

# Using Siemens NX for Industrial ABB Robot Simulation

nuwan prabhath :: 2019/8/3

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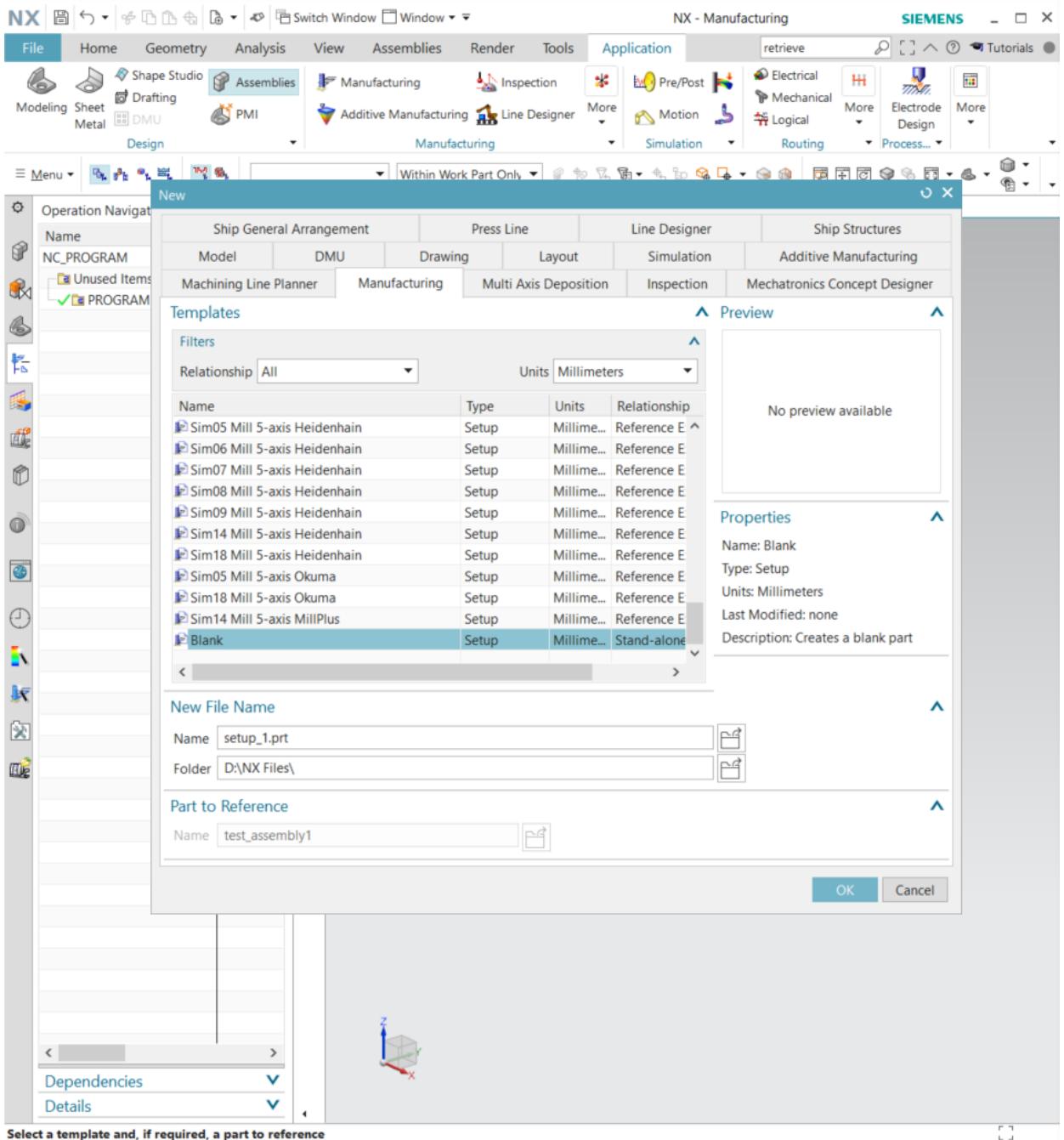
Following tutorial will help you to simulate an ABB robot or any similar robot using [Siemens PLM software suite](#). This tutorial will help to simulate the following scenario in the video.

## Final Simulation of ABB on Rails

This tutorial covers integrating an ABB robot in rails and working on path planning, robot tule configuration and simulation. General CAM/CAD knowledge is preferable. Each step will guide you with screenshots to show how to proceed.

