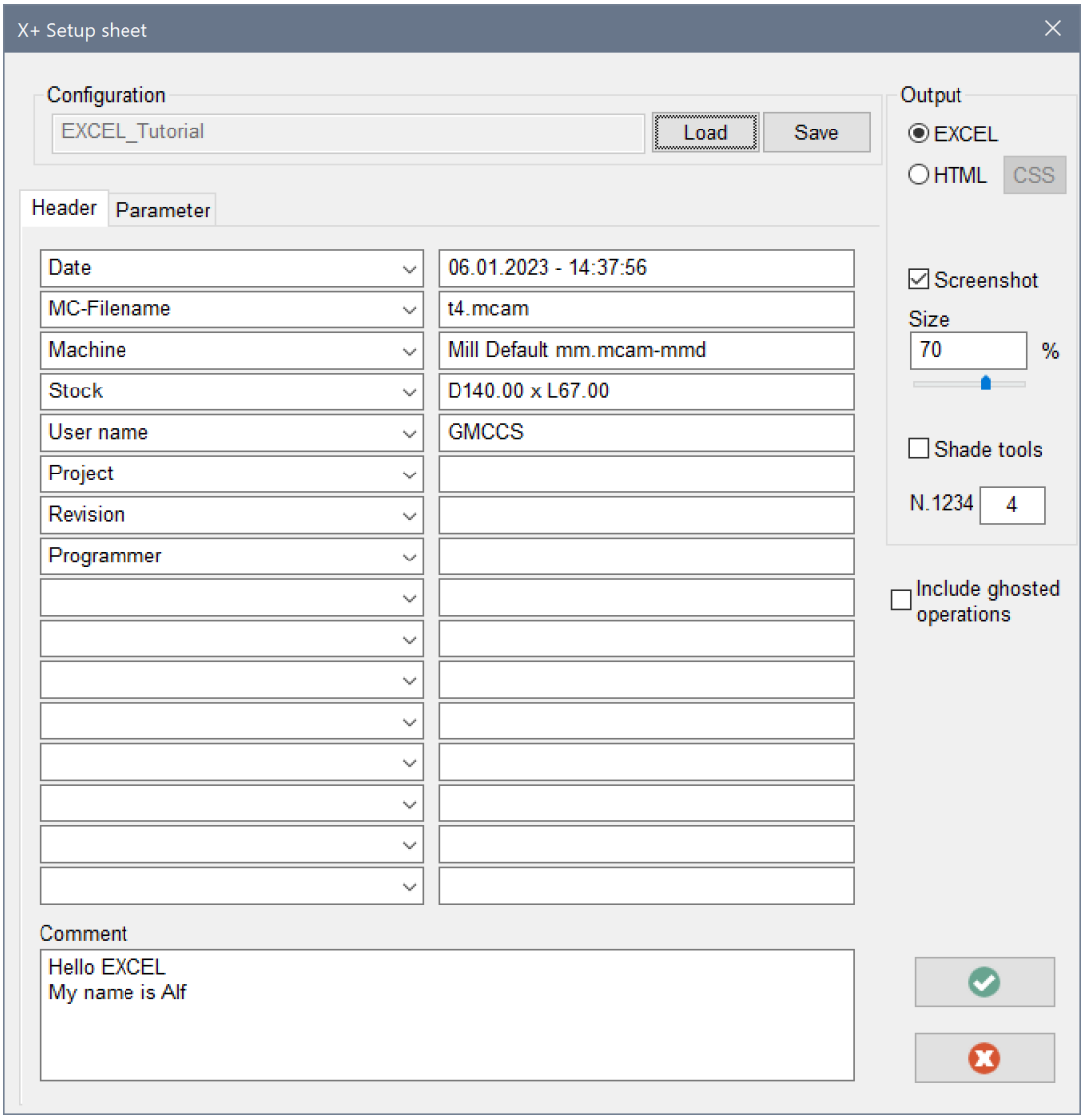
How to *(X+ EXCEL reports)*

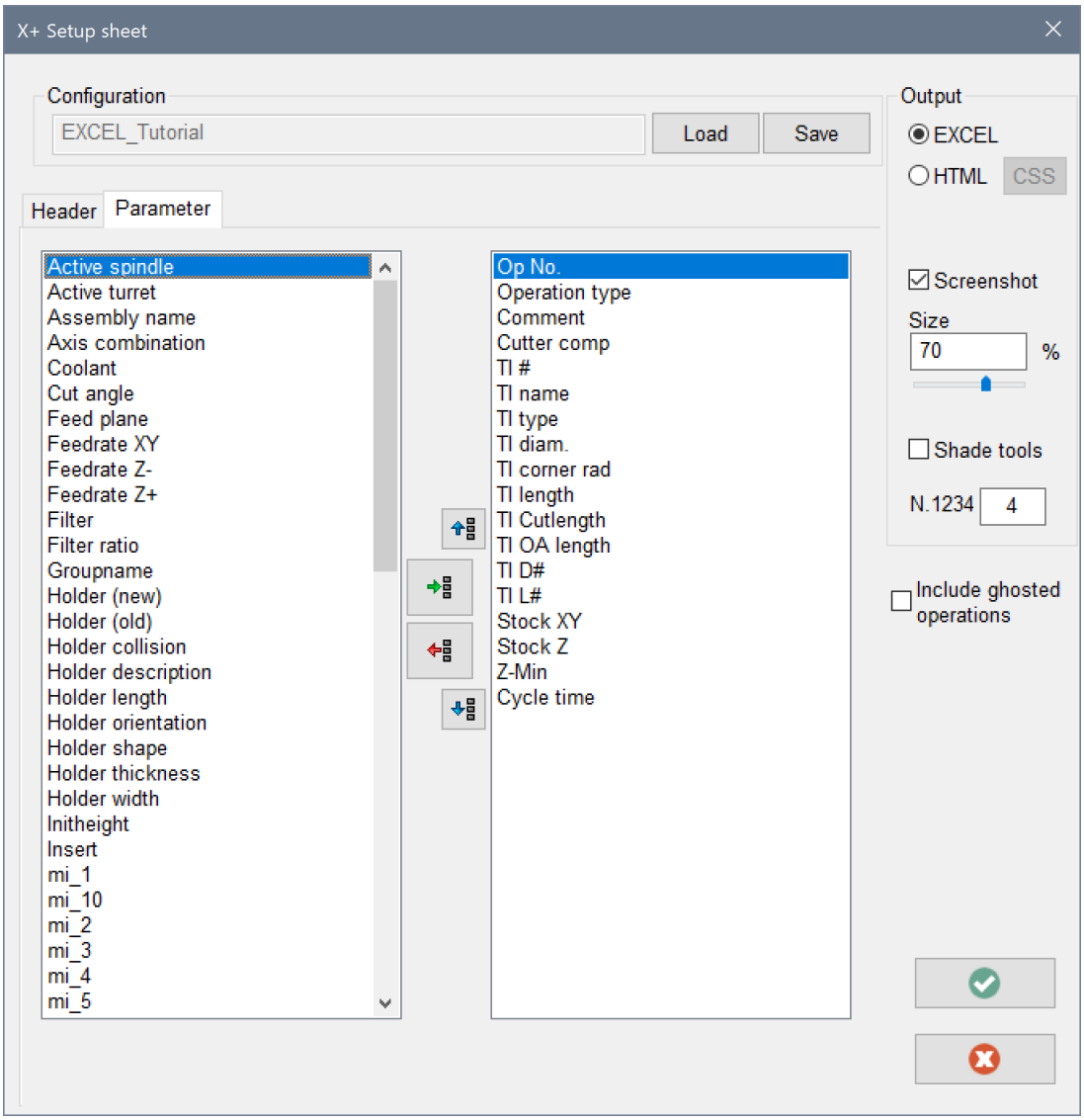
In this tutorial we will create an EXCEL template for X+ from scratch.

Preparation

1. Load a Mastercam file with multiple operations using multiple tools
2. Launch the X+ setup sheet function
3. For this tutorial setup the dialog header as below



