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Siemens Digital Industries Software

# Best Practice
# for
# Polar Mode


## Summary

This document will provide best practice for outputting polar mode in postprocess.

## Table of Contents

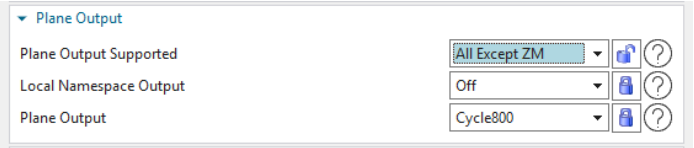
# 1 All motions output as XZC.

Using OOTB sim07 sinumerik machine as example.

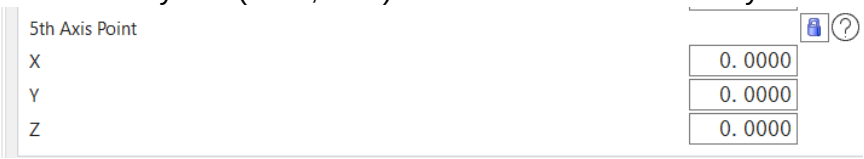
```
N120 T="UGT0202_001" M6
N130 MSG("MILL_FINISH")
N140 TRAFOOF
N150 SUPA Z=_Z_HOME D0
N160 SUPA X=_X_HOME Y=_Y_HOME B=_B_HOME C=_C_HOME D1
N170 CYCLE832(_camtolerance,1,1)
N180 COMPOF
N190 G54
N200 G17 G0 X89.997 Y0. B0. C-17.366 S2228 D1 M3
N210 Z50.
N220 Z3.
N230 G94 G1 G90 Z0. F1203.
N240 X89.721 C-17.585
N250 X89.448 C-17.804
N260 X89.179 C-18.021
N270 X88.913 C-18.239
N280 X88.651 C-18.456
N290 X88.392 C-18.673
N300 X88.136 C-18.889
N310 X87.883 C-19.105
```

## 1.1 Setup in Post Configurator

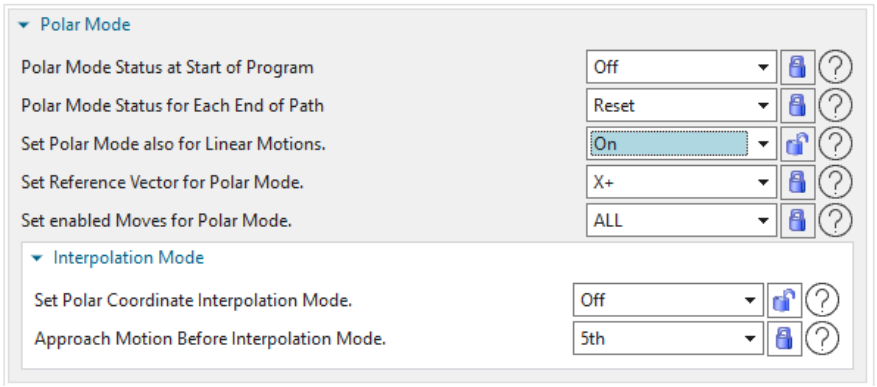
- Plane Output Supported set to “None“, “All Except ZM” or “Non Orthogonal”




- 5th Axis Point set to (0, 0,0), otherwise will get warning message. It also means fixture coordinate system( G54, G55) is located in center of rotary table.

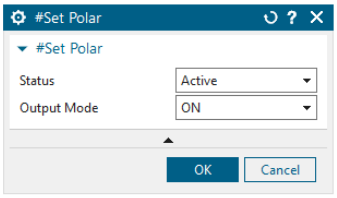



- Polar Mode
  Set Polar Mode also for Linear Motions to “On”



## 1.2 UDE “Set Polar”

Attach to operations which tool axis is (0,0,1)



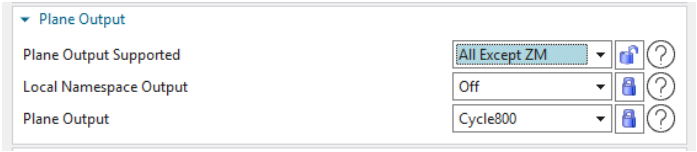

# 2 Only rapid motions output in Polar mode

Using OOTB sim07 sinumerik machine as example.