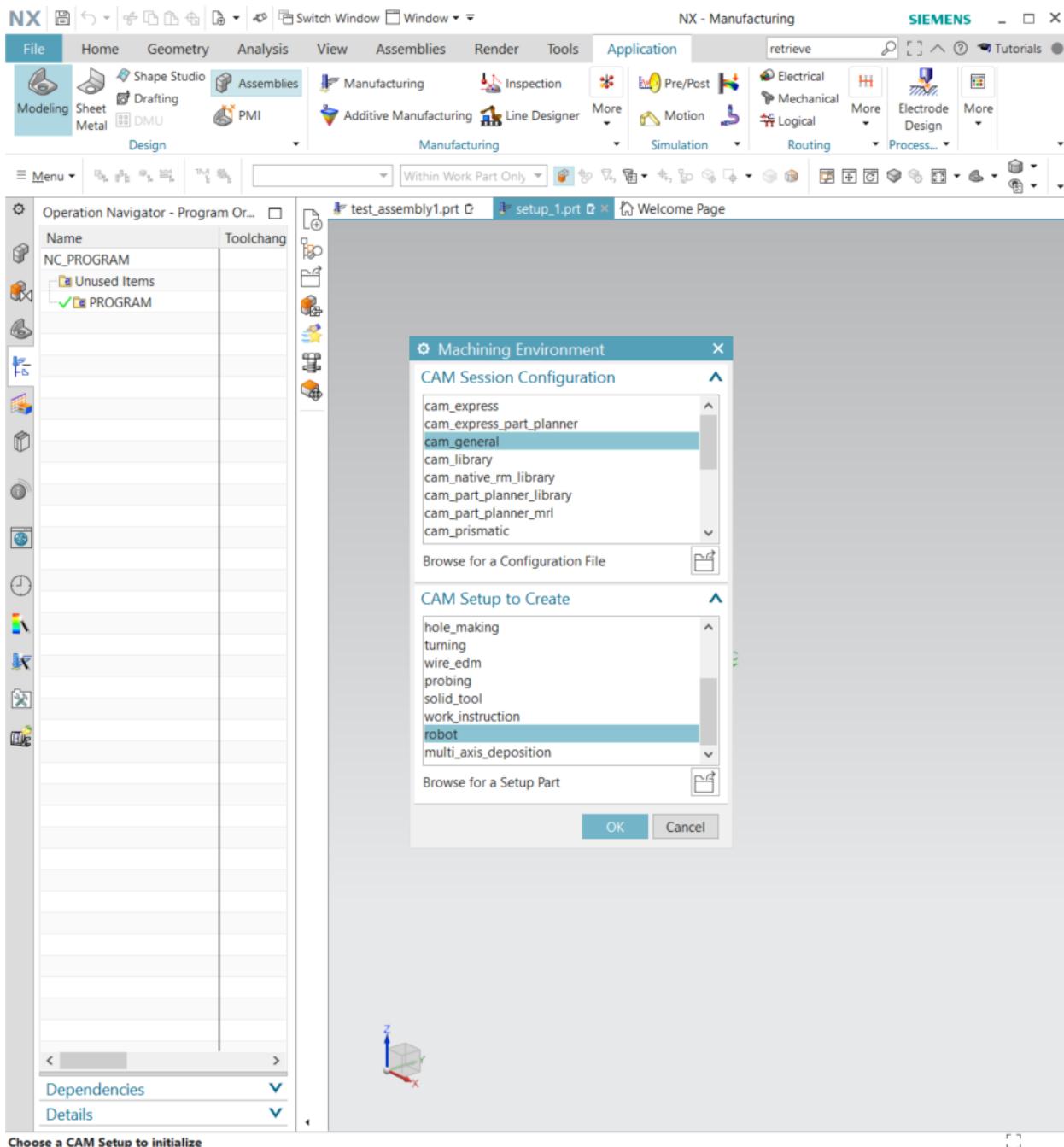
### Steps

1. If you don't have required robot model, copy downloaded robot model to your NX robot library.  
Location is <Installation Path>\MACH\resource\library\machine\installed\_machines
2. Edit *machine\_database.dat* file in notepad to add the new robot. Copy a line and change the name of the folder.
3. In NX go to new->Manufacturing and select Blank template.



