

Post Configurator Enablement Training

Basics – Adapting the NC code by setting UI settings

General

- Create a Post based on Sim08 and Sinumerik 840D

Configure Post Configurator Options (UI) – Example settings

- Information Listing
- Home Position
- Tool Preselect
- Coolant Output
- Machine Mode
- Arc Output Mode
- Default Output Unit
- Check NX Version
- File Output Handling
- Check Post Configurator Library Version
- Output Event Message
- Header
- Cycle800, Approach motion splitting

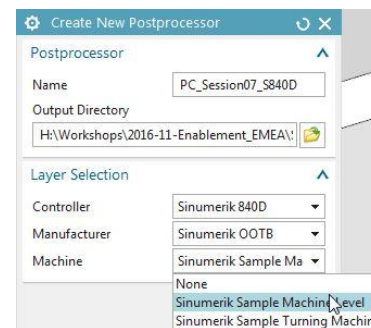
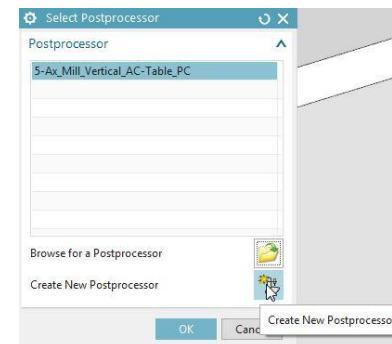
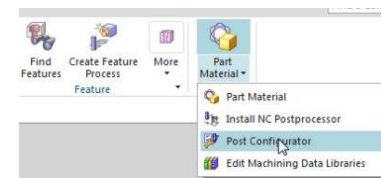
General

- Pretreatment
- Turbo Mode
- Important Debugging settings

Session - 01

Create a new Postprocessor based on Sinumerik 840D with OOTB Machine and Manufacturer Level

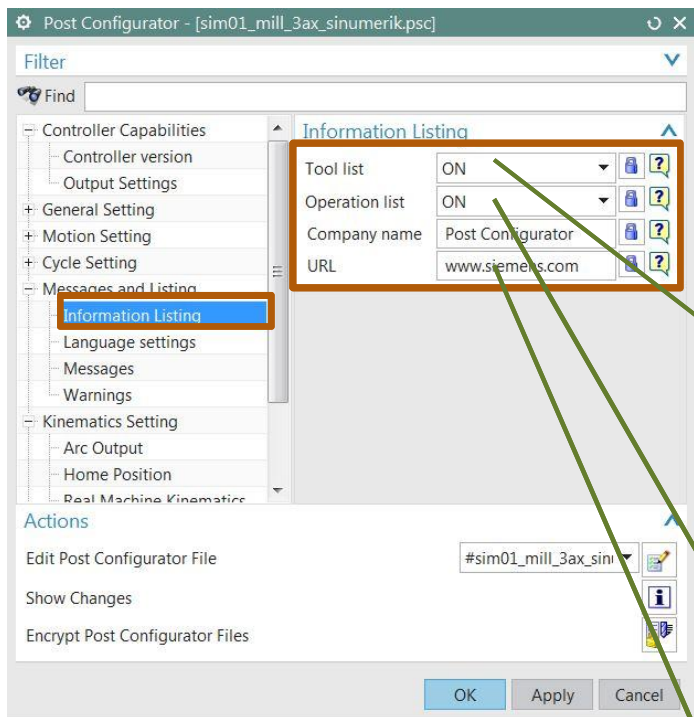
- Open existing CAM-Setup (sim08_mill_5ax_cam_sinumerik_mm.prt)
- Open Post Configurator UI in Ribbon bar
- Select create new Postprocessor
- Browse for a new output folder (e.g. Enablement2016_EMEA/PC_Session01)
- Select a unique name for Postprocessor
- Select Sinumerik840D as controller
- Select OOTB Sinumerik Machine Level
- Select OOTB Sinumerik Manufacturing Level
- Create the post and open the post



Post Configurator – Changing Properties in the UI

UI settings– Information Listing

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Configuration Object	Information Listing
Property	Tool list Operation list Company name URL

ToolList			
Toolnumber	Toolname	Description	Processingtime
1	00T0202_001	Insert Cutter 40 mm	00:00:100
4	00T0203_008	Ball End 10 mm	00:00:142
3	00T0203_088	End mill 10 mm	00:00:139
2	00T0203_019	End mill 10 mm	00:00:140
5	00T0203_092	End mill 10 mm	00:00:139
4	00T0203_085	End Mill 8 mm	00:00:139
10	00T0203_094	End Mill 11.5 mm	00:00:144
10	00T0203_092	Ball End 7/16"	00:00:153
7	00T0203_010	MC-Center Drill 20 mm	00:00:105
4	00T0203_045	Center Drill 10.0 mm	00:00:106

OperationList			
Refname	Toolname	Operationtype	Cuttingtime
FACE_TOP	00T0202_001	Volume Based 2.5D Milling	00:00:139
CAVITY_TOP	00T0203_001	Cavity Milling	00:00:124
CAVITY_WILL	00T0203_008	Cavity Milling	00:00:142
PLANAR_PROFILE_TOP	00T0203_088	Planar Milling	00:00:107
FACE_MILL_FLOOR	00T0203_019	Volume Based 2.5D Milling	00:00:137
PLANAR_MILL	00T0203_092	Planar Milling	00:00:109
FACE_SIDES	00T0202_001	Volume Based 2.5D Milling	00:00:144
FACE_SIDES	00T0202_001	Volume Based 2.5D Milling	00:00:137
FACE_SIDES	00T0202_001	Volume Based 2.5D Milling	00:00:136
FACE_SIDES	00T0202_001	Volume Based 2.5D Milling	00:00:136
FACE_SIDES	00T0202_001	Volume Based 2.5D Milling	00:00:137
FACE_SIDES	00T0202_001	Volume Based 2.5D Milling	00:00:136
FACE_FRONT	00T0202_001	Volume Based 2.5D Milling	00:00:133
FACE_FRONT_CHAMFER_BOTTOM	00T0201_015	Volume Based 2.5D Milling	00:00:104
FACE_FRONT_CHAMFER_TOP	00T0201_019	Variable-axis Surface Contouring	00:00:103
POCKETT_CAVITYMILL	00T0203_088	Cavity Milling	00:00:123
POCKETT_CAVITYMILL	00T0203_088	Cavity Milling	00:00:123
POCKETT_PLANAR_CUTCOMP	00T0203_088	Planar Milling	00:00:120
POCKETT_PLANAR_CUTCOMP	00T0203_088	Planar Milling	00:00:120
FACE_MILL_POCKETT_FLOOR	00T0203_019	Volume Based 2.5D Milling	00:00:104
FACE_MILL_POCKETT_FLOOR	00T0203_019	Volume Based 2.5D Milling	00:00:104
FACE_MILLING_TEXT	00T0201_096	Volume Based 2.5D Milling	00:00:144
VARIABLE_AXIS_SURFACE	00T0203_092	Variable-axis Surface Contouring	00:00:133
DRILL_ID_CENTER_010	00T0203_010	Hole Making	00:00:105
DRILL_ID_CENTER_010	00T0203_010	Hole Making	00:00:136
Totalline			00:12:133