4. Setup the parameter as below

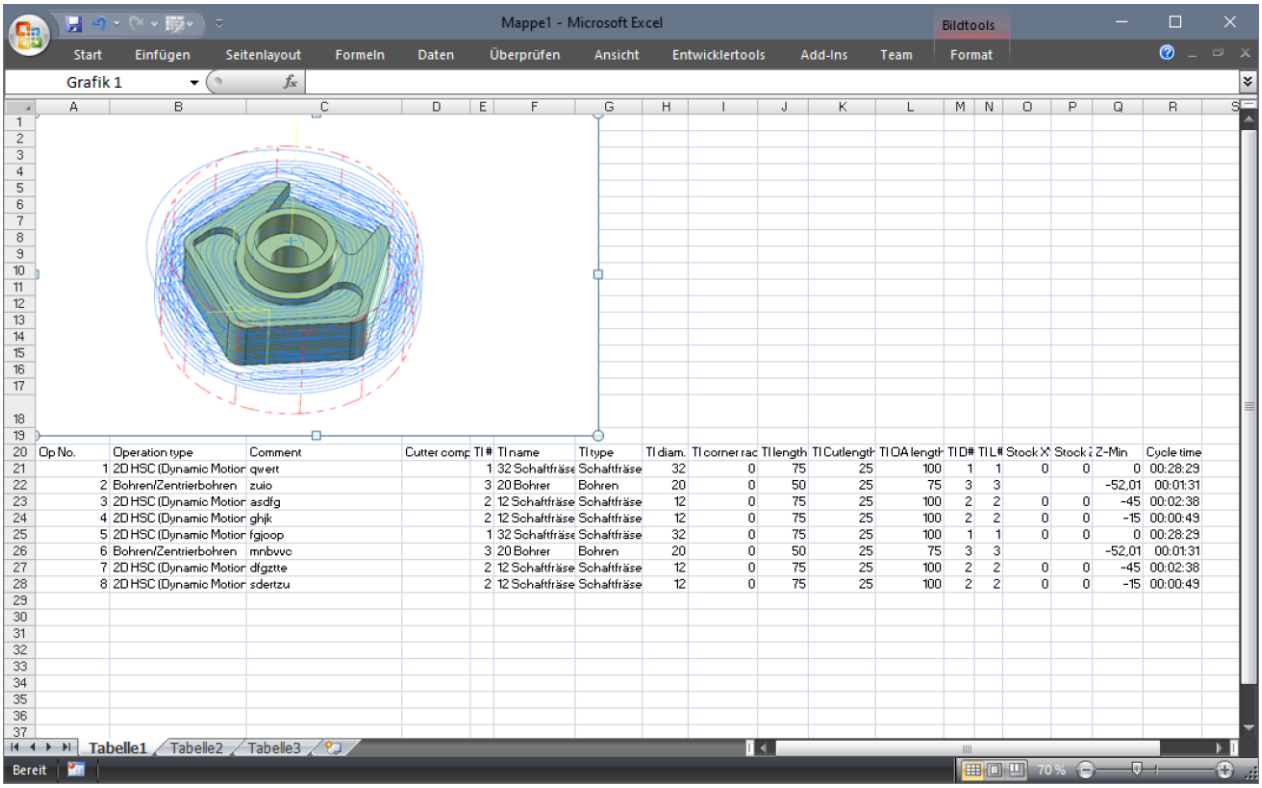


5. Save the settings as a new configuration (***EXCEL_Tutorial***)
   Do not hit the OK button yet!
6. Open Windows-Explorer and navigate to:
   C:\Users\Public\Documents\X+\templates\setup sheets\xlt
7. Delete ***EXCEL_Tutorial.xlt(m)*** files if present.
   We want to create an EXCEL-Template from scratch!
8. Close Windows-Explorer
9. Now press the ***OK*** button in the X+ dialog
10. Save the EXCEL file as ***EXCEL_Tutorial*** on your desktop.
    Save it as **XLSM** file because we are going to add VBA macros!

Now make changes to the EXCEL file

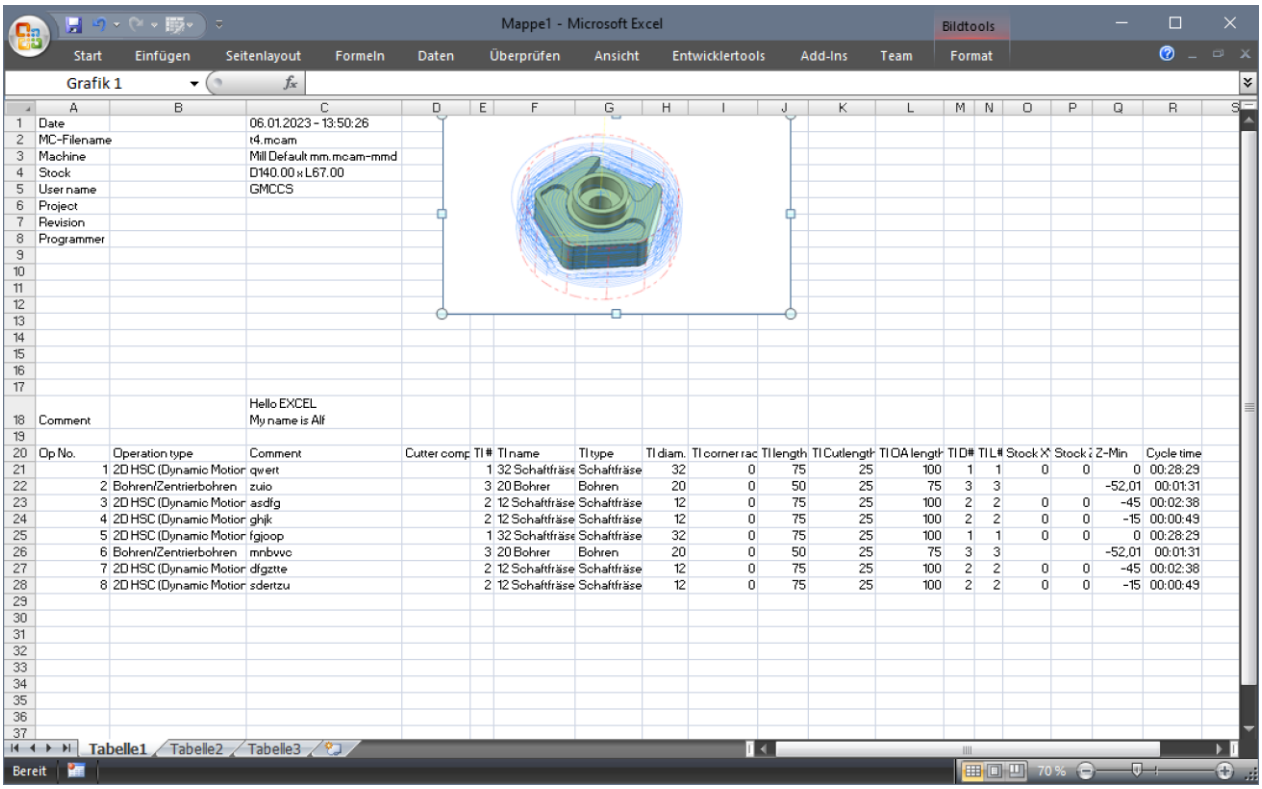
The output is without any formatting.

This is the raw output to an EXCEL file.



Op No.	Operation type	Comment	Cutter comp	Tl #	Tl name	Tl type	Tl diam.	Tl corner rac	Tl length	Tl Cutlength	Tl OA length	Tl D#	Tl L#	Stock X	Stock Z	Z-Min	Cycle time
1	2D HSC (Dynamic Motion	qwert		1	32 Schaftfräse	Schaftfräse	32	0	75	25	100	1	1	0	0	0	00:28:29
2	Bohren/Zentrierbohren	zuio		3	20 Bohrer	Bohren	20	0	50	25	75	3	3			-52,01	00:01:31
3	2D HSC (Dynamic Motion	asdfg		2	12 Schaftfräse	Schaftfräse	12	0	75	25	100	2	2	0	0	-45	00:02:38
4	2D HSC (Dynamic Motion	ghjk		2	12 Schaftfräse	Schaftfräse	12	0	75	25	100	2	2	0	0	-15	00:00:49
5	2D HSC (Dynamic Motion	fgjoop		1	32 Schaftfräse	Schaftfräse	32	0	75	25	100	1	1	0	0	0	00:28:29
6	Bohren/Zentrierbohren	mnbvvc		3	20 Bohrer	Bohren	20	0	50	25	75	3	3			-52,01	00:01:31
7	2D HSC (Dynamic Motion	dfgztte		2	12 Schaftfräse	Schaftfräse	12	0	75	25	100	2	2	0	0	-45	00:02:38
8	2D HSC (Dynamic Motion	sdertzu		2	12 Schaftfräse	Schaftfräse	12	0	75	25	100	2	2	0	0	-15	00:00:49

The screenshot usually hides some information. So let's resize it and move it aside *(Hold shift while resizing)*.



When creating an EXCEL report, X+ always uses the **active** sheet for the output.

If there is no EXCEL template, as in our case, it is always the 1st sheet!

However, if we use an EXCEL template the active sheet is the sheet that was active when the template was saved! Keep that in mind!

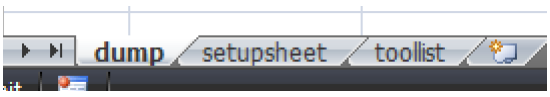
Rename the sheets

Let's rename the sheets first.

1st sheet as ***dump***

2nd sheet as ***setupsheet***

3rd sheet as ***toollist***



Save the file (Ctrl + s)

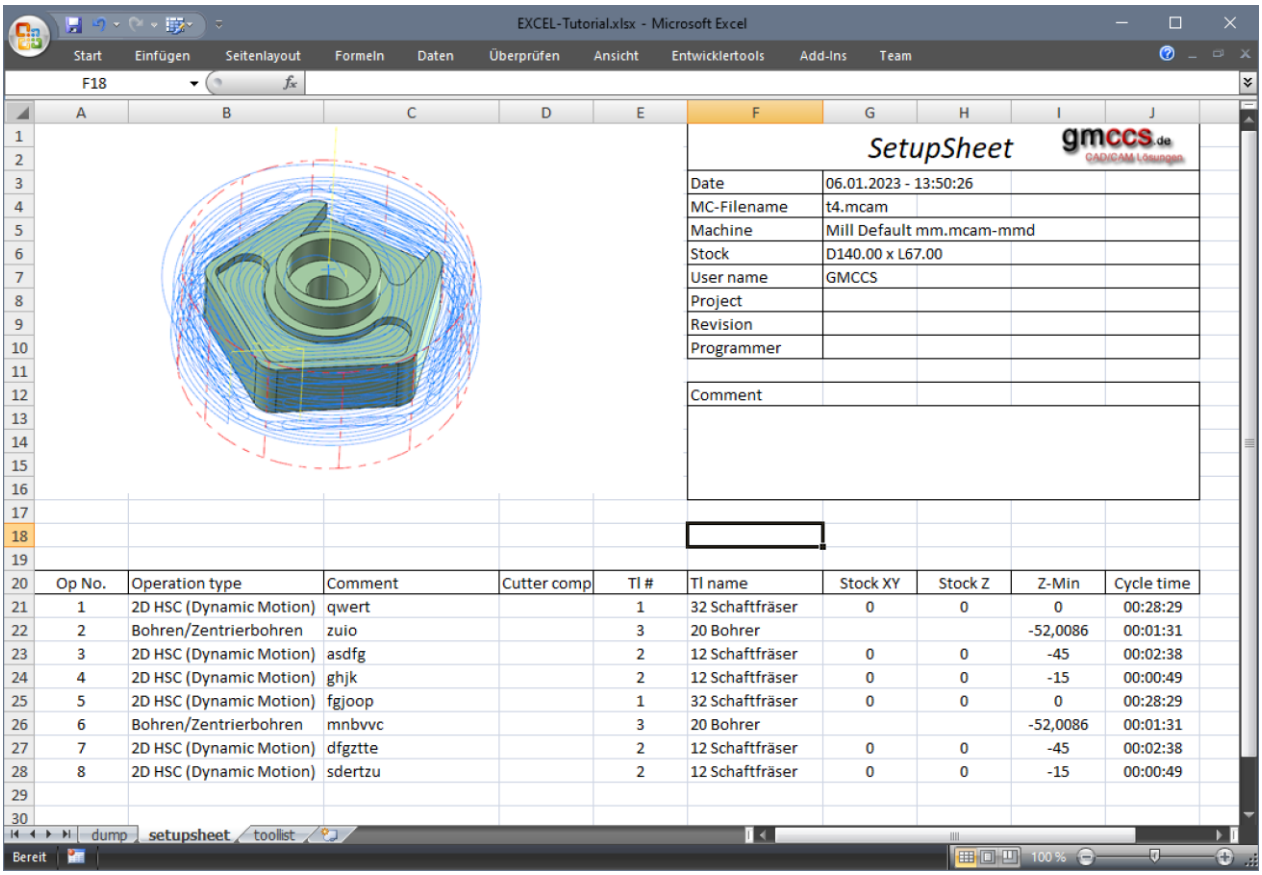
Create the layout for the *setup sheet*

For the layout copy some cells and the screenshot from the dump to the setup sheet.

