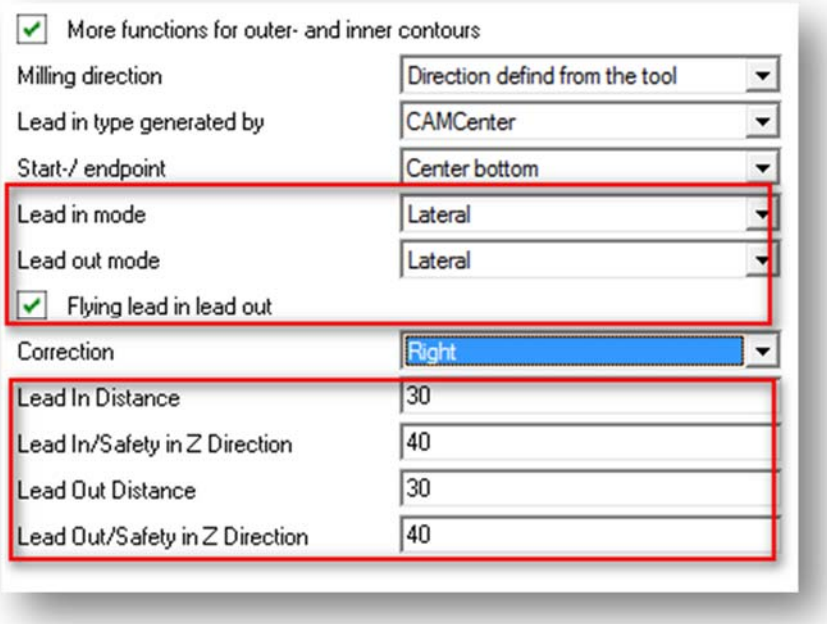


4.8.1.3.3 Lead in and lead out of a lateral approach

For creating a lead in and lead out of a lateral approach, the **lead in and lead out mode** must be set on **lateral**.
The checkbox **flying lead in and lead out** must always be activated so that the lead in can be flying as well.
It is important for the definition that the value is defined for the lead in and lead out distance.

If the lead in and lead out is **not flying** for the distance, then the distances should be set on **in Z on 0**.

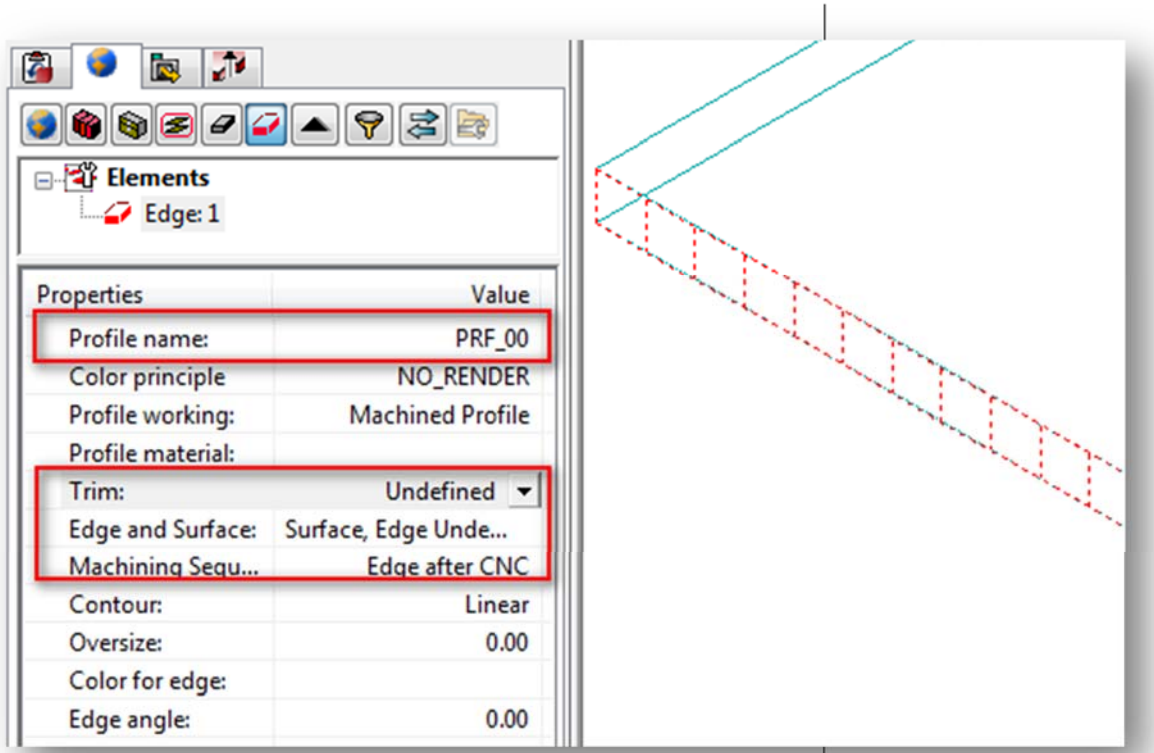



More functions for outer- and inner contours
Milling direction
Direction defind from the tool
Lead in type generated by
CAMCenter
Start-/ endpoint
Center bottom
Lead in mode
Lateral
Lead out mode
Lateral
Flying lead in lead out
Correction
Right
Lead In Distance
30
Lead In/Safety in Z Direction
40
Lead Out Distance
30
Lead Out/Safety in Z Direction
40

4.8.2 Milling plastic edges

4.8.2.1 Data system in CAD

For milling off a plastic edge to glue it on another machine again later, the machining sequence must be set on **edge after CNC** first. If the edge is set on **edge before CNC**, then no milling is initiated.
Additionally, the trims must be defined.



Definition of trims:

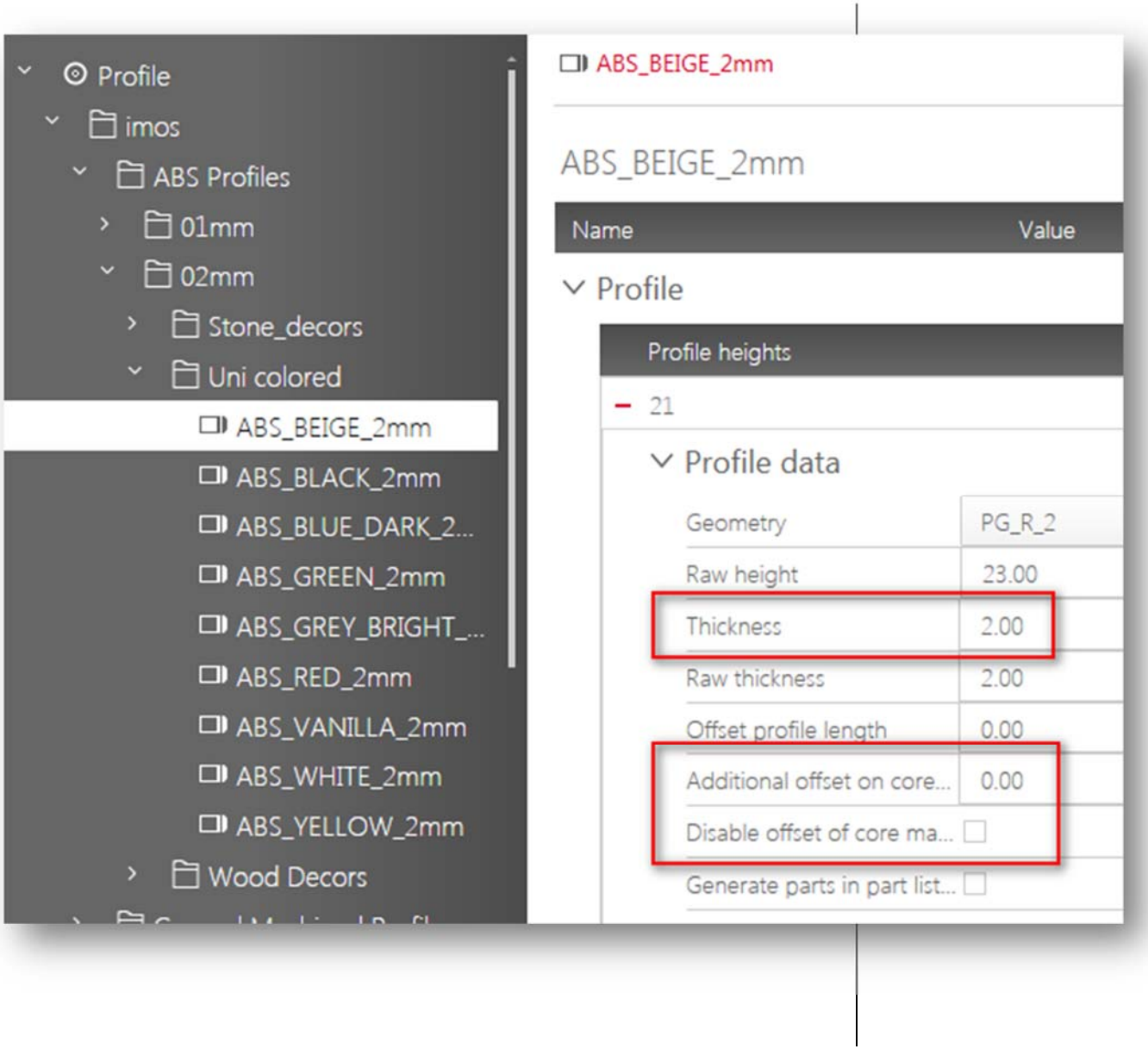
Description	Explanation
Undefined	If the edge is on **undefined**, then the edge is combined with the following edge.
Long	If the edge is on **long**, then the short edge is milled first and then the long edge
Short	If the edge is on **short**, then this edge is milled first and then the long edge.

After defining **trims** for the edges, the profile must be assigned.

Then a new profile must be created via the Element Manager.
In this example the profile is named **ABS_BEIGE_2mm**.
If a plastic edge is milled, the full edge thickness of the plastic edge must be defined next to thickness, because this is calculated in the CNC program later.

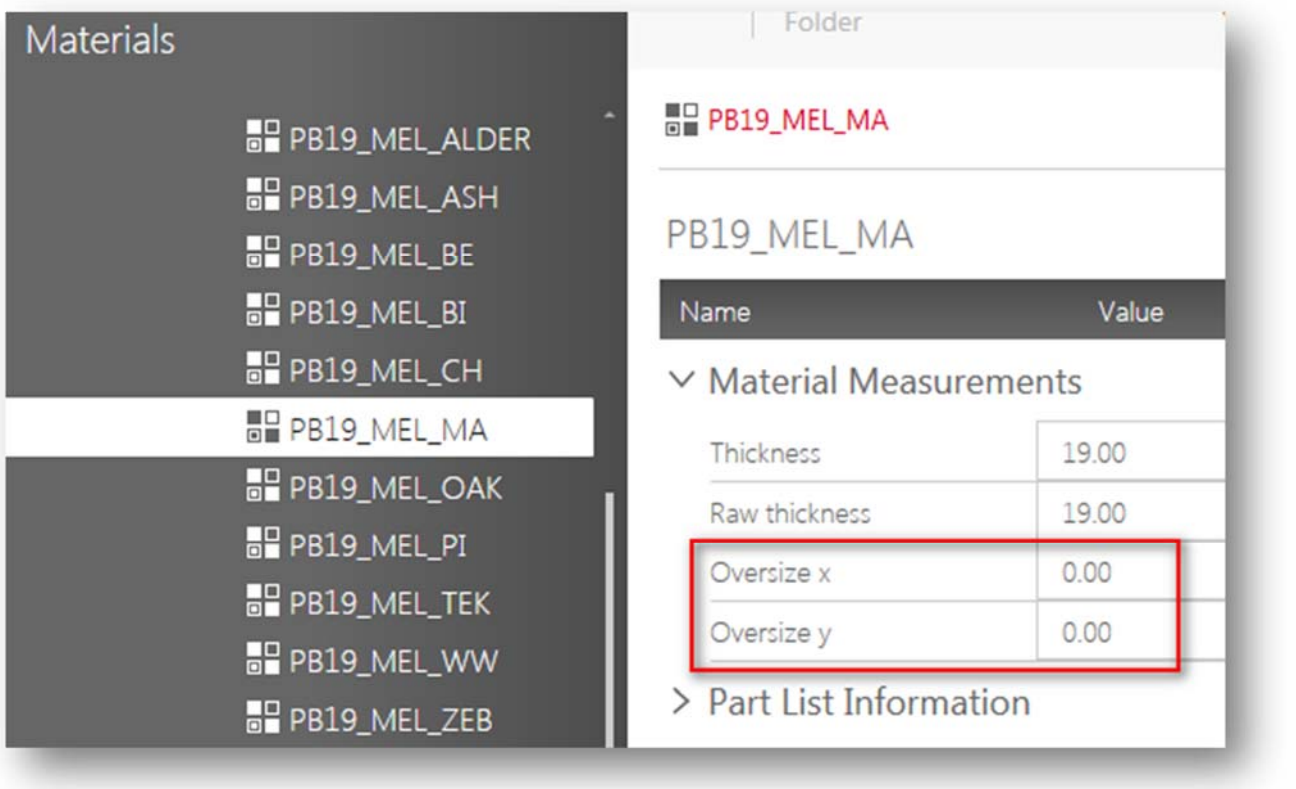
If an oversize is required to cut the panel larger, then the oversize can be defined by the profile and a value must be entered next to **additional oversize on base material**.

It is important that the **profile machining** is set on **machining + edging**. A general name can be entered for **profile material** so that not every edge has to be updated in the CAM Manager later.
If an oversize has been defined on the material, this can be deactivated by activating the checkbox **suppress oversize of the base material**.

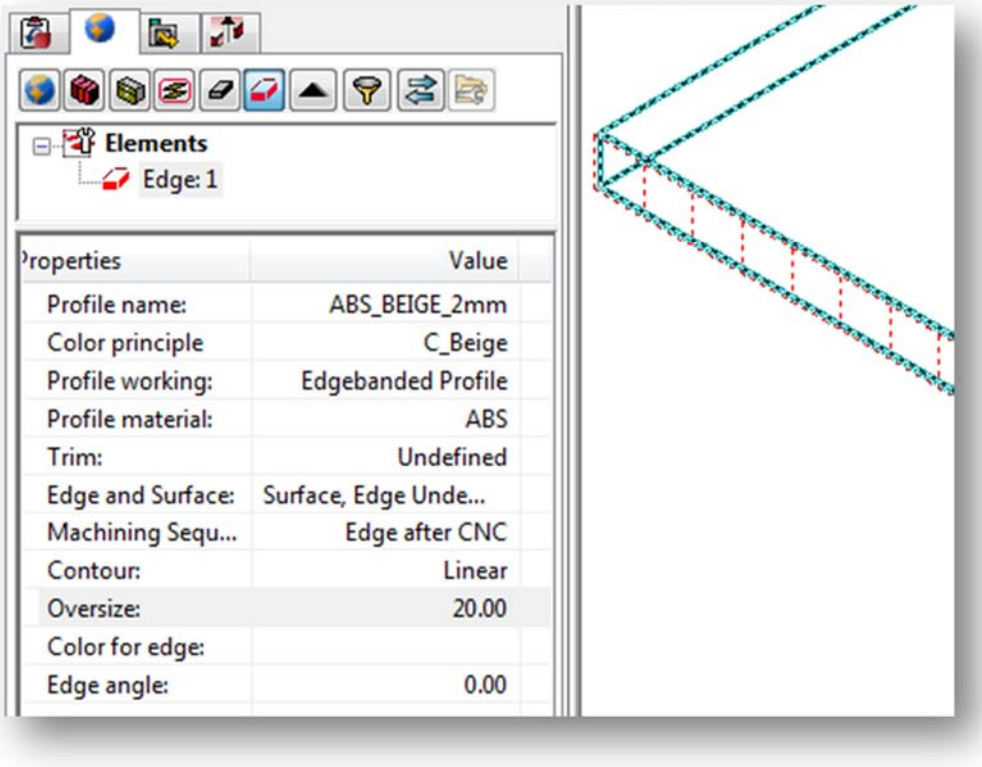


Tool assignment in the CAM Manager

If the profile machining is set on **gluing edges (ABS, veneer, etc.)**, the milling is only then initiated if an oversize has been stored.



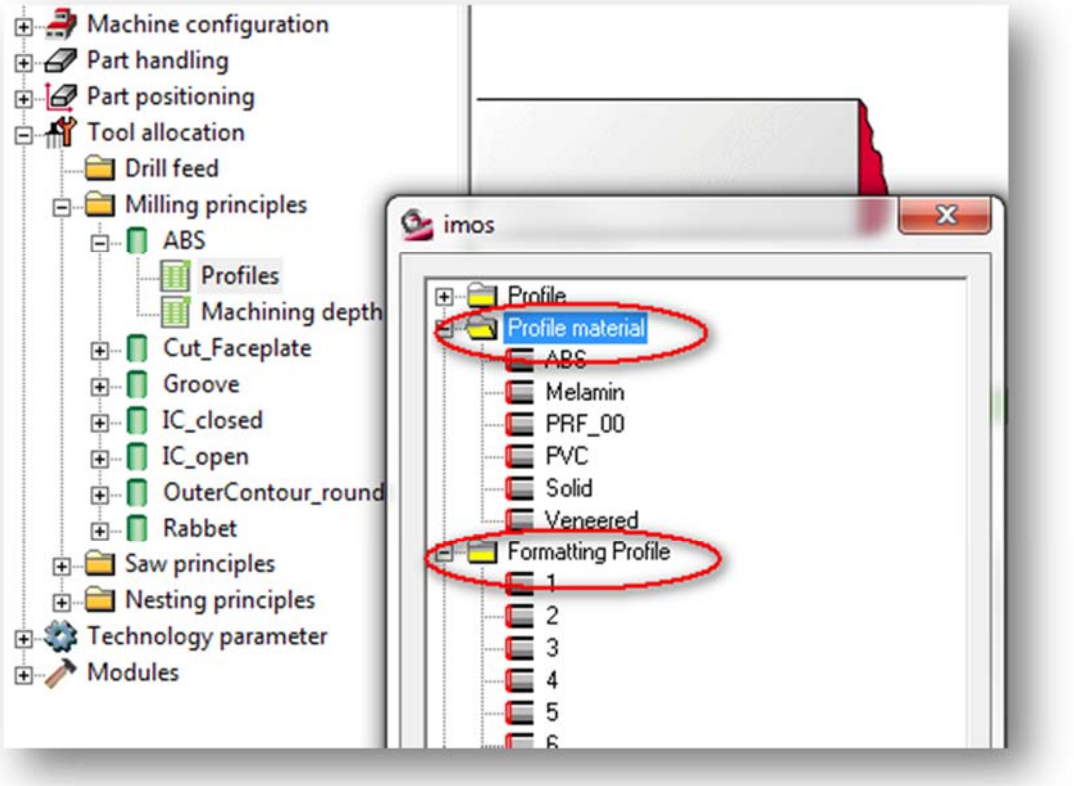
After creating the profile, it must be assigned to the suitable edge:



4.8.2.2 Data system in the CAM Manager

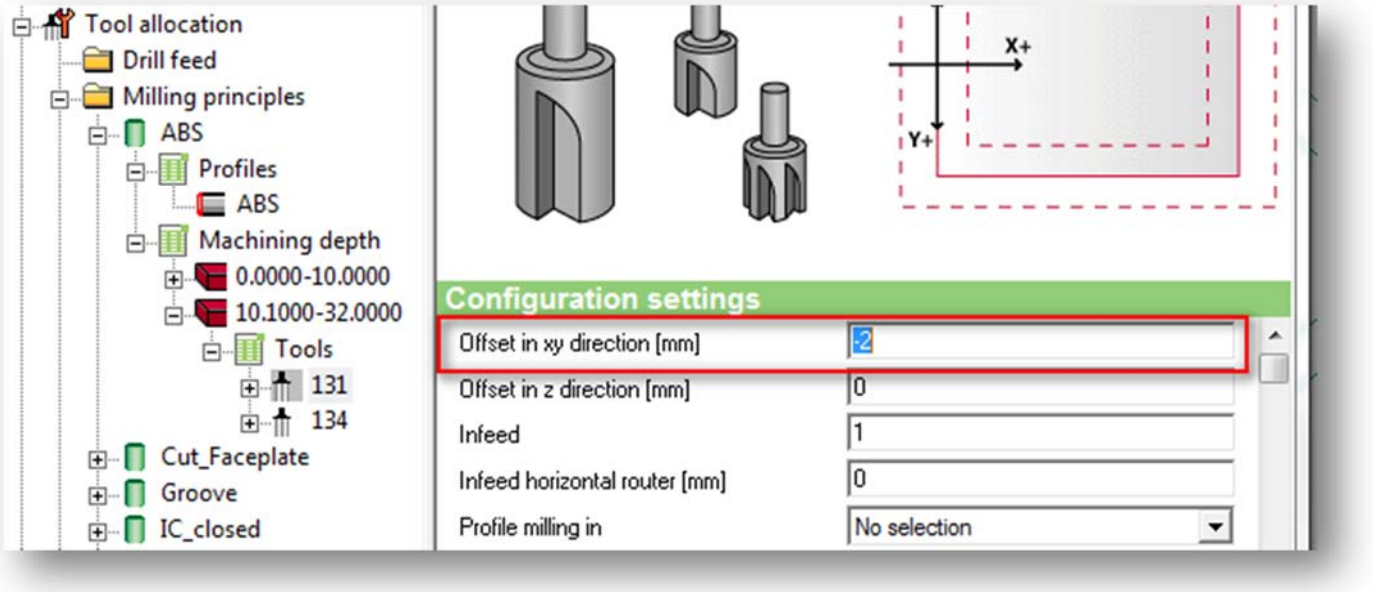
First a new milling principle must be created in the CAM Manager (see also **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager**)
Afterwards a new profile must be assigned to the new created milling principle (in this example **ABS**).

For not always creating a new profile for every edge, the router can be assigned to the edge with the support of the **profile materials** or **formats**.

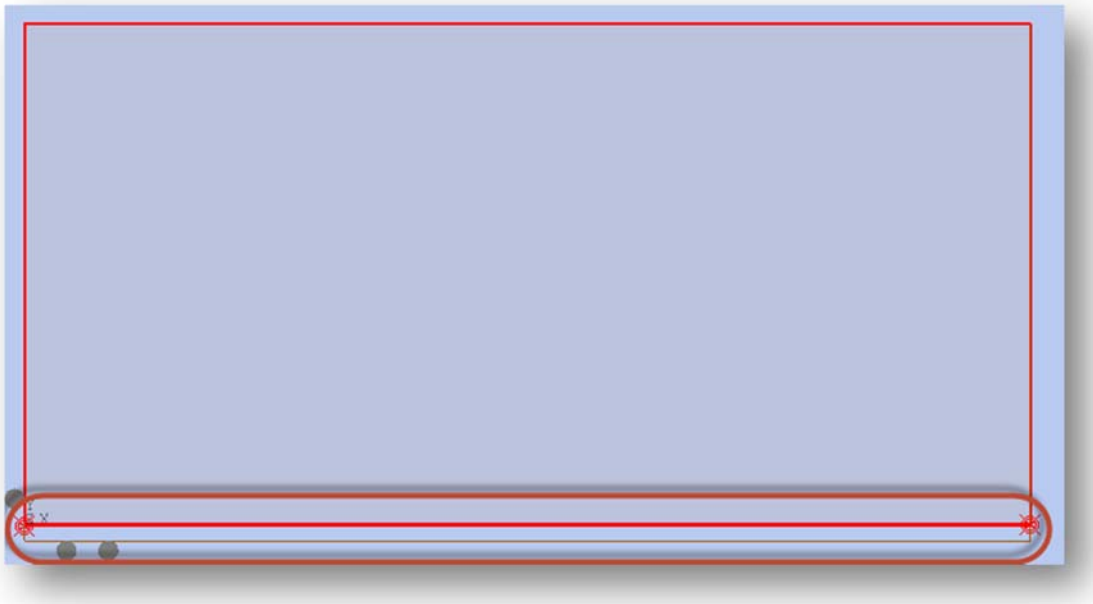


Tool assignment in the CAM Manager

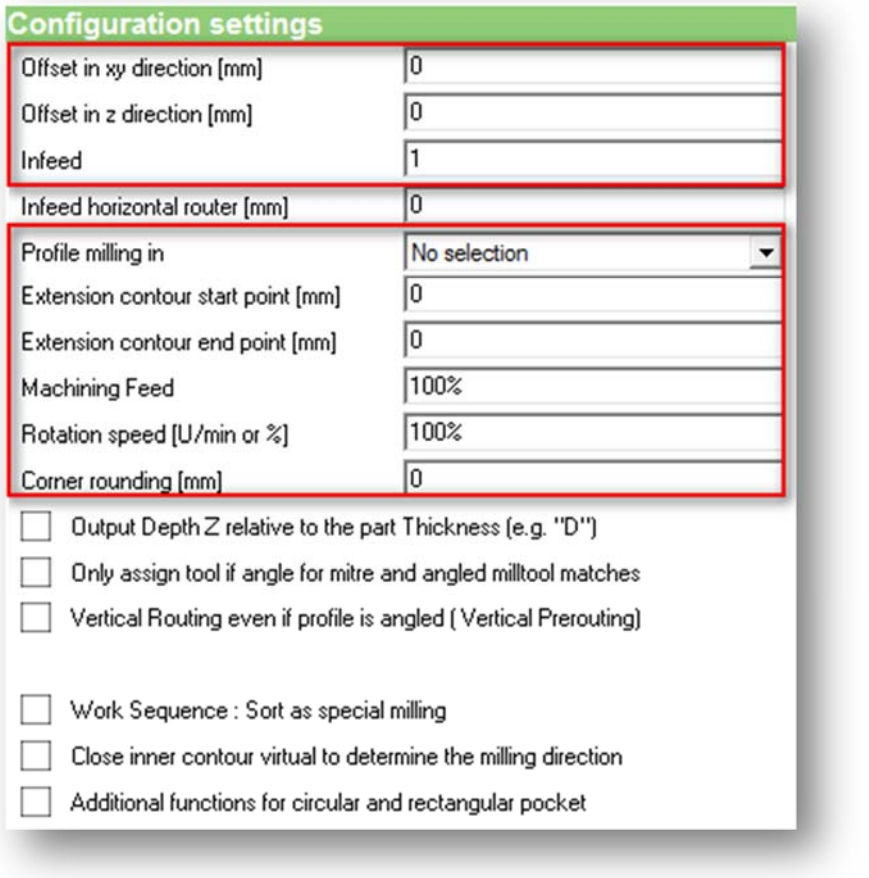
After selecting a profile material, a **value range** of the **machining depth** for the milling principle must be defined and then this machining depth has to be assigned to a router.
In this example the **router 131 for prerouting** has been selected and the **router 134 for precision milling**.



The **router 131** is about 2mm from the main edge in this example so that the **router 134** can execute the precision milling.