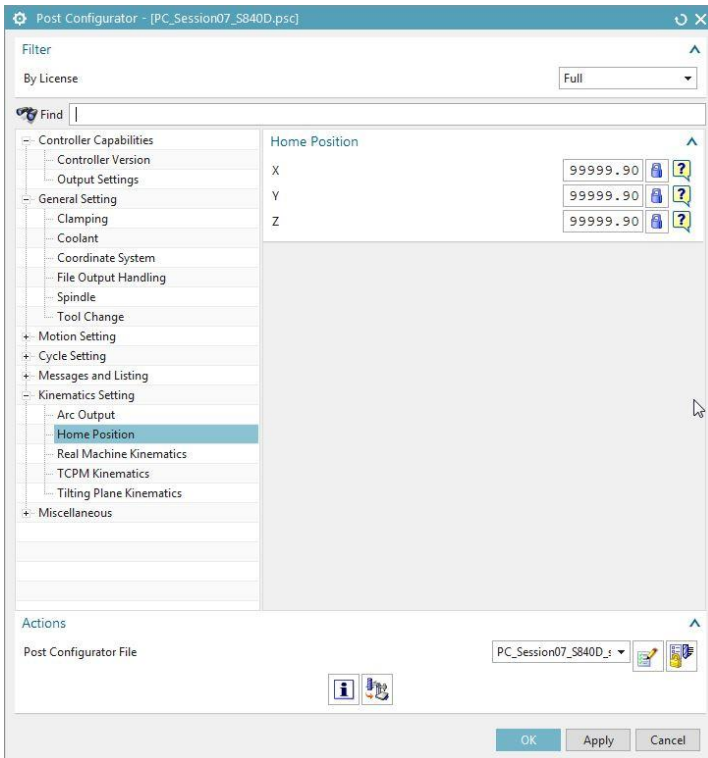
Post Configurator
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- Information listing is only visible in the listing window
- This information is provided by the pretreatment

- Tool List contains Toolnumber, Toolname, Description and Processingtime
- Operationlist contains Operationname, Toolname, Operationtype and Cuttingtime

Post Configurator – Changing Properties in the UI

UI settings– Home Position Setting



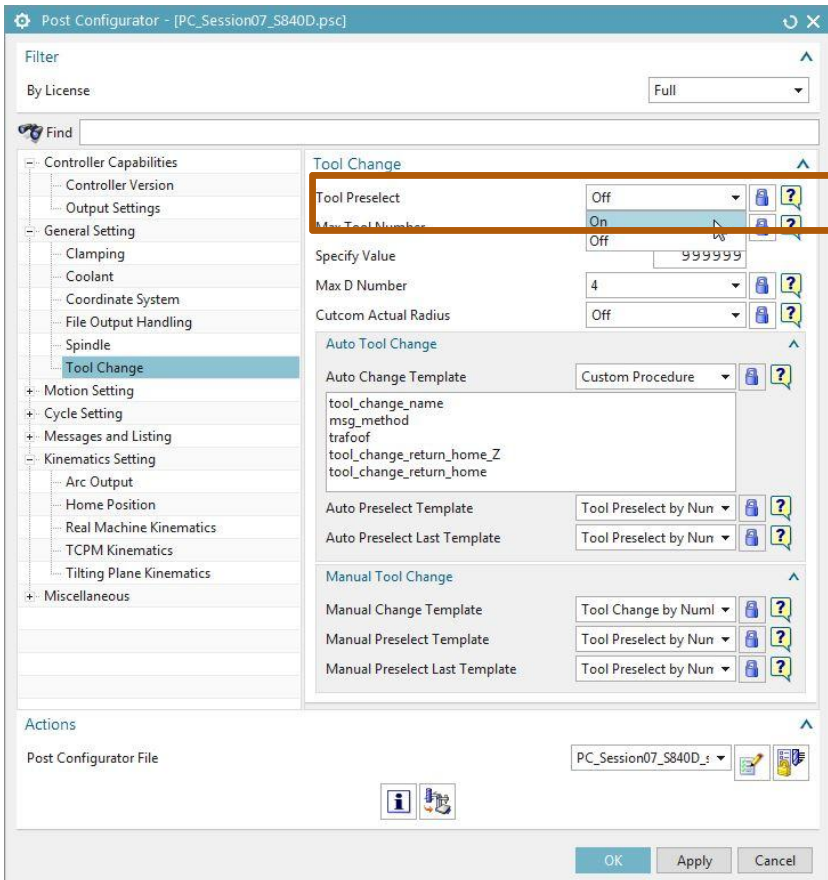
- with creation of post the default value is 99999.9
- must change after creation
- if work with kinematic machine this are normally the initial axis values
- Tip: If you plan to use the post for metric and inch and Home Position is not 0,0,0 you have to add some additional tcl in service layer (see Advanced Modifications)

Configuration Object	Home Position Settings
Property	Z
Value	99999.9 N1 G40 G17 G21 G94 G90 (FACE_TOP , TOOL : UGT0202_001) N2 G0 G53 Z99999.9 N3 T01 M6 N370 ;Initial Move
Value	0 N1 G40 G17 G21 G94 G90 (FACE_TOP , TOOL : UGT0202_001) N2 G0 G53 Z0 N3 T01 M6 N370 ;Initial Move

Post Configurator – Changing Properties in the UI

UI Settings– Tool Preselect

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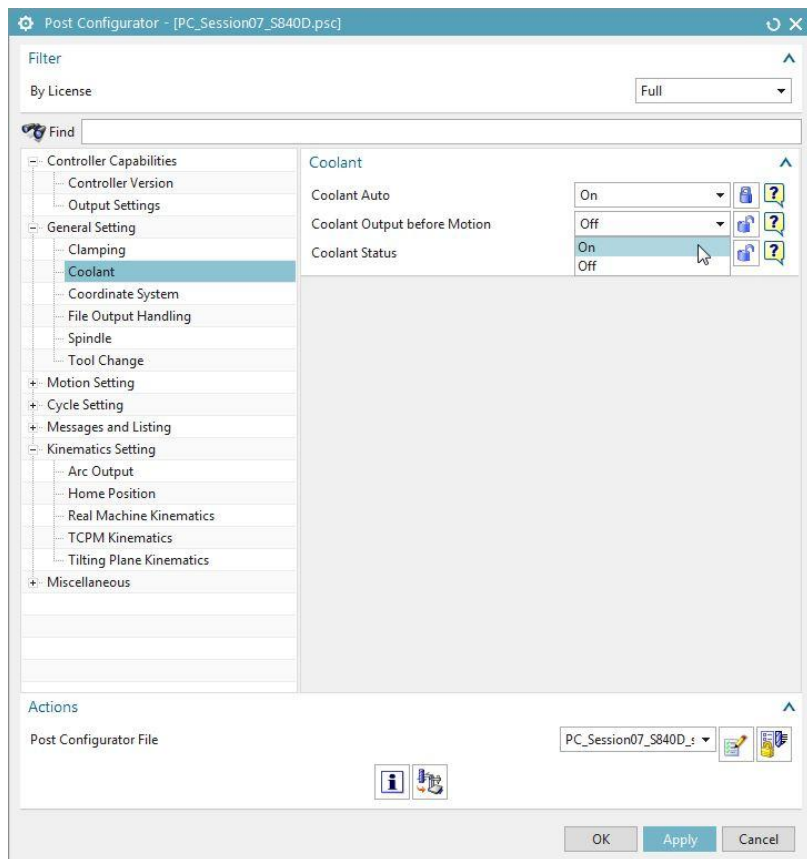