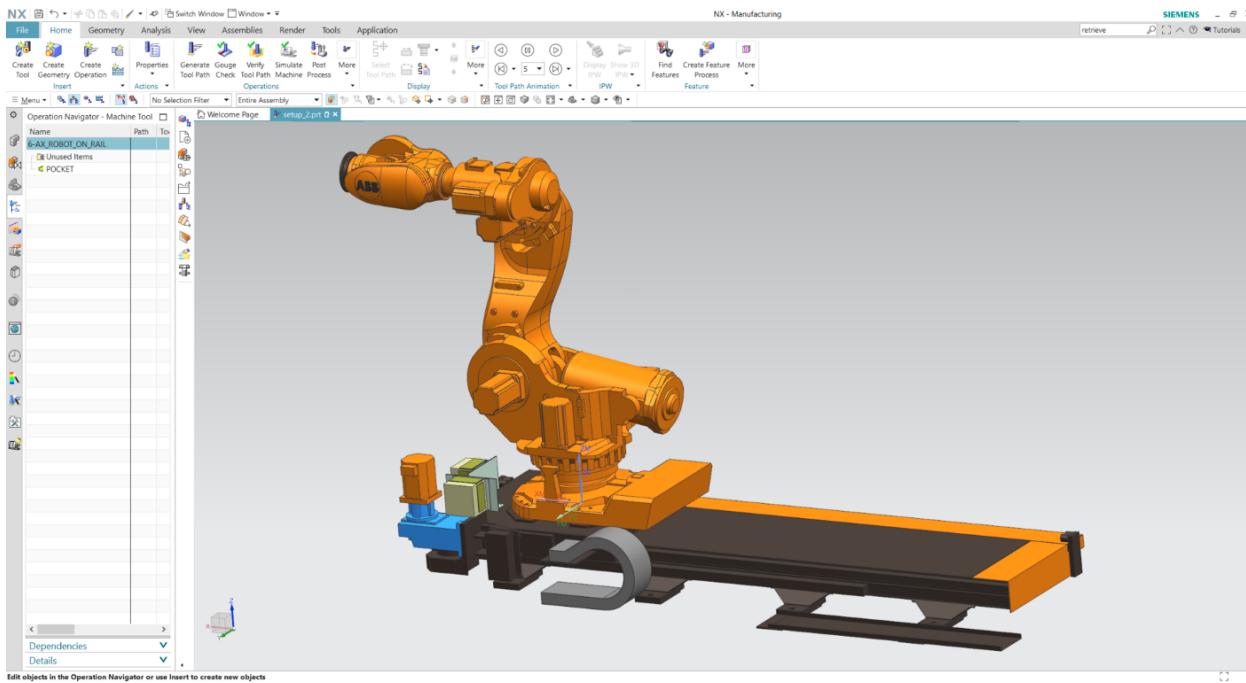
### Step 3

4. Select *robot* in “Cam Setup to Create”.



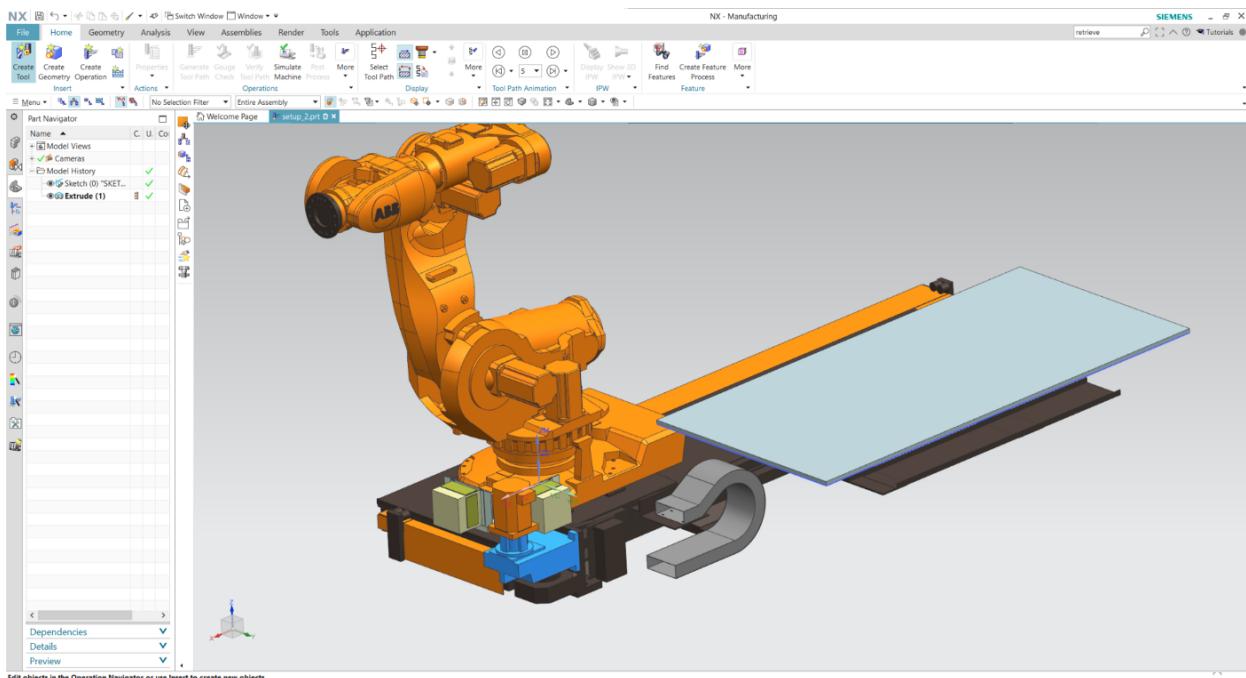
#### Step 4

5. Right-click on left navigator pane and select Machine Tool View and double click on GENERIC\_MACHINE.
6. From Generic Machine window, click "Retrieve Machine from Library" and double click on "ROBOT".
7. Select the required robot and click ok. Click ok for Part mounting. Click ok for Add Machine Part dialogue. Close Information window.
8. Now you have the robot imported.