Do some formatting to the cells as needed (font, size, alignment, color, etc.),

Resize the screenshot and insert a logo.

In this tutorial, I came up with this.



Op No.	Operation type	Comment	Cutter comp	Tl #	Tl name	Stock XY	Stock Z	Z-Min	Cycle time
1	2D HSC (Dynamic Motion)	qwert		1	32 Schaftfräser	0	0	0	00:28:29
2	Bohren/Zentrierbohren	zuio		3	20 Bohrer			-52,0086	00:01:31
3	2D HSC (Dynamic Motion)	asdfg		2	12 Schaftfräser	0	0	-45	00:02:38
4	2D HSC (Dynamic Motion)	ghjk		2	12 Schaftfräser	0	0	-15	00:00:49
5	2D HSC (Dynamic Motion)	fgjoop		1	32 Schaftfräser	0	0	0	00:28:29
6	Bohren/Zentrierbohren	mnbvvc		3	20 Bohrer			-52,0086	00:01:31
7	2D HSC (Dynamic Motion)	dfgztte		2	12 Schaftfräser	0	0	-45	00:02:38
8	2D HSC (Dynamic Motion)	sdertzu		2	12 Schaftfräser	0	0	-15	00:00:49

At this point we are ready to set some references!

For example **G3** refers to **dump!C1 , G4** refers to **dump!C2….**etc. Set the references as below.

SetupSheet	
Date	=dump!C1
MC-Filename	=dump!C2
Machine	=dump!C3
Stock	=dump!C4
User name	=dump!C5
Project	=dump!C6
Revision	=dump!C7
Programmer	=dump!C8
Comment	
=dump!C18	

reference view
(Ctrl + #)

Save the file (Ctrl + s).

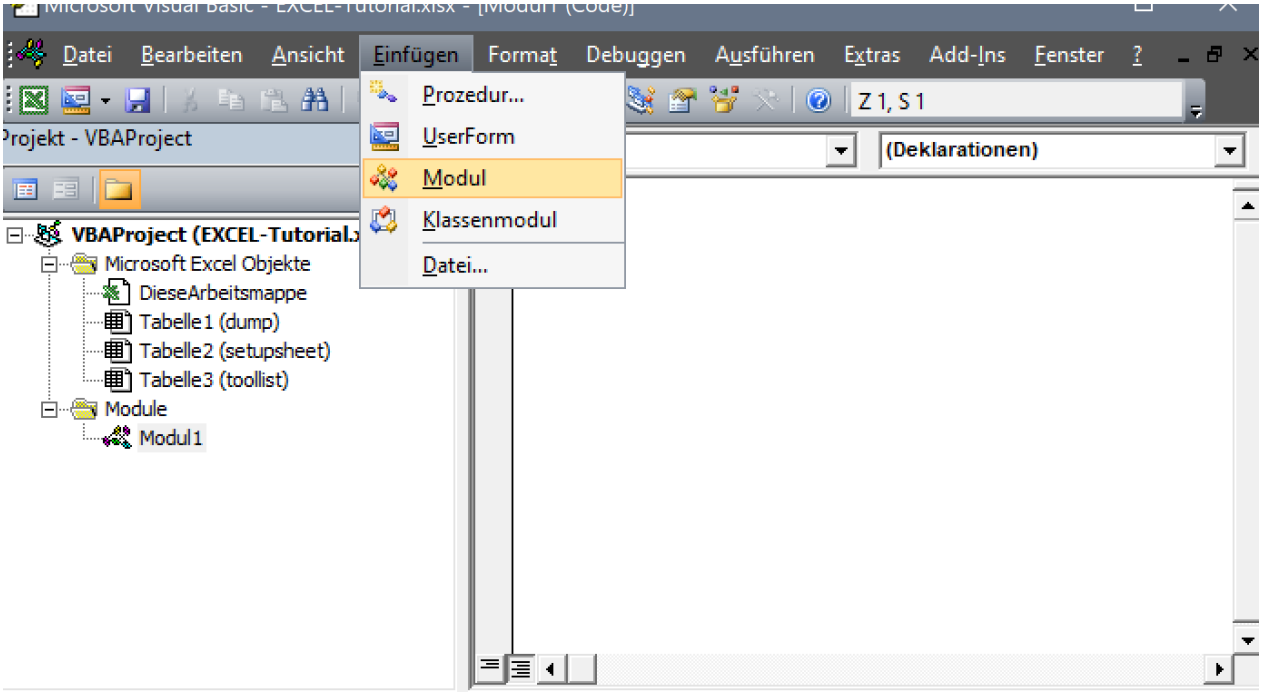
Use VBA to copy and paste cells from dump to setupsheet

Unfortunately the operation list isn't static. The length of the list depends on the number of operations and will probably change with each Mastercam part. Therefore we can't use references here.

Instead of using references we will automate this process with the help of VBA.

Press ***Alt + F11*** to open the Visual Basic editor. Resize the editor to see your EXCEL workbook as well.

From the menu select ***Insert*** then ***Module.***

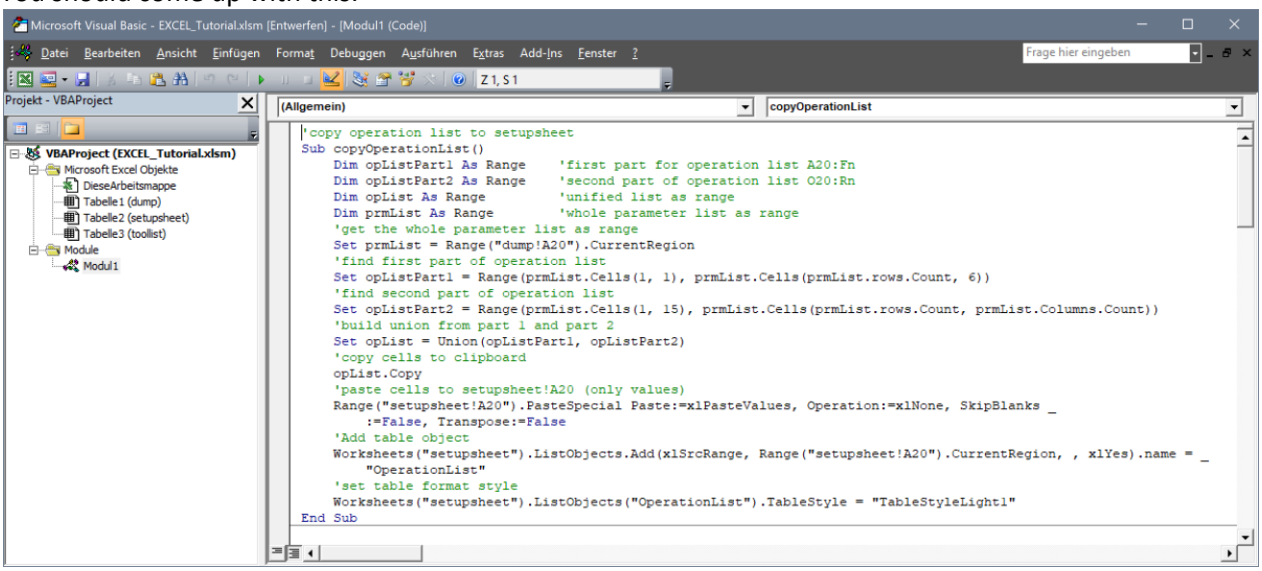


Then on the right window type in or copy and paste the following code:

```
Sub copyOperationList()
   Dim opListPart1 As Range    'first part for operation list A20:Fn
   Dim opListPart2 As Range    'second part of operation list O20:Rn
   Dim opList As Range         'unified list as range
   Dim prmList As Range        'whole parameter list as range
   'get the whole parameter list as range
   Set prmList = Range("dump!A20").CurrentRegion
   'find first part of operation list
   Set opListPart1 = Range(prmList.Cells(1, 1), prmList.Cells(prmList.rows.Count, 6))
   'find second part of operation list
   Set opListPart2 = Range(prmList.Cells(1, 15), prmList.Cells(prmList.rows.Count, prmList.Columns.Count))
   'build union from part 1 and part 2
   Set opList = Union(opListPart1, opListPart2)
   'copy cells to clipboard
   opList.Copy
   'paste cells to setupsheet!A20 (only values)
```

```
    Range("setupsheet!A20").PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
        :=False, Transpose:=False
    'Add table object
    Worksheets("setupsheet").ListObjects.Add(xlSrcRange, Range("setupsheet!A20").CurrentRegion, , xlYes).Name =
_
        "OperationList"
    'set table format style
    Worksheets("setupsheet").ListObjects("OperationList").TableStyle = "TableStyleLight1"
End Sub
```

You should come up with this.



Save the file (Ctrl + s).

Run the macro

Switch to the EXCEL workbook.

Select and delete the entire operation list from the setup sheet .