After entering the definition of the tool, the **configuration setting** can be defined on the right side. In order to do this, the tool must be clicked in the structure tree.
Following parameters can be defined there:



4.8.2.2.1 Basic settings

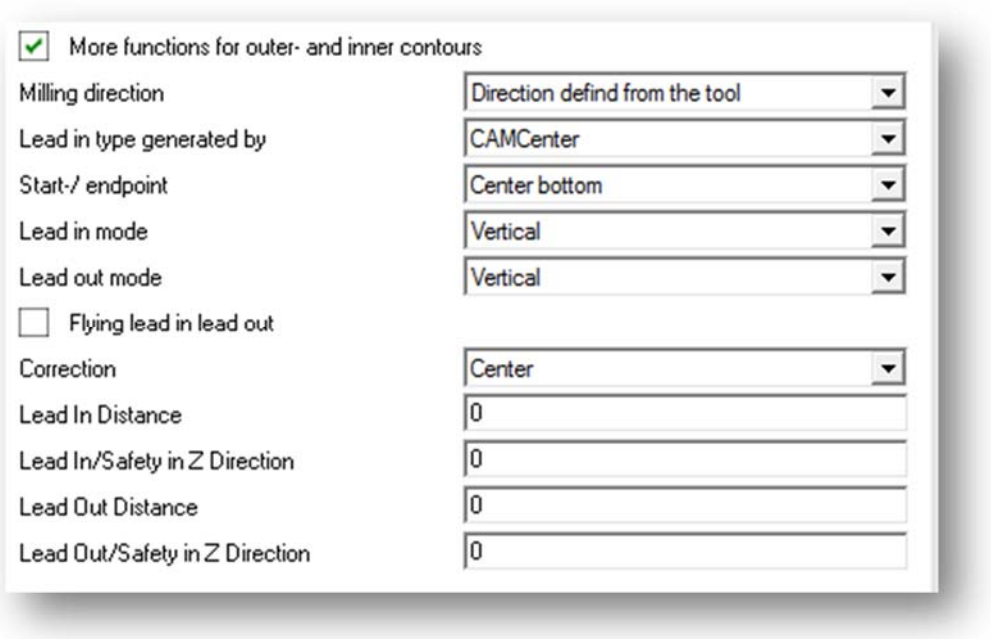
In the configuration settings a few special settings can be made for the router (red marking in the picture above).

Description	Explanation
Offset in XY- direction [mm]	The machining can be moved into the part or away from the part (plus) or away from the (minus) via the offset in XY. The zero point is always the starting position of the machining.
Offset in Z- direction [mm]	The machining can be moved in the height via the offset in Z. Minus is always to the bottom and plus to the top.
Infeed	Via the infeed the machining in Z can be divided into several contours.
Extension contour start point [mm]	Via the extension the machining can be extended on the contour start point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Extension contour end point [mm]	Via the extension the machining can be extended on the contour end point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Feed rate[m/min]	Via the feed rate the router can be regulated lower for this situation. The full value can be defined here or the feed rate set in percent. If the feed rate is set in percent, then the zero point is taken from the tool database.
Speed [U/min oder %]	Via the speed the router can be regulated lower for this situation. The full value can be defined here or the speed set in percent. If the speed is set in percent, then the zero point is taken from the tool database.
Extra functions for outer and inner contours	With an activated checkbox the lead in and the lead out, the compensation and the mode can be defined for this situation.

4.8.2.2.2 More functions for outer and inner contours

Special properties can be filed for this certain situation under the functions **extra functions for outer and inner contours**

If this function is not activated, then the general settings from the **Technology-Parameters** for outer and inner contours are applied. (See Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **5.4**)



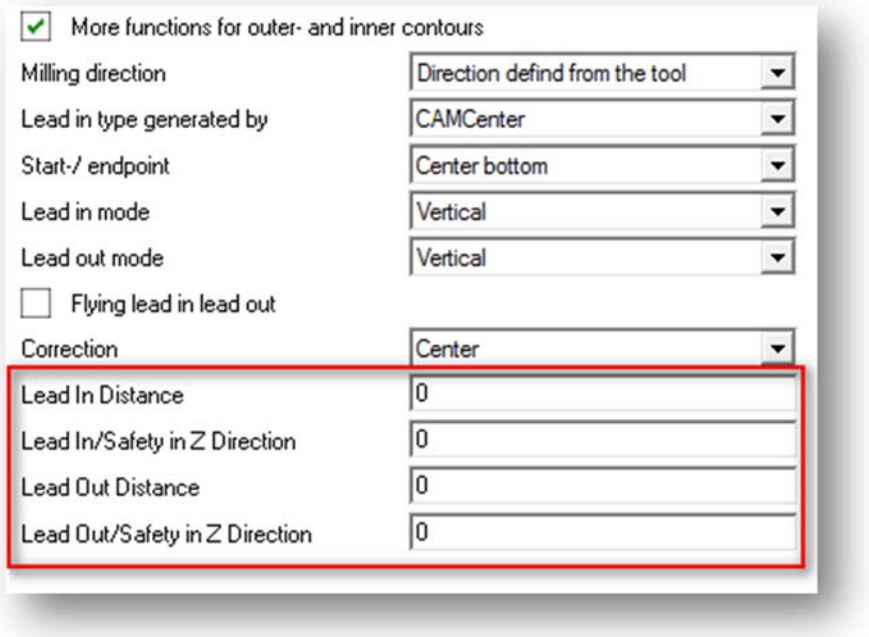
Description	Explanation
Milling direction	The router can be set how it should run via the milling direction. When set on **direction defined from tool**, the setting is applied from the tool database.

Create lead in mode by	If **CAMCenter** is selected as the value here, then a lead in and lead out is created by contours. The lead in and lead out is always **vertical** in the Wop Program.
Start-/ End point	The position of the start and end point can be selected here with a closed inner contour
Lead in mode	If the **create lead in mode by** is on **CAMCenter**, then the lead in mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead in mode from the Wop Program is used.
Lead out mode	If the **create lead in mode by** is on **CAMCenter**, then the lead out mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead out mode from the Wop Program is used.
Flying lead in/lead out	With an activated checkbox the flying lead in/lead out is initiated in the Wop-Mode. If the **create lead in mode by** is on **CAMCenter**, then this should always be activated so that a tangential lead in and lead out is possible.
Lead in distance [mm]	Here the extensions for the lead in distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with “**create lead in mode by**“. See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with “**create lead in mode by**“. See also **4.7.1.3 CAMCenter Mod**.

Lead out distance [mm]	Here the extensions for the lead out distance of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**". See also **4.7.1.3 CAMCenter Mod**.
Lead in distance in Z [mm]	Here the height for the contour extension of the contour can be defined.  This is only then evaluated if **CAMCenter** has been selected with "**create lead in mode by**" and the checkbox **flying lead in/lead out** is activated. See also **4.7.1.3 CAMCenter Mod**.

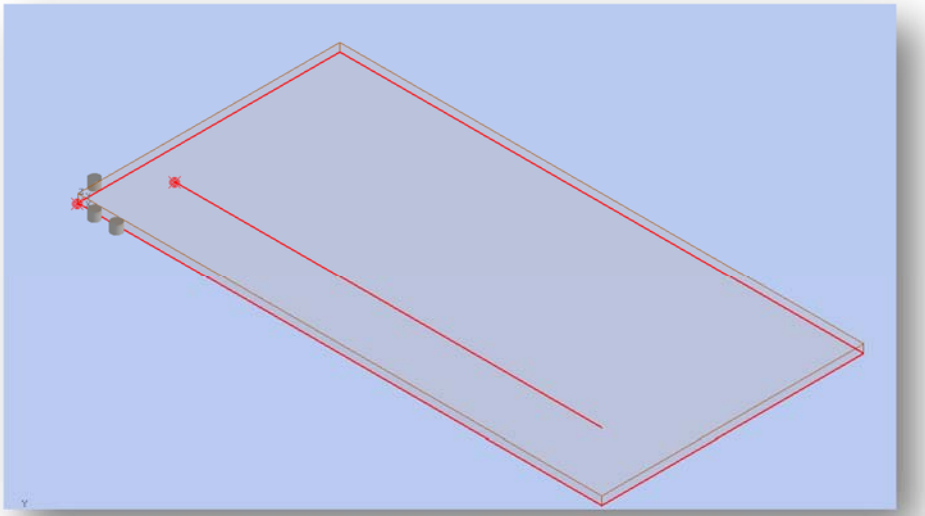
4.8.2.3 CAMCenter Mode

For calculating the lead out distance correctly, it is important that a suitable definition is made for the lead in and lead out distance.
If no lead in and lead out are required, then the values must remain on 0.
This is also important when creating a vertical lead in and lead out. At the same time ensure that the lead in and lead out mode is on vertical.



4.8.2.3.1 Vertical lead in and lead out

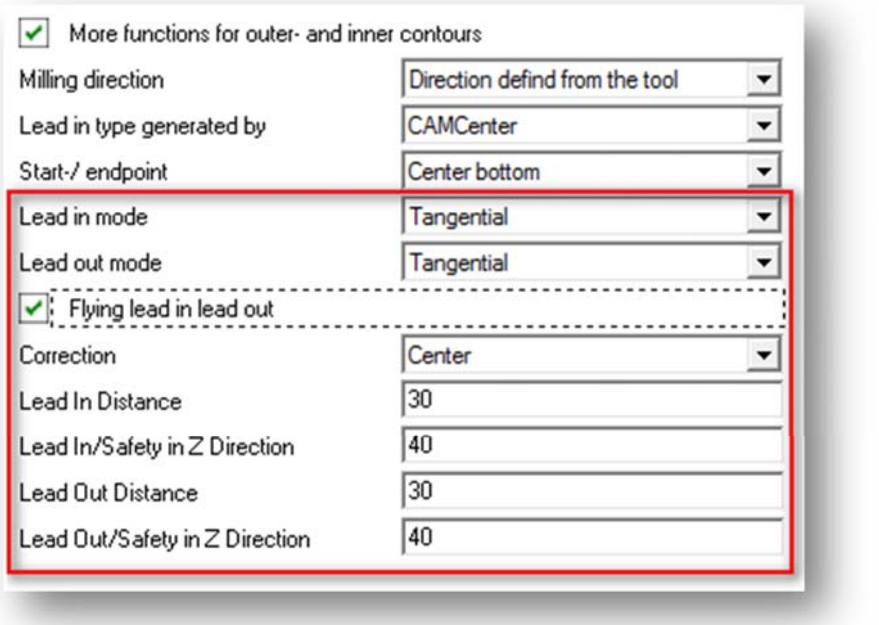
For creating a vertical lead in and lead out, it is important that the values for the **lead in and lead out distances** remain set on 0. In addition the **lead in and lead out mode** should be set on **vertical**. (See picture below **4.7.1.3**)



4.8.2.3.2 Tangential lead in and lead out

For creating a tangential lead in approach, the **lead in and lead out mode** must be set on **tangential**.
Additionally, you must ensure that the values for the lead in and lead out distance are defined and the checkbox **flying lead in/lead out** is activated.

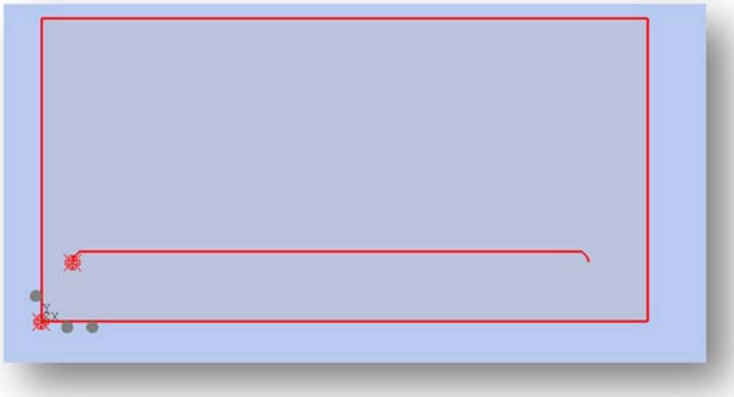


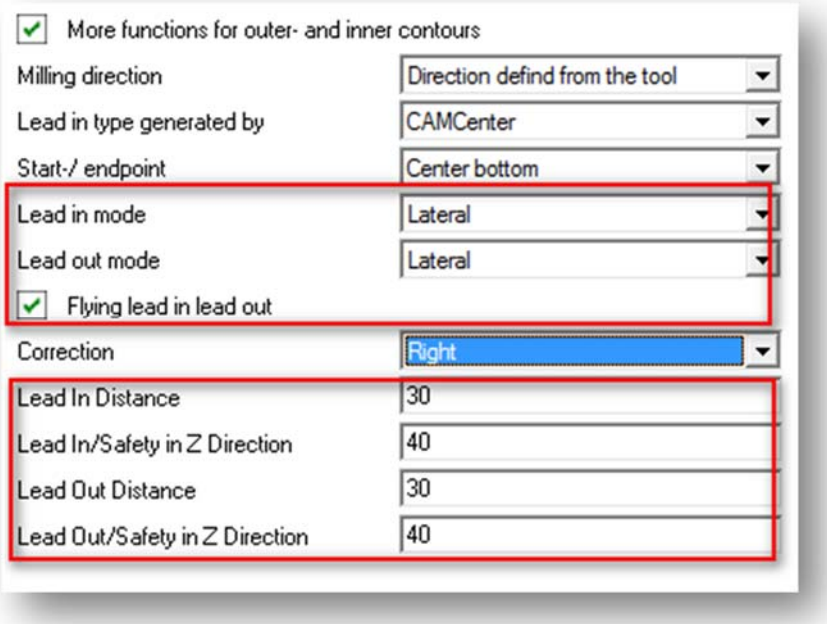


4.8.2.3.3 Lead in and lead out of a lateral approach

For creating a lead in and lead out of a lateral approach, the **lead in and lead out mode** must be set on **lateral**.
The checkbox **flying lead in and lead out** must always be activated so that the lead in can be flying as well.
It is important for the definition that the value is defined for the lead in and lead out distance.

If the lead in and lead out is **not flying** for the distance, then the distances should be set on **in Z on 0**.

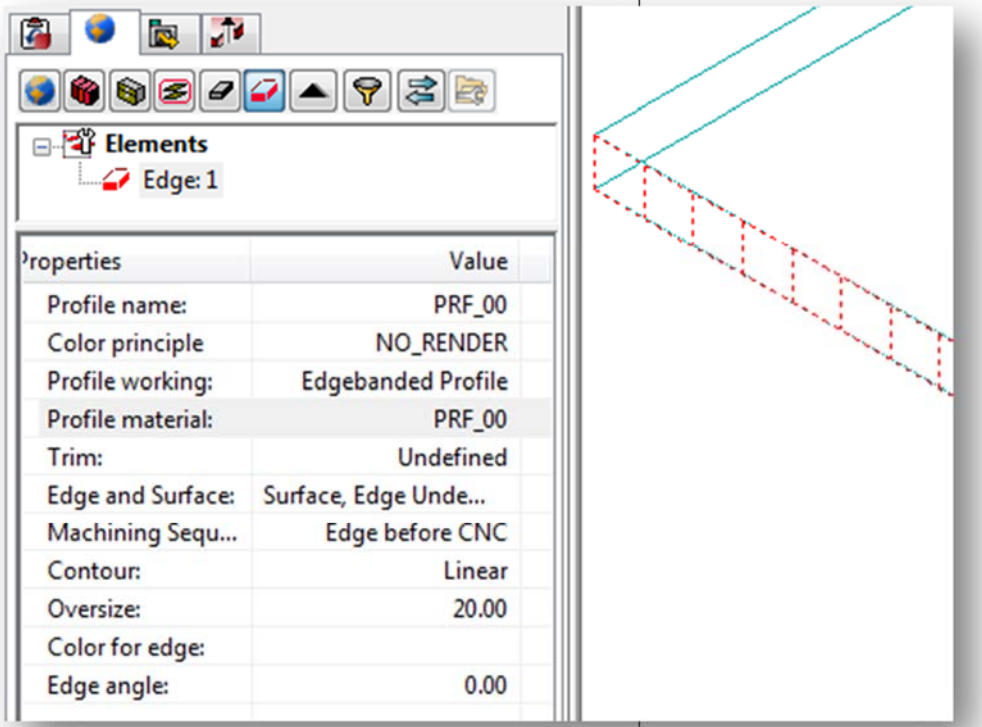



More functions for outer- and inner contours
Milling direction
Direction defind from the tool
Lead in type generated by
CAMCenter
Start-/ endpoint
Center bottom
Lead in mode
Lateral
Lead out mode
Lateral
Flying lead in lead out
Correction
Right
Lead In Distance
30
Lead In/Safety in Z Direction
40
Lead Out Distance
30
Lead Out/Safety in Z Direction
40

4.8.3 Machining of the solid wood edges

4.8.3.1 Data system in CAD

If solid wood edges with strategy have to be milled, all edges obtaining solid wood edges must be set on **edge before CNC**.
Additionally, the trims must be defined here.



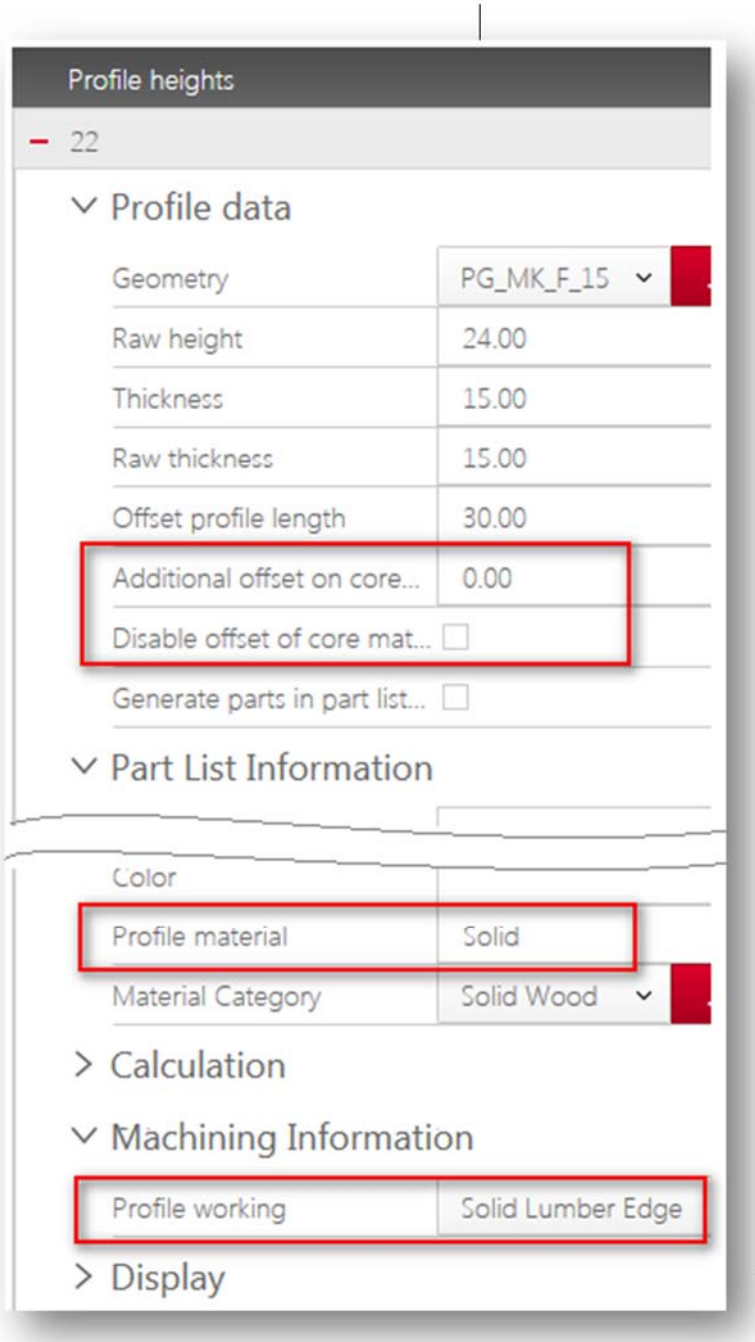
Definition of the trims:

Description	Explanation
Undefined	If the edge is on **undefined**, then the edge is combined with the following edge.
Long	If the edge is on **long**, then the short edge is milled first and then the long edge
Short	If the edge is on **short**, then this edge is milled first and then the long edge.

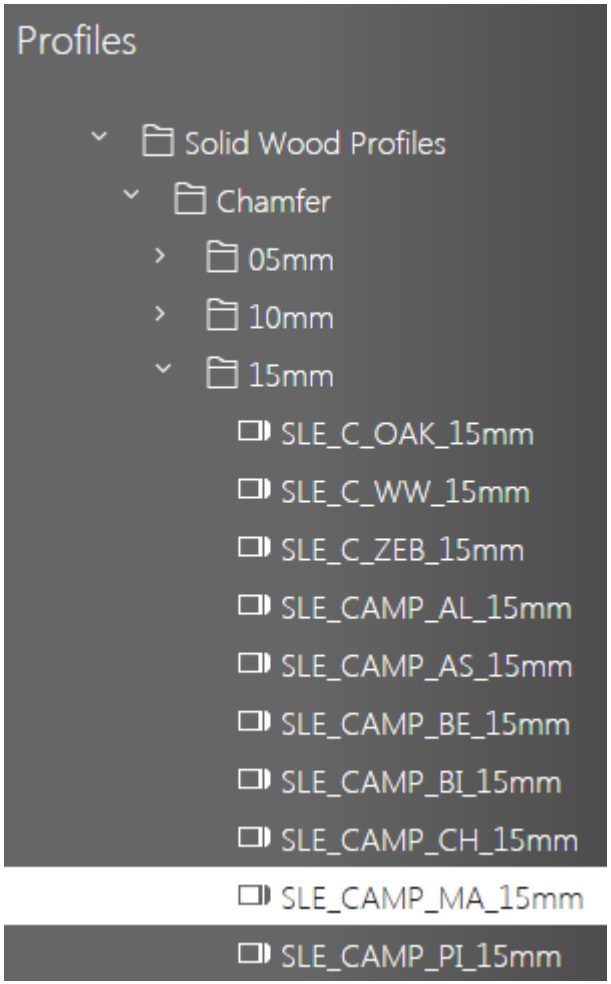
After defining **trims** for the edges, the profile must be assigned.

First a profile must be defined so that the solid wood strategy functions correctly.

In this case the profile **SLE_CAMP_MA_15mm** is applied.

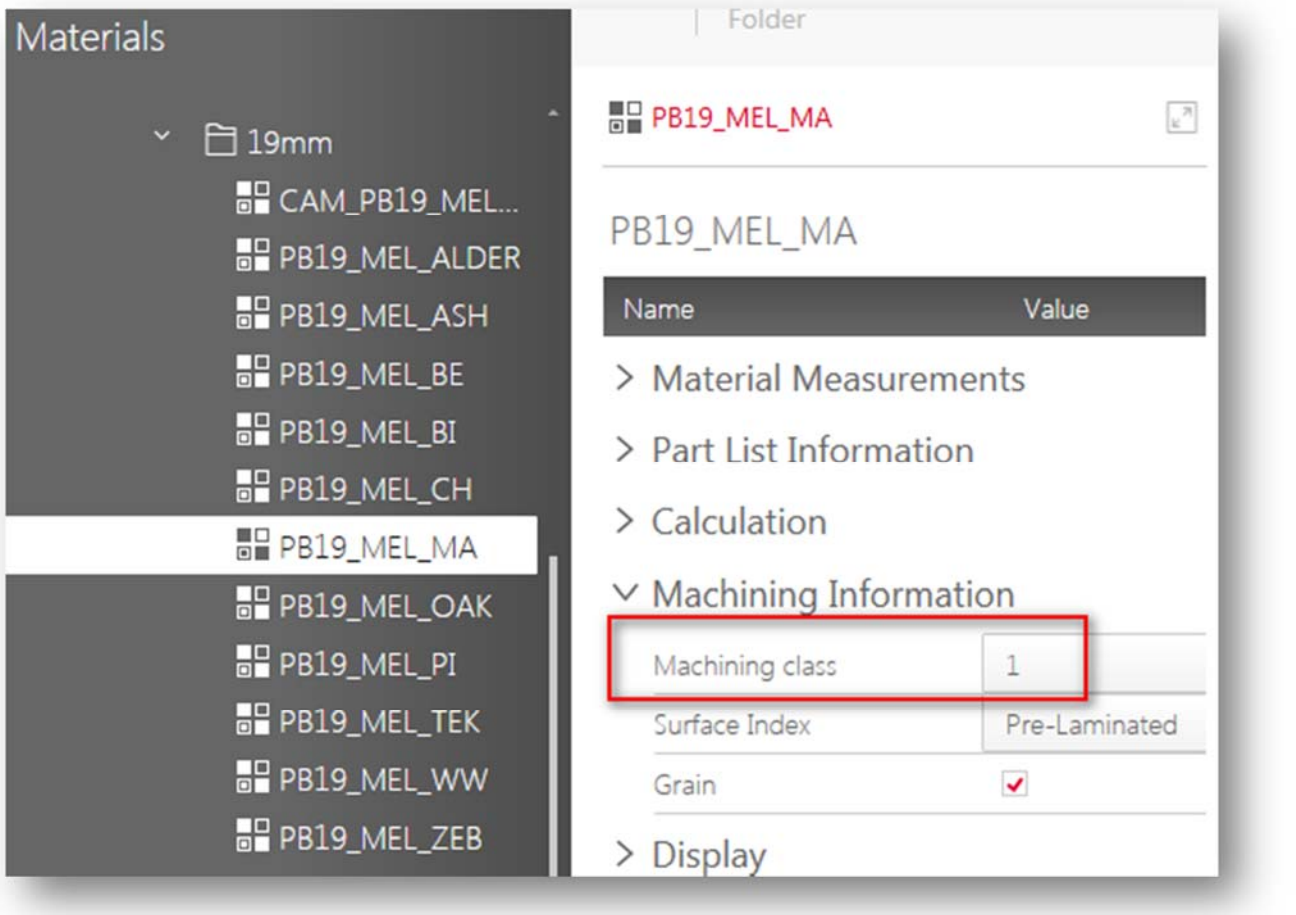


Tool assignment in the CAM Manager

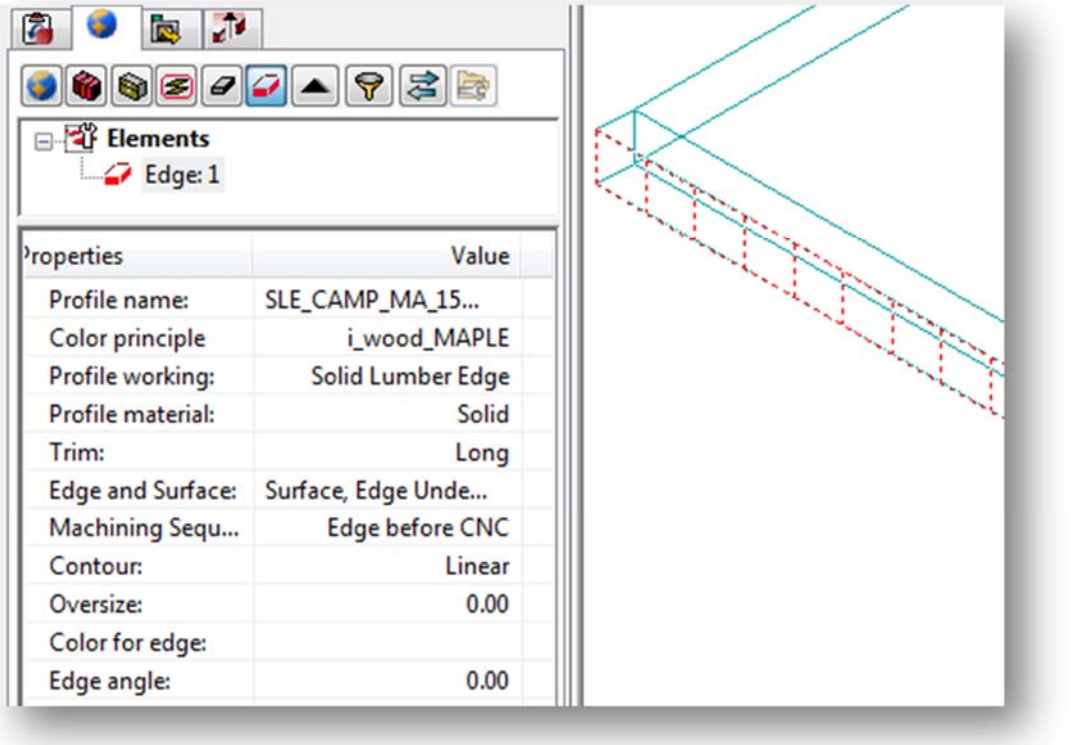


The **profile material** should be defined with the applied edge so that not every edge has to be individually updated in the CAM Manager. Furthermore, the **profile machining** with **solid wood edge** + **machining** should be defined.