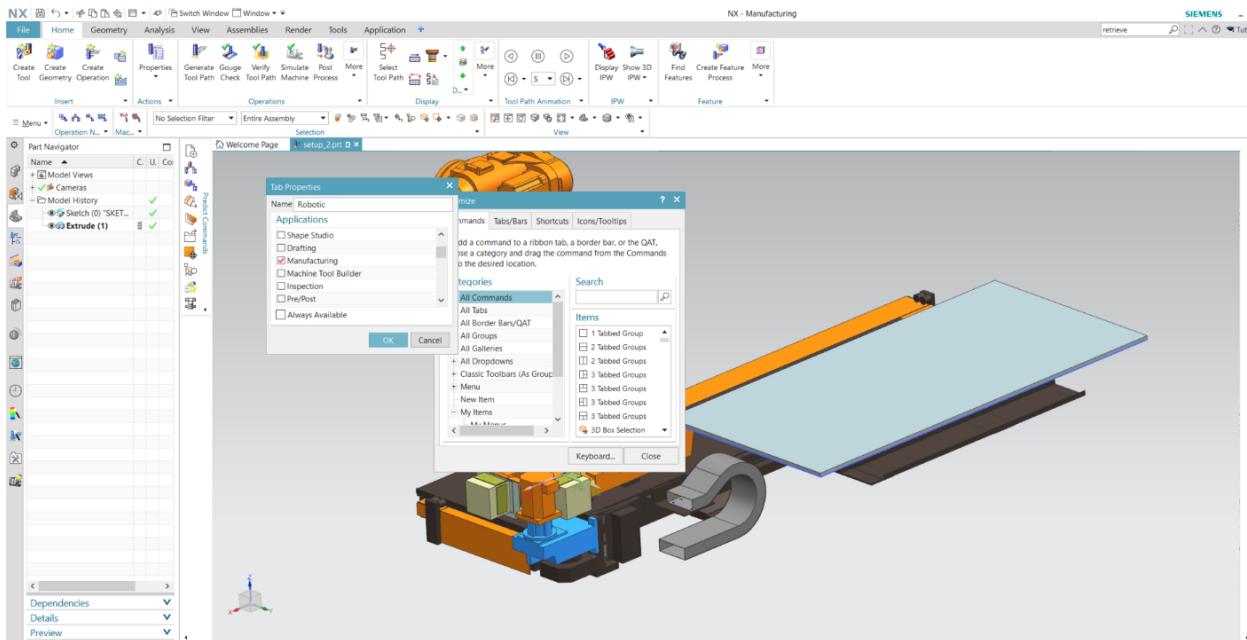
### Step 8

9. Go to the Application tab and click on modelling button on the ribbon. Create a workpiece. Press Ctrl+T to move the piece and switch back to manufacturing again from the applications tab. This step required your CAD talent.



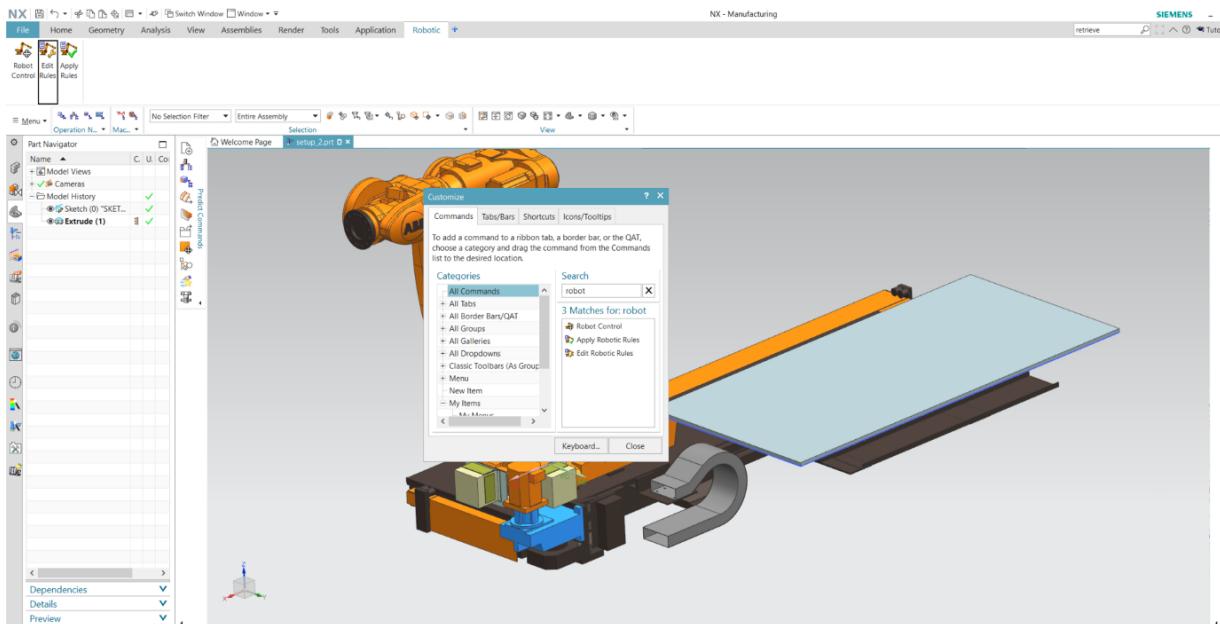
### Step 9

10. Right-click on the bar on the top which menu bar is in and click customise Click on pus button on the bar and name the tab. Then untick all except Manufacturing.