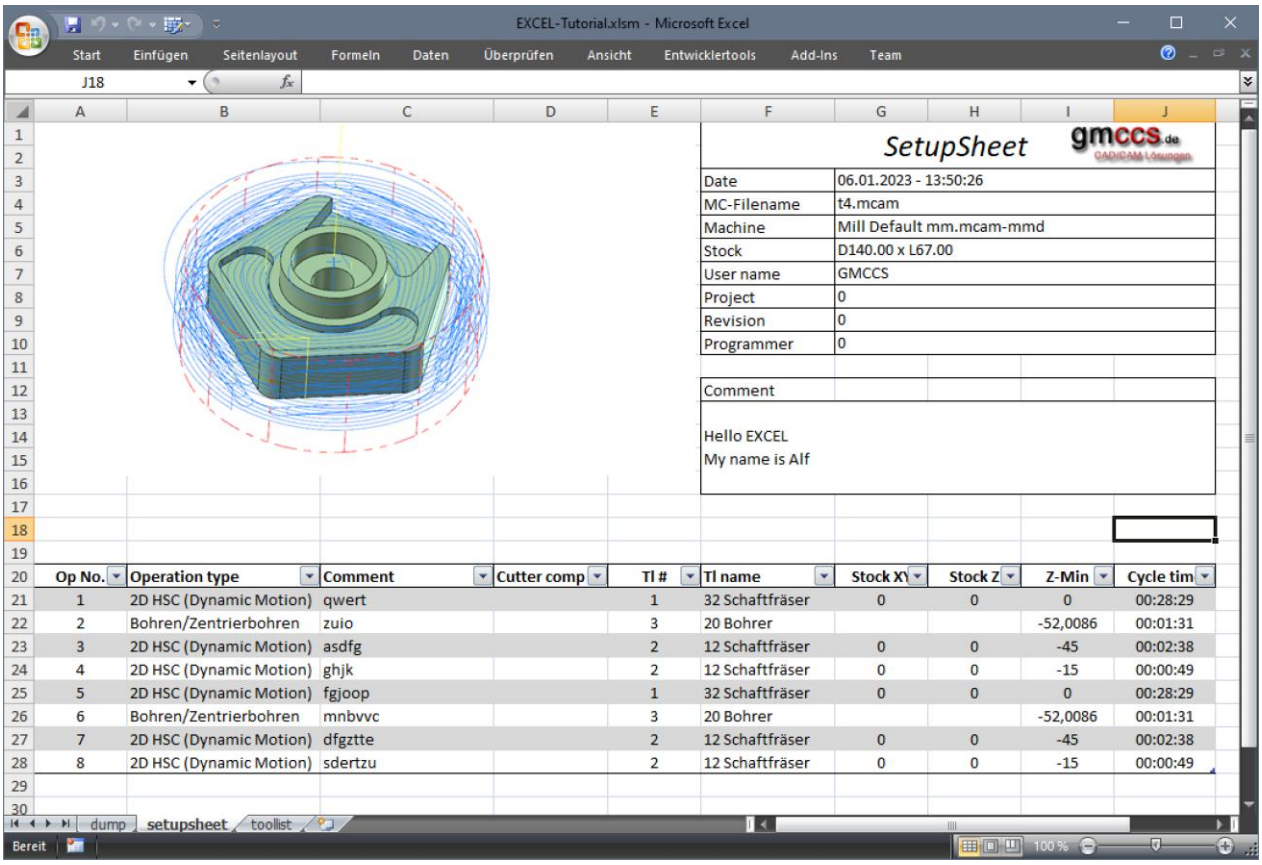
Back in the Visual Basic editor, click in the code list. The cursor must be inside the macro!

Then press ***F5*** to run the macro.

Tip:

Recording macros is always a good way to find the right EXCEL commands. I do this regularly.

If everything went well, you should get something like this.



Use VBA to copy, paste and resize the screenshot

The screenshot should also be automatically copied to the setup sheet, scaled and positioned.

Copy and paste the following two macros into the Visual Basic editor.

```
'helper macro to fit a shape object into a range
Sub fit(ByRef pic As Shape, ByRef r As Range)
   Dim PicWtoHRatio As Single
   Dim CellWtoHRatio As Single
   PicWtoHRatio = pic.Width / pic.Height
   CellWtoHRatio = r.Width / r.Height
   If PicWtoHRatio / CellWtoHRatio > 1 Then
      pic.Width = r.Width
      pic.Height = pic.Width / PicWtoHRatio
   Else
      pic.Height = r.Height
      pic.Width = pic.Height * PicWtoHRatio
   End If
   pic.Top = r.Top + r.Height / 2 - pic.Height / 2 'vertical center align
   pic.Left = r.Left + r.Width / 2 - pic.Width / 2 'horizontal center align
End Sub

'copy the screenshot
Sub copyScreenshot()
   Dim screenshot As Shape 'the screenshot
   Set screenshot = Worksheets("dump").Shapes(1) 'get the screenshot
```

```
  If Not IsNull(screenshot) Then
    'copy screenshot to clipboard
    screenshot.Copy
    'paste to setupsheet
    Worksheets("setupsheet").Paste Destination:=Worksheets("setupsheet").Range("A1")
    'get the copied screenshot
    Set screenshot = Worksheets("setupsheet").Shapes(Worksheets("setupsheet").Shapes.Count)
    'fit the screenshot to A1:E16
    fit screenshot, Worksheets("setupsheet").Range("A1:E16")
  End If
End Sub
```

Test the macros

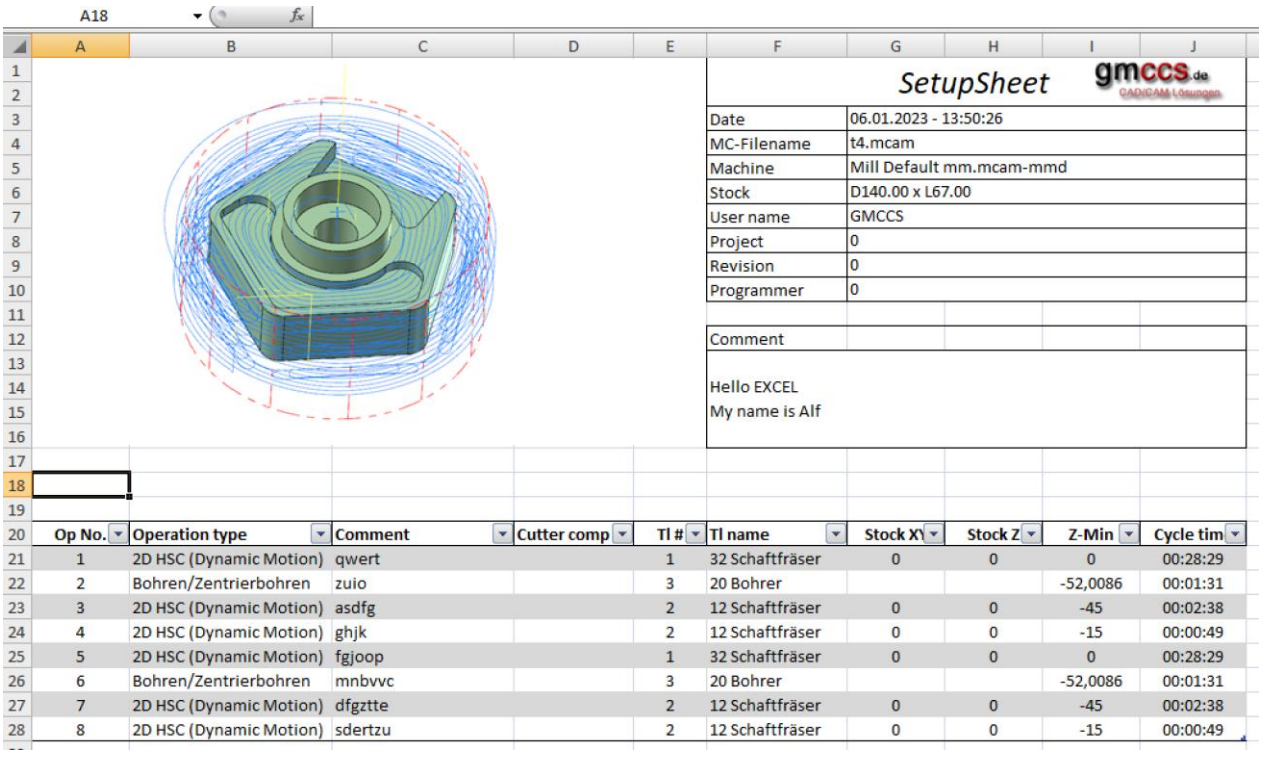
Switch to the EXCEL workbook.

Select and delete the screenshot from the setup sheet .

Back in the Visual Basic editor, click in the code list. The cursor must be inside the macro **copyScreenshot()!**

Then press ***F5*** to run the macro.

If everything went well, the screenshot is perfectly copied, scaled and centered to the range A1:E16.