Which **machining class** is applied for the material is important for the formatting program to assign the tool.

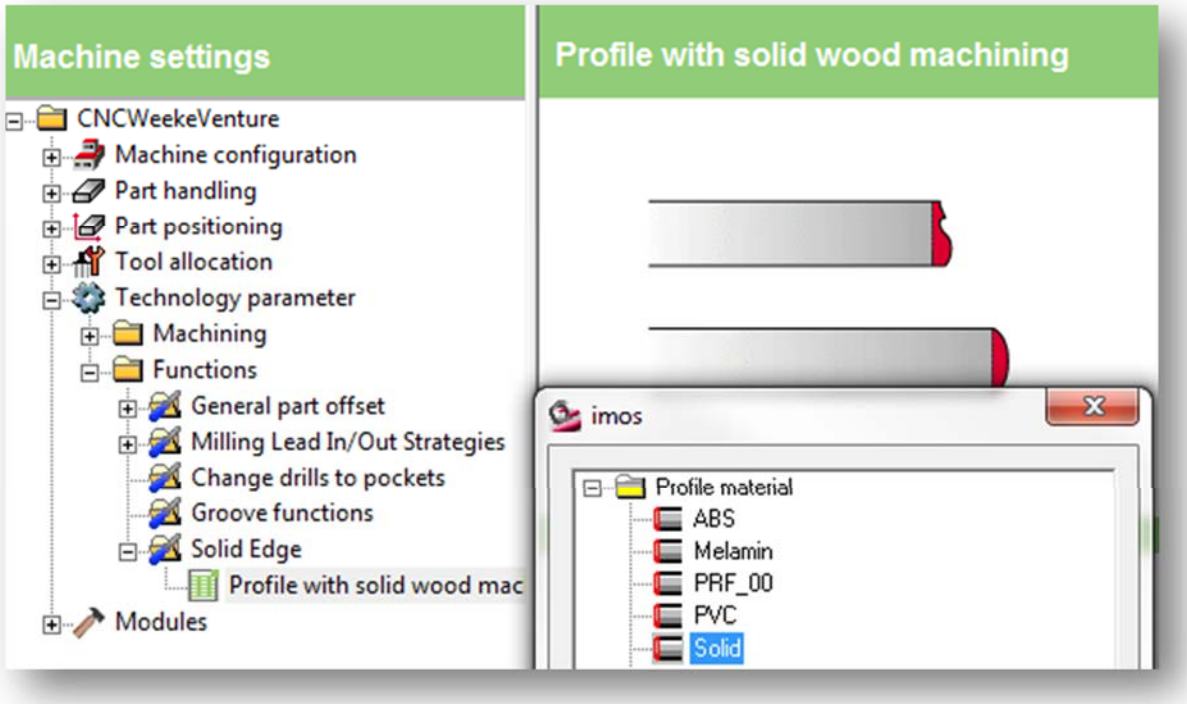


After creating the profile, it must be assigned to a suitable edge:



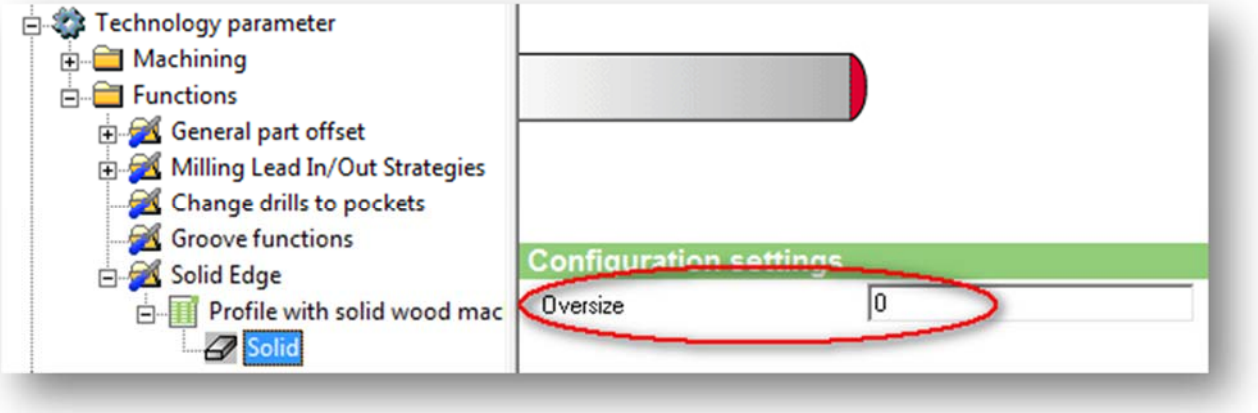
4.8.3.2 Data sytem in the CAM Manager

Before creating a milling profile for the solid wood edge, the profiles in assigning the solid wood must be created first.
For this purpose, change to the **technology parameter** in the CAM Manager. There the class **solid wood edges** must be opened under **functions**. The context menu is called by clicking on the entry **profile with solid wood edges** and there the function **add** can be selected.
Then in the appearing dialog the profile material **solid** must be selected.

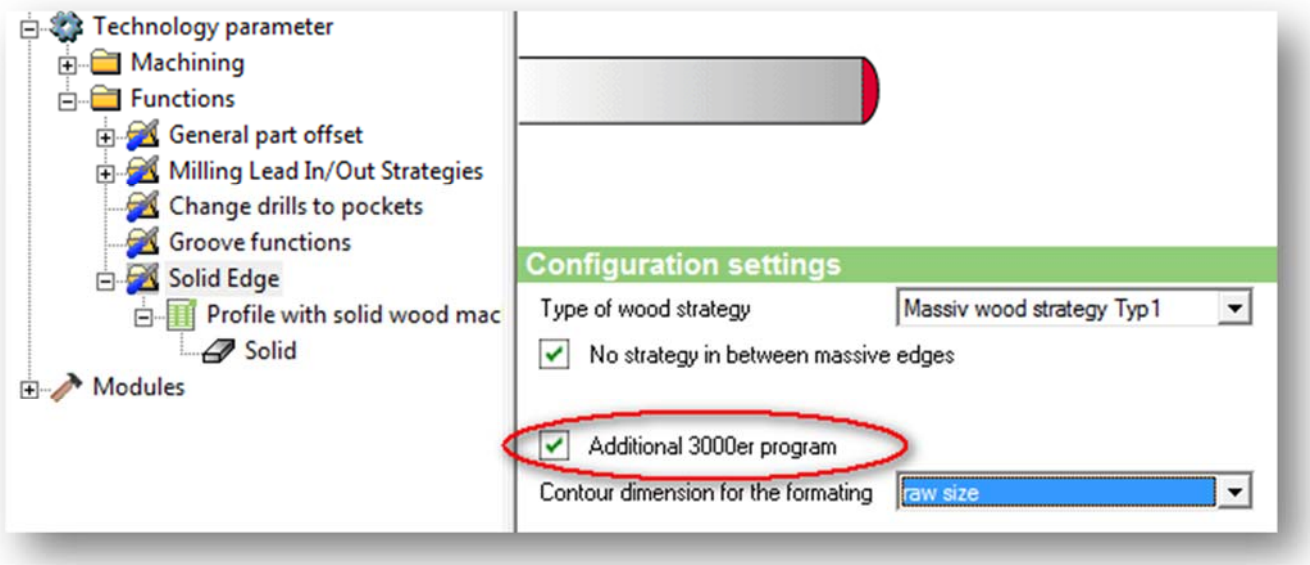


For confirming the selection, leave the dialog via the green checkmark.

After adding the profile material, the material must be marked in the structure tree so that the configuration settings can be called on the right side.
In the configuration settings an **oversize** can be defined to glue the solid wood gluing later.

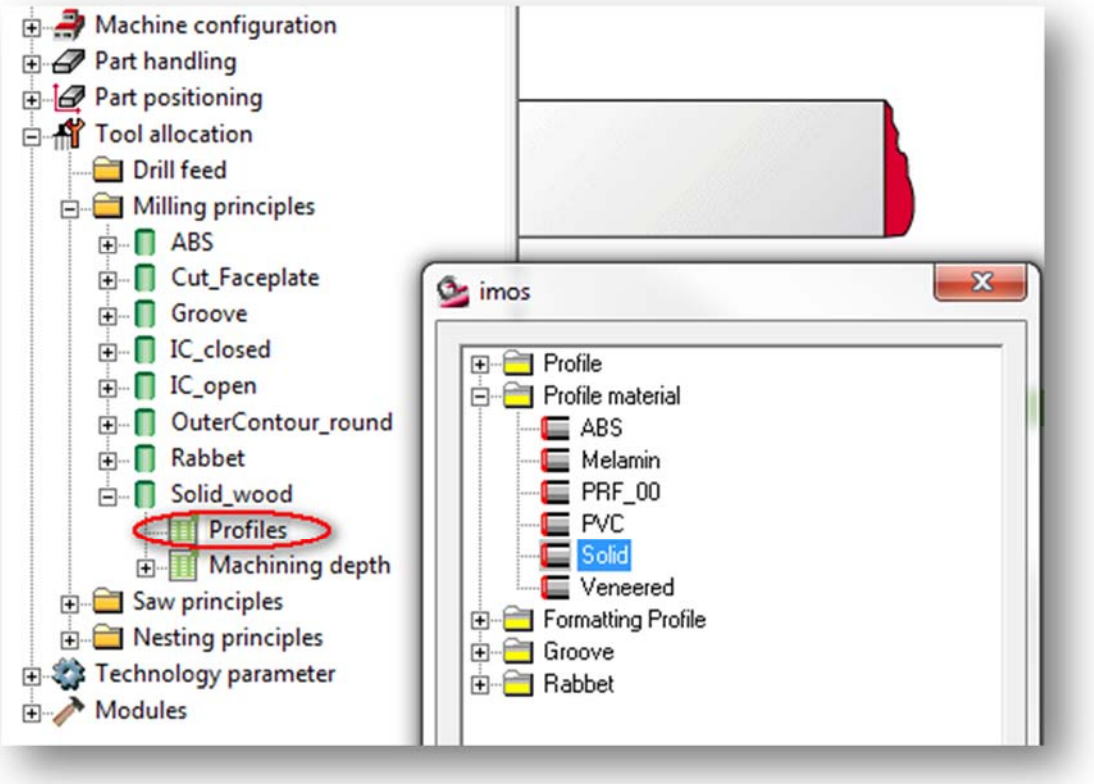


For creating a format program, the checkbox **additionally create 3000 Program** must be activated in the configuration settings of the solid wood edge.



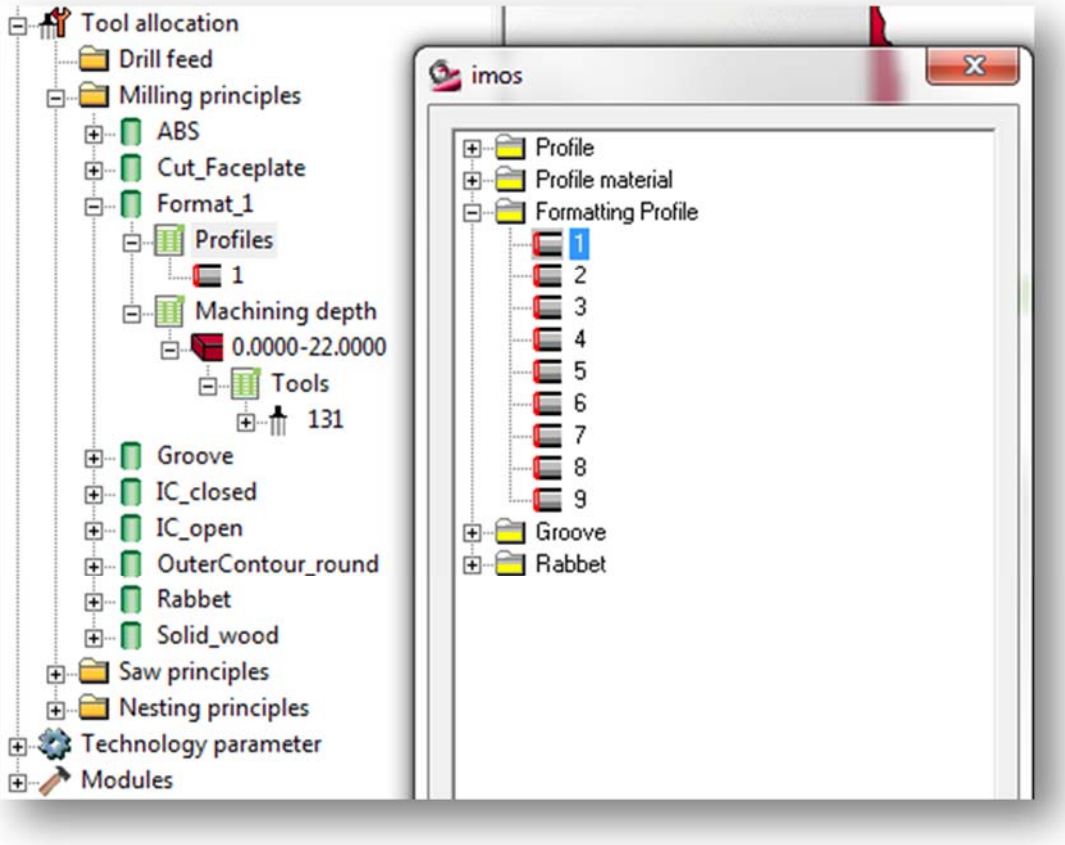
Afterwards change to the **tool allocation** to create a new milling principle.

Read chapter **4.4.2 Creating the profile “PRF_GROOVE“ for the groove in CAM Manager** to find out how to create a new milling principle. .
Afterwards a profile must be assigned to the new created milling principle (in this example solid wood).
Here the principle **solid** is selected from the folder **profile material.**



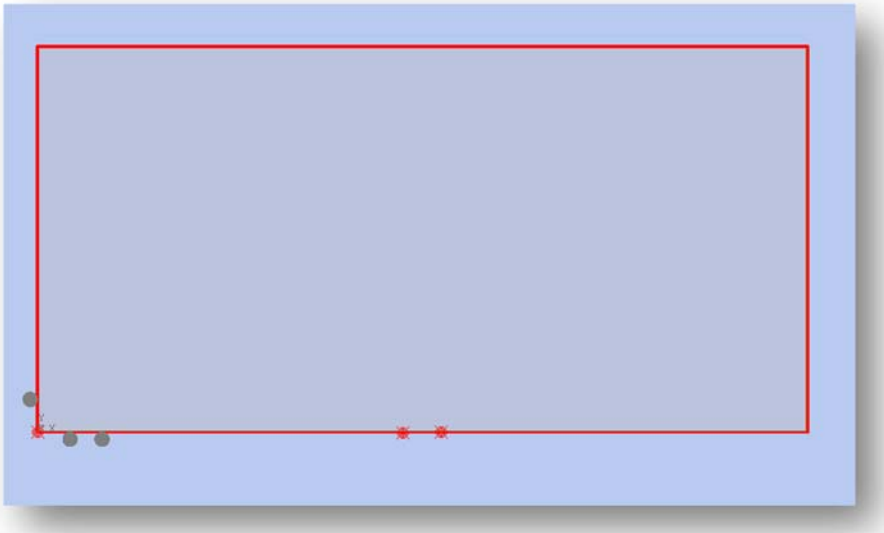
Tool assignment in the CAM Manager

An additional profile must be created so that a tool can also be assigned when formatting the 3000 Program. This profile must be created from the material via the **format class**.

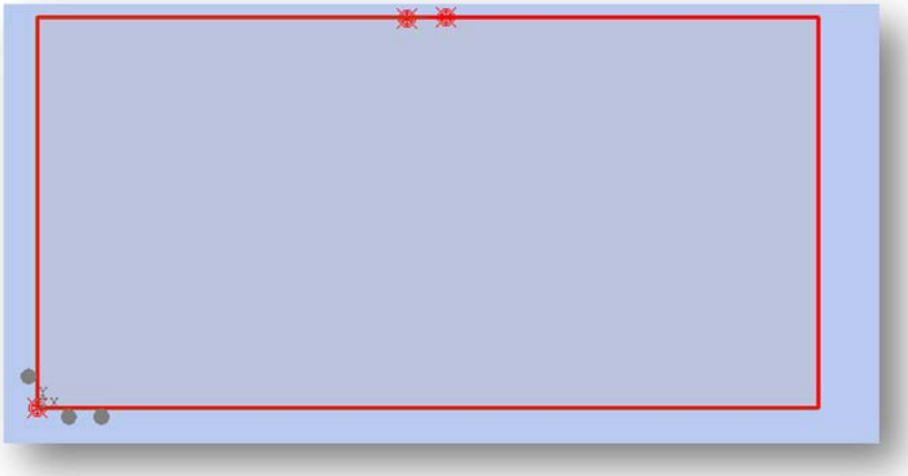


Tool assignment in the CAM Manager

If everything is correctly set, a 3000 Program is generated first containing only **format milling**.



Additionally, a normal 1000 Program is generated containing precision milling for the gluing and other machining.
If a twin tool has been stored in the tool database, a solid wood strategy can be generated.



4.9 A-Angle

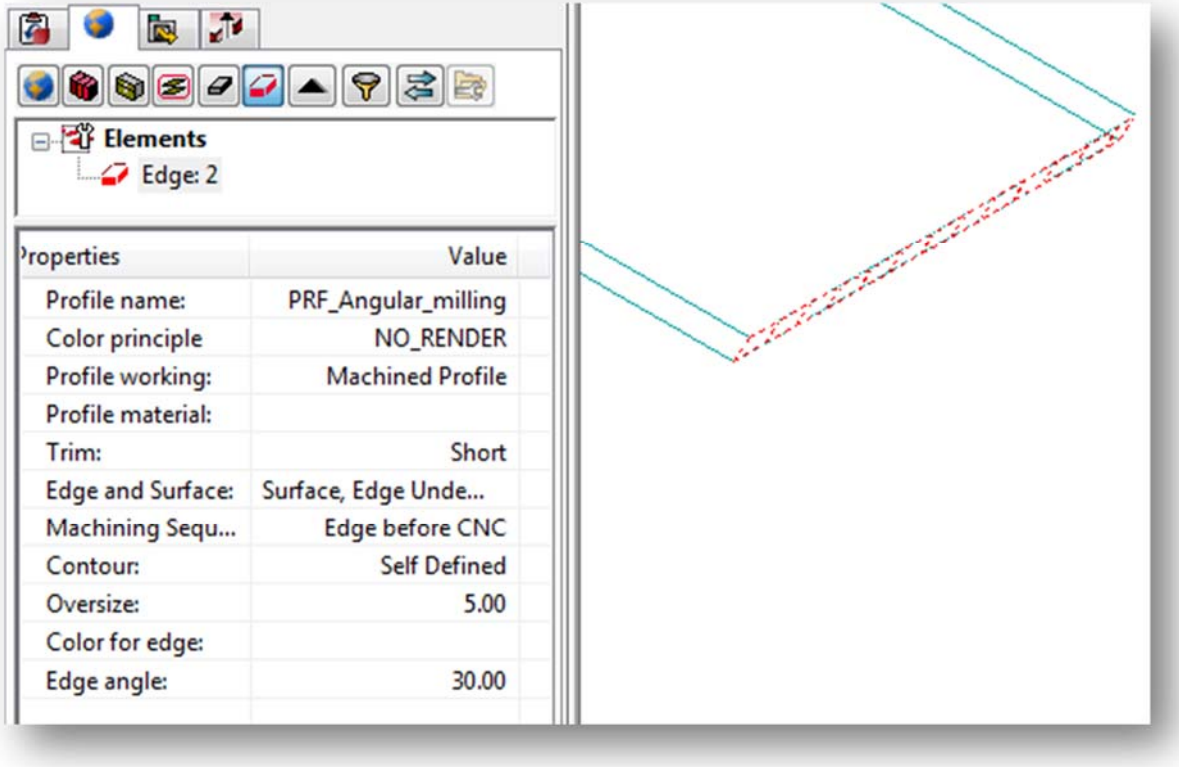
The following chapters show how to create a profile for the **A-Angle milling**.

4.9.1 Data system in CAD

For creating A-Angle milling, ensure that the edge angle is modified.
If new profile geometry with an already existing angle is created, then no A-Angle milling can be created.

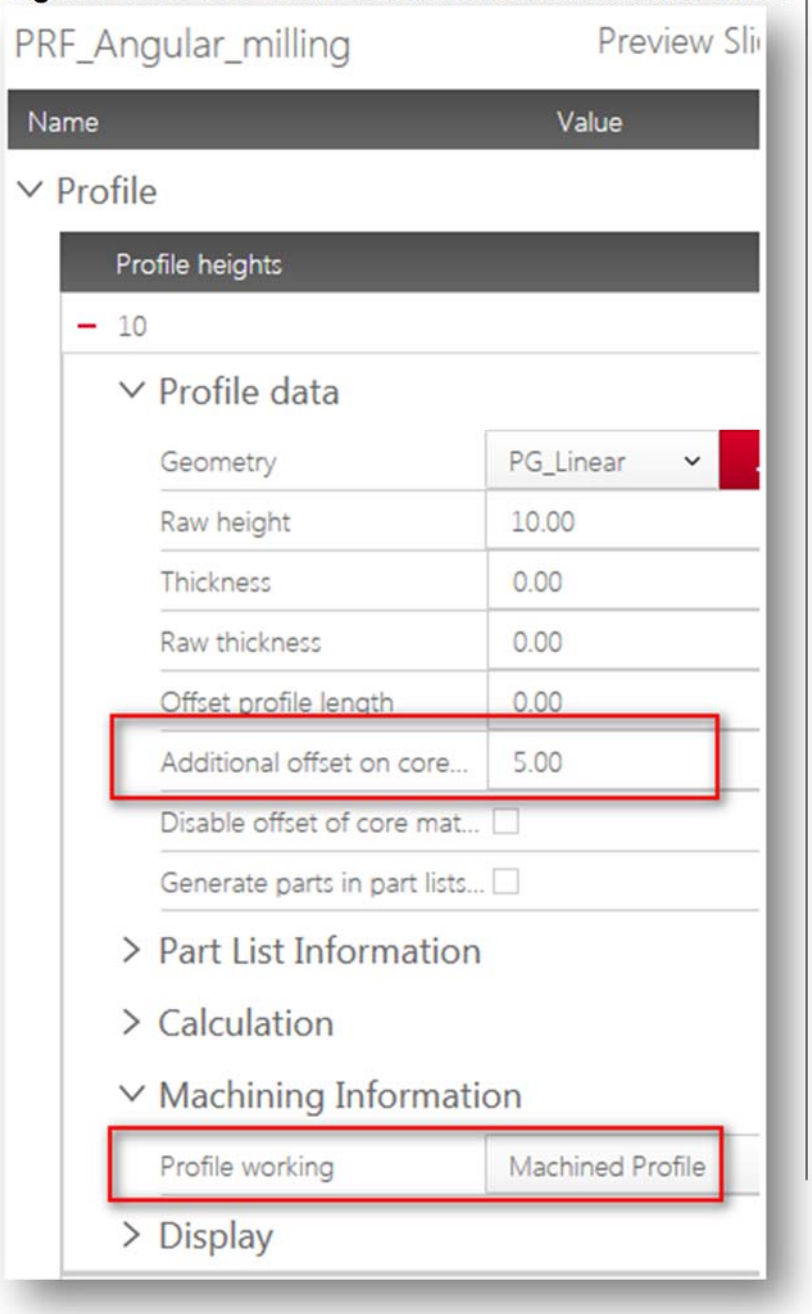


The edge angle must be either modified via the **edge trims in the Article Designer** or via the **edge methods in the imos Manager**.
As soon as the edge angle deviates from 0, 90, 180 or 270 degree, an angle router is recognized.



Tool assignment in the CAM Manager

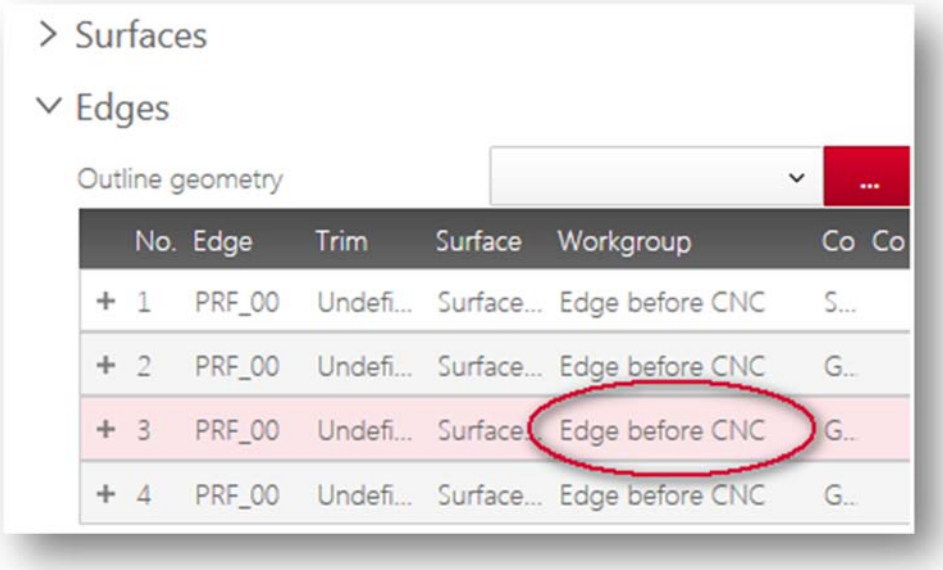
In this example the created profile is named **PRF_Angular_milling**. An oversize of 5mm has been defined for the **additional**



Tool assignment in the CAM Manager

oversize on the base material.
Furthermore, it is important when milling angles that the **profile machining** is set on **machined profile**.