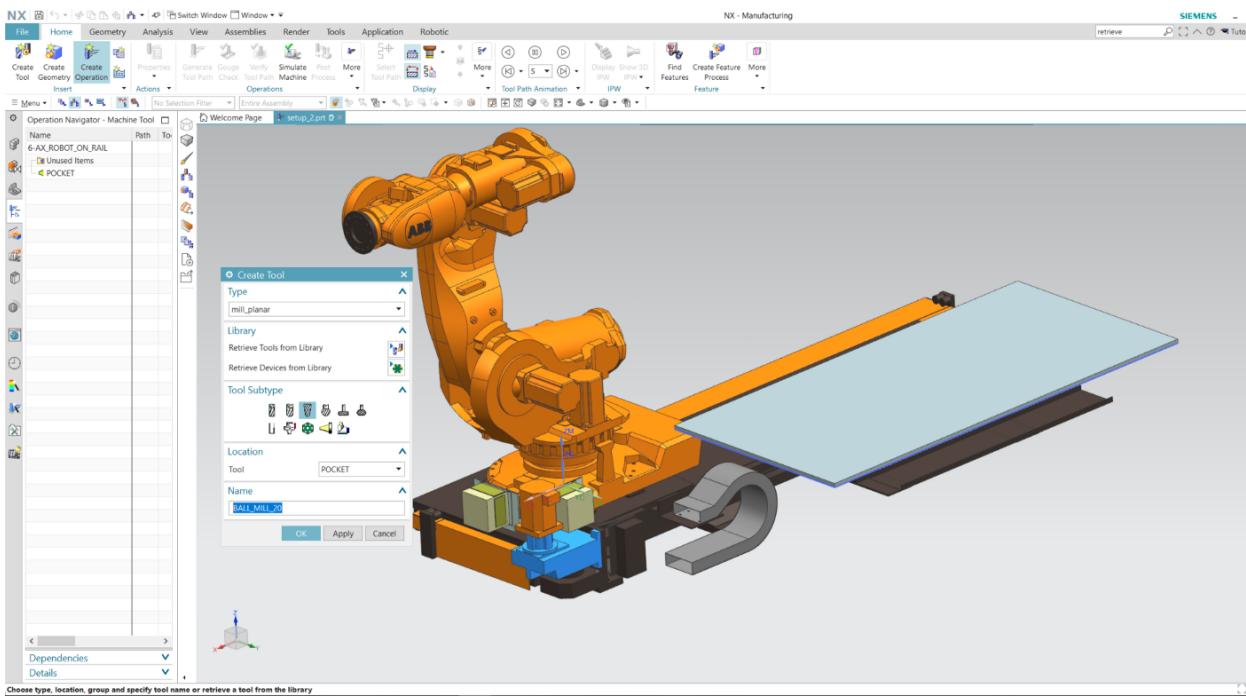
## Step 10

11. Then in customise window type “robot” in search box and drag and drop all three functions to the ribbon.



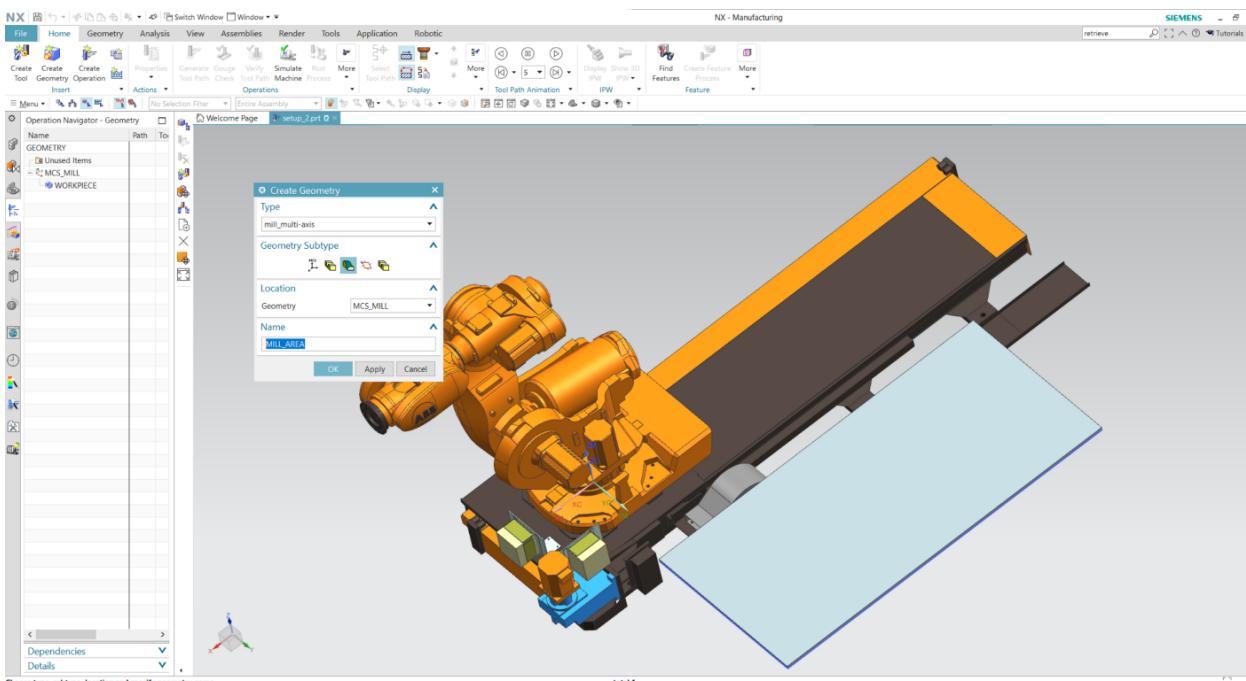
## Step 11

12. In the machine tool view, right-click on POCKET and go to insert and select tool.



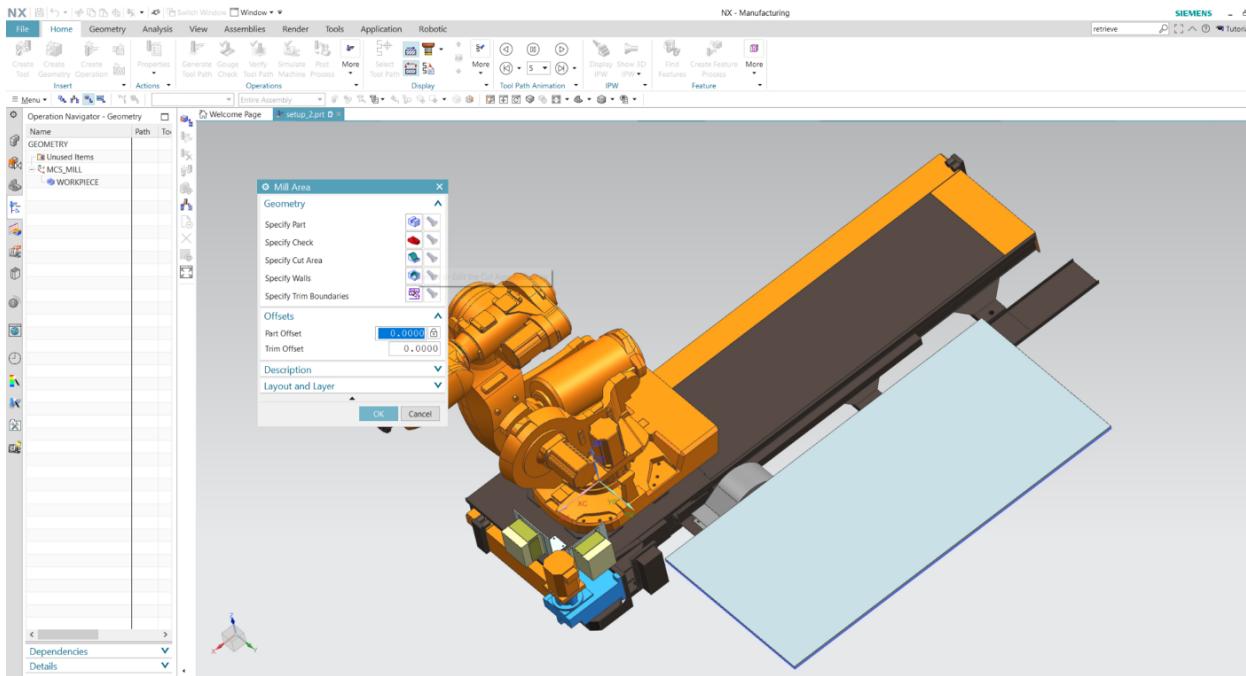
## Step 12

13. Go to geometry view by right-clicking in the left pane. Right-click on MCS\_MILL and go to insert and select geometry. In create geometry window, elect mill\_multi-axis for type and under Geometry Subtype, select Mill Area and click ok.