SetupSheet

Date	06.01.2023 - 13:50:26
MC-Filename	t4.mcam
Machine	Mill Default mm.mcam-mmd
Stock	D140.00 x L67.00
User name	GMCCS
Project	0
Revision	0
Programmer	0

Comment
Hello EXCEL My name is Alf

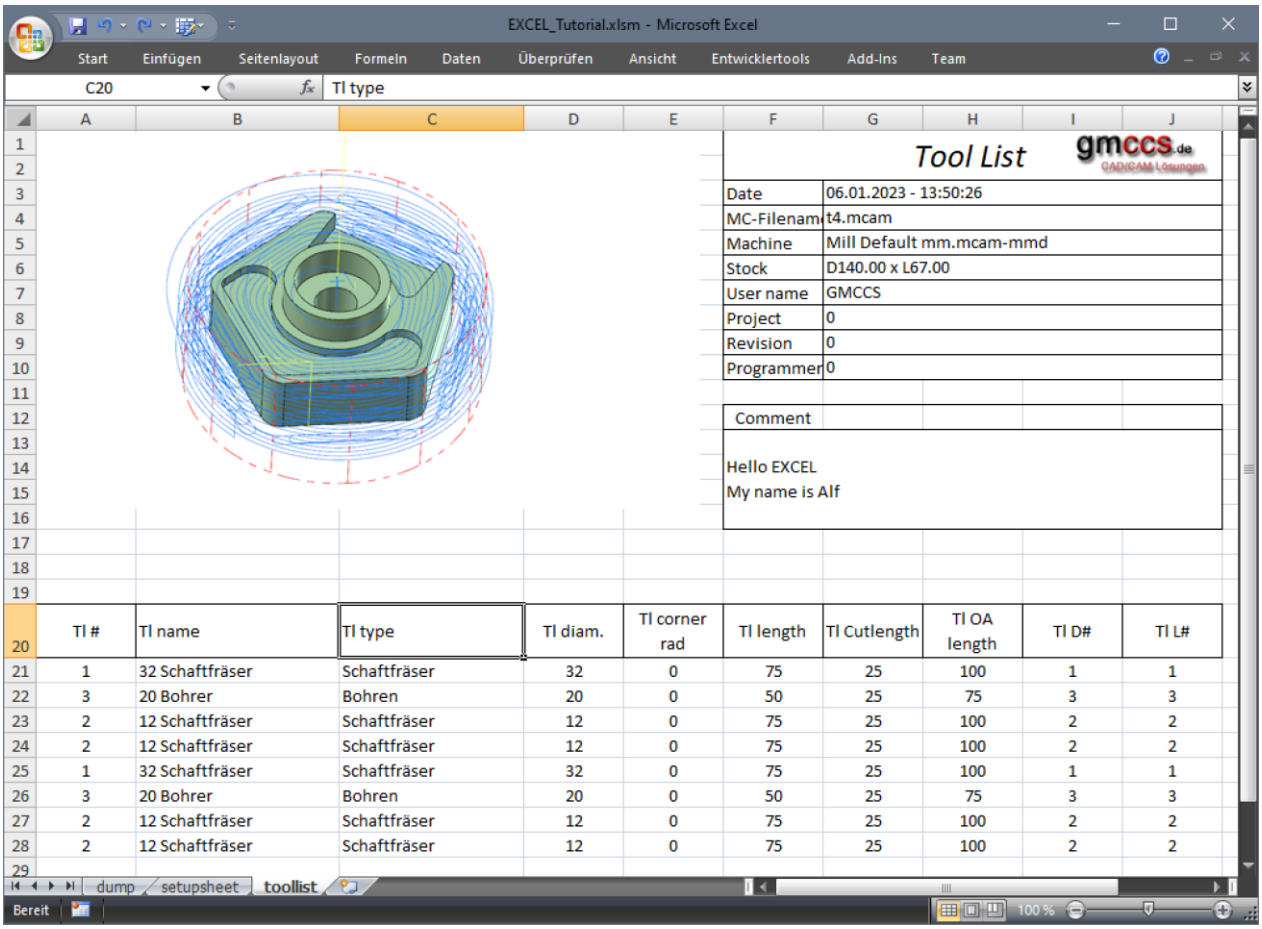
Op No.	Operation type	Comment	Cutter comp	Tl #	Tl name	Stock XY	Stock Z	Z-Min	Cycle tim
1	2D HSC (Dynamic Motion)	qwert		1	32 Schaftfräser	0	0	0	00:28:29
2	Bohren/Zentrierbohren	zuio		3	20 Bohrer			-52,0086	00:01:31
3	2D HSC (Dynamic Motion)	asdfg		2	12 Schaftfräser	0	0	-45	00:02:38
4	2D HSC (Dynamic Motion)	ghjk		2	12 Schaftfräser	0	0	-15	00:00:49
5	2D HSC (Dynamic Motion)	fgjoop		1	32 Schaftfräser	0	0	0	00:28:29
6	Bohren/Zentrierbohren	mnbvvc		3	20 Bohrer			-52,0086	00:01:31
7	2D HSC (Dynamic Motion)	dfgztte		2	12 Schaftfräser	0	0	-45	00:02:38
8	2D HSC (Dynamic Motion)	sdertzu		2	12 Schaftfräser	0	0	-15	00:00:49

We are done with the setup sheet.

Now let's create the layout for the tool list

For simplicity, copy the header from the setup sheet and change only the title to "Tool List".
Then copy all cells for the tool list from dump and set the formatting as needed.

In this tutorial, I came up with this.



Create the macros for the tool list

Copying the tool list via VBA is almost the same as for the setup sheet, so we can copy and modify the code a little. However, we also want to sort the tools and delete duplicates.

Copy and paste the code below to the Visual Basic editor.

```
'sort the tools by number
Sub sortTools()
    ActiveWorkbook.Worksheets("toollist").ListObjects("ToolList").Sort.SortFields. _
        Clear
    ActiveWorkbook.Worksheets("toollist").ListObjects("ToolList").Sort.SortFields. _
        Add Key:=Range("ToolList[[#All],[Tl '#]]"), SortOn:=xlSortOnValues, Order _
        :=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("toollist").ListObjects("ToolList").Sort
        .Header = xlYes
        .MatchCase = False
```

```
      .Orientation = xlTopToBottom
      .SortMethod = xlPinYin
      .Apply
   End With
End Sub

'copy the tool list to toollist
Sub copyToolList()
   Dim toolList As Range     'tool list cells
   Dim prmList As Range      'whole parameter list as range
   'get the whole parameter list as range
   Set prmList = Range("dump!A20").CurrentRegion
   'get the tool list
   Set toolList = Range(prmList.Cells(1, 5), prmList.Cells(prmList.rows.Count, 14))
   toolList.Copy
   'paste cells to setupsheet!A20 (only values)
   Range("toollist!A20").PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
      :=False, Transpose:=False

   'delete duplicate tools
   Worksheets("toollist").Range("A20").CurrentRegion.RemoveDuplicates Columns:=1, Header:=  xlYes

   'Add table object
   Worksheets("toollist").ListObjects.Add(xlSrcRange, Range("toollist!A20").CurrentRegion, , xlYes).name = _
      "ToolList"

   'set table format style
   Worksheets("toollist").ListObjects("ToolList").TableStyle = "TableStyleLight1"

   'sort the tools by number
   sortTools
End Sub
```

Time to create a main macro

To execute all the macros one by one, we create a main macro and make the calls from there.

We name it **format_sheet()** , because X+ calls this macro if it exists in the template. So this is the entry point!
Copy and paste this macro to the Visual Basic editor.

```
'format sheet
Sub format_sheet()
   'create the setup sheet
   copyOperationList
   copyScreenshot ActiveWorkbook.Worksheets("setupsheet")
   'create the tool list
   copyToolList
   copyScreenshot ActiveWorkbook.Worksheets("toollist")
End Sub
```

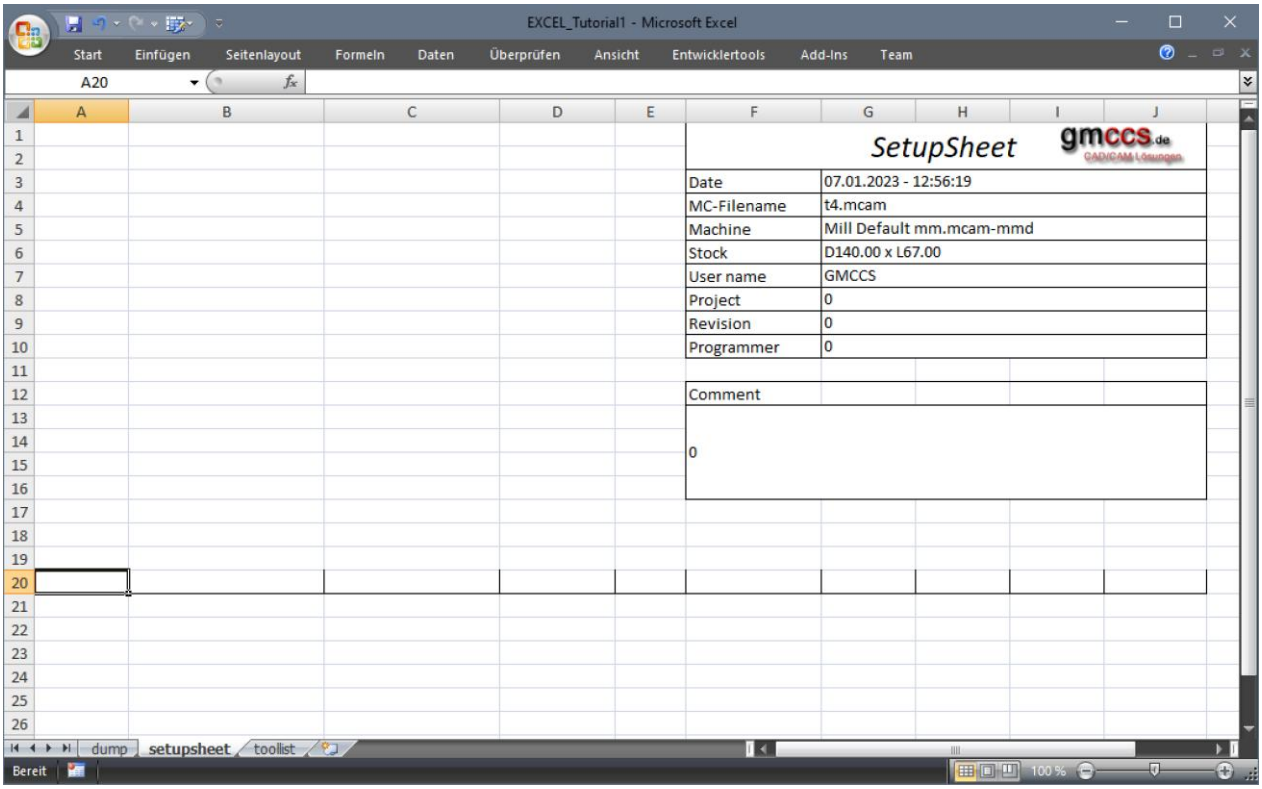
We also need to make some changes to our **copyScreenshot()** macro. We add a parameter for the target sheet. So we can reuse the code for the tool list.