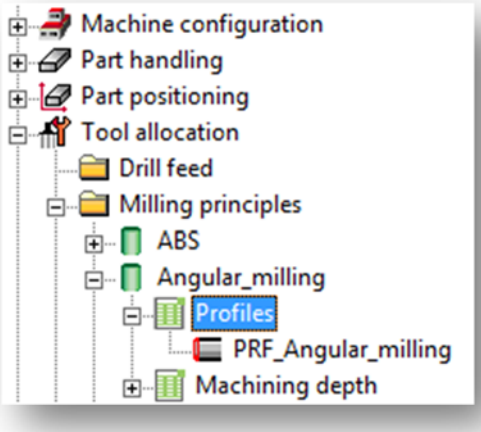
If oversizes should be worked on, the **machining sequence** must be set on **edge before CNC** in the settings of the **part definition**.



After creating profiles in imos CAD, the settings must be made in the CAM Manager now.

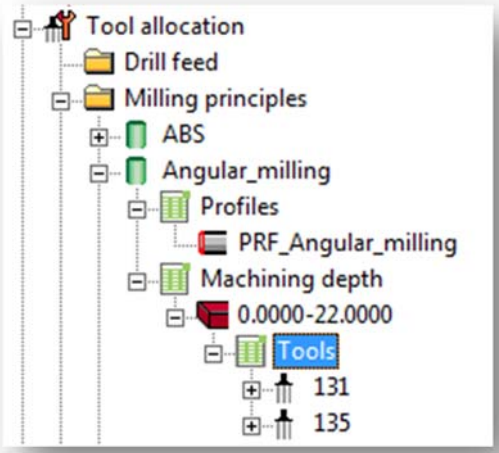
4.9.2 Data system in the CAM Manager

First a new milling principle must be created in the CAM Manager. (see also **4.4.2 Creating** the profile “PRF_GROOVE“ for the groove **in CAM Manager**)
Afterwards the new created profile **PRF_Angular_milling** in imos CAD must be assigned to the new created milling principle (in this example **A_ Angular_milling**).



Afterwards a **value range** for the **machining depth** still has to be defined for the milling principle and then this machining depth is assigned to the router.

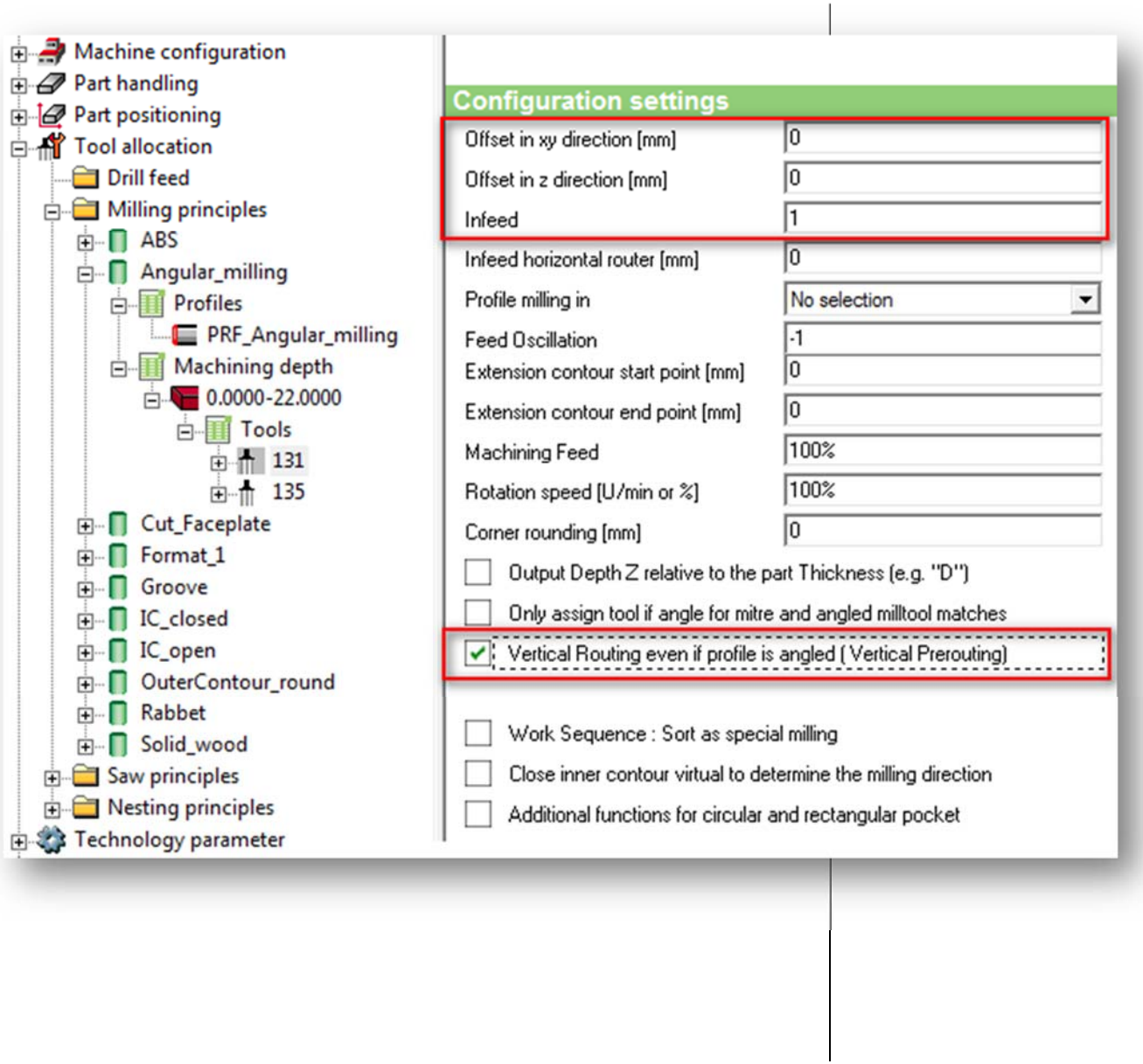
The first tool is for roughing the contour. Then the second tool is for the A-angle milling.



Tool assignment in the CAM Manager

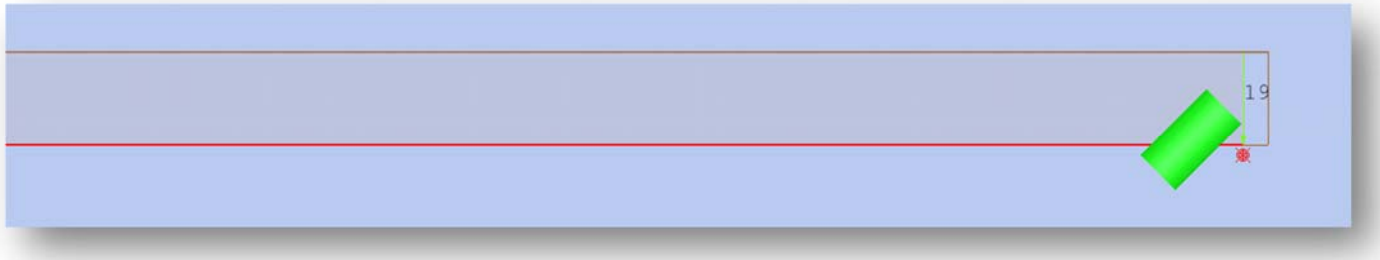
After assigning both tools, the first tool for roughing must be marked in the structure tree so that the settings can be made in the **configuration settings**.

In the settings the option **vertical milling even if the profile requires angled milling (vertical roughing)** must be activated to create a vertical milling even though an angle has been transferred by CAD and the oversize is milled before.
The other settings correspond to those of the outer and inner contours.

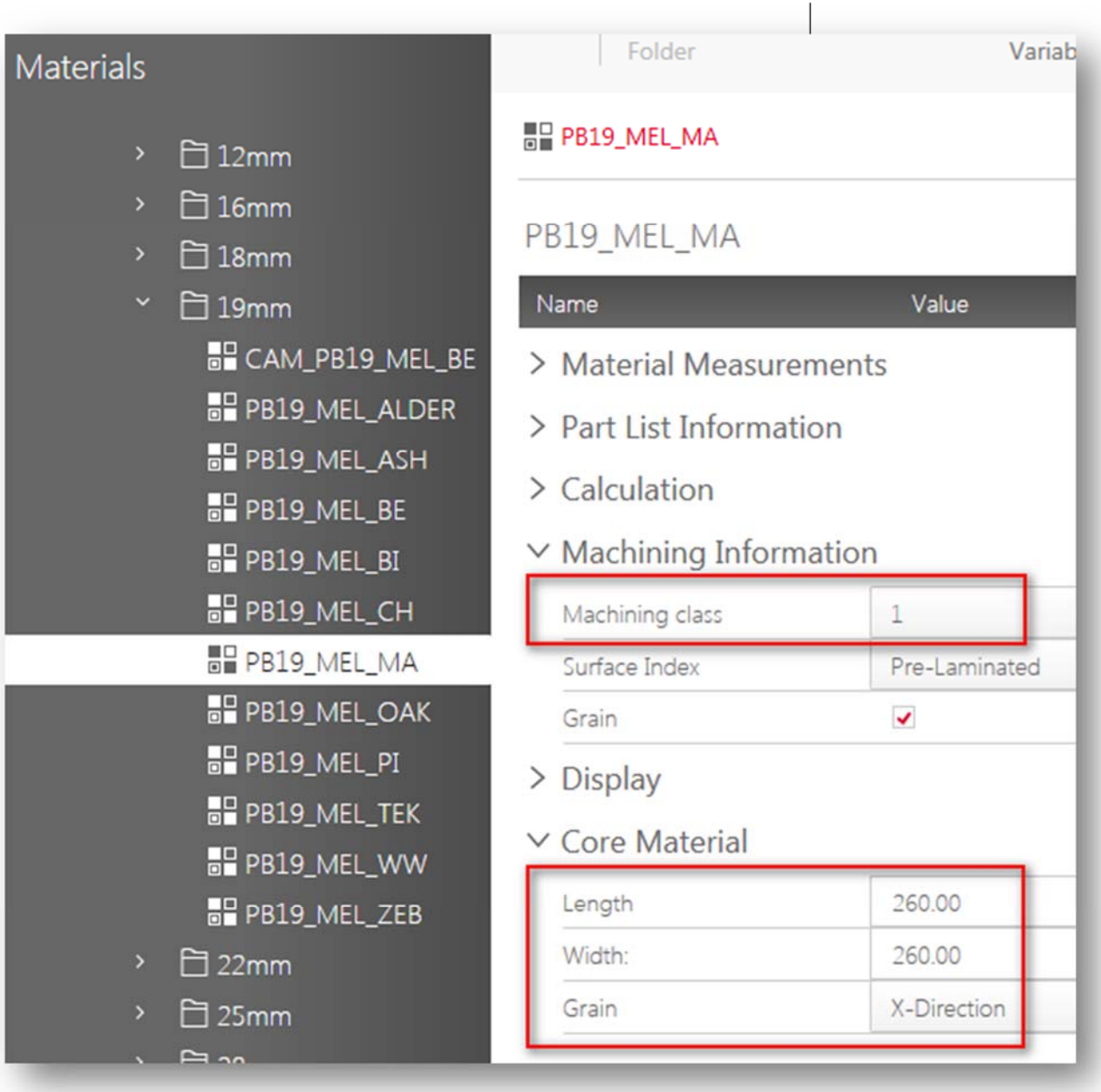


Tool assignment in the CAM Manager

After generating the CNC- Program, the angled milling appears.



4.10 Nesting principles



Tool assignment in the CAM Manager

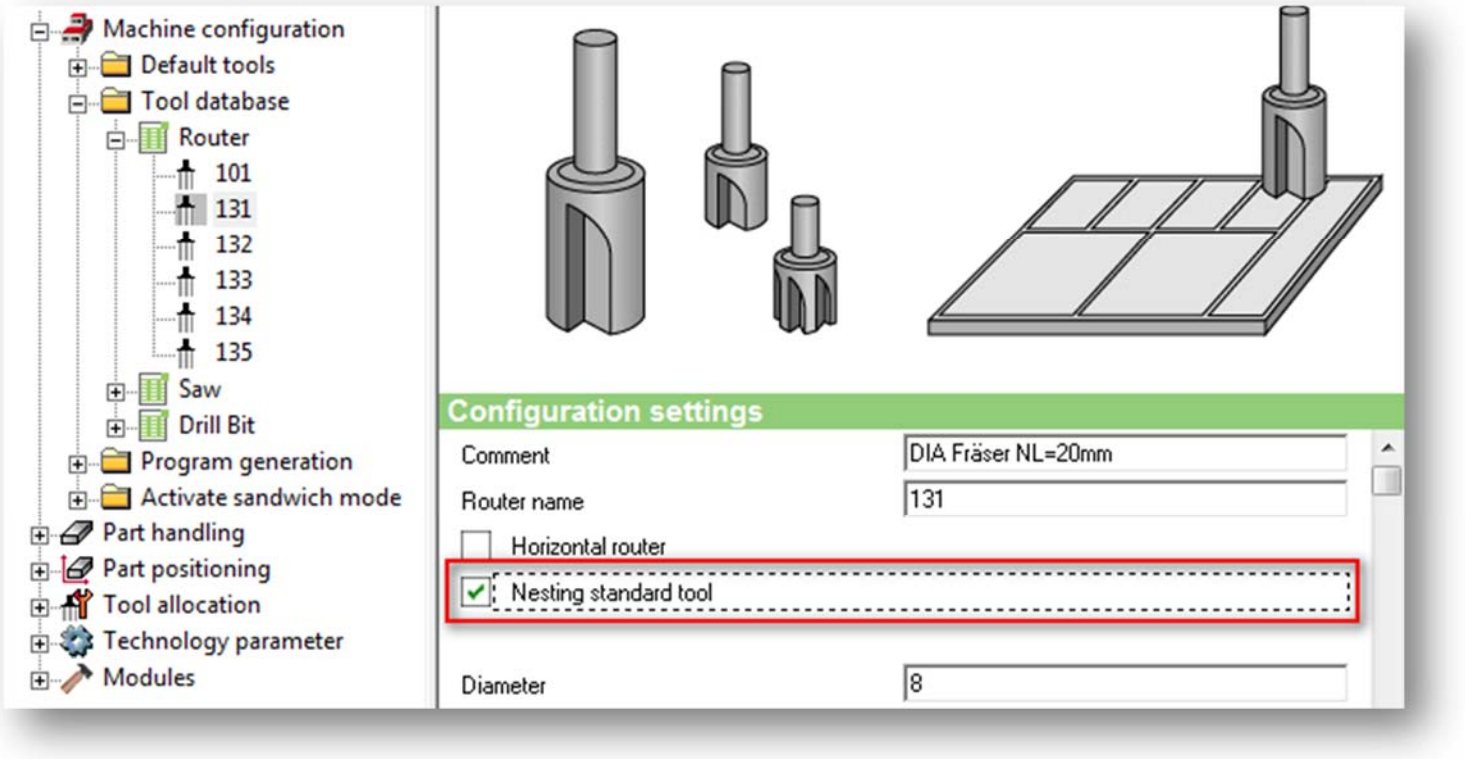
The **Nesting principles** are required if a Nesting machine is used or for machining a cutting pattern on the CNC Machine In addition the Nesting principles are required to output the contours via the imos Module **Direct Nest.**

4.10.1 Data system in CAD

For allocating the tools correctly, the **machining classes** are required in CAD. Based on the **machining classes** in the material, the tools can be correctly assigned later.

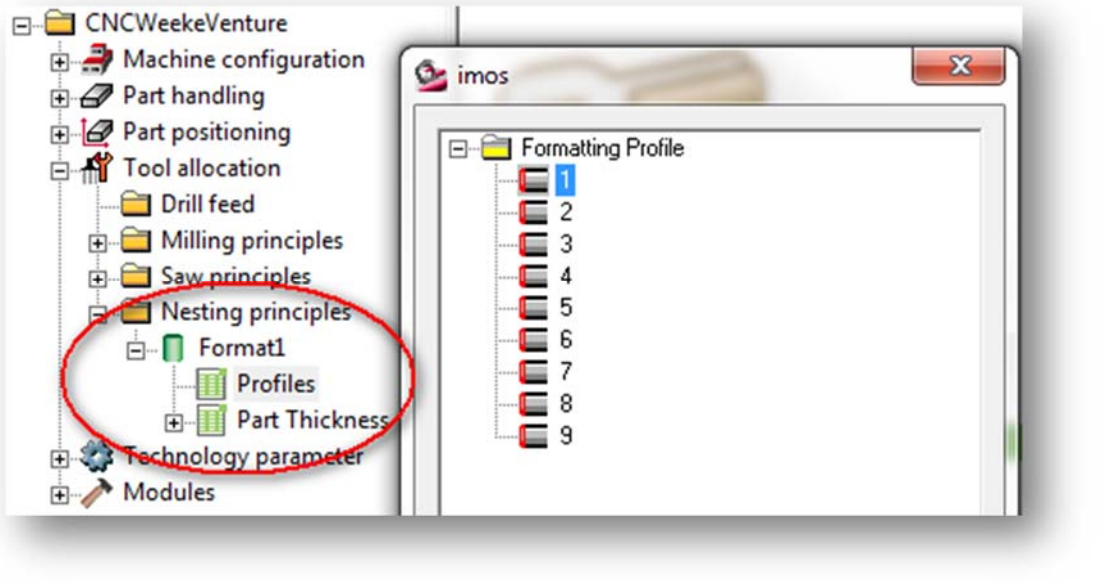
4.10.2 Data system in the CAM Manager

It is important with the data system in the CAM Manager that the nesting tool is defined first to assign the nesting part later. In order to do this, the option **Nesting Standard Tool** must be activated in the corresponding tool in the **tool database**.



Tool assignment in the CAM Manager

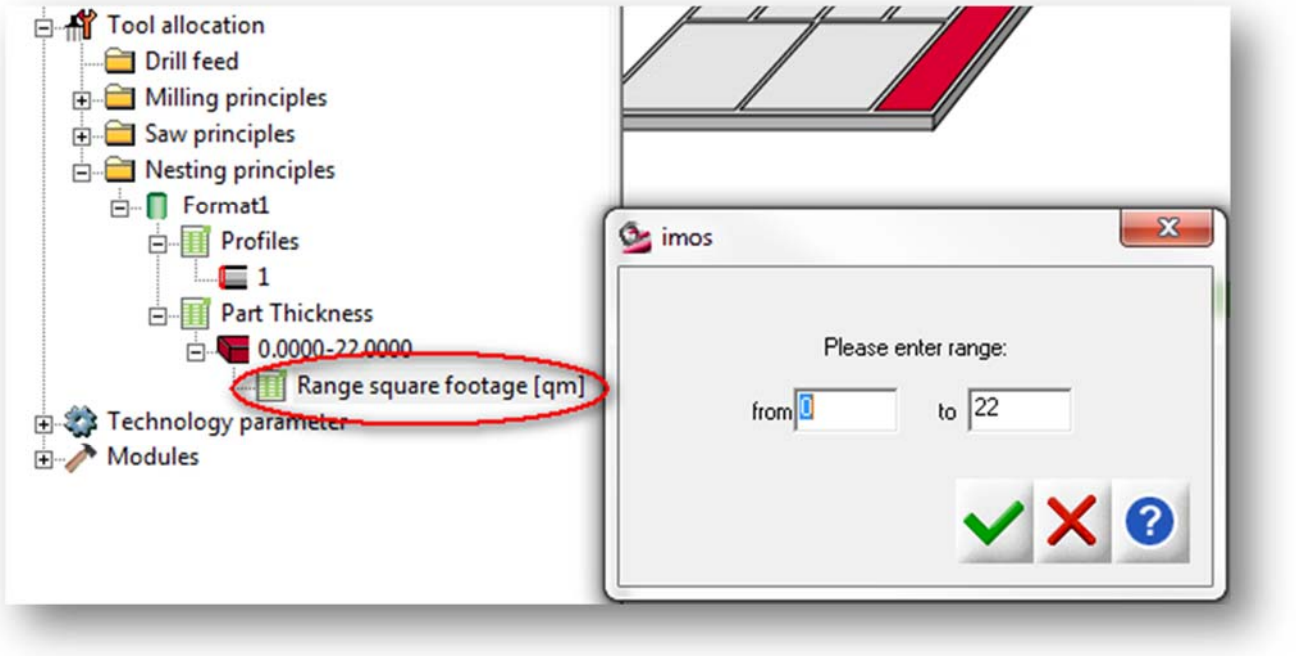
Afterwards the nesting principles must be created in the **tool allocation**.
For this purpose, the entry **nesting principles** must be selected in the tool allocation by clicking on the right mouse button and select **add** in the appearing context menu.
In this example the name **Format1** is taken for the principle. Then a **format profile** must be assigned to the new created principle. Now the entry **profile** is marked below **Format1** and the function **add** is selected in the context menu again. In the appearing dialog the suitable format profile must be selected.



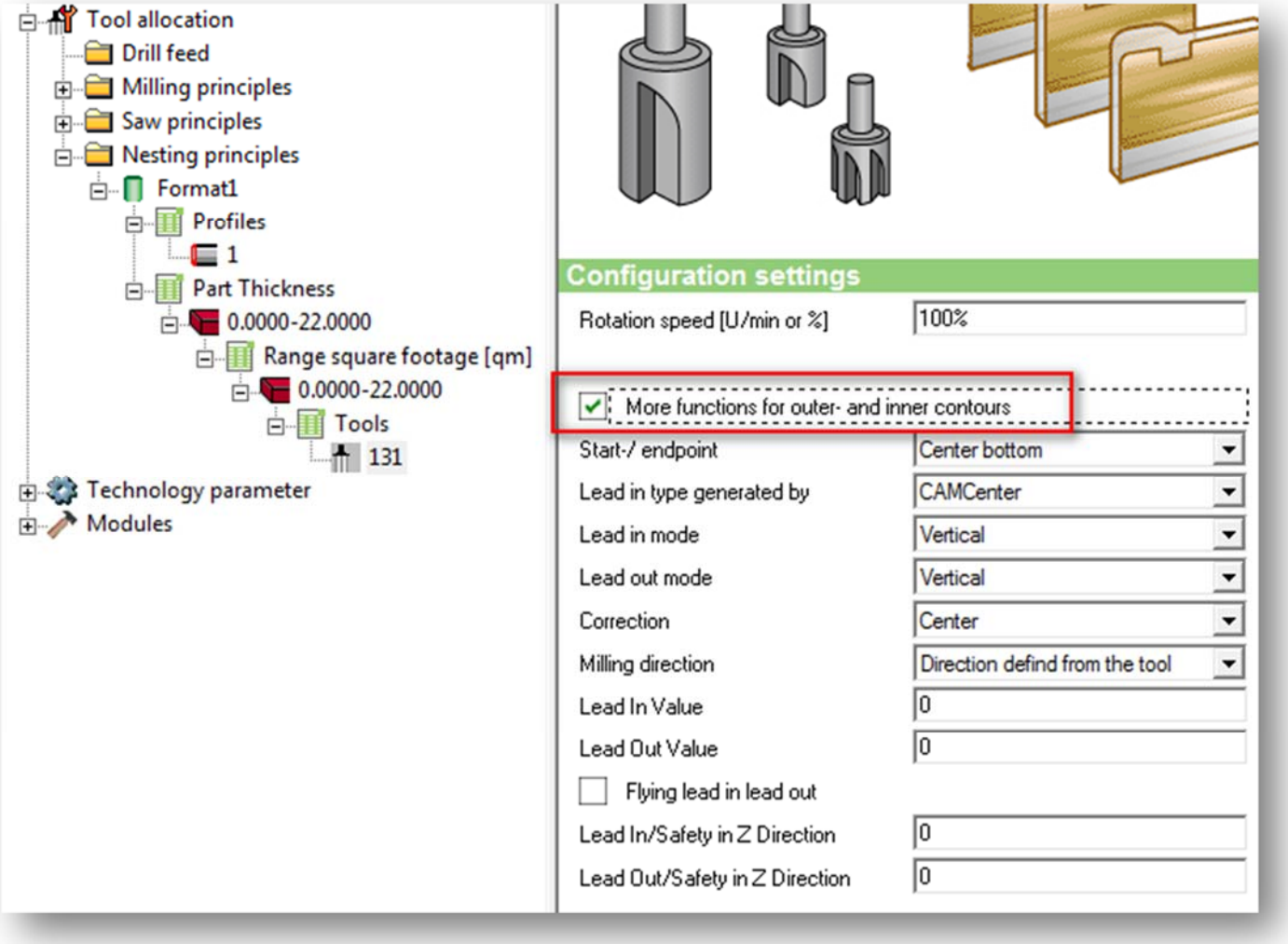
The next step is to define a value range for the principle and then afterwards the sqm must be defined for this area where the tool should operate.

The function enables an **Onion Skinning** as well.

Now the entry **range square footage [sqm]** is marked by right clicking the right mouse button and then set in the area. For confirming the entry, leave the dialog via the green checkmark.



Afterwards a tool must be assigned to the area. The procedure is the same as the assignment of profiles mentioned before. Here the tool defined as **Nesting Standard Tool** in the tool database before must be selected.
Afterwards some settings for this situation must be made in the configuration settings.