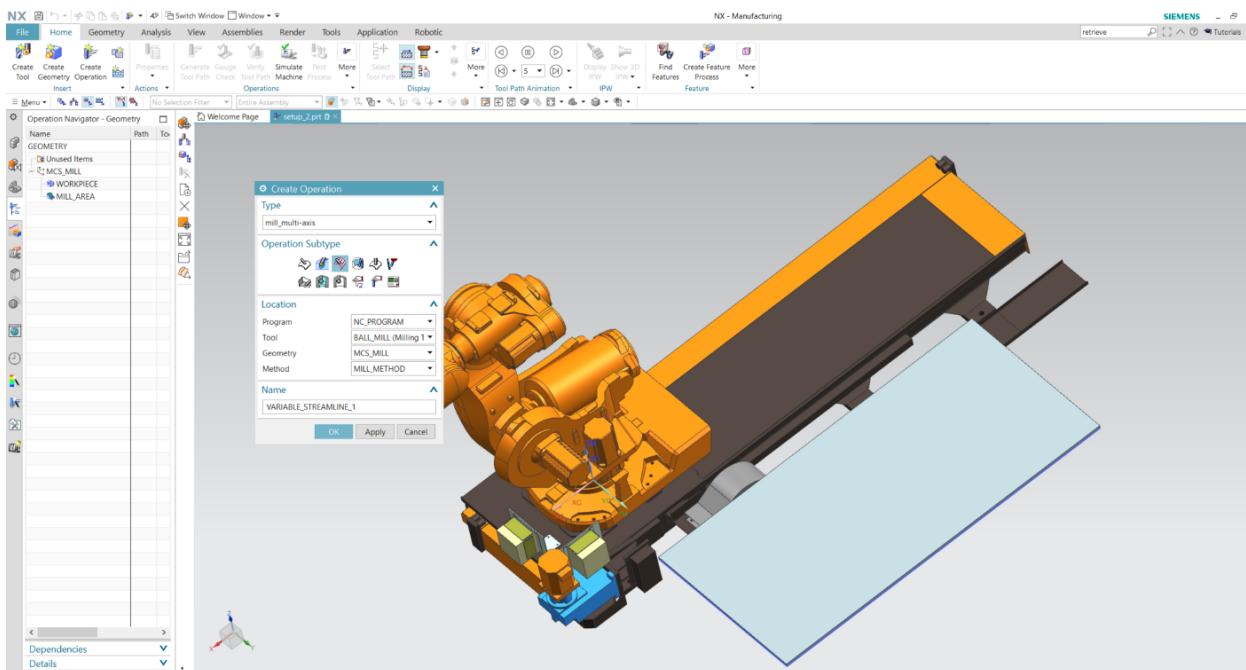
## Step 13

14. Then click on specify the cut area in other window and select the work surface and click ok.



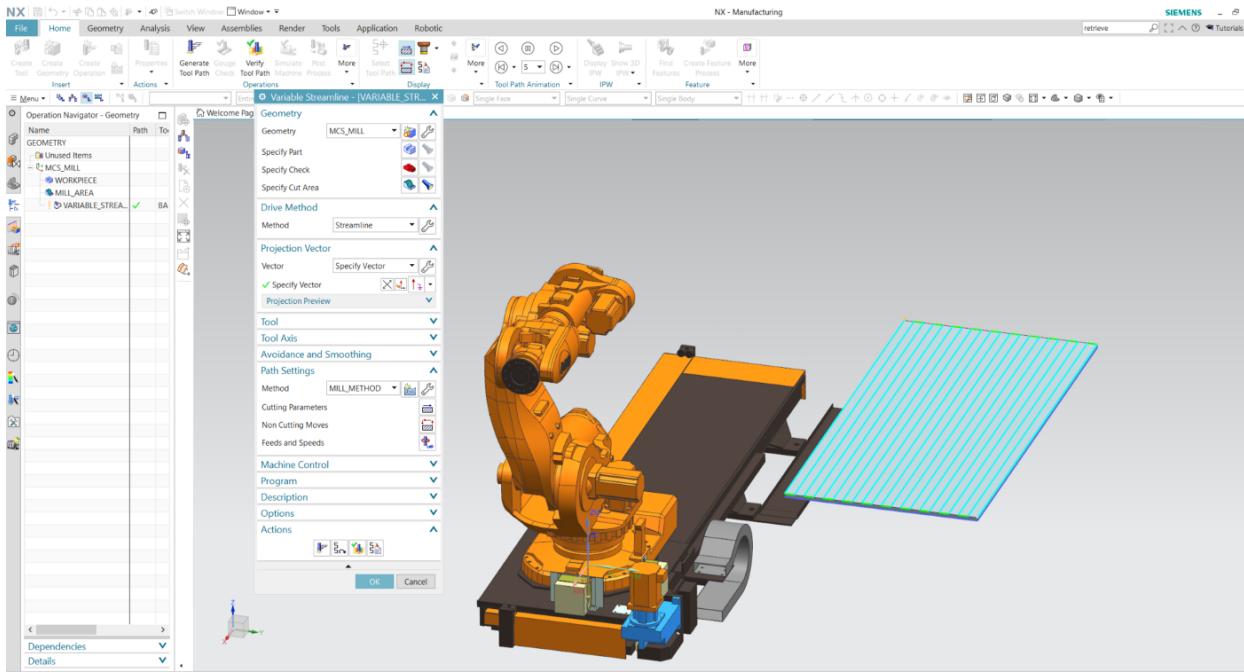
## Step 14

15. In the home tab click on Create Operation and select mill\_multi-axis as type, variable streamline as Operation Subtype, Ball\_MILL as the tool, MCS\_MILL as Geometry, and MILL\_METHOD as Method. Change the name to something suitable.

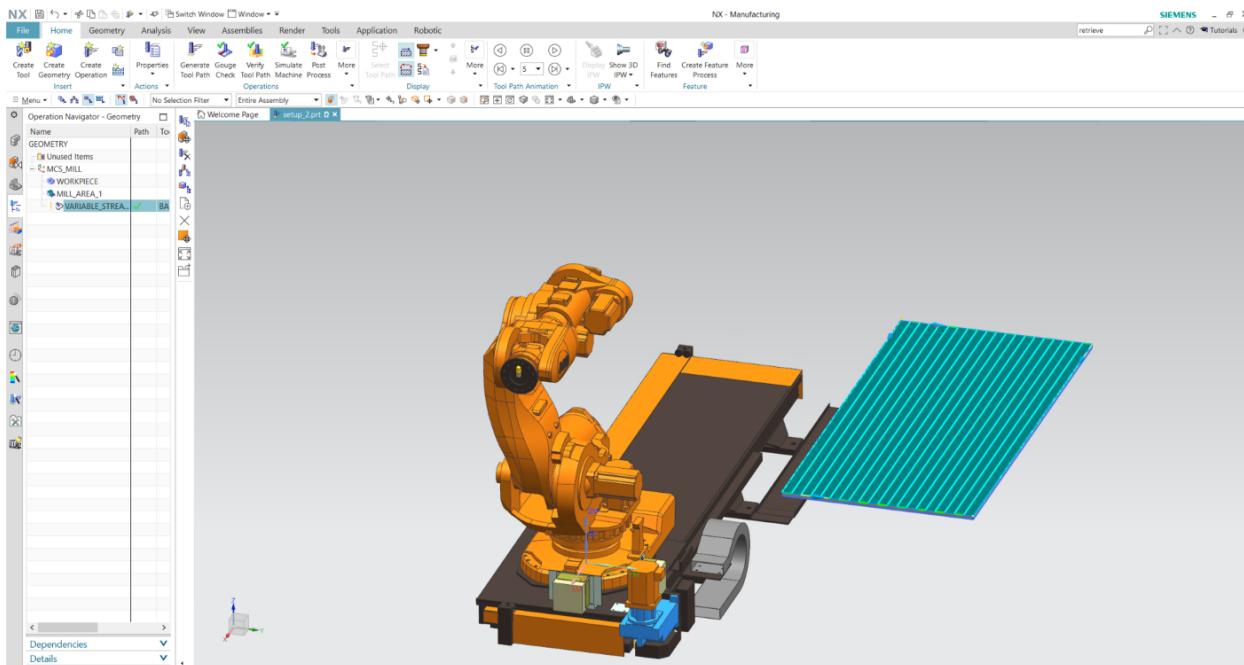


## Step 15

16. In variable cutting region window Specify Cut Area, under Projection Vector, select Specify Vector and select down vector. And finally at the bottom under Actions click Generate button and see the tool path.