Configuration Object	Tool Change
Property	Tool Preselect
Value	OFF N1 G40 G17 G21 G94 G90 (FACE_TOP , TOOL : UGT0202_001) N2 G0 G53 Z0 N3 T01 M6 N370 ;Initial Move
Value	ON N1 G40 G17 G21 G94 G90 (FACE_TOP , TOOL : UGT0202_001) N2 G0 G53 Z0. N3 T01 M6 N4 T06 N5 G54

Post Configurator – Changing Properties in the UI

UI settings– Coolant Output

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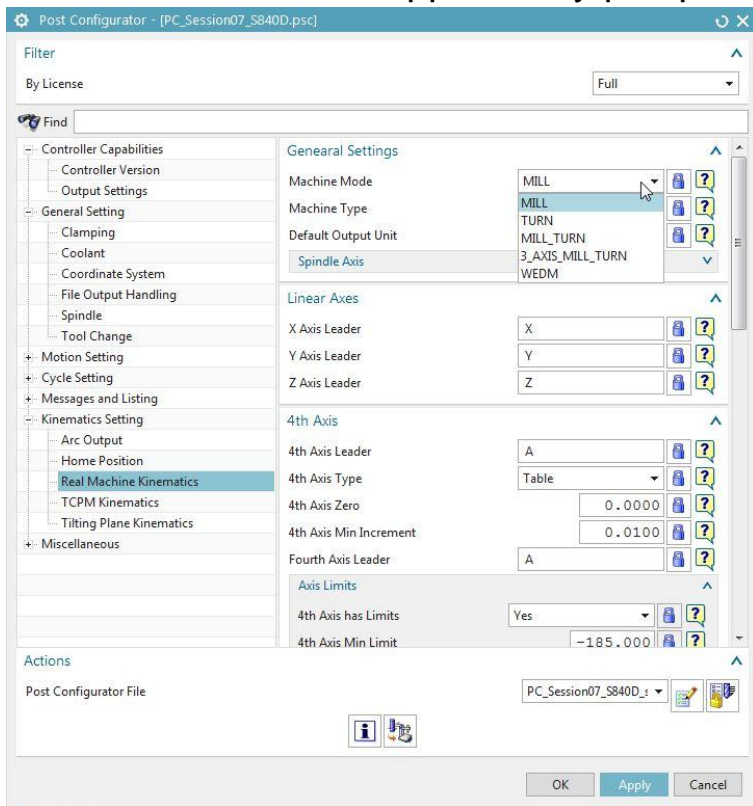


Configuration Object	Coolant
Property	Coolant output before motion
Value	OFF N210 CYCLE800(1,"R_DATA",0,57,0,0,0,0,0,0,0,0,0,0,1,0) N220 G0 X-79.599 Y42. Z50. S2228 D1 M3 N230 Z3. N240 G17 G1 G90 Z0. M8 F1203.
Value	ON N210 CYCLE800(1,"R_DATA",0,57,0,0,0,0,0,0,0,0,0,0,1,0) N220 G0 X-79.599 Y42. Z50. S2228 D1 M3 N230 M8 N240 Z3. N250 G17 G1 G90 Z0. F1203.

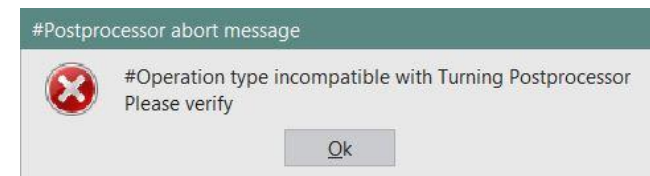
Post Configurator – Changing Properties in the UI

UI settings– Machine Mode

➤ Machine mode supported by postprocessor. Compatibility will be checked with operation's machine mode.



Configuration Object	Machine Mode
Property	Machine Mode
Value	File Based Defined in machine layer
Value	TURN (If operation is milling)

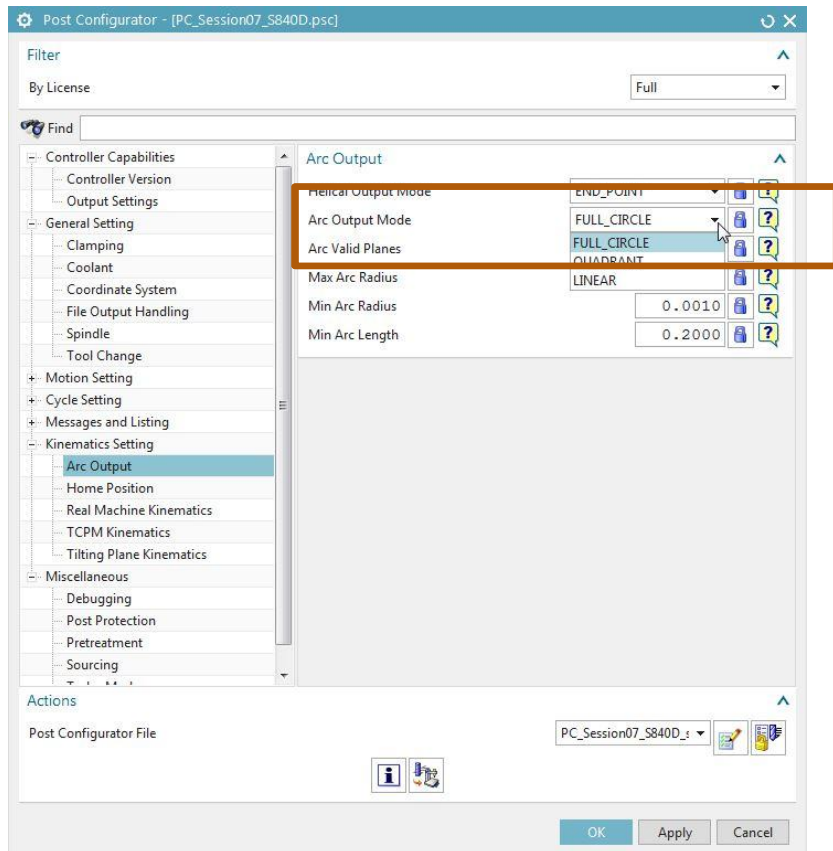


- machine mode and machine type control general output, like templates for home positions or toolchange

Post Configurator – Changing Properties in the UI

UI settings– Arc Output Mode Full_Circle/ Linear

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Configuration Object	CONF_container_arc
Property	Arc Output Mode
Value	FULL_CIRCLE N260 G2 X-5.964 Y9.832 I-41.067 J68.581 N270 G3 X-5.983 Y-9.821 I5.964 J-9.832
Value	LINEAR N250 G17 G1 G90 X-5.074 Y10.358 F1203. N260 X-5.964 Y9.832 N270 X-7.702 Y8.58 N280 X-9.158 Y7.005 N290 X-10.297 Y5.187

