

Siemens PLM Software

NX CAM 11.0.1:

Depth First Ordering in Area Milling

Machine cut order regions in a top-down, depth-first manner.

About NX CAM

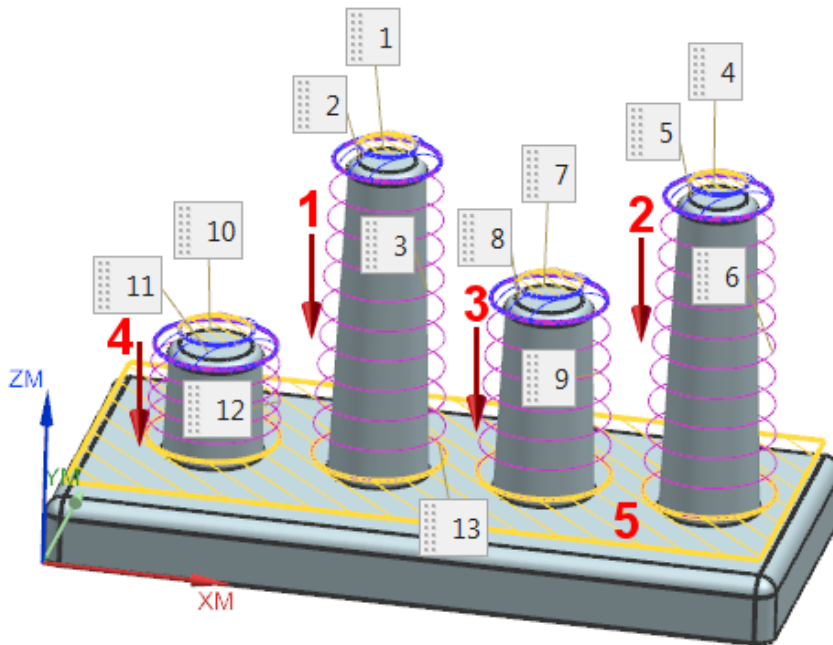
NX™ CAM software has helped many of the world's leading manufacturers and job shops produce better parts faster. You can also achieve similar benefits by making use of the unique advantages NX CAM offers.

This is one of many hands-on demonstrations designed to introduce you to the powerful capabilities in NX CAM 11.0.1. In order to run this demonstration, you will need access to NX CAM 11.0.1.

Visit the [NX Manufacturing Forum](#) to learn more, ask questions, and share comments about NX CAM.

Hands-on Demonstration: Depth First Ordering in Area Milling

When using the Steep and Non-steep containment method in the Area Milling drive method, NX can now cut regions from top to bottom, ordering each set of regions according to the next highest maximum ZM value.

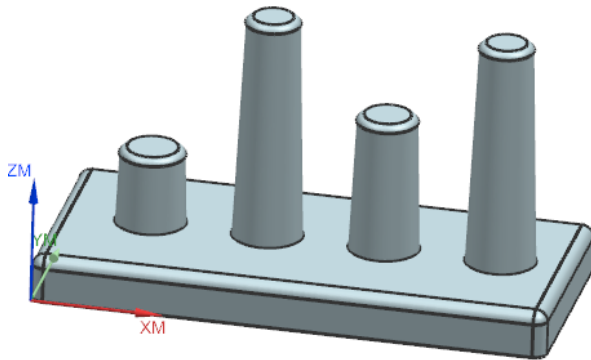


Prerequisites:

1. You will need access to **NX CAM 11.0.1** in order to run this demonstration.
2. If you haven't done so already, download and unzip **depth_first_ordering.7z**.


Demo:

1. Open **depth_first_1.prt** in NX.

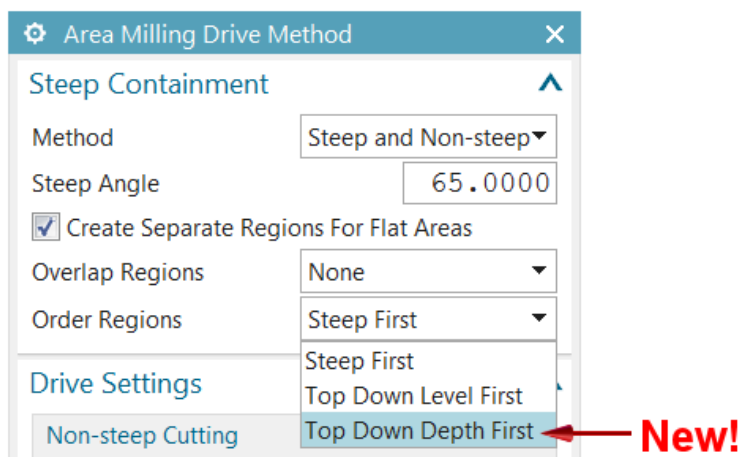


2. Double-click **CONTOUR_AREA** to edit the operation.

Notice that the Drive Method is set to Area Milling.