Tool assignment in the CAM Manager

4.10.2.1 Basic Settings

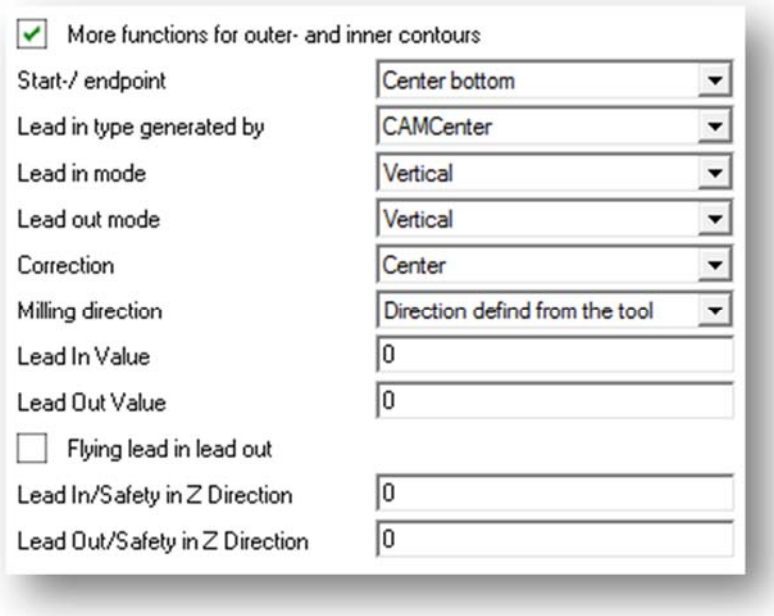
In the **configuration settings** some special settings can be made for the Nesting router:

Description	Explanation
Offset in XY- direction [mm]	The machining can be moved into the part or away from the part (plus) or away from the (minus) via the offset in XY. The zero point is always the starting position of the machining.
Offset in Z- direction [mm]	The machining can be moved in the height via the offset in Z. Minus is always to the bottom and plus to the top.
Infeed	Via the infeed the machining in Z can be divided into several contours.
Extension contour start point [mm]	Via the extension the machining can be extended on the contour start point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Extension contour end point [mm]	Via the extension the machining can be extended on the contour end point. This is only then evaluated if the **lead in and the lead out** are controlled via the **Wop- Mode.**
Feed rate [m/min]	Via the feed rate the router can be regulated lower for this situation. The full value can be defined here or the feed rate set in percent. If the feed rate is set in percent, then the zero point is taken from the tool database.
Speed [U/min oder %]	Via the speed the router can be regulated lower for this situation. The full value can be defined here or the speed set in percent. If the speed is set in percent, then the zero point is taken from the tool database.
Extra functions for outer and inner contours	With an activated checkbox the lead in and the lead out, the compensation and the mode can be defined for this situation.

4.10.2.2 More functions for outer and inner contours

Special properties can be filed for this certain situation under the functions **extra functions for outer and inner contours**

If this function is not activated, then the general settings from the **Technology-Parameters** for outer and inner contours are applied. (See Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** and **5.4**)

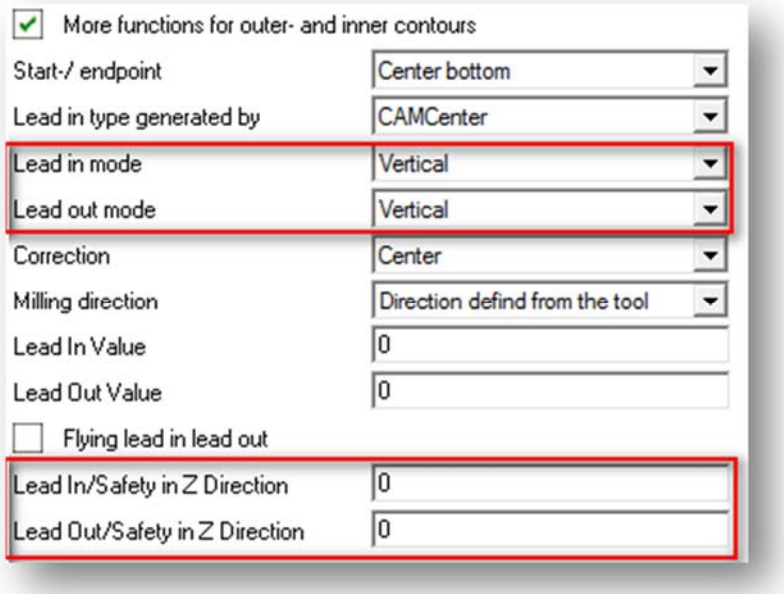


Description	Explanation
Start-/ End point	The position of the start and end point can be selected here with a closed inner contour
Create lead in mode by	If **CAMCenter** is set, then a lead in and lead out is created by contours. The lead in and lead out is always vertical in the Wop Program.

Description	Explanation
Lead in mode	If the **create lead in mode by** is on **CAMCenter**, then the lead in mode consists of contours. This means that even if the mode is on vertical, a lateral or tangential lead in consists of contours with the lead in and lead out in the WOP Program, for example. If the **create lead in mode by** is on **Wop Mode**, then the normal lead in mode from the Wop Program is used.
Lead out mode	See **lead in mode.**.
Milling direction	The router can be set how it should run via the milling direction. When set on **direction defined from tool**, the setting is applied from the tool database.
Lead in value	Here the extensions for the lead in distance of the contour can be defined. This is only then evaluated if “**create lead in mode by**“ has been set on **CamCenter**.
Lead out value	Here the extensions for the lead out distance of the contour can be defined. This is only then evaluated if “**create lead in mode by**“ has been set on **CamCenter**.
Flying lead in/lead out	With an activated checkbox the flying lead in/lead out is initiated in the Wop- Mode. If the **create lead in mode by** is on **CAMCenter**, then this should always be activated so that a tangential lead in and lead out is possible.
Lead in distance in Z [mm]	Here the height can be defined for the contour extension of the contour. This is only then evaluated if **CAMCenter** has been set with “**create lead in mode by**“and the checkbox **flying lead in/lead out** is activated.
Lead out distance in Z [mm]	Here the height can be defined for the contour extension of the contour. This is only then evaluated if **CAMCenter** has been set with “**create lead in mode by**“and the checkbox **flying lead in/lead out** is activated.

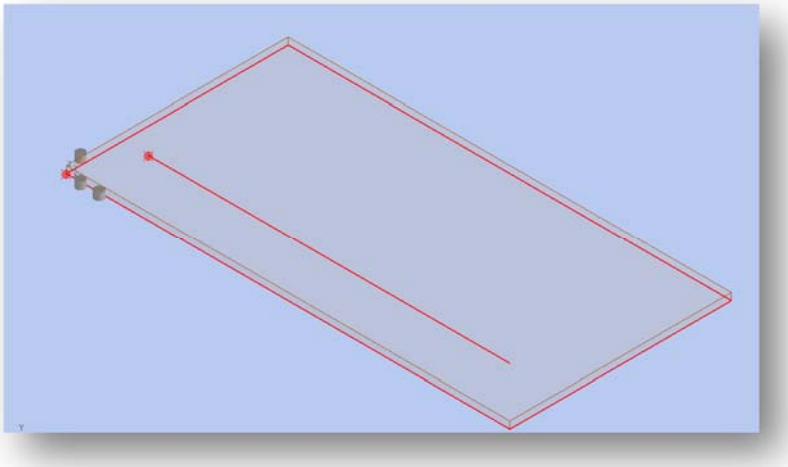
4.10.2.3 CAMCenter Mode

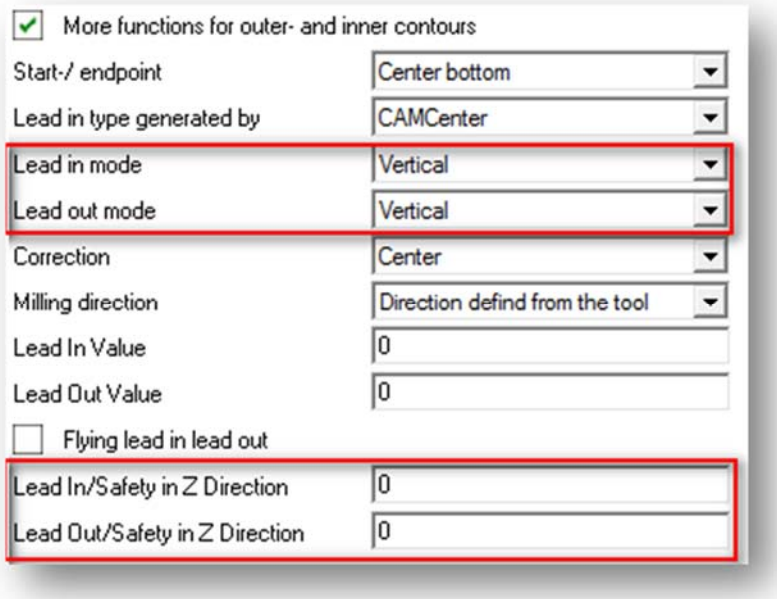
For calculating the lead out distance correctly, it is important that a suitable definition is made for the lead in and lead out distance.
If no lead in and lead out are created, then the values must be set on **0** and the **lead in and lead out** are set on vertical.



4.10.2.3.1 Vertical lead in and lead out

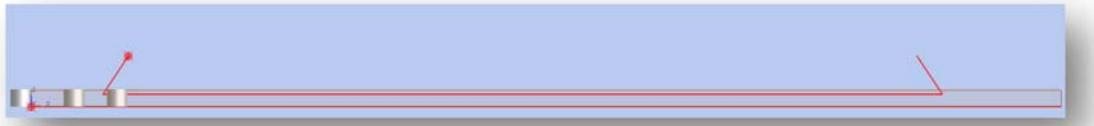
For obtaining a vertical lead in and lead out, it is important that the values for the **lead in and lead out distances** remain set on **0**. In addition the **lead in and lead out mode** should be set on **vertical**.

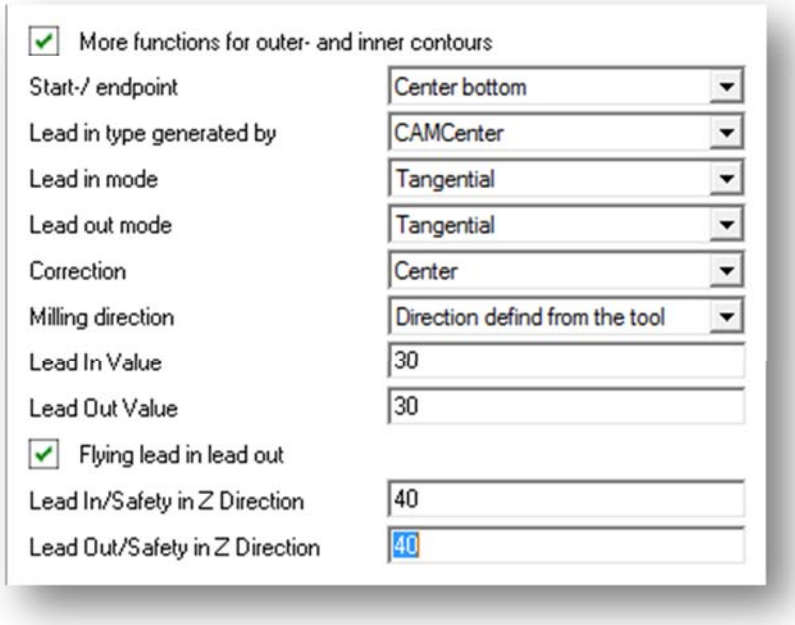



More functions for outer- and inner contours
Start-/ endpoint
Center bottom
Lead in type generated by
CAMCenter
Lead in mode
Vertical
Lead out mode
Vertical
Correction
Center
Milling direction
Direction defind from the tool
Lead In Value
0
Lead Out Value
0
Flying lead in lead out
Lead In/Safety in Z Direction
0
Lead Out/Safety in Z Direction
0

4.10.2.3.2 Tangential lead in and lead out

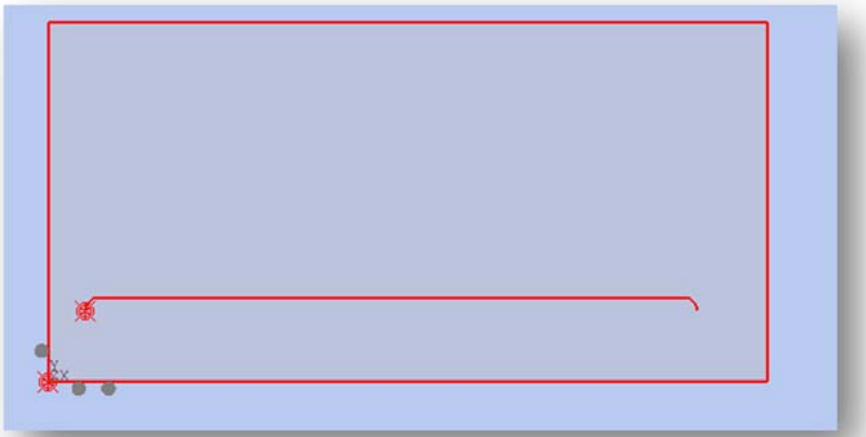
For creating a tangential lead in approach, the **lead in and lead out mode** must be set on **tangential**.
Additionally, you must ensure that the values for the **lead in and lead out distance** are defined and the checkbox **flying lead in/lead out** is activated.

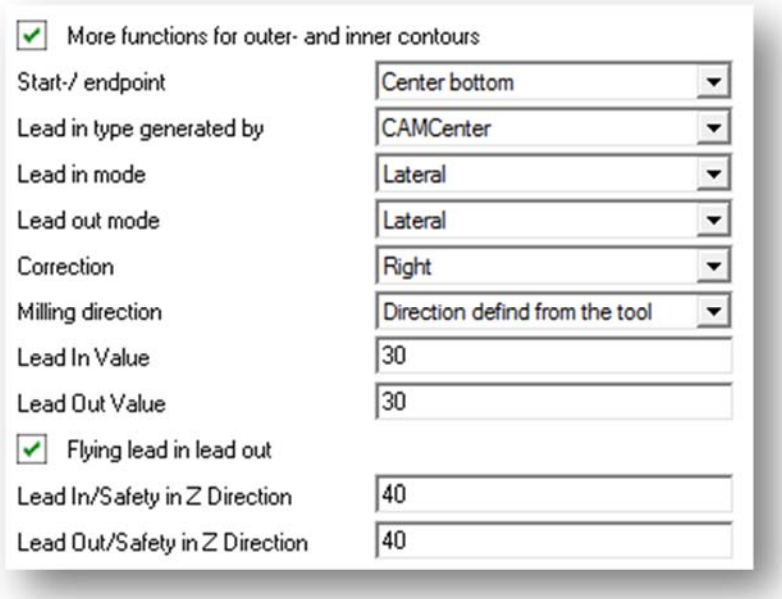




4.10.2.3.3 Lead in and lead out of a lateral approach

For creating a lead in and lead out of a lateral approach, the **lead in and lead out mode** must be set on **lateral**.
The checkbox **flying lead in and lead out** must always be activated so that the lead in can be flying as well.
It is important for the definition that the value is defined for the lead in and lead out distance.
If the lead in and lead out is **not flying** for the distance, then the distances should be set on **in Z on 0**.



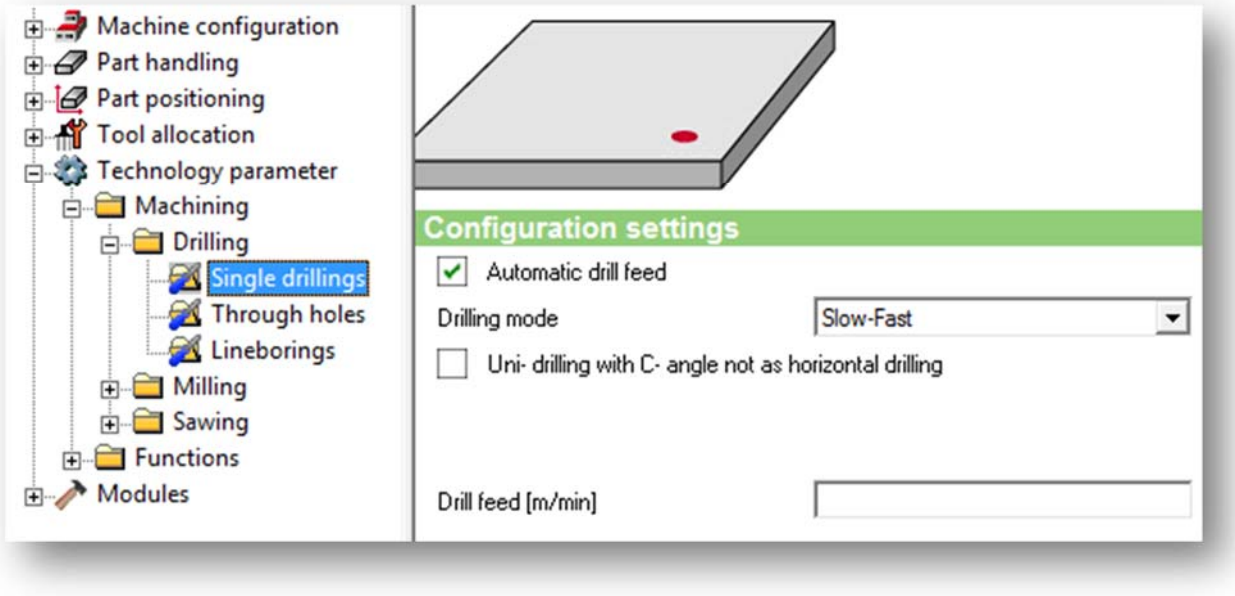

More functions for outer- and inner contours
Start-/ endpoint
Center bottom
Lead in type generated by
CAMCenter
Lead in mode
Lateral
Lead out mode
Lateral
Correction
Right
Milling direction
Direction defind from the tool
Lead In Value
30
Lead Out Value
30
Flying lead in lead out
Lead In/Safety in Z Direction
40
Lead Out/Safety in Z Direction
40

5. Technology Parameter

Via the **Technology-Parameter** the basic settings can be made for individual machining.
If no further settings have been made in the **configuration settings** of the **tool allocations**, then the parameters from the technology parameters are applied..

5.1 Drillings

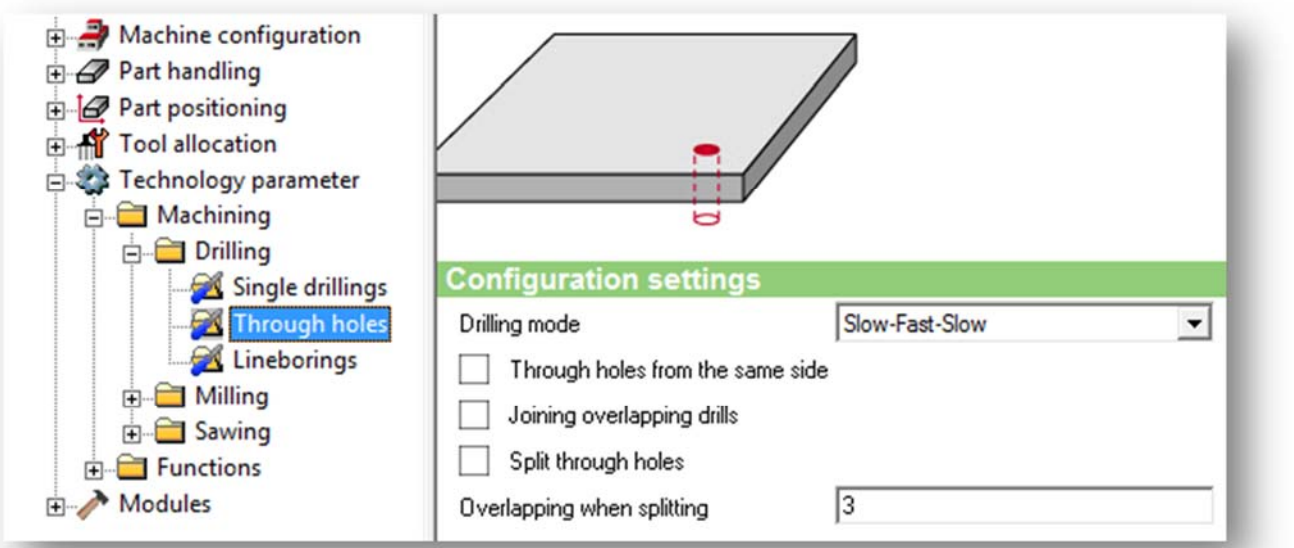
5.1.1 Single drillings



Description	Explanation
Automatic drill feed	If the checkbox is activated and no drill has been created in the applied tool database for this diameter, the drill feed of the machine is used. No feed rate is written.

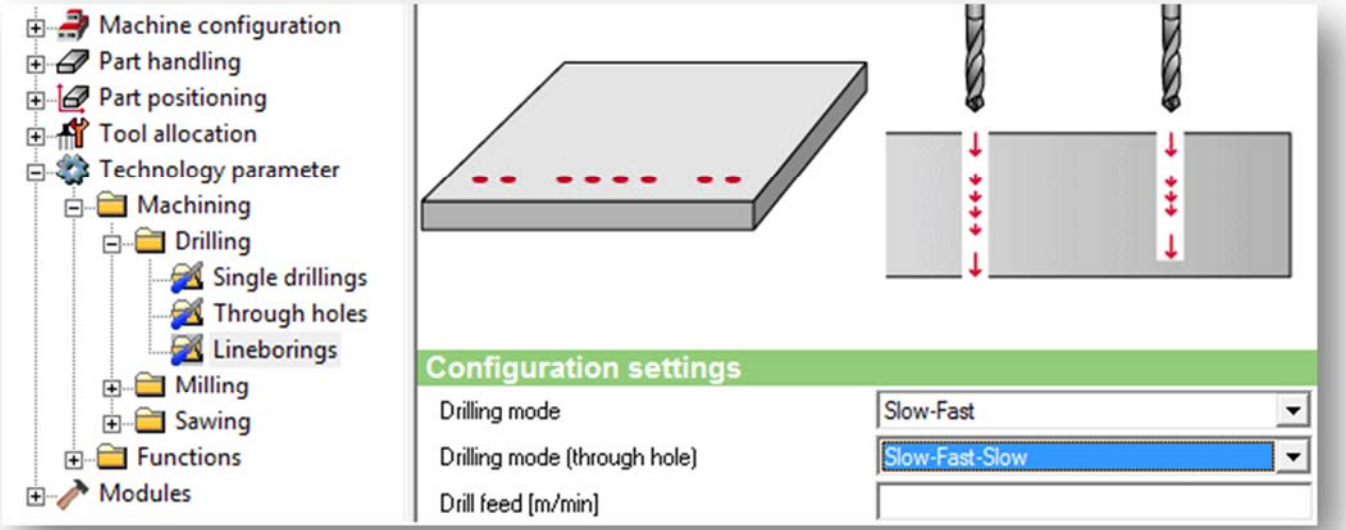
Drilling mode	The drilling mode enables to define how far the drill should plunge into the part (slow-fast or fast- fast). This is only then applied if no drill has been created in the tool database for the diameter.
Uni-drilling with C-angle not as horizontal drilling	With an activated checkbox horizontal drillings, which have a C-angle, are output as universal drillings.
Drill feed [m/min]	If the checkbox **drill feed** is **deactivated**, a drill feed can be stored here. The feed rate is only then used if no drill has been created in the tool database.

5.1.2 Through holes



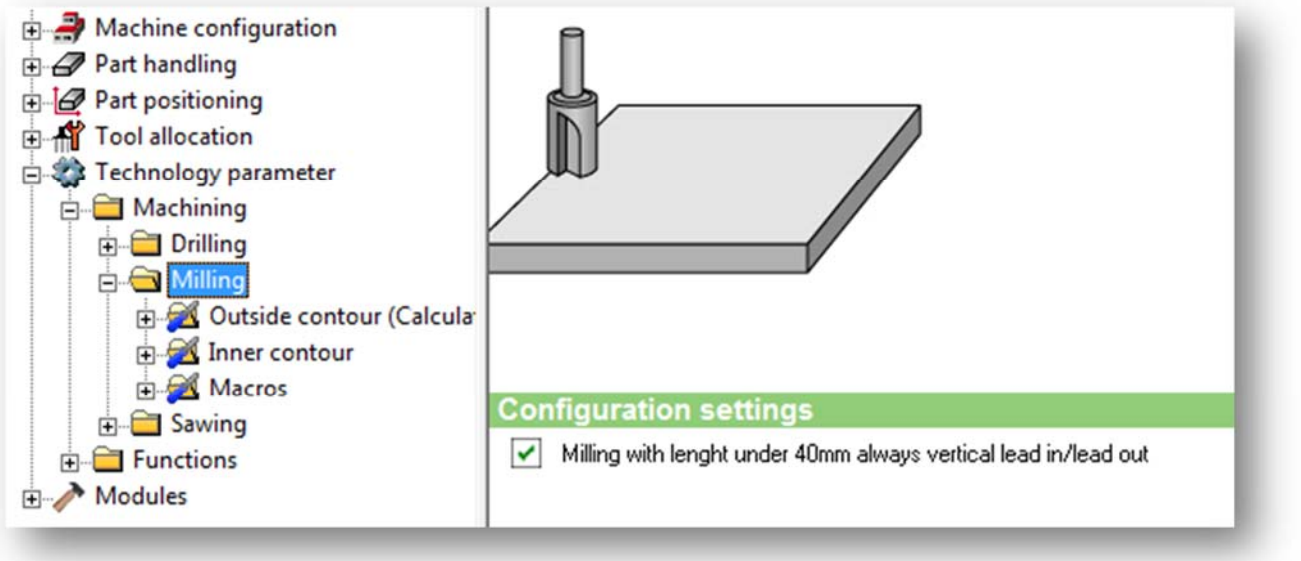
Description	Explanation
Drilling mode	The general drilling mode can be defined here. If the drilling diameter has not been set in the tool database, then this feed rate is used.
Through holes from the same side	For drilling through holes from a side, these can be defined with the support of the Checkbox.
Joining overlapping drills	This checkbox must be activated for joining overlapping drills.
Split through holes	This checkbox must be activated for splitting through holes because no lance drill exists. If this checkbox is activated, then the checkbox **through holes from the same side** is not allowed to be activated.
Overlap splitting rabbet	Here the overlapping of the through hole can be defined. The value is only then evaluated if the checkbox **split through holes** is activated.

5.1.3 Lineborings



Description	Explanation
Drilling mode	Defines the drilling mode for not throughout lineborings.
Drilling mode (through hole)	Defines the drilling mode for throughout lineborings.
Drill feed [m/min]	Defines the drill feed. If the checkbox **automatic drill feed** is not activated in the single drillings, then the drill feed can be defined here. This drill feed is only then used if no drill has been created in the tool database for the certain diameter.