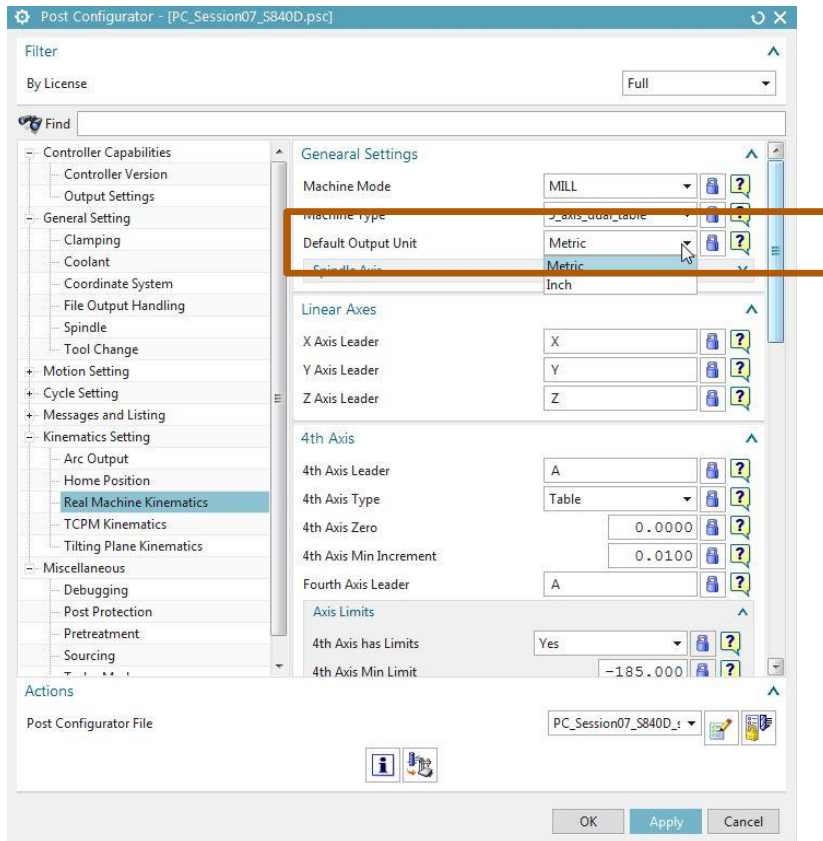
➤ Also there are other Arc Output settings:

- max. and min. Arc radius output
- min. arc length
- Valid plane

Post Configurator – Changing Properties in the UI

UI settings– Default Output unit

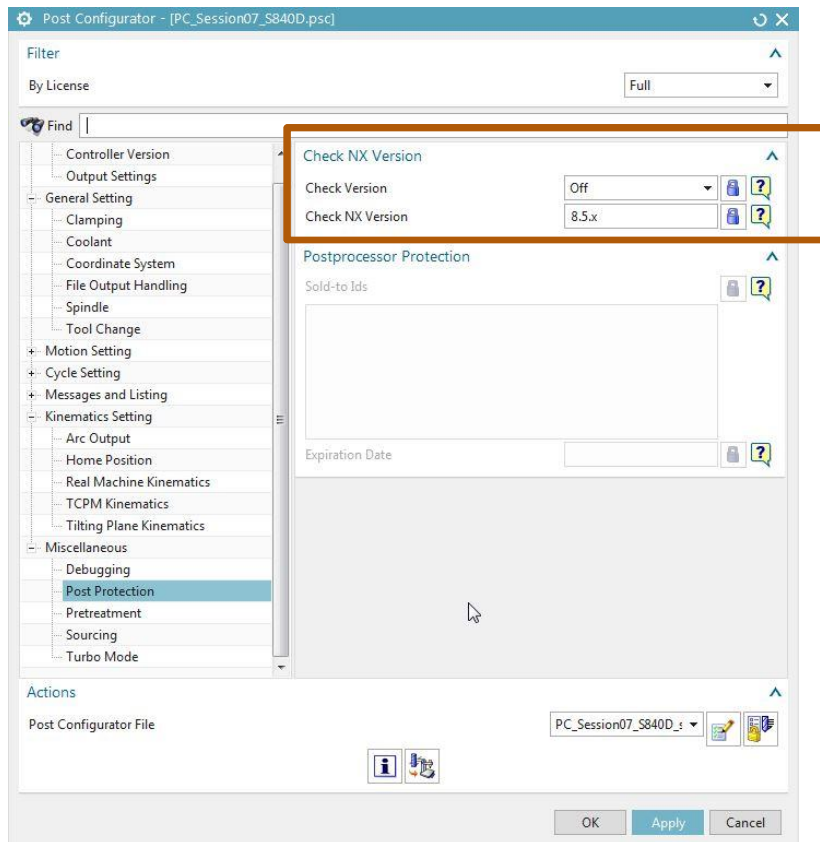
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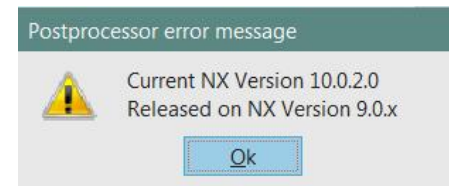
Configuration Object	KinContainer_MTB
Property	Default Output Unit
Value	Metric N220 G0 X-79.599 Y42. Z50. S2228 D1 M3 N230 M8 N240 Z3. N250 G17 G1 G90 Z0. F1203. N260 X-56. N270 X56.
Value	Inch N220 G0 X-3.1338 Y1.6535 Z1.9685 S2228 D1 M3 N230 M8 N240 Z0.1181 N250 G17 G1 G90 Z0. F47.4 N260 X-2.2047 N270 X2.2047

Post Configurator – Changing Properties in the UI

UI settings- Check NX Version



Configuration Object	Check NX Version
Property	Check Version
Value	ON
Property	Check NX version
Value	If current version not same as input version