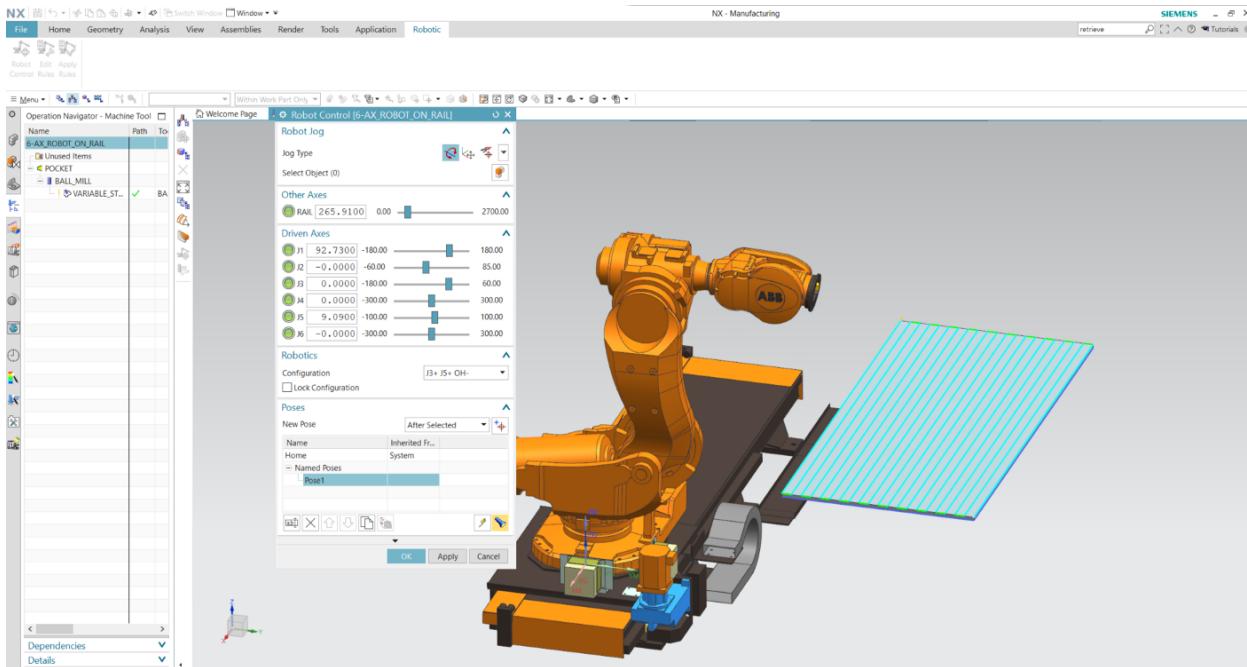


## Step 16



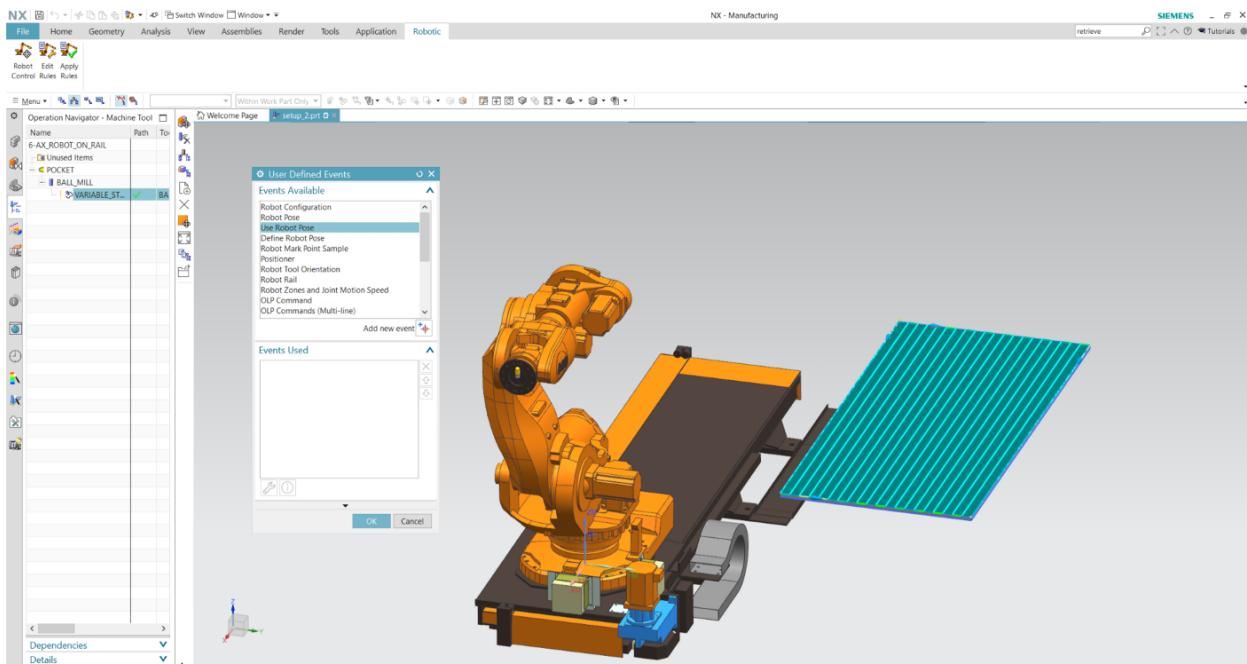
## Step 16 — Created Tool Path

17. Go to Robotic tab we created earlier and click on Robot Control. Under Driven Axes, change any joint which is blue slightly (near to singularity). Under Poses click on new pose button on the right corner and save it with a name. Under the Rules section, go to Rail tab and in the drop-down for Mode, change it to follow Tool Path. Otherwise, the robot won't move on the rail.

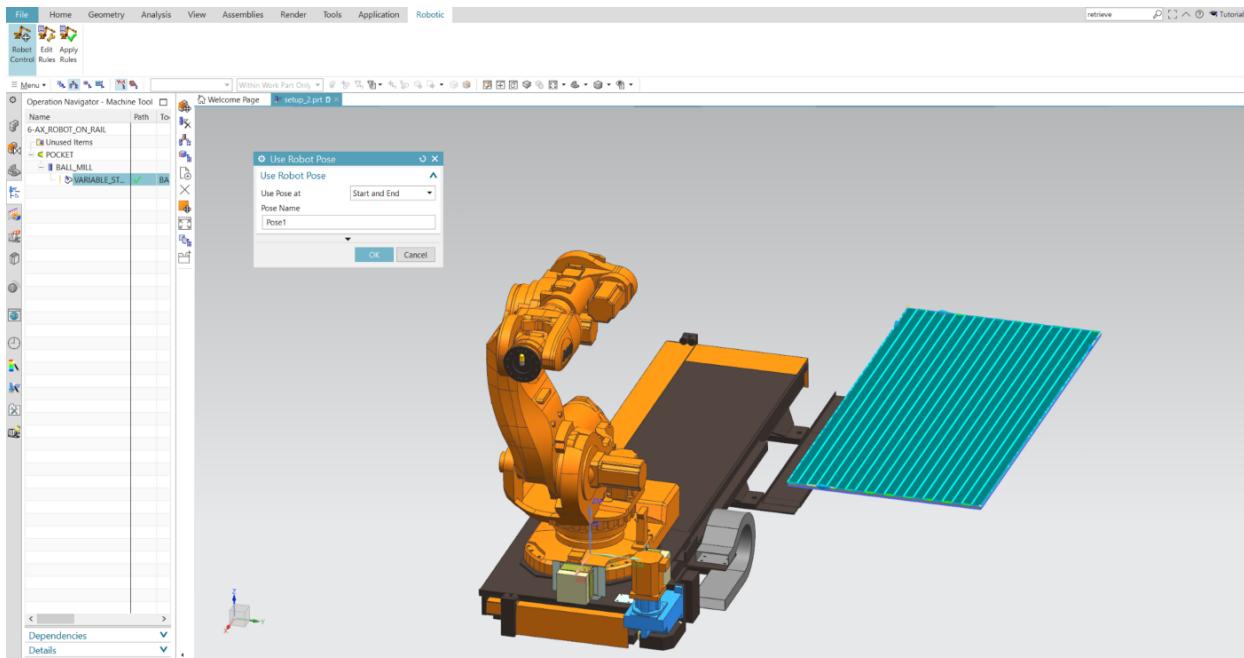


## Step — 17

18. Select variable streamlines operation and click on Edit Rules in Robotic tab and select Use Robot Pose and press add a new event. After click ok set the same pose name which was created earlier. After all, click the Apply Rules button on the Robotic Tab.