3. In the **Drive Method** section of the dialog box, click **Edit** .

Top Down Level First retains the behavior of the previous Top Down option (completing each cut level across multiple regions before moving down to the next level). Top Down Depth First is a new option that cuts regions from top to bottom, ordering each set of regions according to the next highest maximum ZM value.

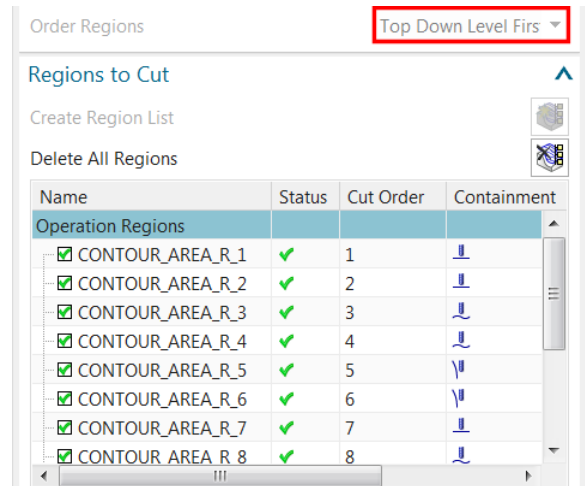
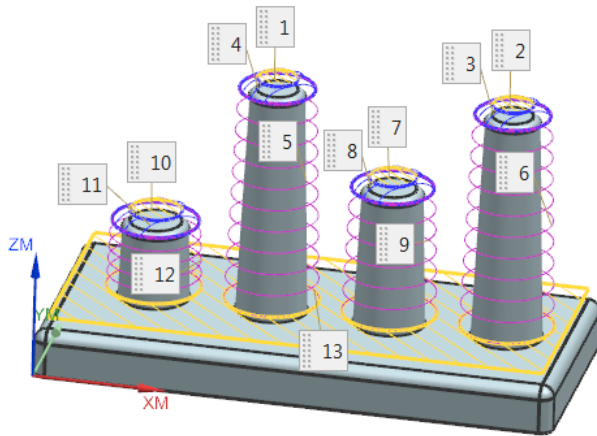


You will first observe the existing behavior of Top Down Level First. You will then compare it to the new behavior of Top Down Depth First.


4. Click **Cancel**.

5. Click **Cut Regions** .

When Top Down Level First is specified, NX orders cut regions the same as Top Down did in NX11. Cut regions of different types with the same maximum ZM value (they are at the same height) are cut in the following order: 1) flat, 2) non-steep, 3) steep. In this example, cut regions 1 and 2 have the same maximum ZM value as cut regions 3 and 4. Cut regions 1 and 2 are flat, so they are cut first.



6. Click **Cancel**.

7. In the **Drive Method** section of the dialog box, click **Edit** .

8. Select **Top Down Depth First** from the **Order Regions** list.

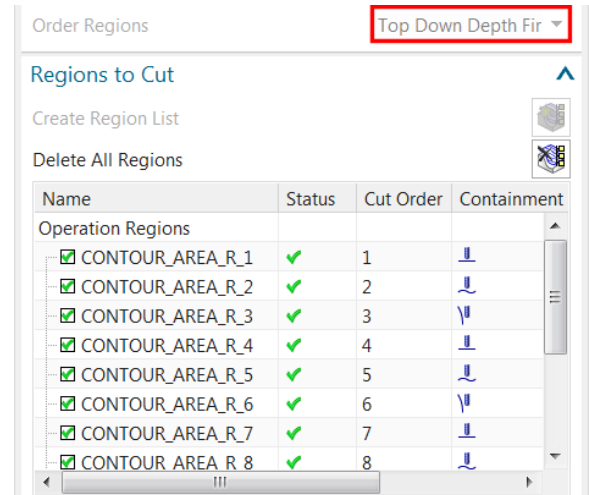
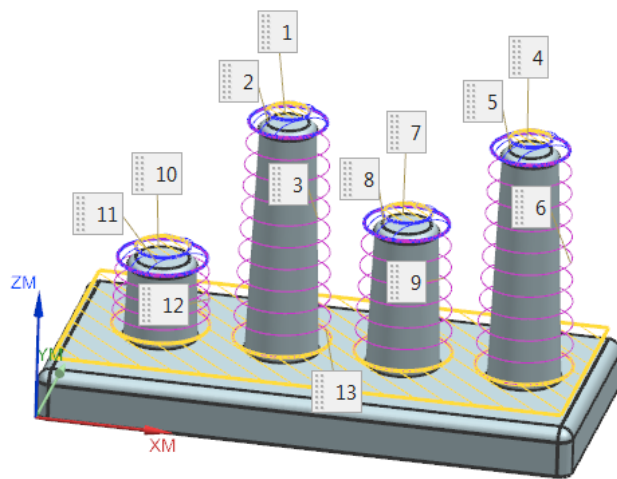
9. Click **OK**.