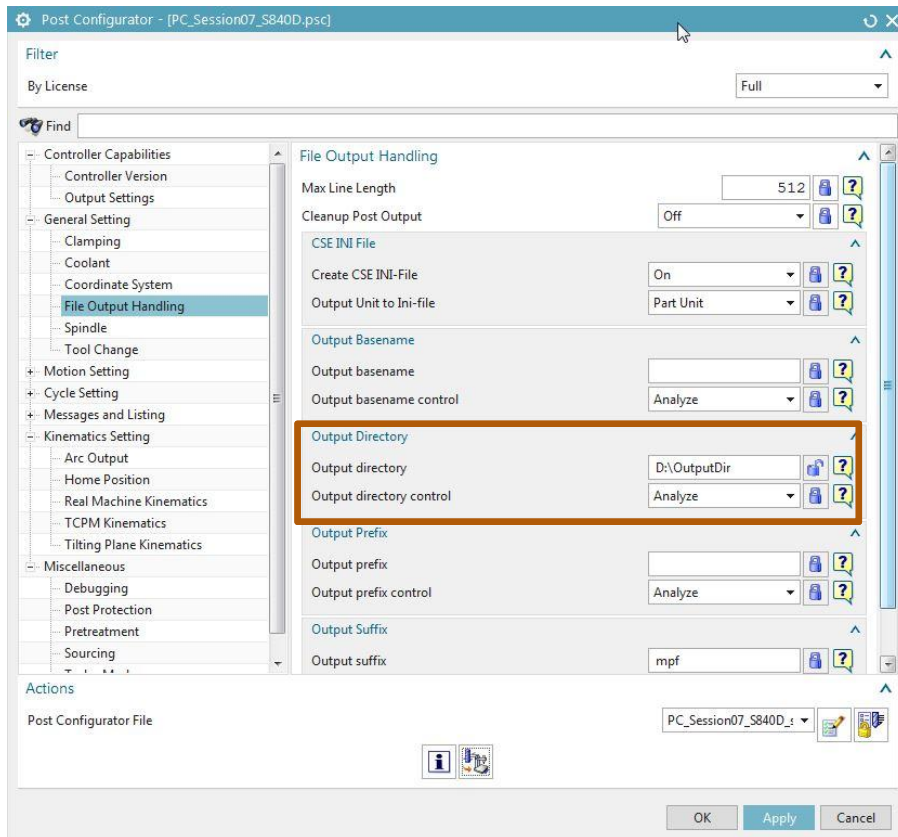


- normally post libraries are backwards compatible without restrictions to NX9.0 and with restrictions to NX8.5
- if add functionality which only works with one NX Version it's recommend to switch this on and check the version

Post Configurator – Changing Properties in the UI

UI settings- File Output Handling

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Analyze:

- Checks for a value for the Output directory

Direct Output:

- Names the directory with the Output directory value

Function call:

- Calls the procedure LIB_SPF_output_setting_directory

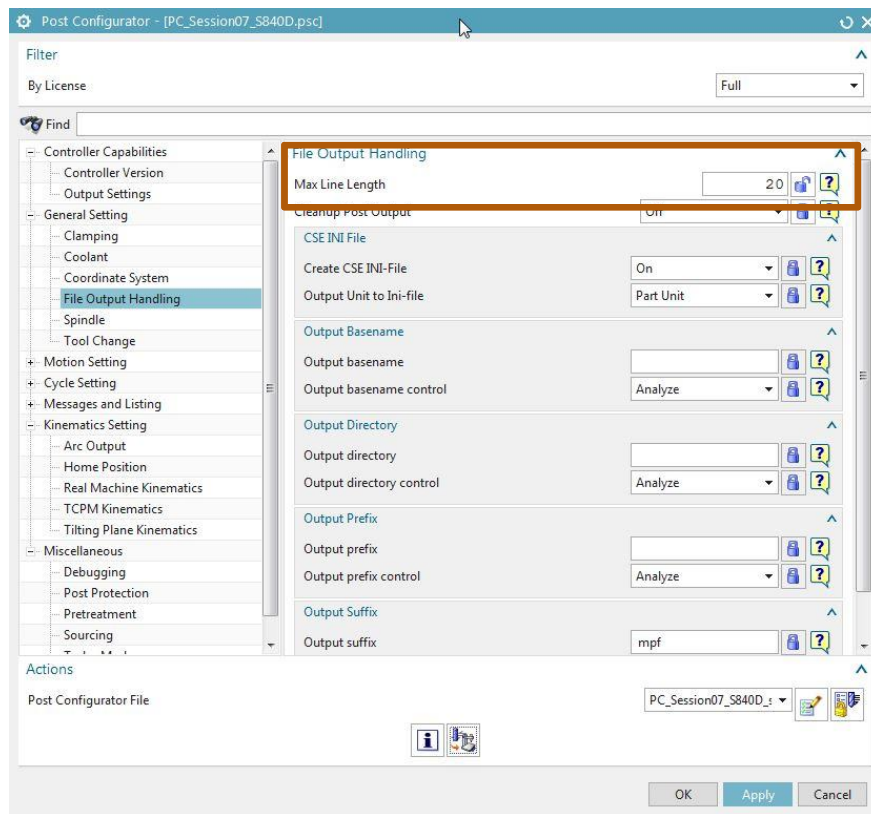
Custom Procedure:

- TCL procedure, must return a result, e.g. return my_name
- NC file output to D:\Outputdir
- there is also the option for create CSE INI-File (necessary for Sinumerik)
- set up max. line length of output