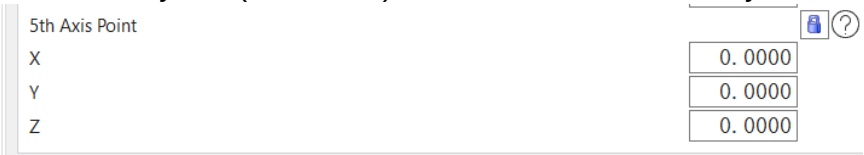
```
N120 T="UGT0202_001" M6
N130 MSG("MILL_FINISH")
N140 TRAFOOF
N150 SUPA Z=_Z_HOME D0
N160 SUPA X=_X_HOME Y=_Y_HOME B=_B_HOME C=_C_HOME D1
N170 CYCLE832(_camtolerance,1,1)
N180 COMPOF
N190 G54
N200 G17 G0 X89.997 Y0. B0. C-17.366 S2228 D1 M3
N210 Z50.
N220 Z3.
N230 G94 G1 G90 Z0. F1203.
N240 X54.572 Y-43.834
N250 X54.31 Y-44.159
N260 X18.885 Y-87.993
N270 Z3.
N280 G0 Z7.
```

## 2.1 Setup in Post Configurator

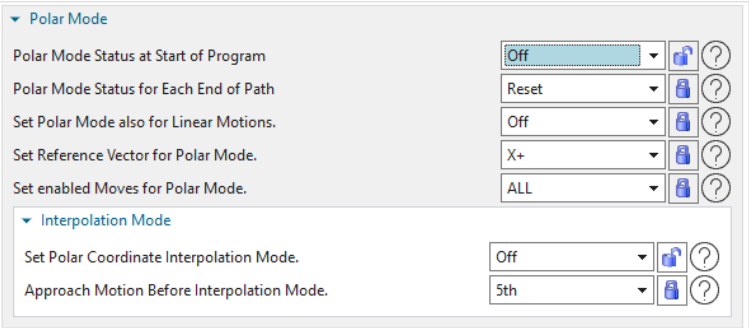
- Plane Output Supported set to “None” , “All Except ZM” or “Non Orthogonal”




- 5th Axis Point set to (0, 0,0), otherwise will get warning message. It also means fixture coordinate system( G54, G55) is located in center of rotary table.

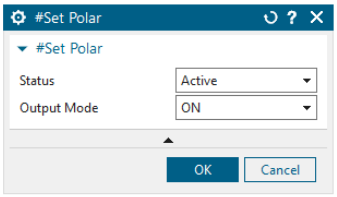



- Polar Mode
  Set Polar Mode also for Linear Motions to “Off”




## 2.2 UDE "Set Polar"

Attach to operations which tool axis is (0,0,1)




# 3 Lock Axis UDE

Lock Axis UDE is used to lock specify axis so it doesn't move, other axes move will compensate the locked axis motion. For example, lock Y axis on plane XY will lead to XC-Z motion (tool axis must be (0,0,1)). Lock X axis on plane ZX will lead to ZB -Y motion (tool axis must be (0,1,0)).

In most cases it is used to convert XYZ motions to XZC motions. But it cannot be replaced by Polar UDE. Polar UDE just a subset of it. Lock Axis UDE can lock any axis on any position, such as lock C axis on 90 degree or Lock Y axis on 10mm.

# 4 Documentation History

| When | Who | What |
|---|---|---|
| 16-Sep-2020 | LL | Initial version |

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