10. Click **Cut Regions** .

11. Click **Delete All Regions** .


12. Click **Create Region List** .


When Top Down Depth First is specified, region sets are cut from top to bottom, ordering each cut according to the next highest maximum ZM value. When maximum ZM values are the same (as with 1 and 4), the region closest to the MCS is cut first.

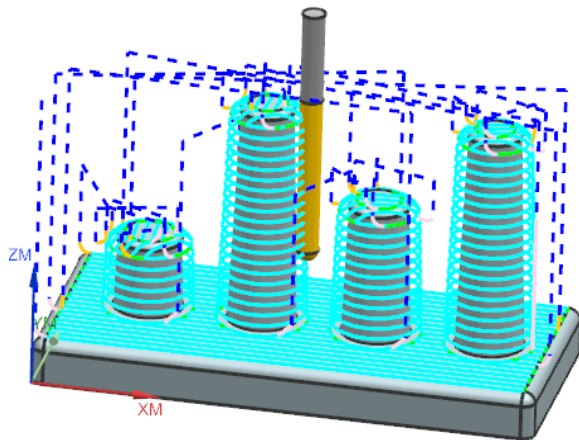


13. Click **OK**.

14. Click **Generate** .

15. Click **Verify** .

16. Set the **Animation Speed** to an appropriate value and click **Play** .



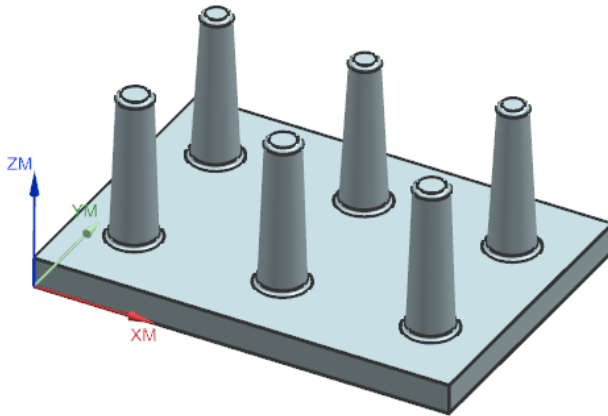
17. Click **OK** to complete the tool path visualization.

18. Click **OK** to complete the operation.

19. Close the part without saving.

Next, you will observe how the cut order is optimized to minimize the distance between top-down region sets of the same height and type.

1. Open **depth_first_2.prt** in NX.



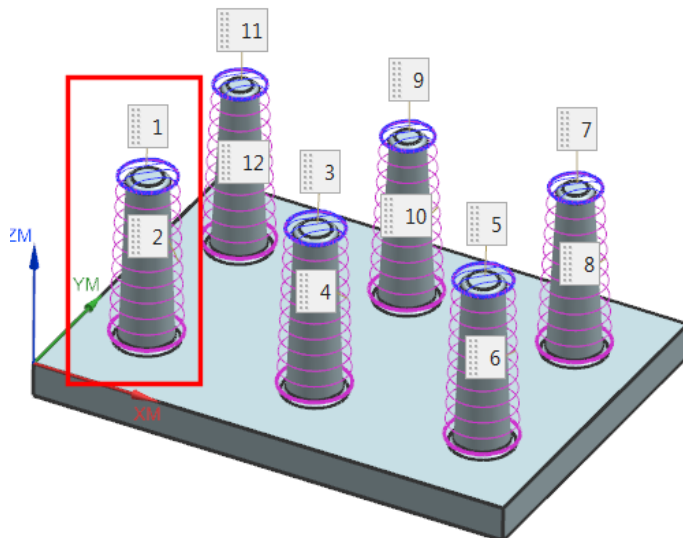
2. Click **Geometry View**.

Notice that each operation uses a different MCS.

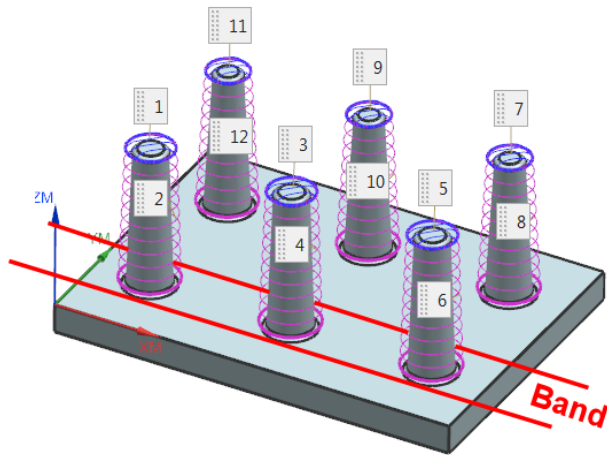
3. Click each MCS in the Operation Navigator to see the location and orientation.
4. Double-click **CONTOUR_AREA_MCS_1** to edit the operation.