Post Configurator – Changing Properties in the UI

UI settings- File Output Handling Max. Line Length

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```
=====
Number of warnings: 1
=====
GENERAL WARNING
-----
The output line is longer than allowed (Max: 20 / Current: 26):
  Befor: N10 DEF REAL _camtolerance
  After: N10 DEF REAL _camtol
-----
The output line is longer than allowed (Max: 20 / Current: 56):
  Befor: N20 DEF REAL _X_HOME, _Y_HOME, _Z_HOME, _A_HOME, _C_HOME
  After: N20 DEF REAL _X_HOME
-----
The output line is longer than allowed (Max: 20 / Current: 51):
  Befor: N40 _X_HOME=99999.9 _Y_HOME=99999.9 _Z_HOME=99999.9
  After: N40 _X_HOME=99999.9
-----
```

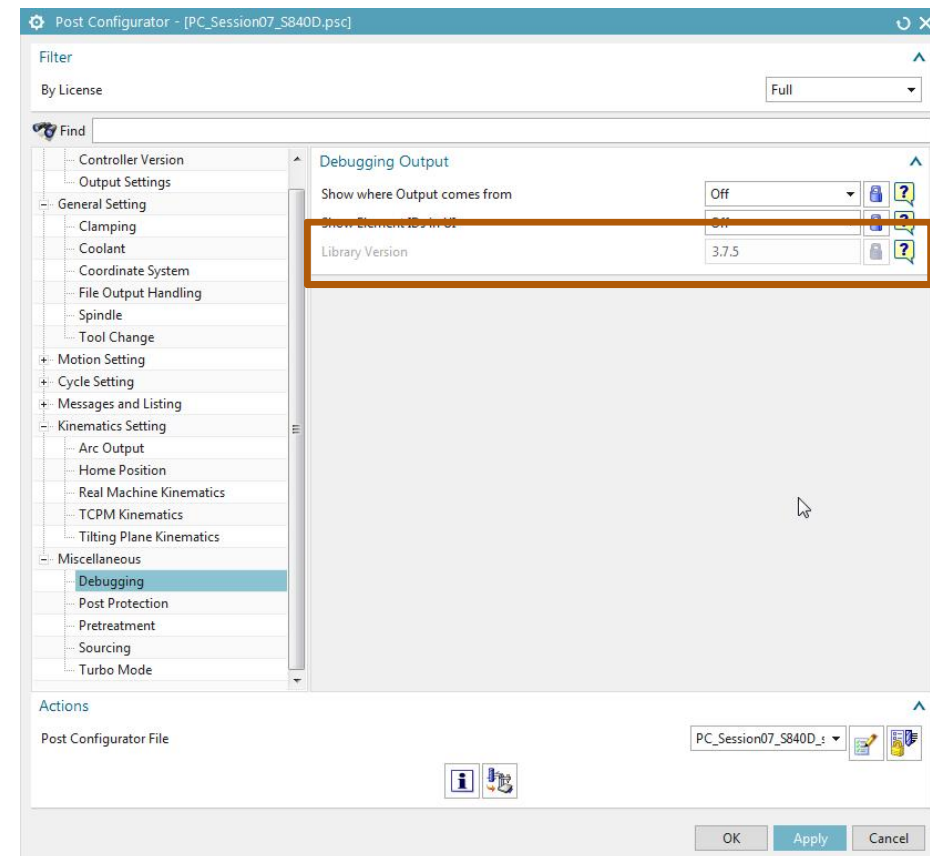
- Some controller have a maximum Line length
- In library version 3.7.5 this property cut off the values and put out a warning what the output is before/ after
- In updated version on Kitstore the lines are splitted (see Kitstore slides)

Post Configurator – Changing Properties in the UI

UI settings- Check Library Version

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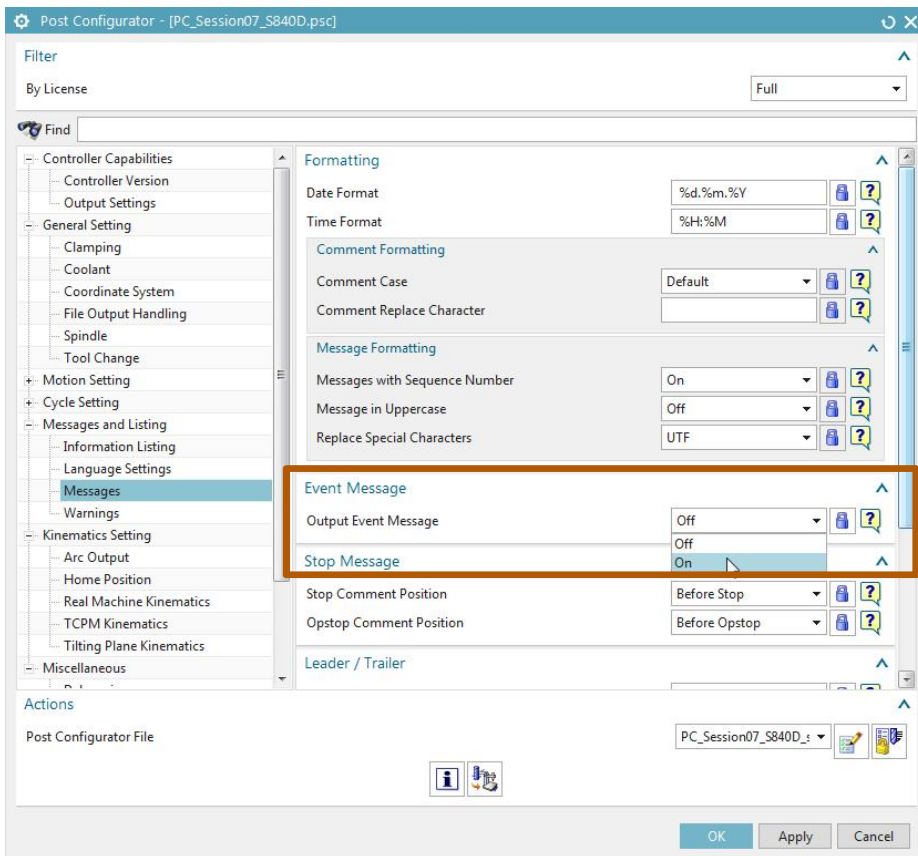
- Library version of the used libraries for this post
- It's a read only property
- Useful for updating posts
- Value can read through:
„set myVersion [LibraryInformation library_version]“
Or
MOM_output_to_listing_device "----> [LibraryInformation library_version]"



Post Configurator – Changing Properties in the UI

UI settings– Output Event Message

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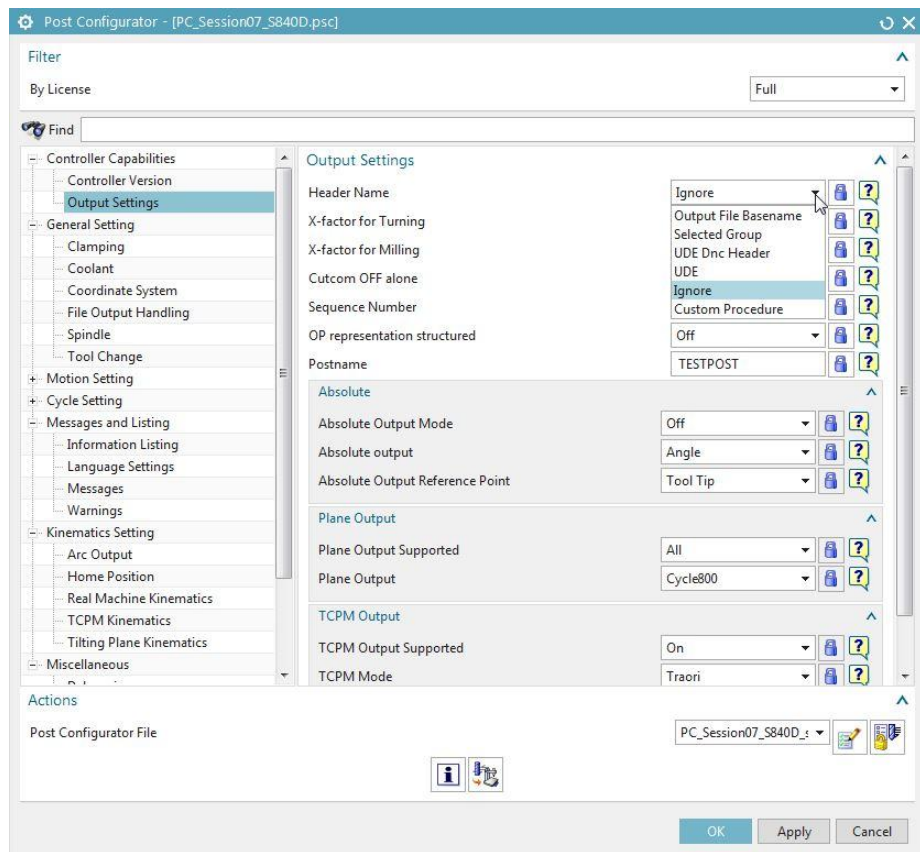


- In default off
- useful for debugging to switch it on

Configuration Object	Message Output Handling
Property	Output event message
Value	<p>ON</p> <pre>N1 G40 G17 G21 G94 G90 (START OF PATH) (FACE_TOP , TOOL : UGT0202_001) N2 () (OPERATION : FACE_TOP) N3 () (FIRST TOOL) N4 G0 G53 Z0. (TOOL CHANGE) N5 T01 M6 (RAPID MOVE)</pre>
Value	<p>OFF</p> <pre>N1 G40 G17 G21 G94 G90 (FACE_TOP , TOOL : UGT0202_001) N2 G0 G53 Z0. N3 T01 M6</pre>

Post Configurator – Changing Properties in the UI UI settings- Header

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Output file basename:

Output the partname

Selected group:

Output the selected group in ONT

Ignore:

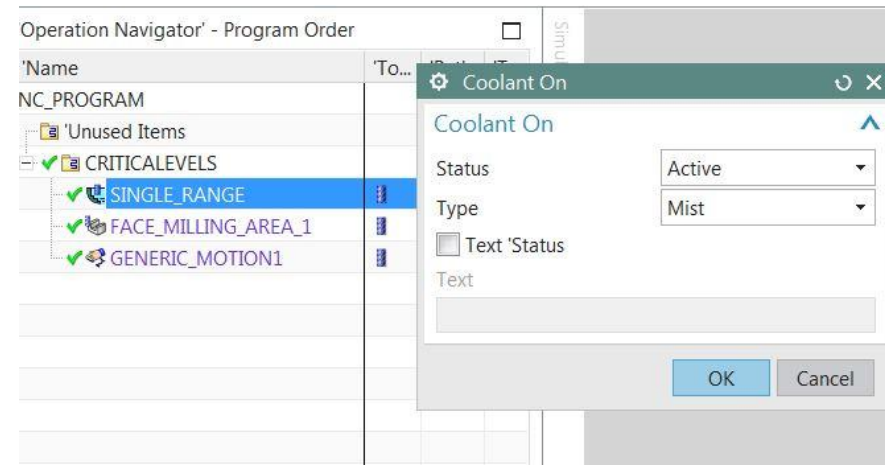
no output at start of program

Custom procedure:

Customized output with tcl

Post Configurator – UDE Handling

- most of OOTB UDE's work also with PostConfigurator
- add them as start or end events
- possible to add own UDE's (see Advanced Modifications)
- to reuse own UDE's add them in service.cdl and copy your procs into service layer or own UDE-Layer