5.2 Milling

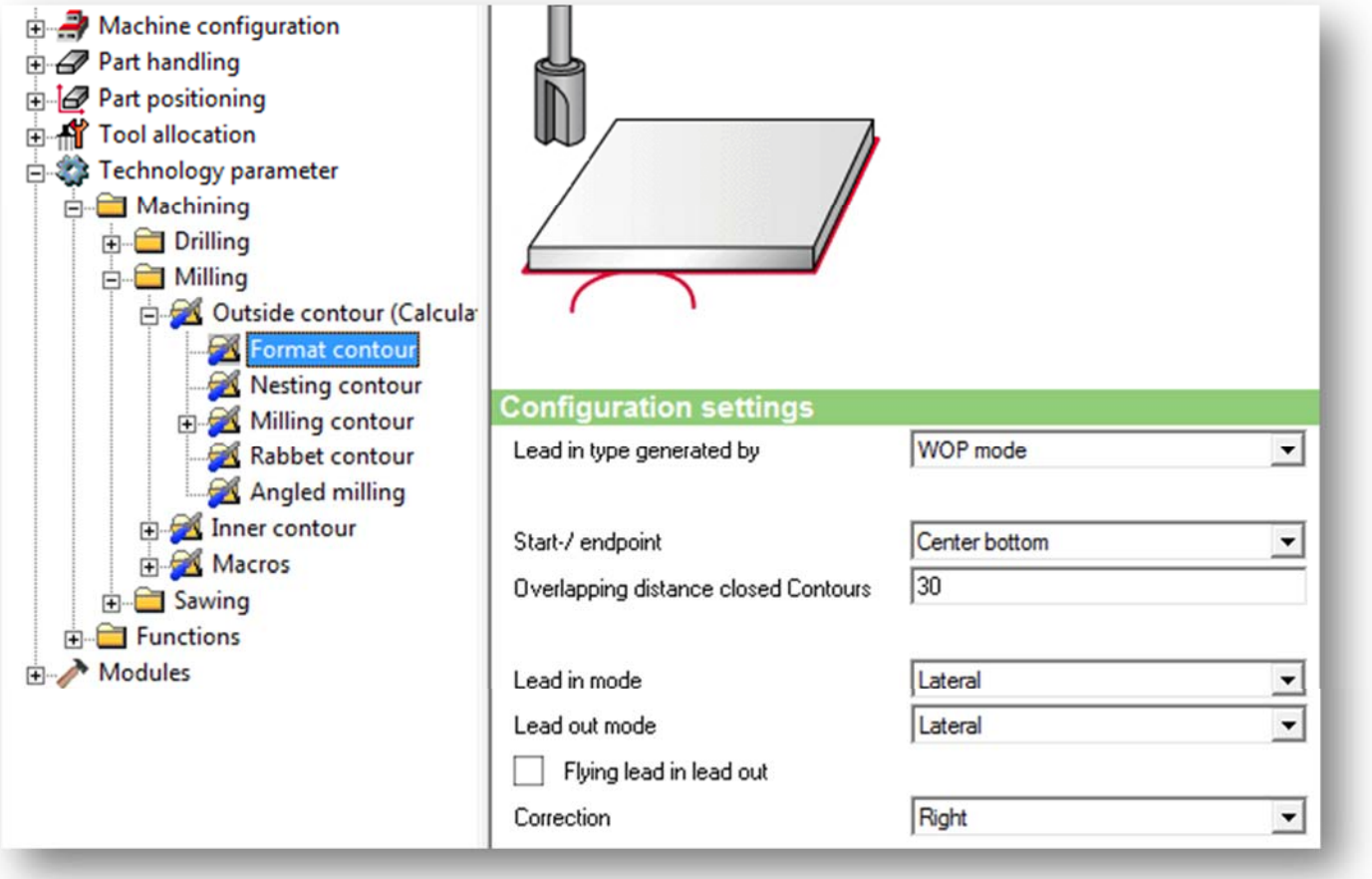


Description	Explanation
Millings under 40mm length always lead in/lead out vertically	With an activated checkbox the millings are always vertically led in and led out where the contours are less than 40mm.

5.3 Outer contours

5.3.1 Format contour

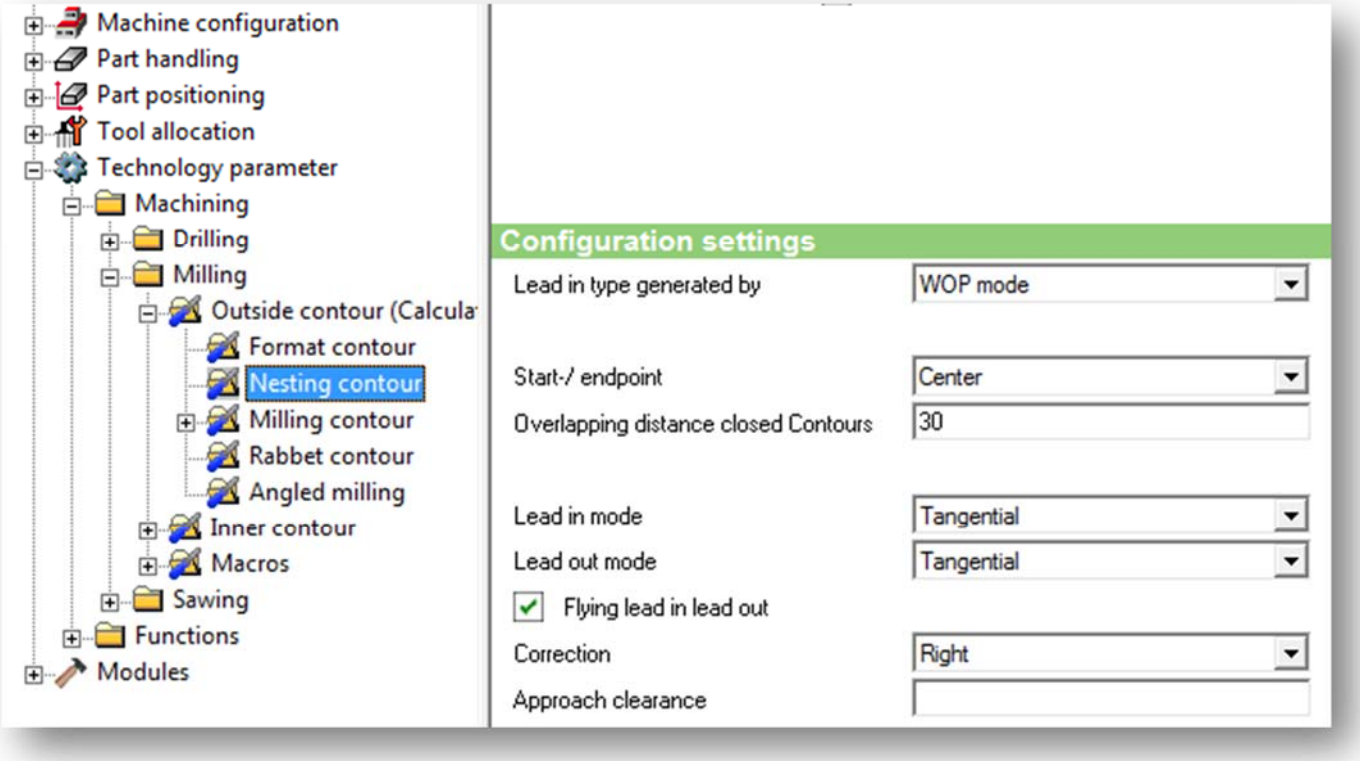
The format contour settings are always then applied if the part has to be formatted (closed contour with oversize).



Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Start-/End point	If the contour is closed, you can decide on which position the start point should be on the part.
Overlapping closed contours [mm]	The overlapping with closed contours can be defined here.
Lead in mode	Here the lead in mode can be defined.
Lead out mode	Here the lead out mode can be defined.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.

5.3.2 Nesting contour

This setting is always then used if it is a nesting contour.

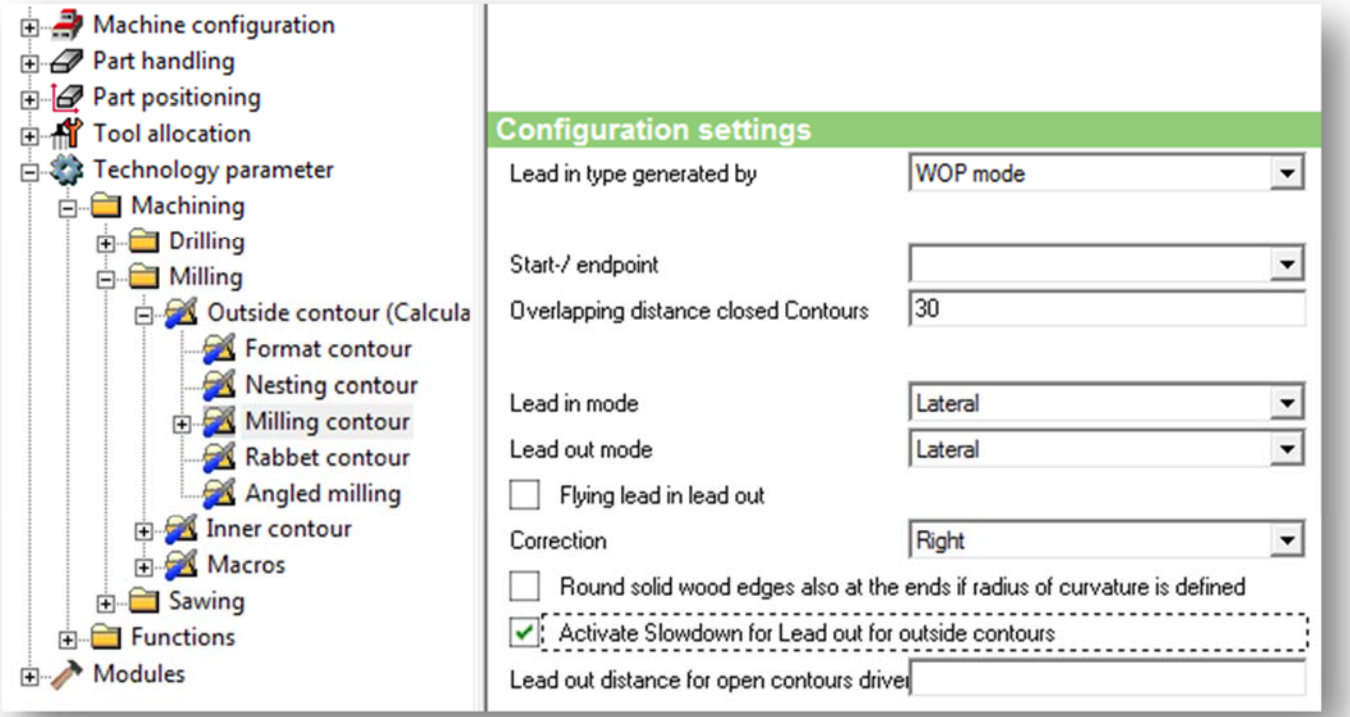


Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the **tool database**.
Start-/End point	If the contour is closed, you can decide where the start point should be on the part.

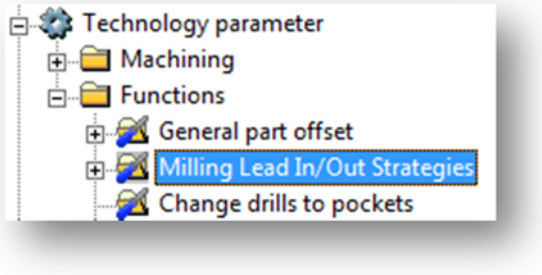
Overlapping closed contours [mm]	Defines the overlapping with closed contours.
Lead in mode	Defines the lead in mode.
Lead outmode	Defines the lead out mode.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.
Lead in distance	The lead in distance for nesting contours can be defined here.

5.3.3 Milling contours

The settings for milling contours are always then applied if the contours are curved or if they are single contours.

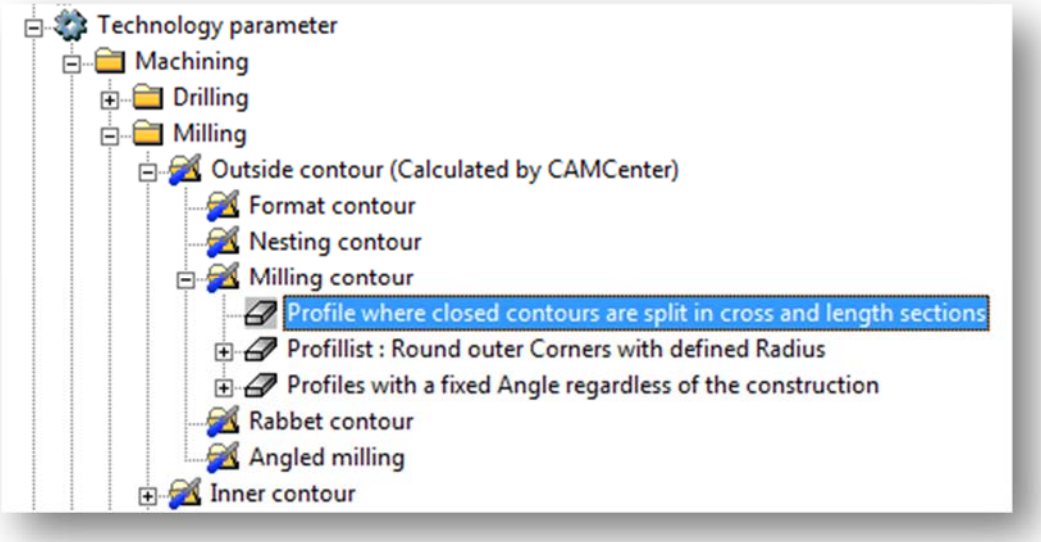


Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Start-/End point	If the contour is closed, you can decide where the start point should be on the part.

Overlapping closed contours [mm]	Defines the overlapping with closed contours.
Lead in mode	Defines the lead in mode.
Lead out mode	Defines the lead out mode.
Flying lead in/lead out mode	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.
Round solid wood edges also at the ends if radius of curvature is defined	Here it can be decided if solid wood edges should be rounded. To do so, the **profile machining** must be on **solid wood edge** or on **solid + machining** in imos.
Activate slow lead out with not closed outer contours	For creating a slow lead out, the checkbox must be activated.
Lead out of not closed contours which are driven with lead out feed	Here the feed rate must be set for the slow lead out. Thereby, ensure that the profile materials are stored in the functions of the **Technology Parameters.** These are under milling lead in/ out strategies. 

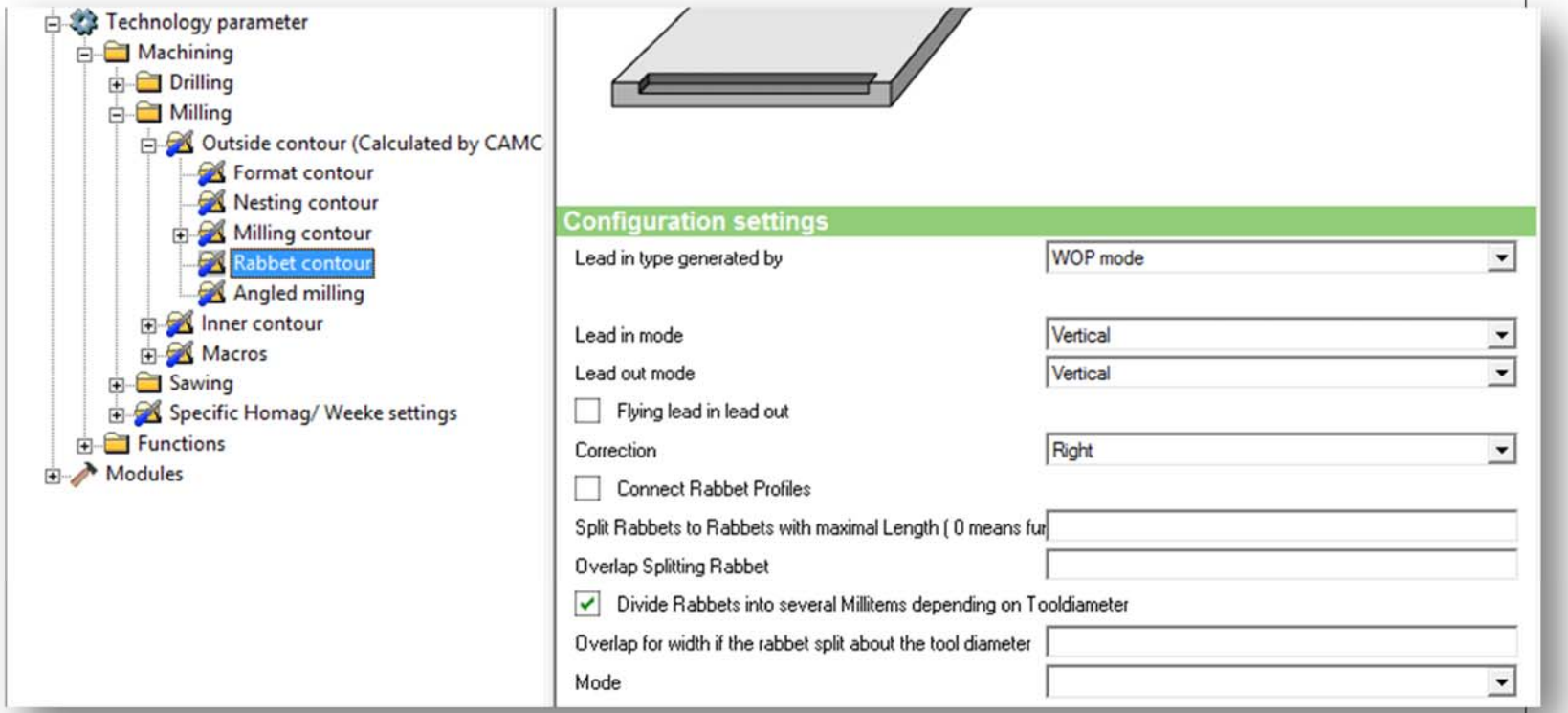
5.3.3.1 Special functions for milling contours

Here profiles or profile materials can be stored.
In order to do this, the corresponding function must be marked by clicking the right mouse button and then a **profile** or **profile material** can be assigned via the context menu.
Afterwards further settings for the assigned profile can be made via the **configuration settings**.



Description	Explanation
Profiles where closed contours are split in cross and length sections	**Profiles** or **profile materials**, which are never joined to a closed contour, can be defined here.
Profile lists: round outer corners with defined radius	**Profiles** or **profile materials**, which are rounded on the outer corners, can be defined here.
Profiles with a fixed angle regardless of the construction	Contours, which e.g. are joined or have a fixed angle, can be defined here. Imos does not have to transfer an A-angled milling for this.

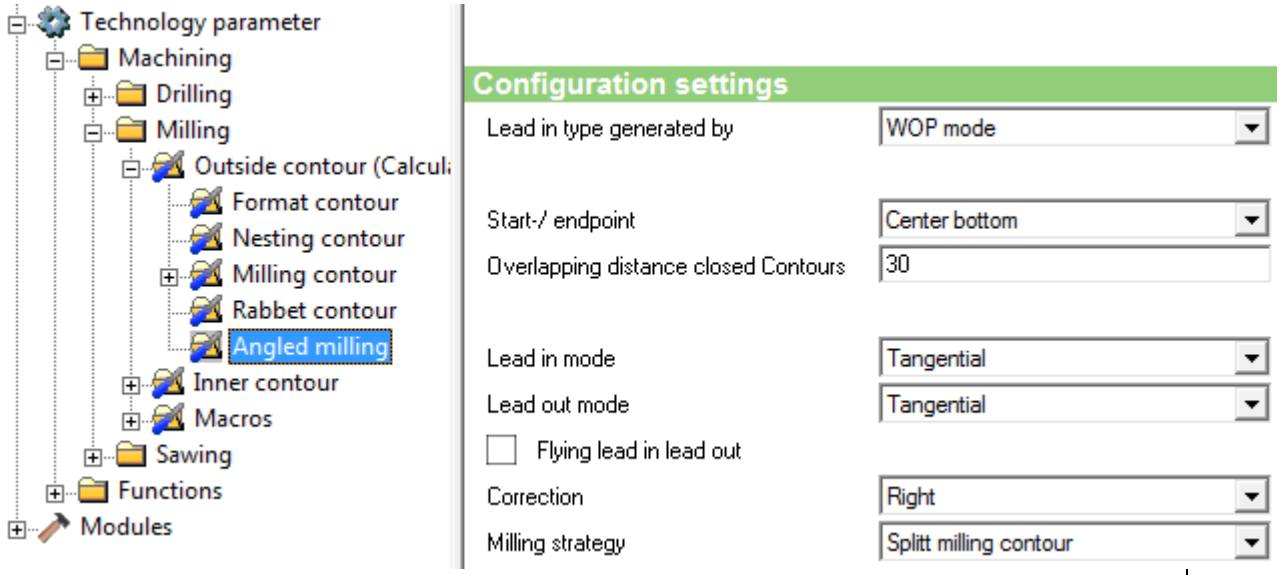
5.3.4 Rabbet contour



Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Start-/End point	If the contour is closed, you can decide where the start point should be on the part.

Overlapping closed contours [mm]	Defines the overlapping with closed contours.
Lead in mode	Defines the lead in mode.
Lead out mode	Defines the lead out mode.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.
Split rabbets to rabbets with maximal length (0=> means functionality OFF)	Defines when the rabbet contour has to be split.
Overlap splitting rabbet (value must be less than split length)	Defines the overlapping of the contours to obtain a neat trim.
Divide rabbets into mill items depending on tool diameter	With an activated checkbox the rabbets are divided in the width according to the tool diameter defined in the tool database.
Overlap for width if the rabbet split about the tool diameter	Defines the distance between the individual contours to each other, so that a clean transition occurs
Mode	Here the mode can be entered if the rabbet is transferred as groove.

5.3.5 Angled milling

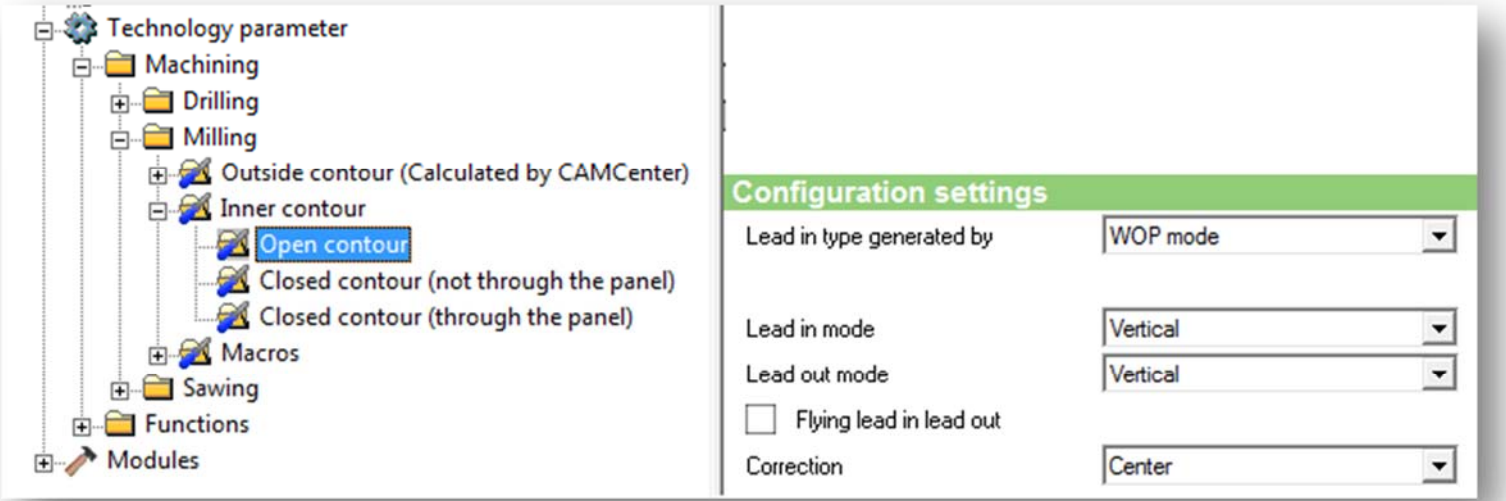


Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Start-/End point	If the contour is closed, you can decide where the start point should be on the part.
Overlapping closed contours [mm]	Defines the overlapping with closed contours.
Lead in mode	Defines the lead in mode.
Lead out mode	Defines the lead out mode.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.
Milling strategy	Here it can be decided if closed contours have to be split or if they should be driven as a loop.

5.4 Inner contours

5.4.1 Opened inner contours

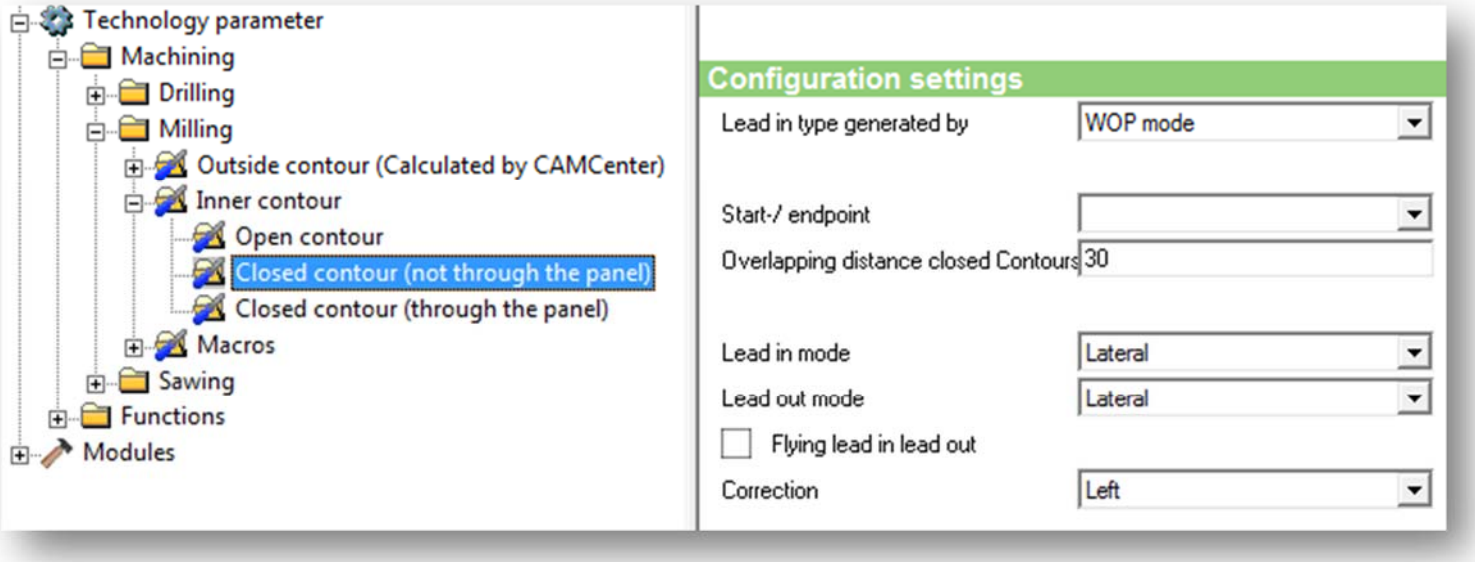
These settings are always then evaluated if the inner contours are not closed.



Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Lead in mode	Defines the lead in mode.
Lead out mode	Defines the lead out mode.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.