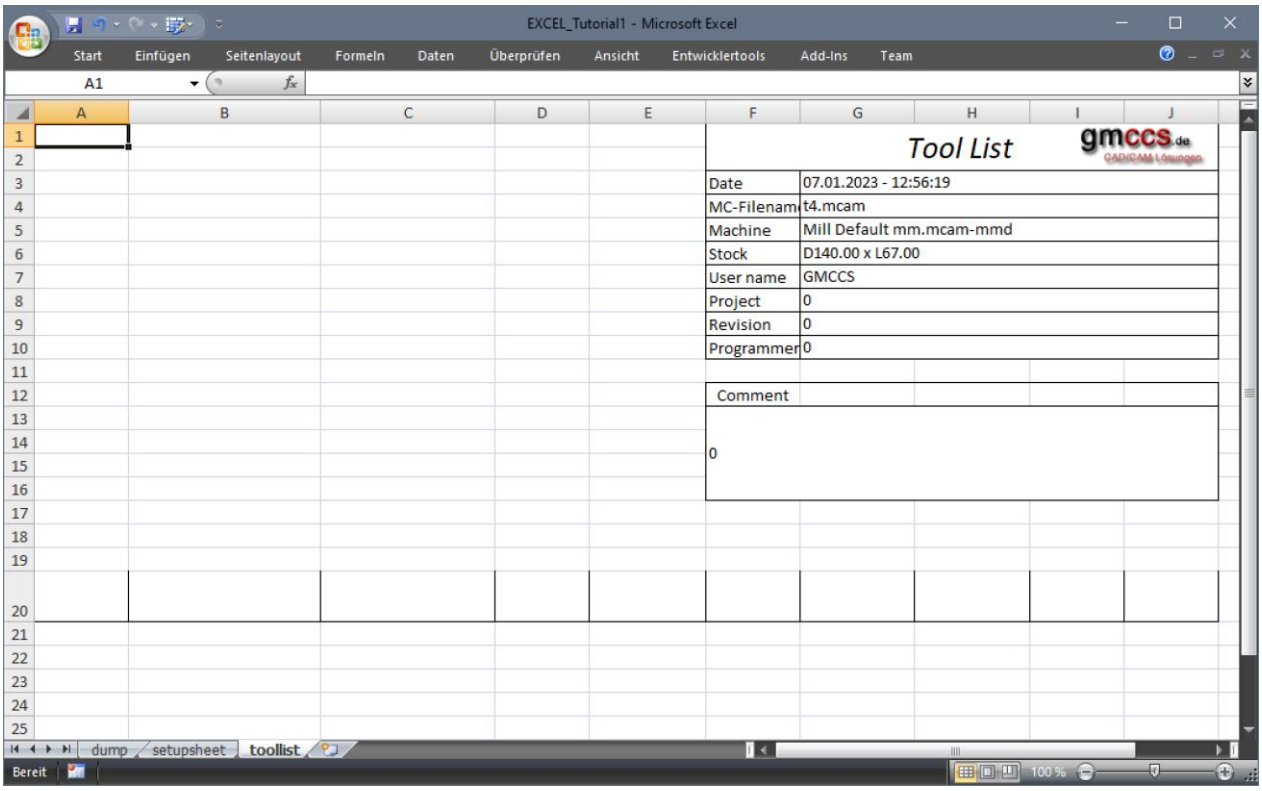
```
'copy the screenshot (modified)
Sub copyScreenshot(ByRef ws As Worksheet)
   Dim screenshot As Shape 'the screenshot
   Set screenshot = ActiveWorkbook.Worksheets("dump").Shapes(1) 'get the screenshot
   If Not IsNull(screenshot) Then
      'copy screenshot to clipboard
      screenshot.Copy
      'paste to ws (setupsheet or toollist)
      ws.Paste Destination:=ws.Range("A1")
      'get the copied screenshot
      Set screenshot = ws.Shapes(ws.Shapes.Count)
      'fit the screenshot to A1:E16
      fit screenshot, ws.Range("A1:E16")
   End If
End Sub
```

Run the *format_sheet()* macro

Before we execute the ***format_sheet()*** macro, we need to clean up our workbook.

So switch to the workbook and delete the screenshots, operation list and tool list from both sreenshot and toollist.

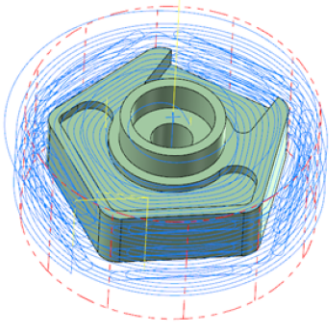




Switch to the Visual Basic editor and click into the format_sheet macro. The cursor must be inside this macro.

Press **F5** to execute the macro.
Check the result.

EXCEL_Tutorial1 - Microsoft Excel



SetupSheet

gmccs.de CAD/CAM Lösungen

Date	07.01.2023 - 13:08:18
MC-Filename	t4.mcam
Machine	Mill Default mm.mcam-mmd
Stock	D140.00 x L67.00
User name	GMCCS
Project	0
Revision	0
Programmer	0

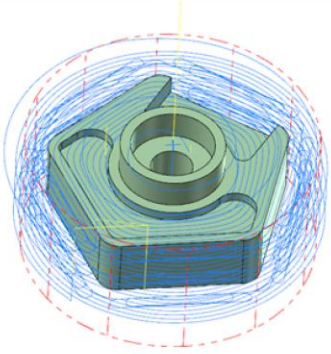
Comment
Hallo EXCEL My name is Alf

Op No.	Operation type	Comment	Cutter comp	Tl #	Tl name	Stock X	Stock Z	Z-Min	Cycle tim
1	2D HSC (Dynamic Motion)	qwert		1	32 Schaftfräser	0	0	0	00:28:29
2	Bohren/Zentrierbohren	zuio		3	20 Bohrer			-52,0086	00:01:31
3	2D HSC (Dynamic Motion)	asdfg		2	12 Schaftfräser	0	0	-45	00:02:38
4	2D HSC (Dynamic Motion)	ghjk		2	12 Schaftfräser	0	0	-15	00:00:49
5	2D HSC (Dynamic Motion)	fgjoop		1	32 Schaftfräser	0	0	0	00:28:29
6	Bohren/Zentrierbohren	mnbvvc		3	20 Bohrer			-52,0086	00:01:31
7	2D HSC (Dynamic Motion)	dfgztte		2	12 Schaftfräser	0	0	-45	00:02:38
8	2D HSC (Dynamic Motion)	sdertzu		2	12 Schaftfräser	0	0	-15	00:00:49

dump | setupsheet | toollist

Bereit

EXCEL_Tutorial1 - Microsoft Excel



Tool List

gmccs.de CAD/CAM Lösungen

Date	07.01.2023 - 13:08:18
MC-Filename	t4.mcam
Machine	Mill Default mm.mcam-mmd
Stock	D140.00 x L67.00
User name	GMCCS
Project	0
Revision	0
Programmer	0

Comment
Hallo EXCEL My name is Alf

Tl #	Tl name	Tl type	Tl diam.	Tl corner rad	Tl length	Tl Cutlength	Tl OA length	Tl D#	Tl L#
1	32 Schaftfräser	Schaftfräser	32	0	75	25	100	1	1
2	12 Schaftfräser	Schaftfräser	12	0	75	25	100	2	2
3	20 Bohrer	Bohren	20	0	50	25	75	3	3

dump | setupsheet | toollist

Bereit

To speed up the execution of the macros we can disallow EXCELs screen-updating during execution.

We can also add an Error handler, just in case.

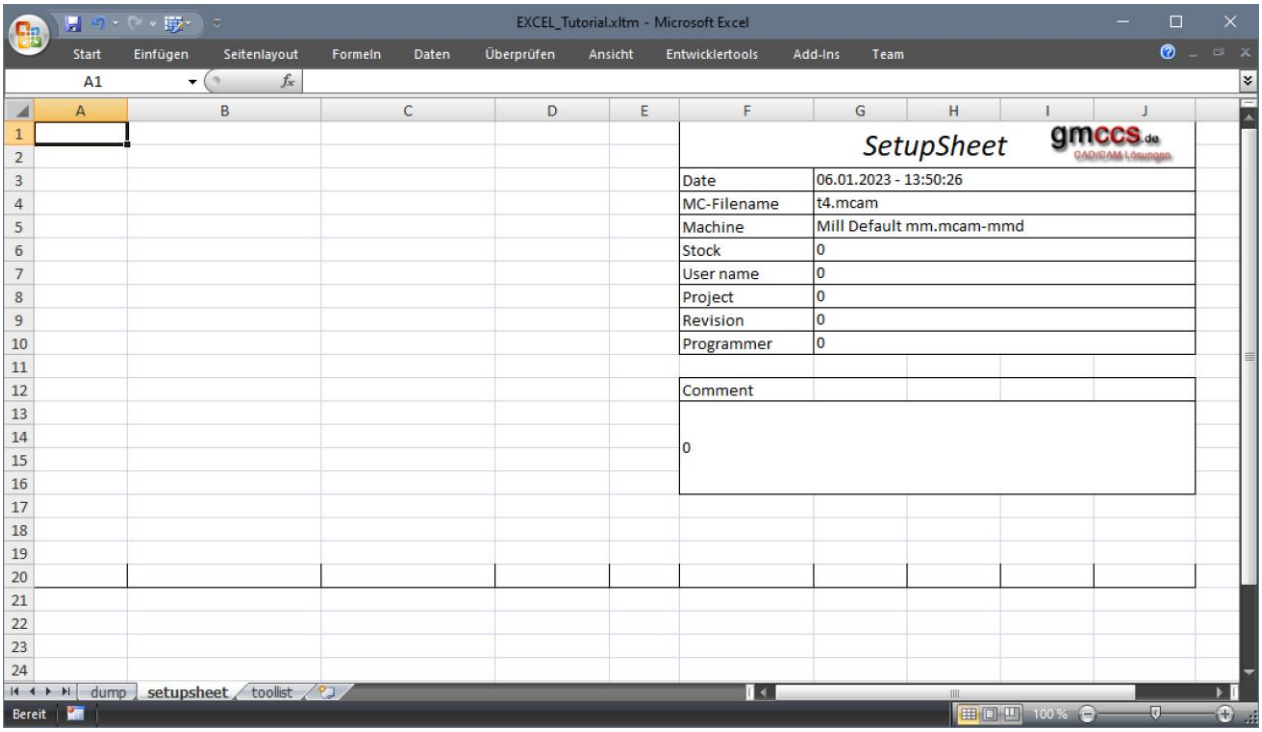
The final ***format_sheet()*** macro looks like this.