```

N3 (TOOL_NAME: UGTI0202_030)
N4 T01 M6
N5 G54
N6 G17 G94 G1 G90 X152.142 Y1.585 F6350. S1629 M3 M7
N7 G43 Z46.565 H1
N8 Z45.714 F6000.
N9 Z37.714 F660.
N10 X144.488 Y13.392
  
```

Post Configurator – Changing Properties in the UI UI settings- Cycle800

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All important informations for Cycle800 can be set here.

Plane output motion with init:

- MOVE-> Motion is done with Cycle800
- STAY -> Rotary motion is done before

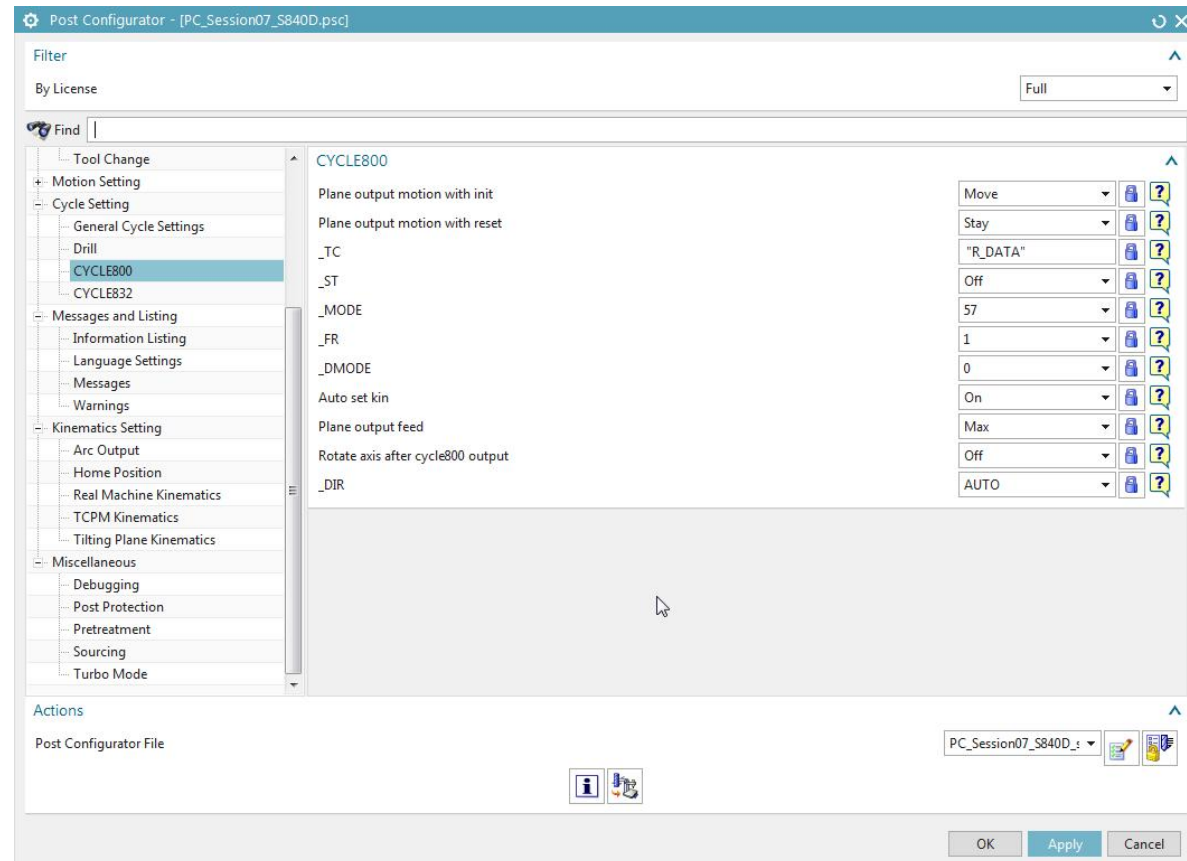
Change Toolcarrier name:

- Enter name of the Toolcarrier

Rotate axis after Cycle800 output

DIR:

- Auto: Post set the preferred direction
- -1/1 -> user defined



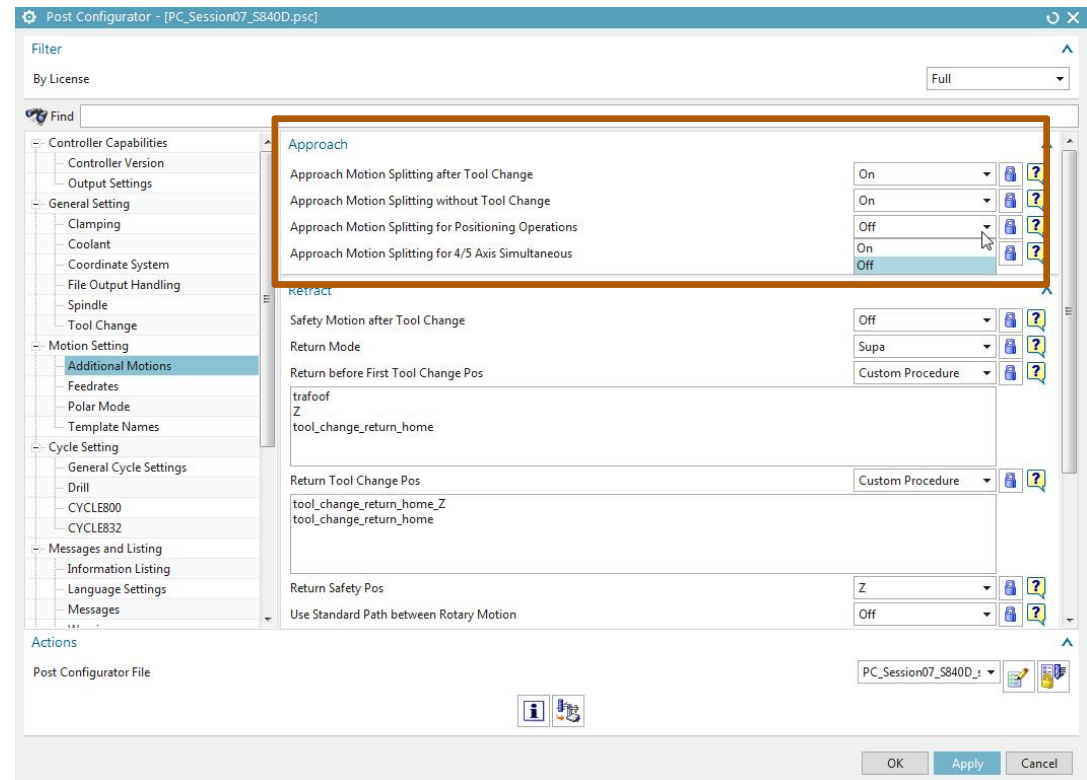
Post Configurator – Changing Properties in the UI UI settings- Approach motion splitting

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N310 CYCLE800(1,"R_DATA",0,57,0,0,0,0,0,0,0,0,0,1,0)
N320 ;Initial Move
N330 G0 X-79.599 Y42. Z50. S2228 D1 M3
N340 M8
N350 Z3.

- Options to configure different Approach motions easy by one-click

N310 CYCLE800(1,"R_DATA",0,57,0,0,0,0,0,0,0,0,0,1,0)
N320 ;Initial Move
N330 G0 X-79.599 Y42. S2228 D1 M3
N340 Z50.
N350 M8
N360 Z3.



Pretreatment Run

- Post Configurator Post do a double run
 1. Pretreatment Run
 2. Actual Run
- Information of the Post Run are collected
- This can be extended to collect more information
- This is used to enable certain Post options (like Turbo Mode)
- Post Configurator always needs the Pretreatment run
- Happens hidden in the background