5.4.2 Closed inner contours (not through the panel)

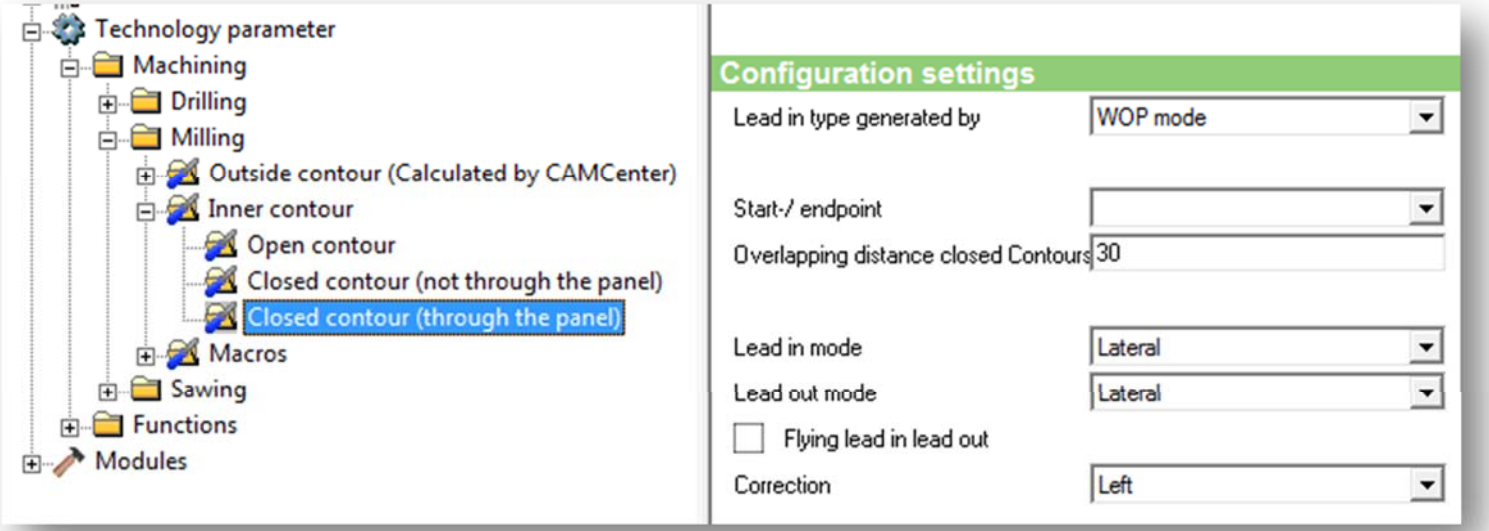
These settings are always then made if the inner contours are not through the panel.



Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Start-/End point	If the contour is closed, you can decide where the start point should be on the part.
Overlapping closed contours [mm]	Defines the overlapping with closed contours.
Lead in mode	Defines the lead in mode.
Lead out mode	Defines the lead out mode.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Compensation	Defines the compensation.

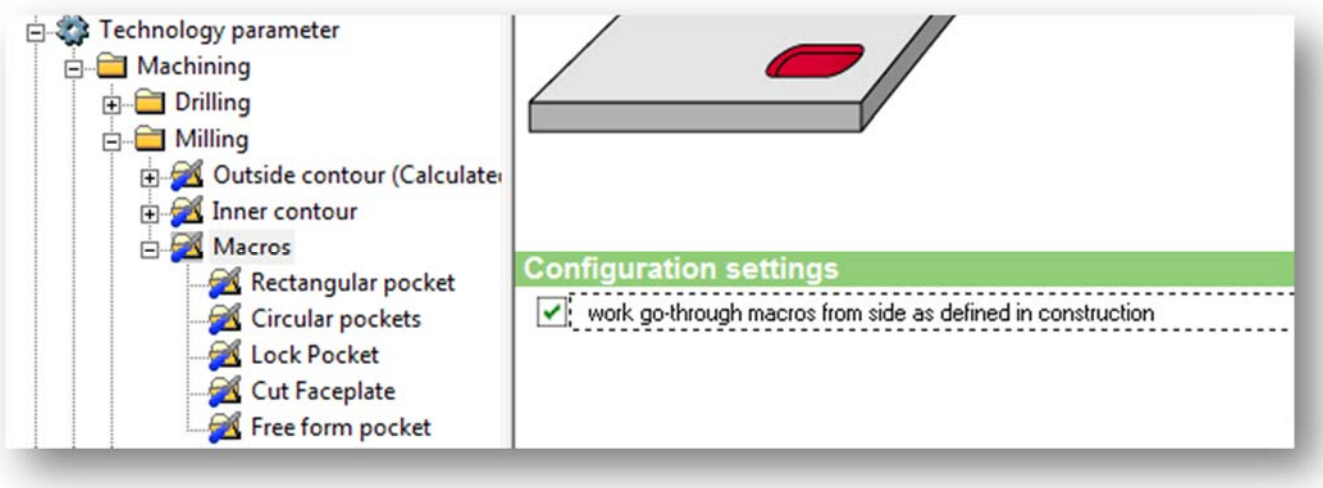
5.4.3 Closed inner contours (through the panel)

These settings are always then made if the inner contours are through the panel.



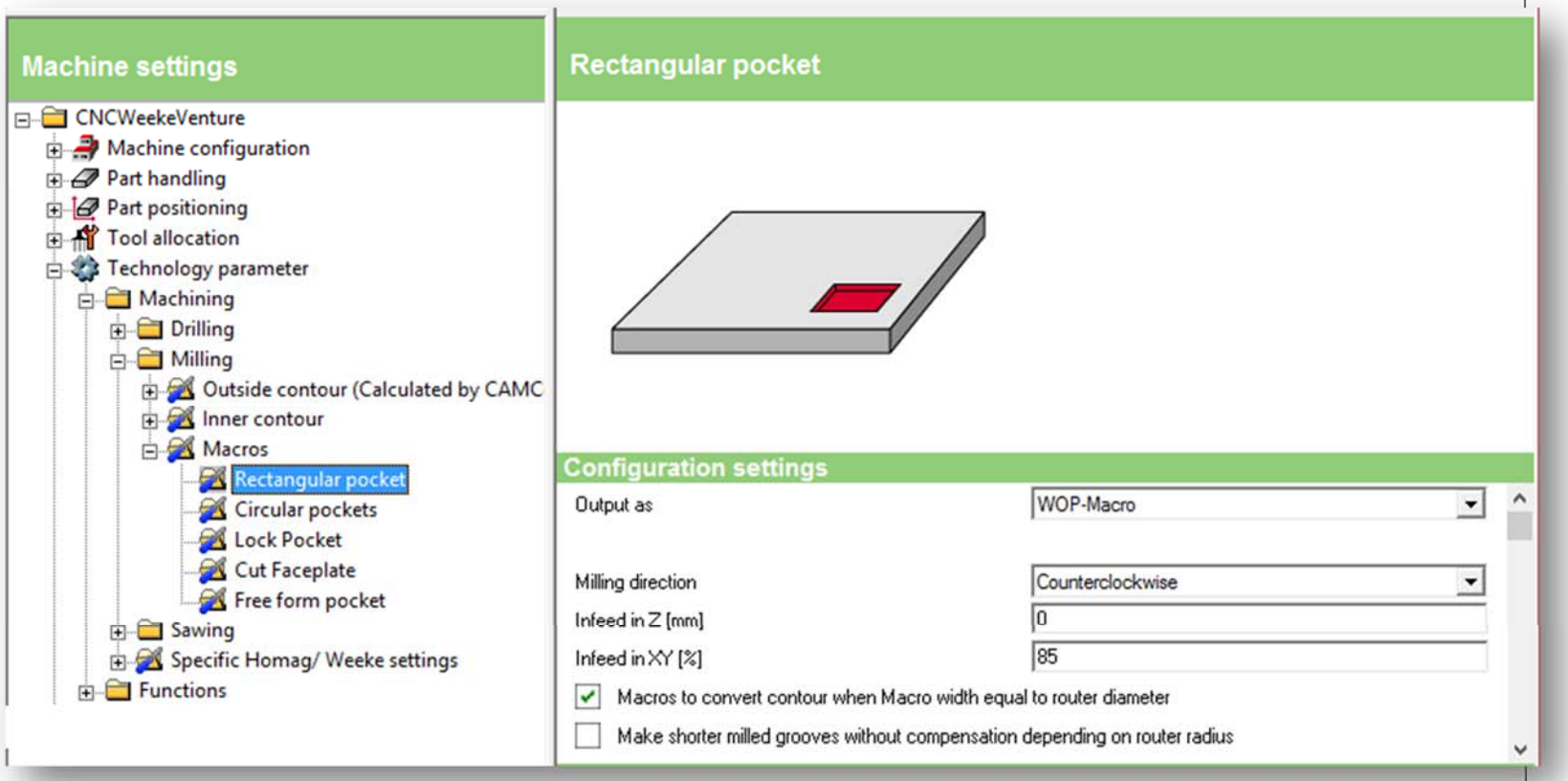
Description	Explanation
Create lead in mode by	Here it can be decided if the lead in should be created via the **Wop-Mode** or via **CAMCenter**. If the lead in should be created via CAMCenter, then the lead in and lead out on the tool must be defined in the tool database.
Start-/End point	If the contour is closed, you can decide where the start point should be on the part.
Overlapping closed contours [mm]	Defines the overlapping with closed contours.
Lead in mode	Defines the lead in mode.
Lead out mode	Defines the lead out mode.
Flying lead in/lead out	If the contour should be flying lead in and lead out, the checkbox must be activated. If the **lead in mode** is on **CAMCenter**, then this checkbox should be activated.
Tool compensation	Defines the compensation.

5.5 Macros



Description	Explanation
Work-go-through macros from side as defined in construction	With an activated checkbox macros, which overlap, are machined in the same way as defined in the construction (which means top and bottom here).

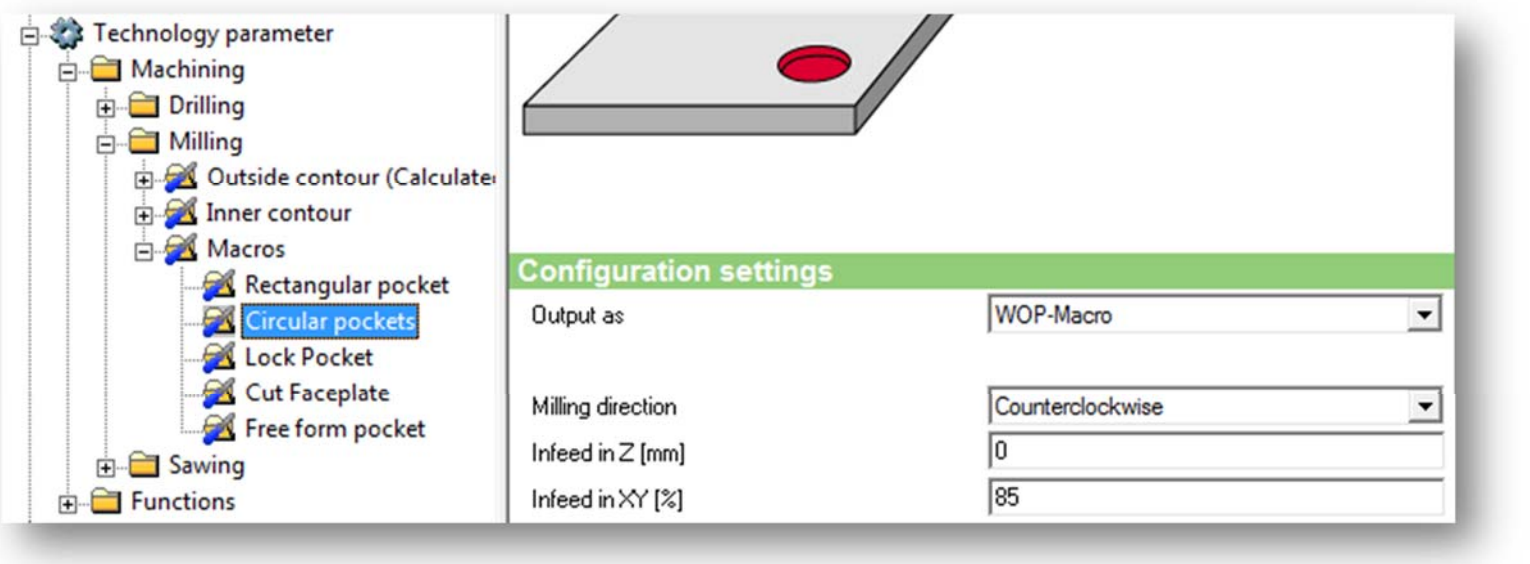
5.5.1 Rectangular Pockets



Description	Explanation
Output as	Defines the output (as Wop- Macro or contour).
Milling direction	The milling direction can be defined here.

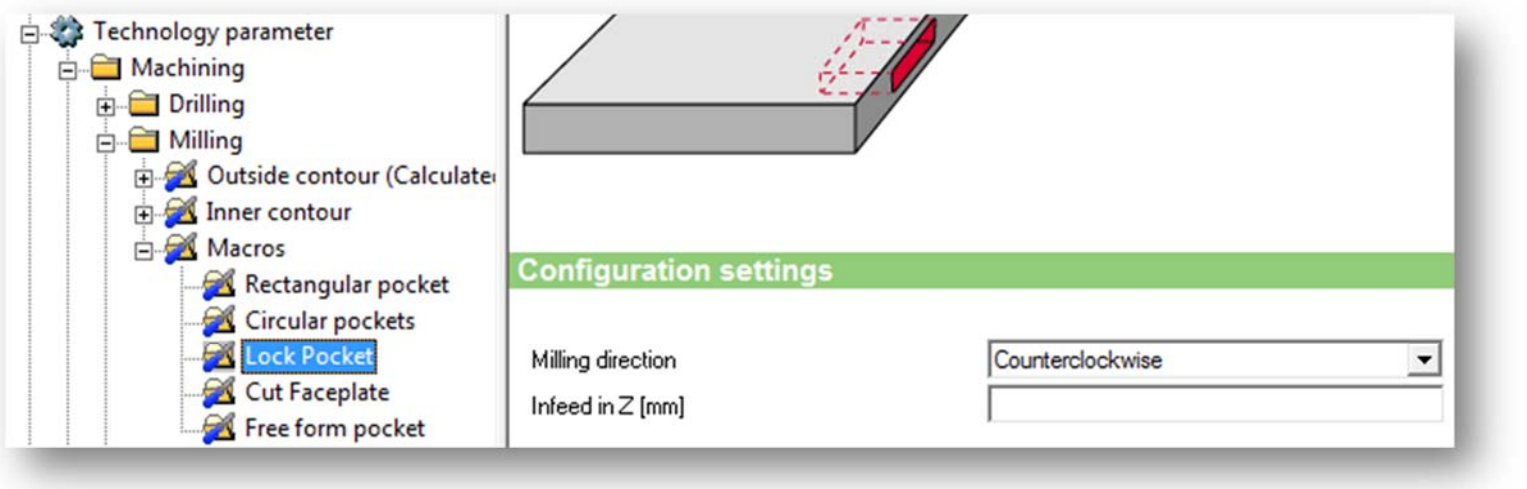
Infeed in Z [mm]	If no infeed has been transferred from the CAD, then this infeed is activated with the **Wop- Macros**.
Infeed in XY [%]	Here the infeed in XY can be output in percent.
Macros to convert contour when Macro width equal to router diameter	If the checkbox is enabled, then all macros, where the width is equal to the cutter diameter, converted to outlines
Make shorter milled grooves without compensation depending on router radius	When this box is checked, the contours to be cut by the cutter radius

5.5.2 Circular Pockets



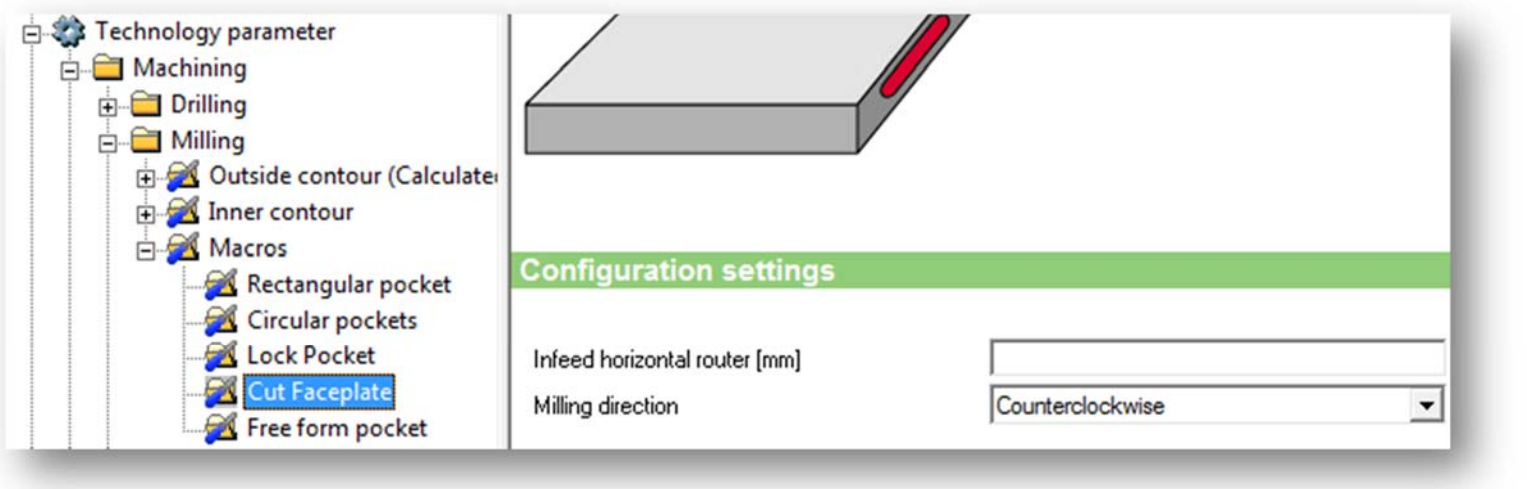
Description	Explanation
Output as	Defines the output (as Wop- Macro or contour).
Milling direction	The milling direction can be defined here.
Infeed in Z [mm]	If no infeed has been transferred from the CAD, then this infeed is activated with the **Wop- Macros**.
Infeed in XY [%]	Here the infeed in XY can be output in percent.

5.5.3 Lock Pocket



Description	Explanation
Infeed in Z [mm]	If no infeed has been transferred from the CAD, then this infeed is activated with the **Wop- Macros**.
Infeed in XY [%]	Here the infeed in XY can be output in percent.

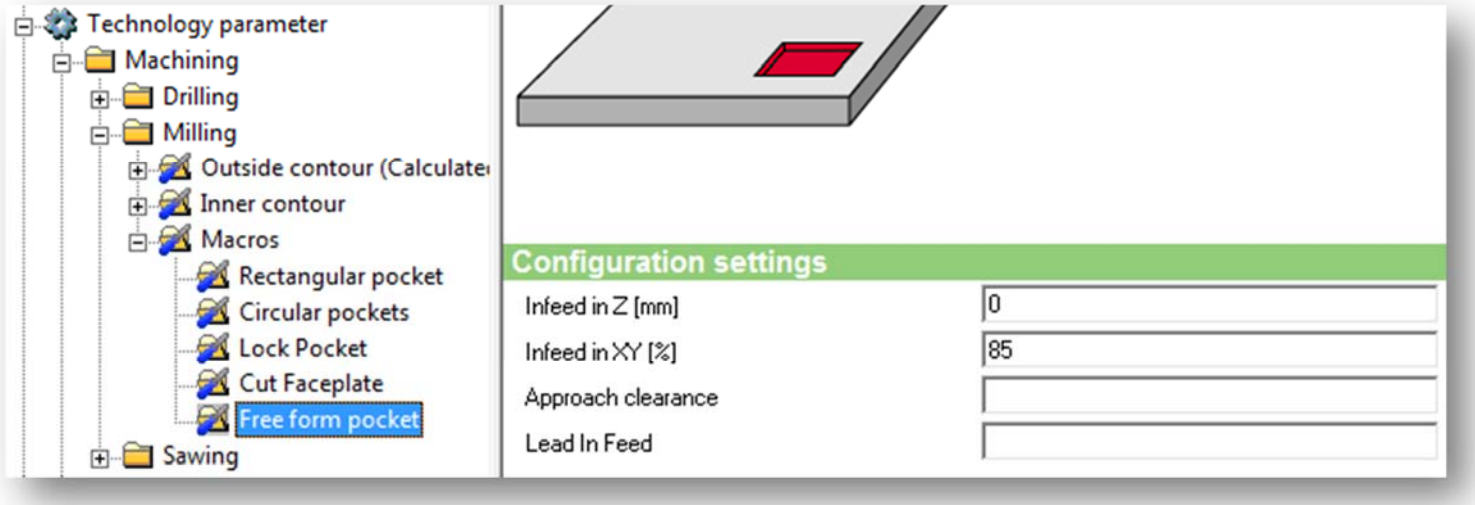
5.5.4 Cut Faceplate



Description	Explanation
Infeed in Z [mm]	If no infeed has been transferred from the CAD, then this infeed is activated with the **Wop- Macros**.
Infeed in XY [%]	Here the infeed in XY can be output in percent.

5.5.5 Free Form Pocket

This function is not available for every manufacturer.

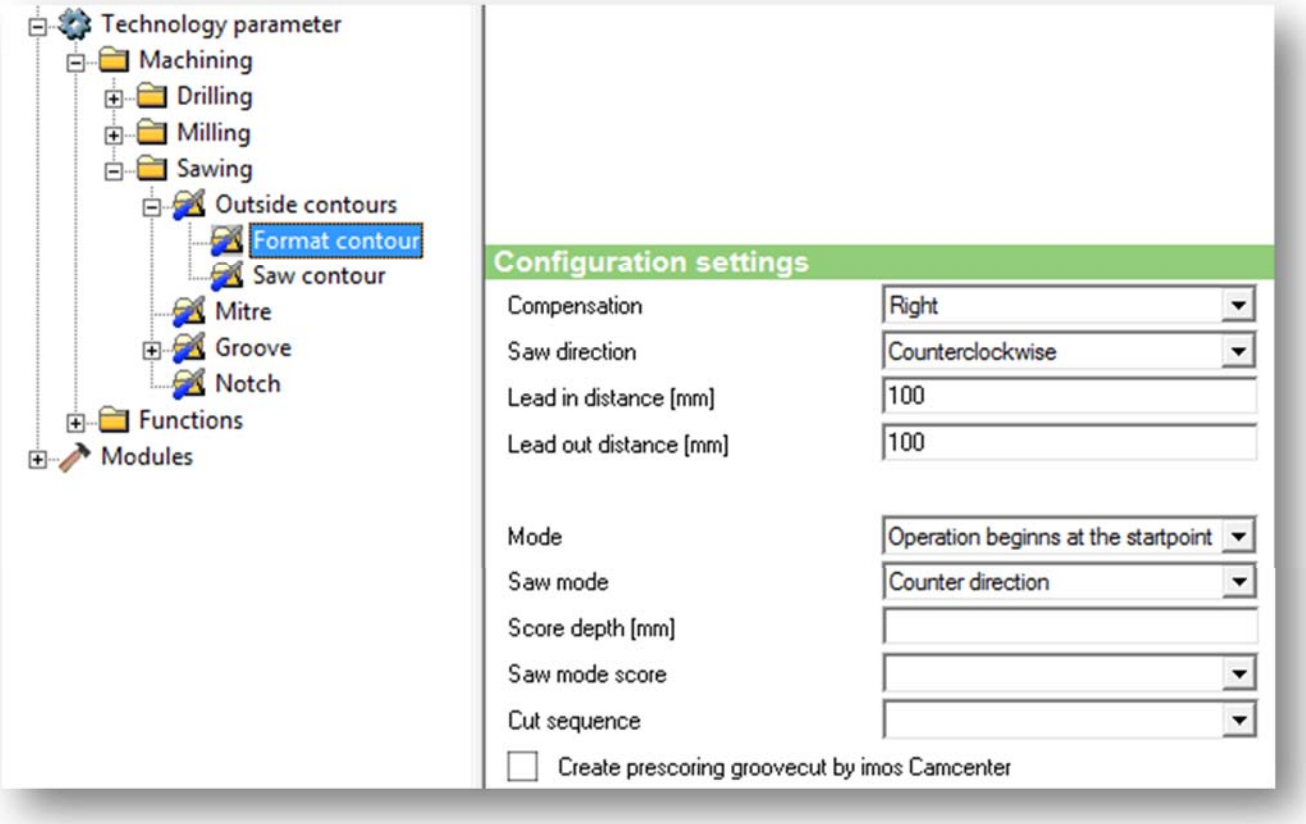


Description	Explanation
Infeed in Z [mm]	If no infeed has been transferred from the CAD, then this infeed is activated with the **Wop- Macros**.
Infeed in XY [%]	Here the infeed in XY can be output in percent.
Lead in distance	Defines the lead in distance.
Lead in feed [m/min]	Defines the lead in feed.

5.6 Sawing

5.6.1 Outer Contours

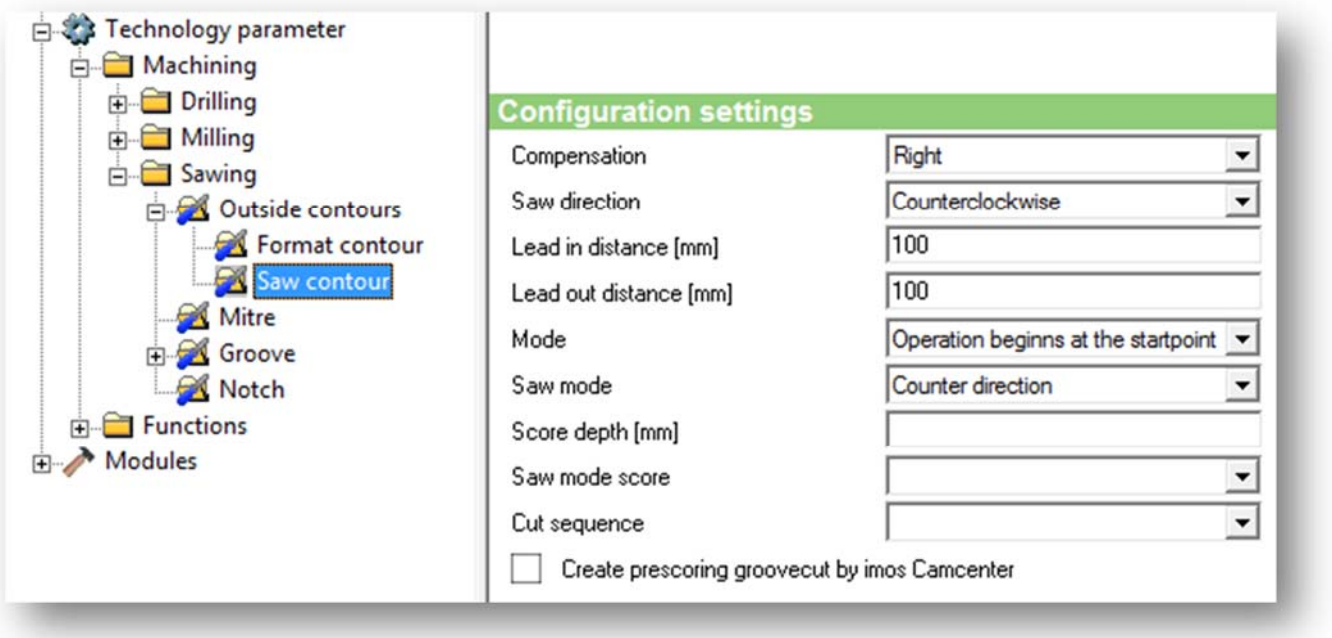
5.6.1.1 Format Contour



Description	Explanation
Tool compensation	The compensation of the saw can be defined here.