5. Click **Cut Regions** .

The first region cut is the one closest to the MCS.

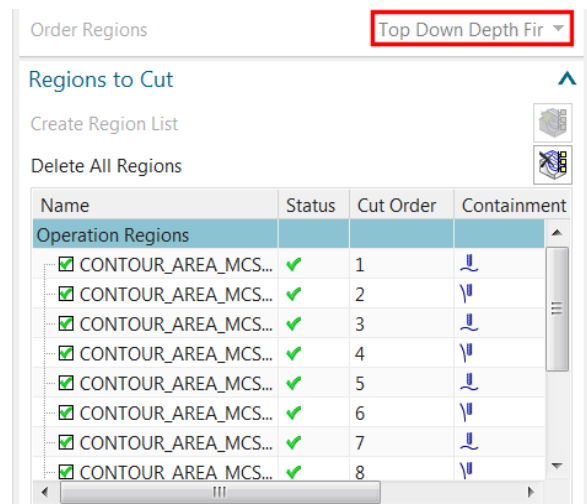
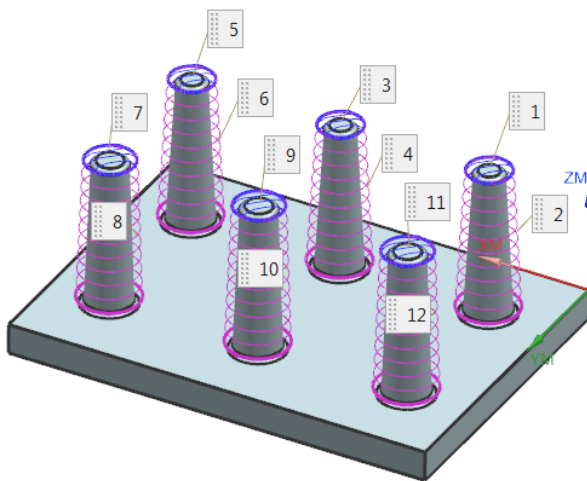


The maximum ZM region with a centroid that lies on or near the same YM band will be cut next from -XM to +XM (1-3). In other words, top-down regions sets are cut in approximate rows (bands) along XM.



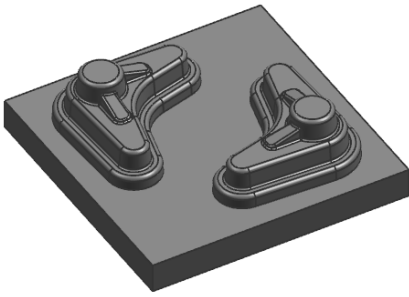
6. Click **Cancel** in the **Cut Regions** dialog box.
7. Click **Cancel** again to exit the operation.
8. Double-click **CONTOUR_AREA_MCS_3** to edit the operation.
9. Click **Cut Regions** .

Notice the order of the cut regions relative to the location and orientation of the MCS.

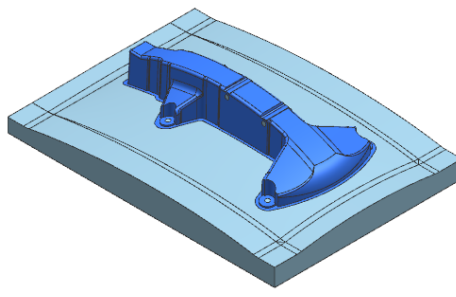


10. Click **Cancel**.
11. Click **Cancel** to exit the operation.
12. Continue to explore the ordering of the cut regions relative to the MCS for each operation.
13. When you have finished, close the part without saving.

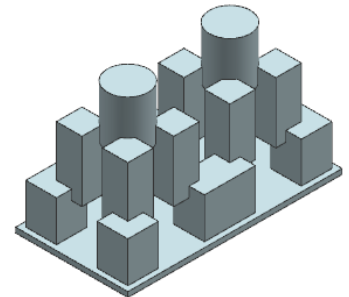
14. Use **depth_first_practice_1.prt**, **depth_first_practice_2.prt**, and **depth_first_practice_3.prt** for additional practice.



top_down_practice_1.prt



top_down_practice_2.prt



top_down_practice_3.prt

15. When you have finished, close the parts without saving.

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