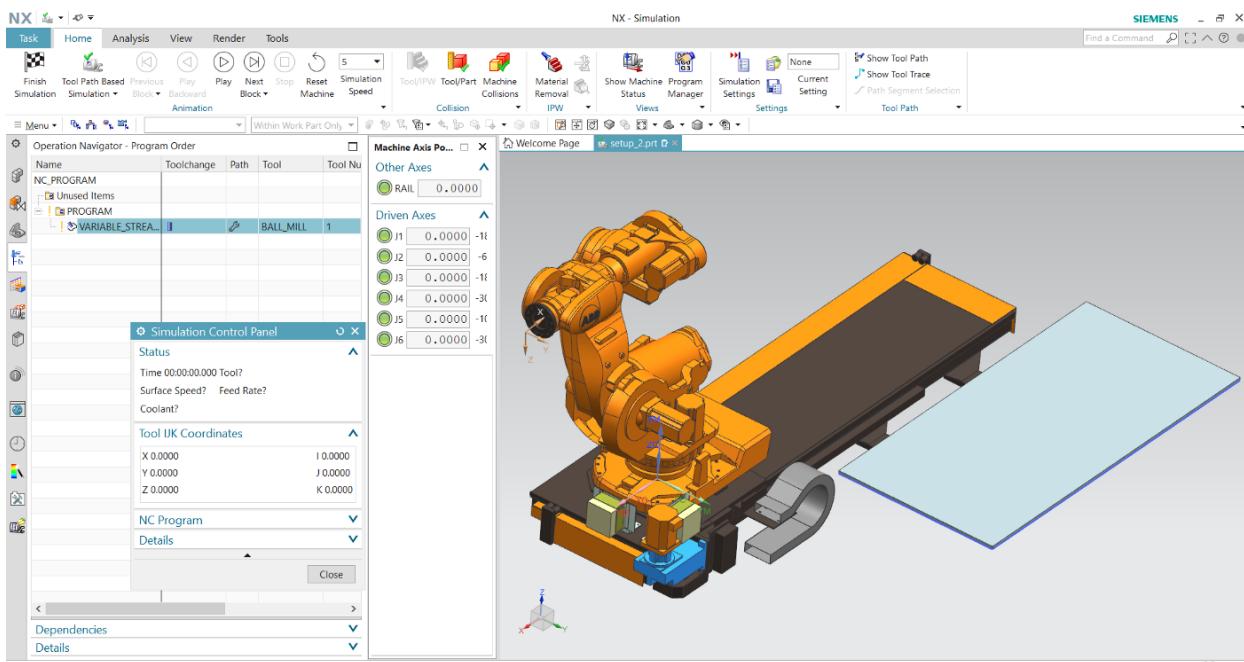
## Step 18 — Set Robot Pose Without Singularity



### Step 18 — Set Pose Name

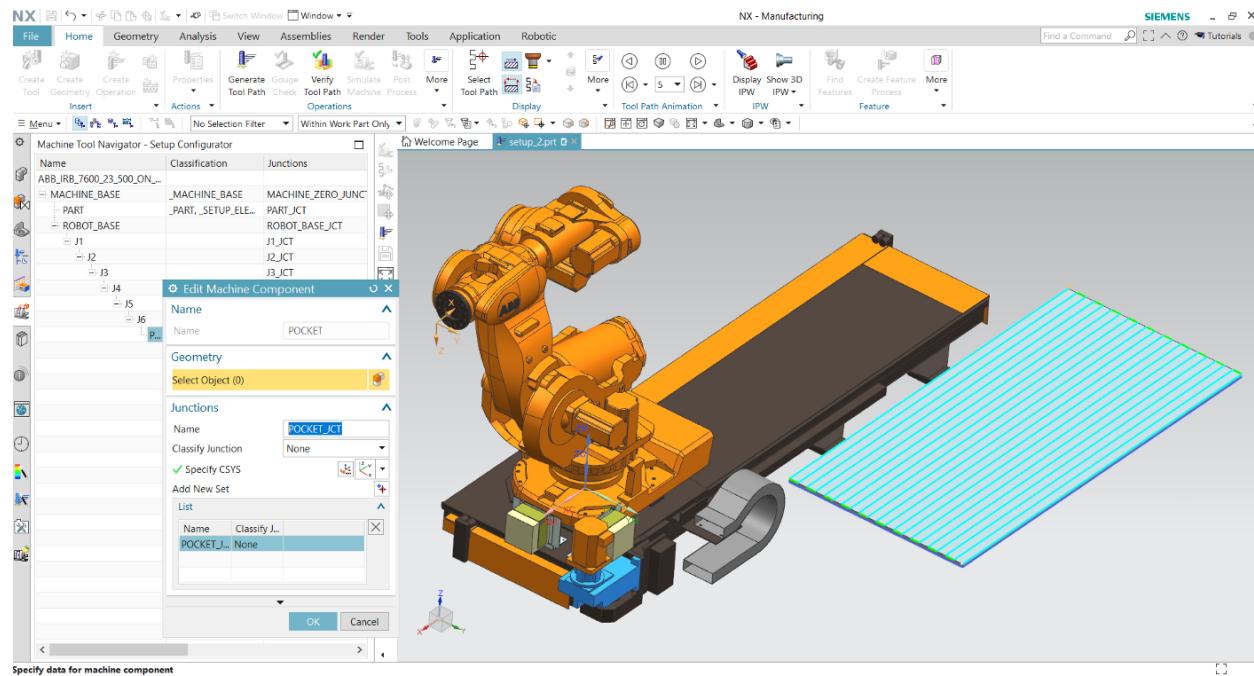
19. Click on Simulate Machine button in the Home Tab.

20. Then click on the Play button on the home tab. It will start the simulation of the robot. If you encounter any reachability or singularity issues, try changing initial pose and location of the workpiece.



### Step — 20

21. If you need to change the location of the tool head, click on machine tool navigator on the left icon pane and expand the ROBOT\_BASE till you find the pocket. Right-click on it and go to Edit-Machine component and set the tooltip location as required.



Step — 21