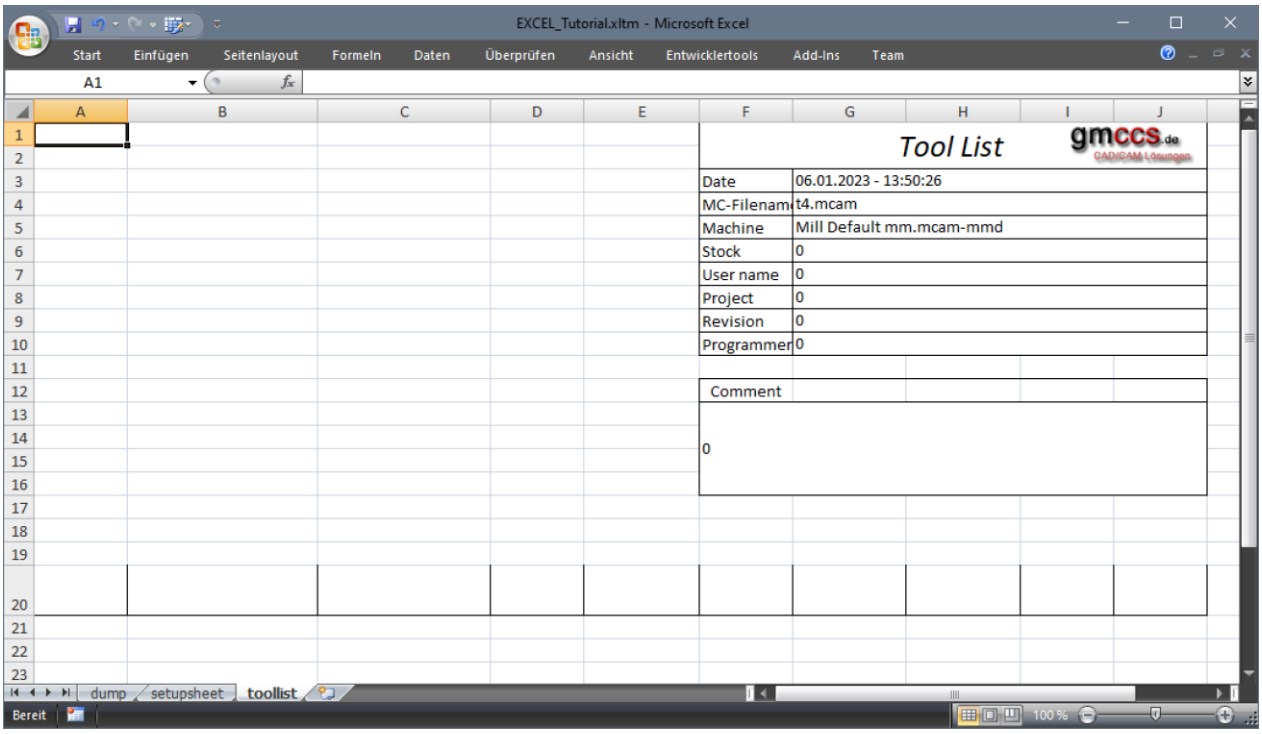
```
'format sheet
Sub format_sheet()
   On Error GoTo error
   'do not allow sreen updating
   Application.ScreenUpdating = False
   'create the setup sheet
   copyOperationList
   copyScreenshot ActiveWorkbook.Worksheets("setupsheet")
   'create the tool list
   copyToolList
   copyScreenshot ActiveWorkbook.Worksheets("toollist")
error:
   'allow sreen updating
   Application.ScreenUpdating = True
End Sub
```

That's it.

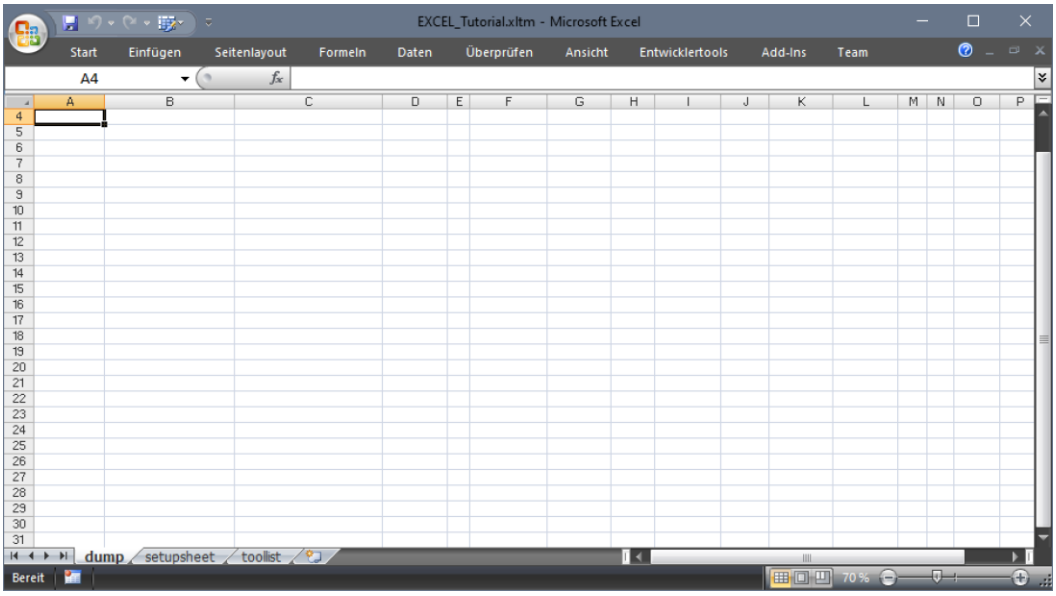
To use this workbook as an EXCEL template for X+, we need to clean up the workbook and save it as XLTM file.

So switch to the workbook and delete the screenshots, as well as the operation and tool list from both the setupsheet and the toollist as before.





Also delete the whole content from dump (empty sheet here).
Set dump as active sheet before saving the workbook as XLTM file!



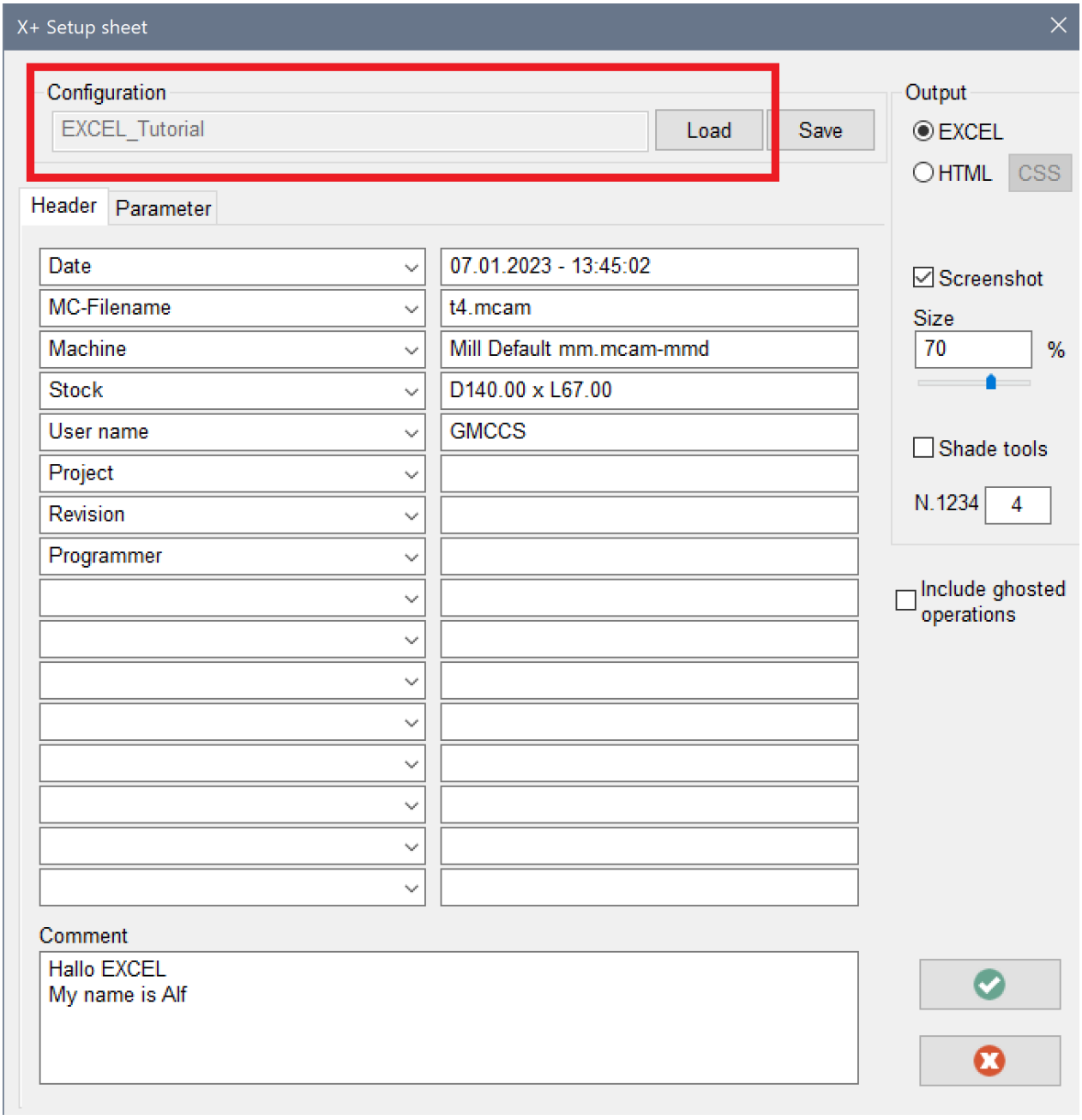
Then save it as:

"C:\Users\Public\Documents\X+\templates\setup sheets\xlt\EXCEL_Tutorial.xltm"

Final version: download

Use the template with X+

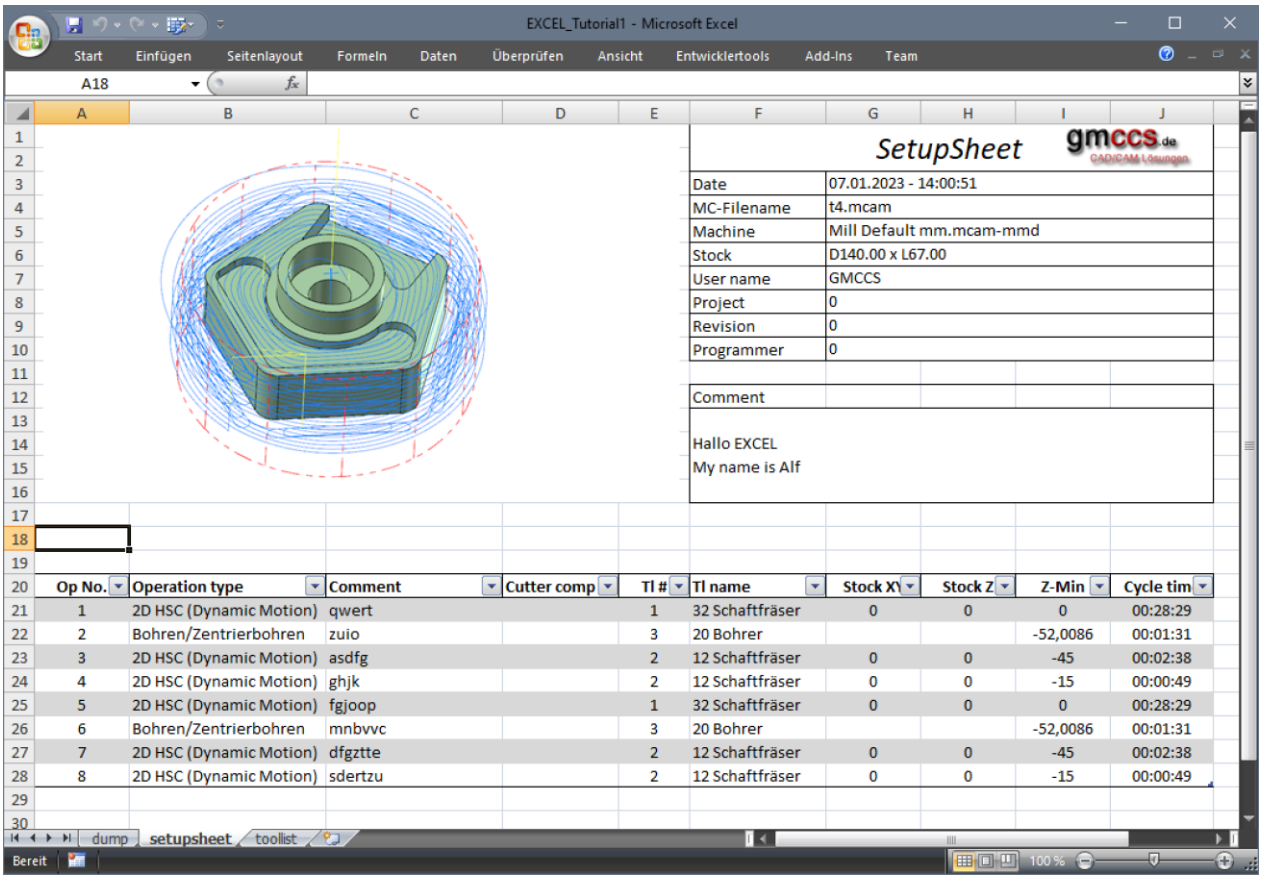
In the X+ dialog box, load the ***EXCEL_Tutorial*** configuration and then press the OK button.

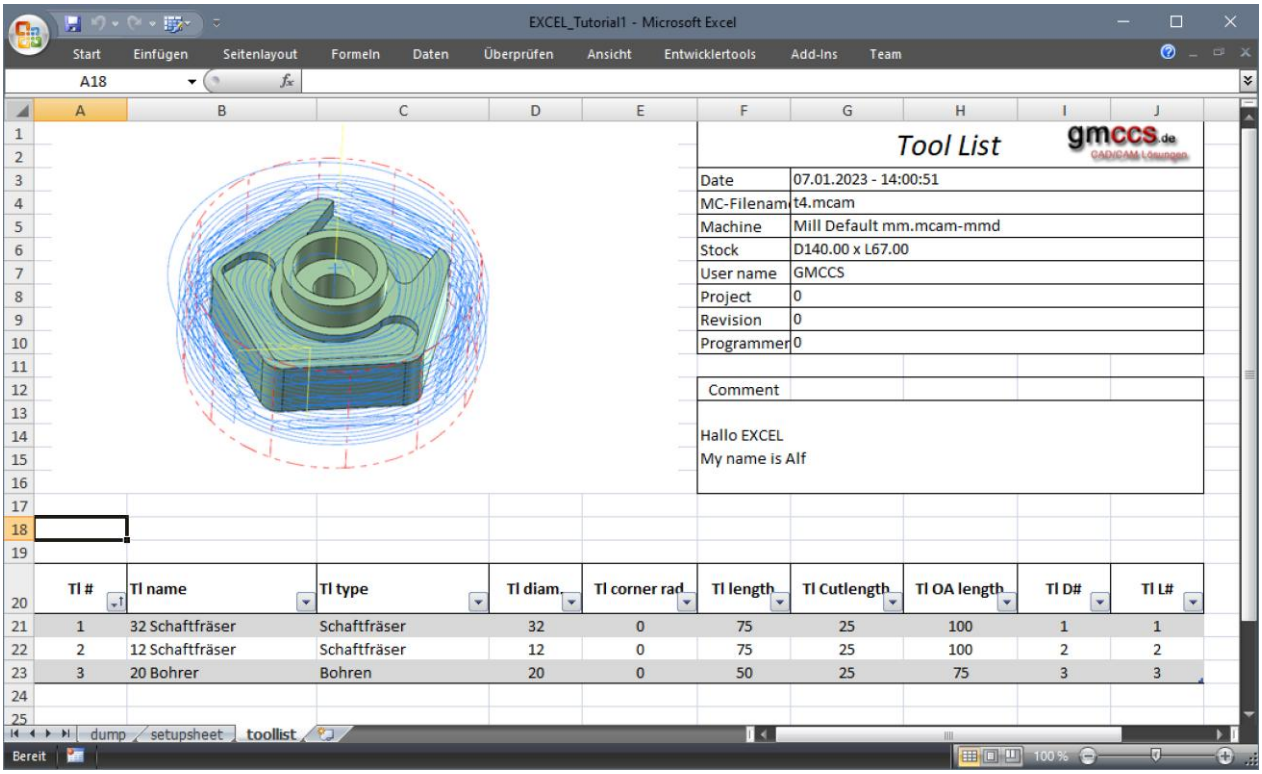


X+ creates a new EXCEL workbook from our EXCEL template.
After all the information has been transferred to the **active** sheet, it calls the macro ***format_sheet().***

If you make changes to your configuration, you may need to update your EXCEL template as well. Keep that in mind!

Result


EXCEL_Tutorial1 - Microsoft Excel
SetupSheet
gmccs.de
CAD/CAM Lösungen
Date 07.01.2023 - 14:00:51
MC-Filename t4.mcam
Machine Mill Default mm.mcam-mmd
Stock D140.00 x L67.00
User name GMCCS
Project 0
Revision 0
Programmer 0
Comment
Hallo EXCEL
My name is Alf
Op No. | Operation type | Comment | Cutter comp | Tl # | Tl name | Stock XY | Stock Z | Z-Min | Cycle tim
1 | 2D HSC (Dynamic Motion) | qwert | | 1 | 32 Schaftfräser | 0 | 0 | 0 | 00:28:29
2 | Bohren/Zentrierbohren | zuio | | 3 | 20 Bohrer | | | -52,0086 | 00:01:31
3 | 2D HSC (Dynamic Motion) | asdfg | | 2 | 12 Schaftfräser | 0 | 0 | -45 | 00:02:38
4 | 2D HSC (Dynamic Motion) | ghjk | | 2 | 12 Schaftfräser | 0 | 0 | -15 | 00:00:49
5 | 2D HSC (Dynamic Motion) | fgjoop | | 1 | 32 Schaftfräser | 0 | 0 | 0 | 00:28:29
6 | Bohren/Zentrierbohren | mnbvvc | | 3 | 20 Bohrer | | | -52,0086 | 00:01:31
7 | 2D HSC (Dynamic Motion) | dfgztte | | 2 | 12 Schaftfräser | 0 | 0 | -45 | 00:02:38
8 | 2D HSC (Dynamic Motion) | sdertzu | | 2 | 12 Schaftfräser | 0 | 0 | -15 | 00:00:49
dump
setupsheet
toollist
Bereit


EXCEL_Tutorial1 - Microsoft Excel
Tool List
gmccs.de
CAD/CAM Lösungen
Date 07.01.2023 - 14:00:51
MC-Filenam t4.mcam
Machine Mill Default mm.mcam-mmd
Stock D140.00 x L67.00
User name GMCCS
Project 0
Revision 0
Programmer 0
Comment
Hallo EXCEL
My name is Alf
Tl # | Tl name | Tl type | Tl diam. | Tl corner rad | Tl length | Tl Cutlength | Tl OA length | Tl D# | Tl L#
1 | 32 Schaftfräser | Schaftfräser | 32 | 0 | 75 | 25 | 100 | 1 | 1
2 | 12 Schaftfräser | Schaftfräser | 12 | 0 | 75 | 25 | 100 | 2 | 2
3 | 20 Bohrer | Bohren | 20 | 0 | 50 | 25 | 75 | 3 | 3
dump
setupsheet
toollist
Bereit