Sawing direction	The sawing direction can be defined here.
Lead in distance	Here the lead in distance can be defined (the initial point is the starting point of the cut).
Lead out distance	Here the lead out distance can be defined (the initial point is the end point of the cut).
Mode	The plunge mode can be defined here.
Saw mode	The run of the saw can be defined here.
Depth for pre-scoring sawing [mm]	If the value greater than 0 der Wert, then a pre-scoring is initiated here.
Saw mode score	The plunge mode for the pre-scoring can be defined here.
Cut sequence	Here the cut sequence for the cuts can be defined. This accelerates the machine procedure.
Create prescoring as groovecut by imos CAMCenter	If the checkbox is activated, then a single saw cut is output.

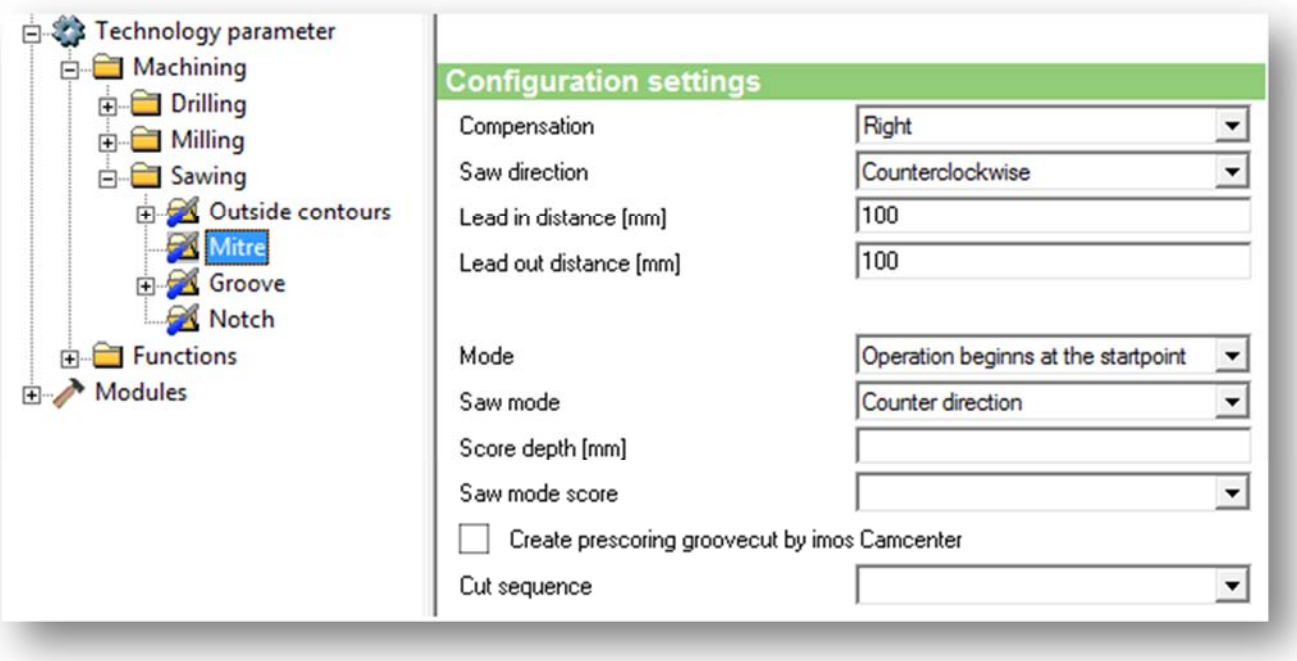
5.6.1.2 Saw Contour



Description	Explanation
Tool compensation	The compensation of the saw can be defined here.
Sawing direction	The sawing direction can be defined here.
Lead in distance	Here the lead in distance can be defined (the initial point is the starting point of the cut).
Lead out distance	Here the lead out distance can be defined (the initial point is the end point of the cut).
Mode	The plunge mode can be defined here.

Saw mode	The run of the saw can be defined here.
Depth for pre-scoring sawing [mm]	If the value greater than 0 der Wert, then a pre-scoring is initiated here.
Saw mode score	The plunge mode for the pre-scoring can be defined here.
Cut sequence	Here the cut sequence for the cuts can be defined. This accelerates the machine procedure.
Create prescoring as groovecut by imos CAMCenter	If the checkbox is activated, then a single saw cut is output.

5.6.2 Mitre

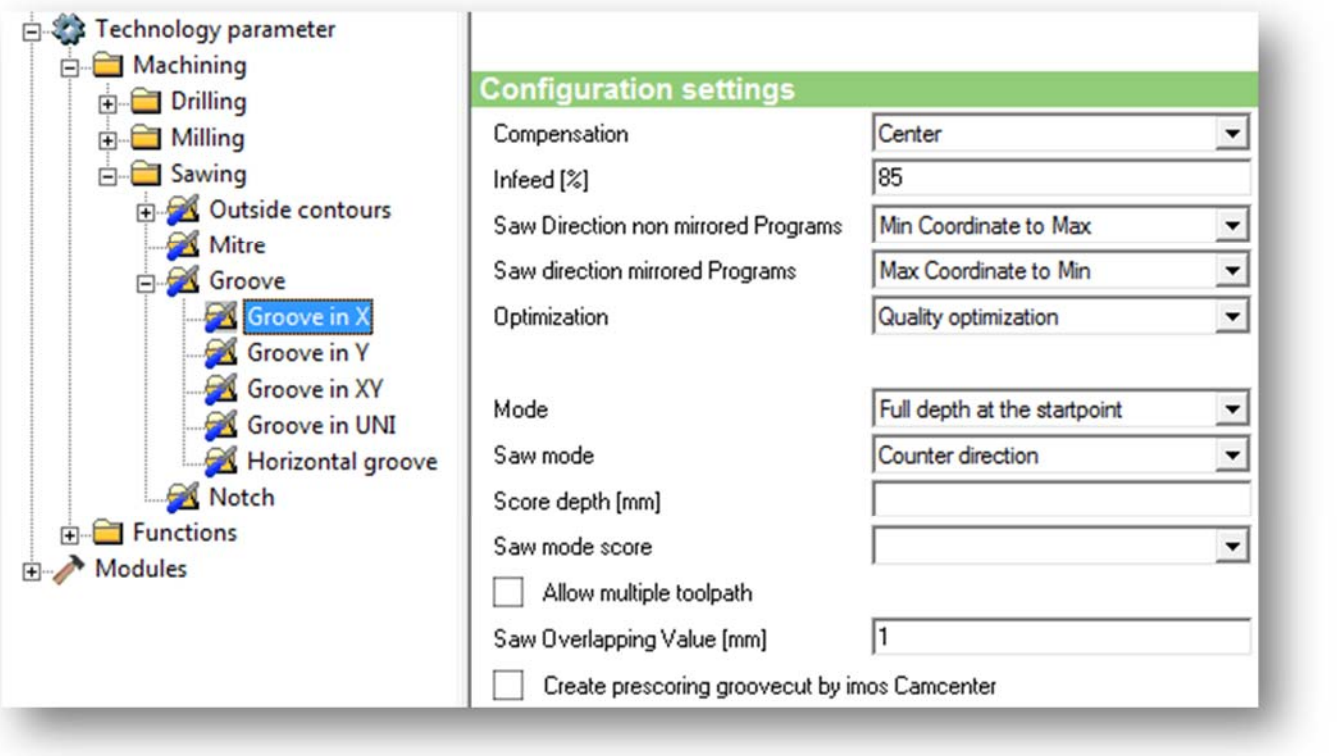


Description	Explanation
Tool compensation	The compensation of the saw can be defined here.
Sawing direction	The sawing direction can be defined here.
Lead in distance	Here the lead in distance can be defined (the initial point is the starting point of the cut).
Lead out distance	Here the lead out distance can be defined (the initial point is the end point of the cut).

Mode	The plunge mode can be defined here.
Saw mode	The run of the saw can be defined here.
Depth for pre-scoring sawing [mm]	If the value greater than 0 der Wert, then a pre-scoring is initiated here.
Saw mode score	The plunge mode for the pre-scoring can be defined here.
Cut sequence	Here the cut sequence for the cuts can be defined. This accelerates the machine procedure.
Create prescoring as groovecut by imos CAMCenter	If the checkbox is activated, then a single saw cut is output.

5.6.3 Grooves

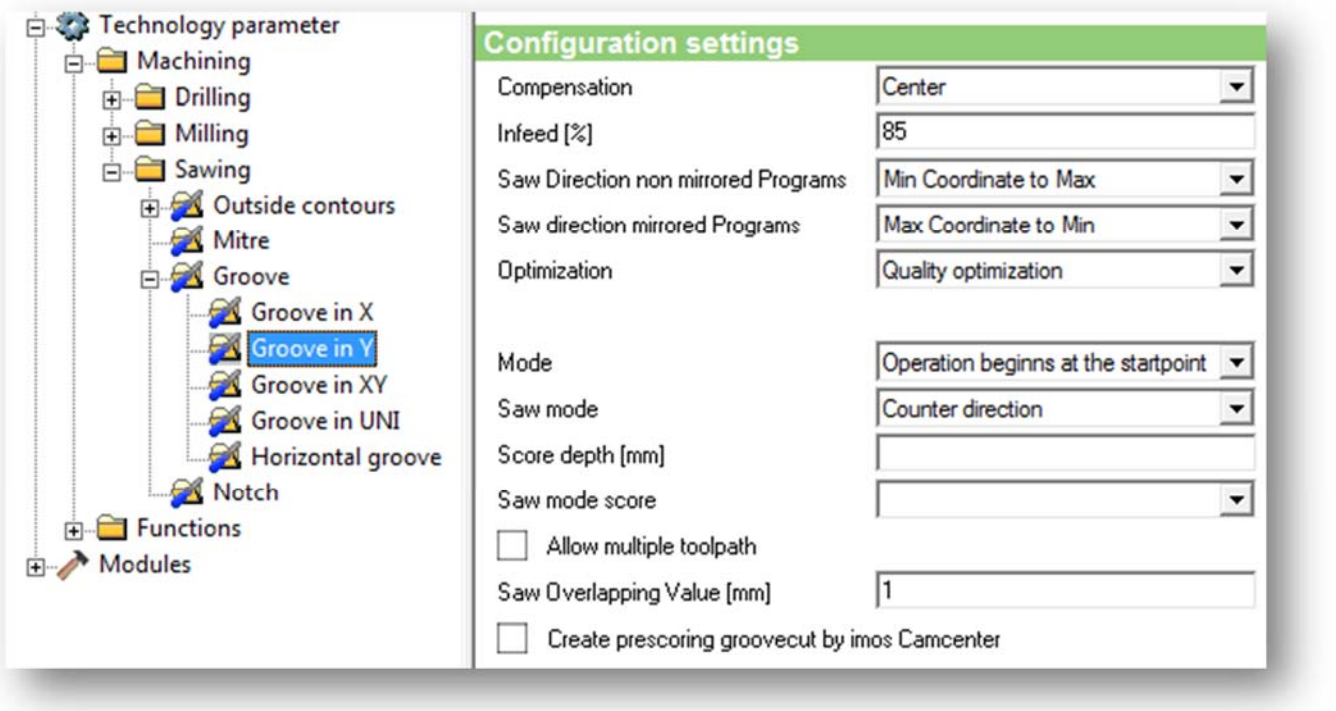
5.6.3.1 Grooves in X



Description	Explanation
Tool compensation	Here the compensation of the saw can be defined. By default this value is on **center**.
Infeed [%]	If the cut is output as a groove macro instead of a single cut, then this value is written in the macro.

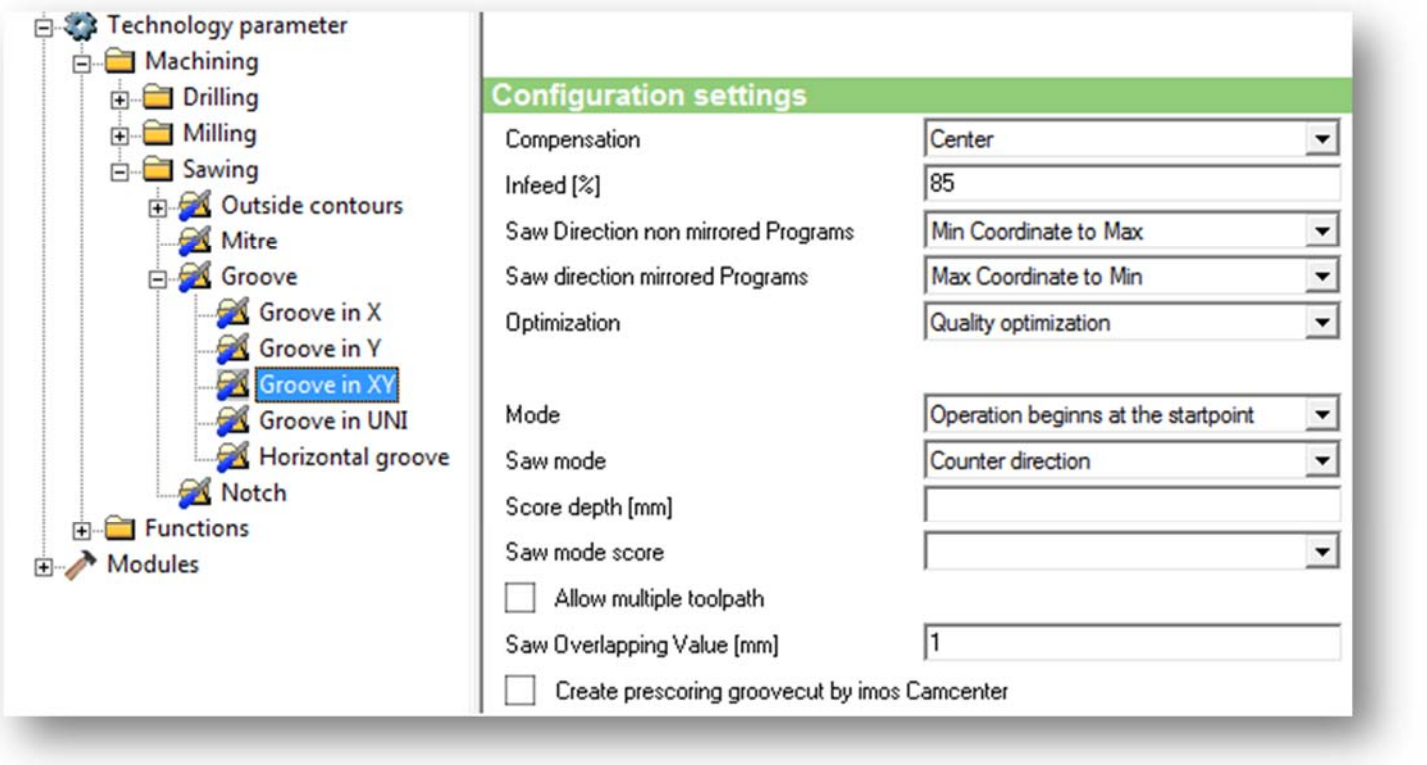
Saw direction non-mirrored programs	The start- and end point for non-mirrored parts can be defined here.
Saw direction mirrored programs	The start- and end point for mirrored parts can be defined here.
Optimization	Here it can be decided which optimization setting should be transferred.
Mode	The plunge mode can be defined here.
Saw mode	The run of the saw can be defined here.
Depth for pre-scoring sawing [mm]	If the value greater than 0 der Wert, then a pre-scoring is initiated here.
Saw mode score	The plunge mode for the pre-scoring can be defined here.
Allow multiple toolpath	With an activated checkbox the grooves are output as single cuts.
Groove overlap [mm]	The groove overlap can be entered in mm here. This is only evaluated if the checkbox **Allow multiple toolpath** is activated.
Create prescoring as groovecut by imos CAMCenter	If the checkbox is activated, then a single saw cut is output.

5.6.3.2 Grooves in Y



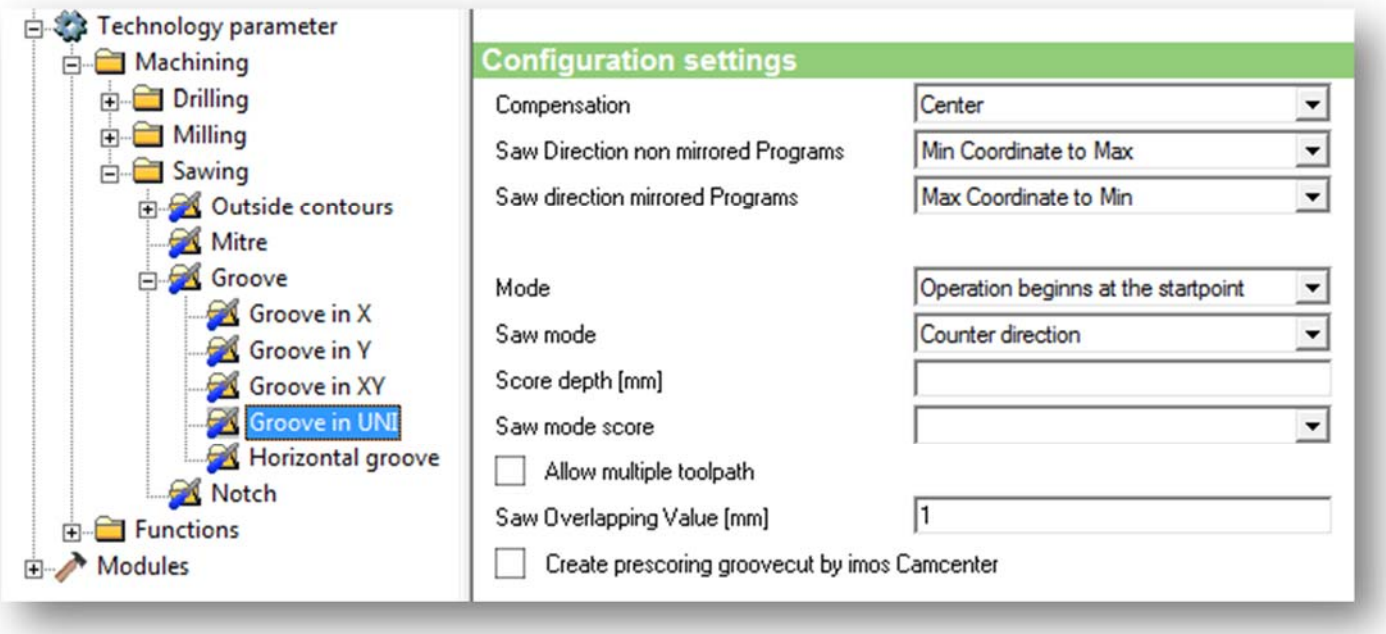
Read the description in chapter **5.6.3.1 Grooves in X**.

5.6.3.3 Grooves in XY



Read the description in chapter **5.6.3.1 Grooves in X**.

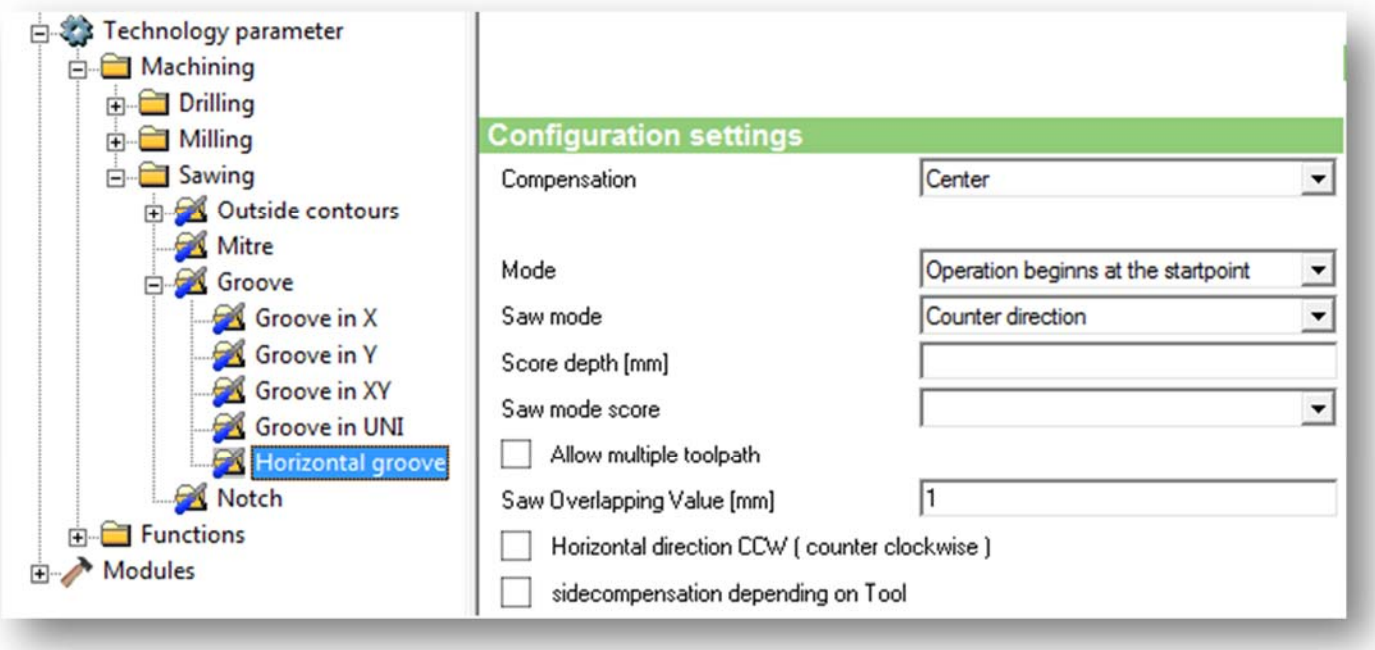
5.6.3.4 Uni Grooves



Description	Explanation
Tool compensation	Here the compensation of the saw can be defined. By default this value is always on **center**.
Infeed [%]	If the cut is output as a groove macro instead of a single cut, then this value is written in the macro.
Saw direction non-mirrored programs	The start- and end point for non-mirrored parts can be defined here.
Saw direction mirrored programs	The start- and end point for mirrored parts can be defined here.
Mode	The plunge mode can be defined here.

Saw mode	The run of the saw can be defined here.
Depth for pre-scoring sawing [mm]	If the value greater than 0 der Wert, then a pre-scoring is initiated here.
Saw mode score	The plunge mode for the pre-scoring can be defined here.
Allow multiple toolpath	With an activated checkbox the grooves are output as single cuts.
Groove overlap [mm]	The groove overlap can be entered in mm here. This is only evaluated if the checkbox **Allow multiple toolpath** is activated.
Create prescoring as groovecut by imos CAMCenter	If the checkbox is activated, then a single saw cut is output.

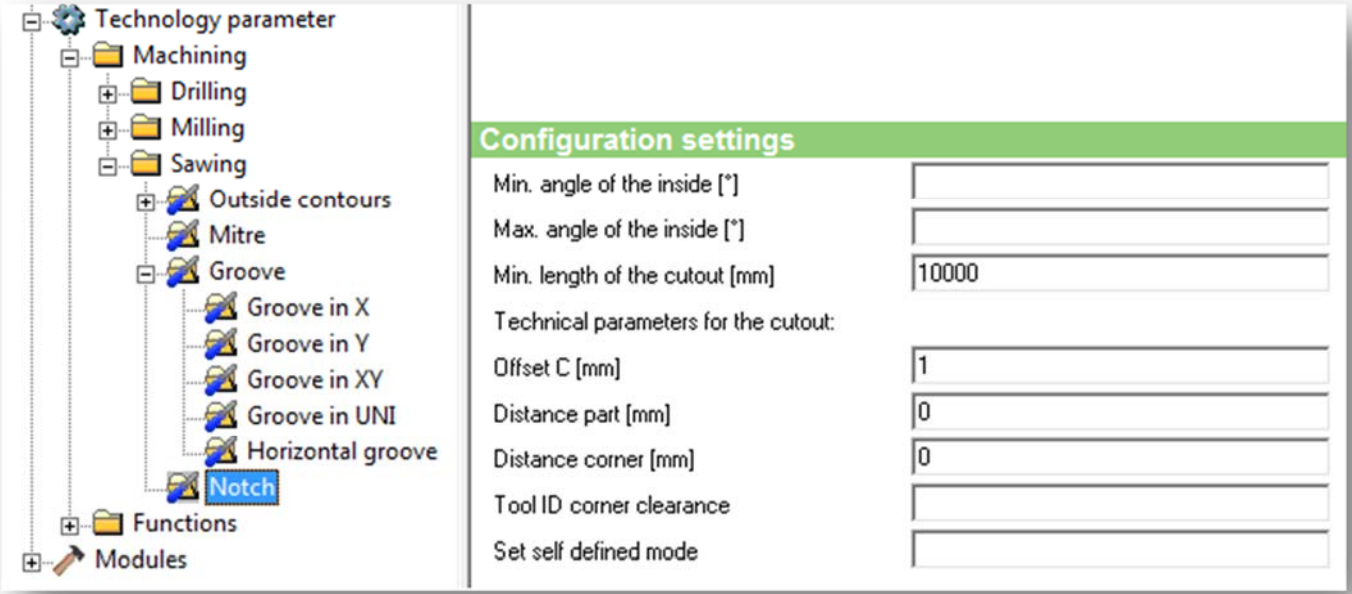
5.6.3.5 Horizontal grooves



Description	Explanation
Tool compensation	By default this value is always on **center**.
Mode	The plunge mode can be defined here.
Saw mode	The run of the saw can be defined here.
Depth for pre-scoring sawing [mm]	If the value greater than 0 der Wert, then a pre-scoring is initiated here.
Saw mode score	The plunge mode for the pre-scoring can be defined here.
Allow multiple toolpath	With an activated checkbox the grooves are output as single cuts.
Groove overlap [mm]	The groove overlap can be entered in mm here. This is only evaluated if the checkbox **Allow multiple toolpath** is activated.
Horizontal direction CCW	With an activated checkbox the direction is rotated.
Side compensation depending on tool	If the checkbox is activated, then the checkbox in Wop Program is activated as well.

5.6.4 Corner Clearance

The corner clearance can be applied for part outer edges.



Description	Explanation
Min. angle of the inside	The minimal angle of the inside can be defined in degree here.
Max. angle of the inside	The maximal angle of the inside can be defined in degree here.
Min. length of the cut [mm]	The minimal length of the cut can be defined here.
Offset C [mm]	The offset for the C angle can be defined here.
Distance part [mm]	The distance to the length side can be defined here.
Distance corner [mm]	The clearance distance to the corner can be defined here.
Tool ID corner clearance	The tool ID can be defined here.
Define own mode	If a mode is defined here, then this is written in the MPR-File.