- **Example:** special tool informations at the begin of a program



Turbo Mode

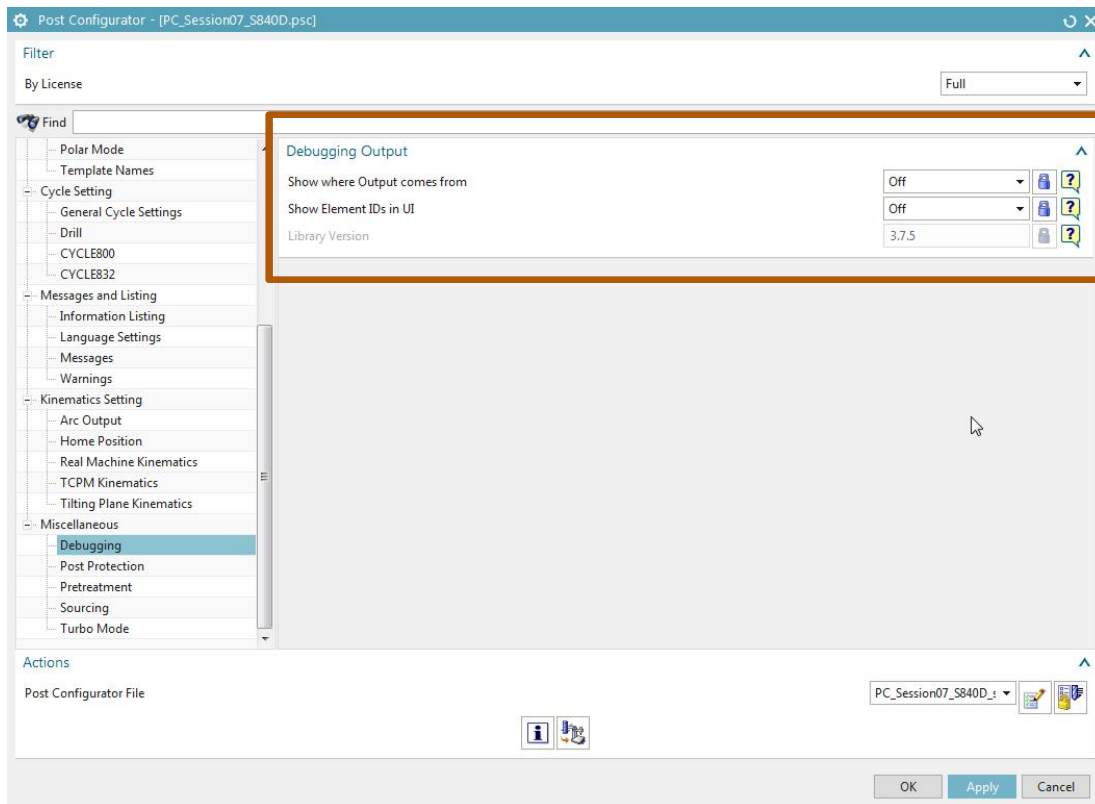
- Turbo Mode can be used to speed up to post processing for simple Movement outputs
- Turbo Mode will bypass the Tcl Interpreter and directly output the code using a C-Routine
- Can speed up post processing for those cases by 6-times

Note:

- Its not possible to execute Tcl code for those events
- A lot of standard post MOM functions do not work (Review Tool)
- Output can be wrong in certain situations (Changing tool axis)



Important Debugging settings



Show where Output comes from:

- Adds debugging information to the information window
- Shows which Tcl commands generated NC code lines
- Is needed to use Entry points and change buffers

Show Element Ids in UI:

- Activates debugging information for elements in the UI
- With this information new properties can be created in the UI

Final Tasks

- use the Master spindle Option to output NC code like:

```

N300 ;TRANSFORM CODE
N310 CYCLE800(1,"R_DATA",0,57,0,0,0,0,0,0,0,0,1,0)
N310 ;Initial Move
N320 SETMS(1)
N330 G0 X-79.599 Y42. Z50. S2228 D1 M3
N340 M8
N350 Z3.

```

- Change to TRANS/ ROT output:

```

N320 AROT Z0.0
N330 AROT Y-15.
N340 AROT X0.0
N350 TRAORI
N360 ;Initial Move
N370 SETMS(1)
N380 X29.263 Y30.919 Z27.941 S2228 D1 M3
N390 M8

```

- Change CYCLE800 to _MODE 39:

```

N300 CYCLE800(1,"R_DATA",0,39,0,0,0,0,0,-15,0,0,0,1,0)
N310 ;Initial Move
N320 SETMS(1)
N330 G0 X29.263 Y30.919 Z27.941 S2228 D1 M3
N340 M8

```

