

# Variable Axis Profiling and Curvature Matching

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# Variable Axis Profiling



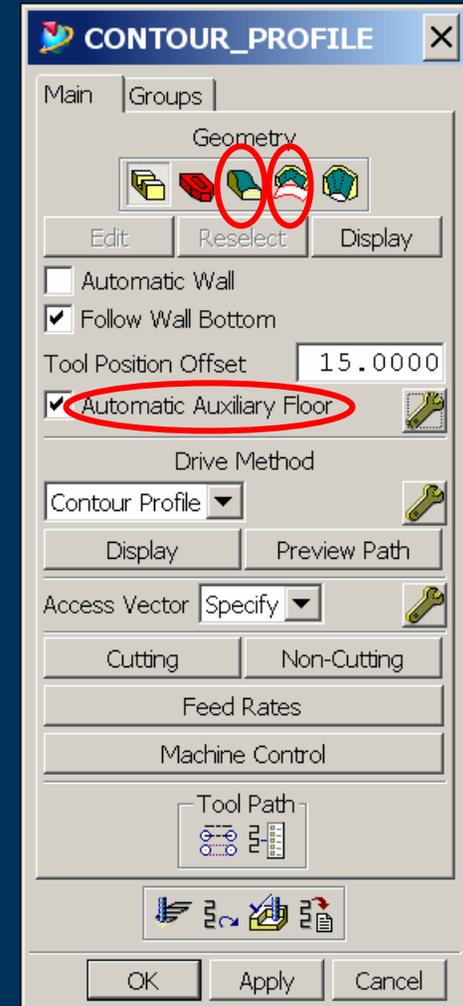
- ▶ Floor, Auxiliary Floor, Automatic Auxiliary Floor, Follow Wall Bottom
- ▶ Location of star and end of cut
- ▶ Extensions at star and end of cut
- ▶ Guided tool axis
- ▶ Access vector



# Floor, Auxiliary Floor, Automatic Auxiliary Floor, Follow Wall Bottom



- ▶ All “floors” are used to control the placement of the cutter
- ▶ Floor– face(s) on a cavity next to walls
- ▶ Auxiliary Floor– mostly to be used for no-floor cases
- ▶ Automatic Auxiliary Floor– a handy way to create an auxiliary floor. It is an infinite plane created from amx/min box around part
- ▶ Follow Wall Bottom

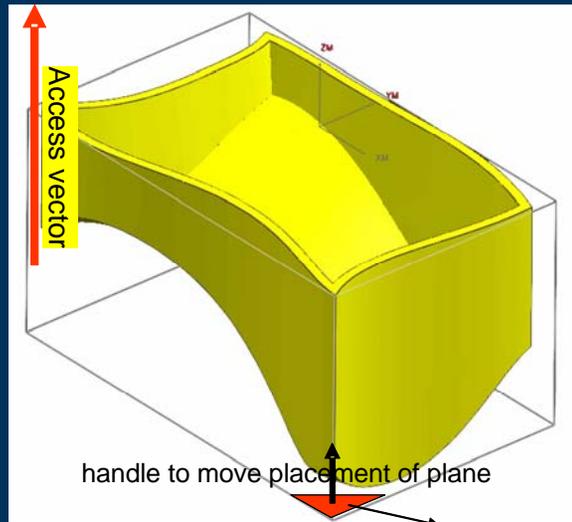




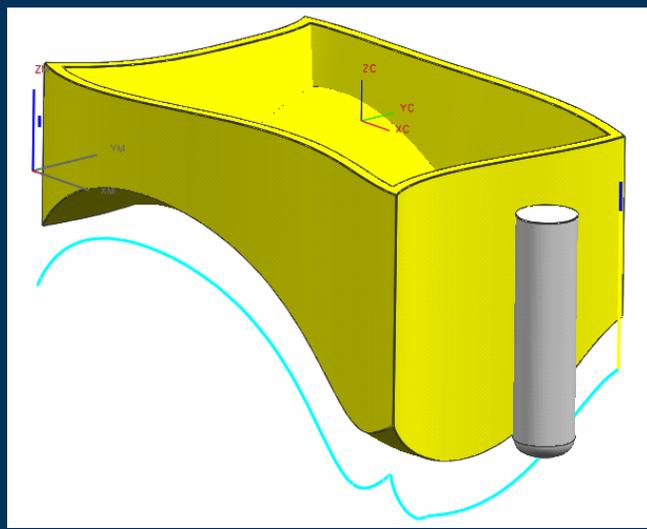
# Floor, Auxiliary Floor, Automatic Auxiliary Floor , Follow Wall Bottom



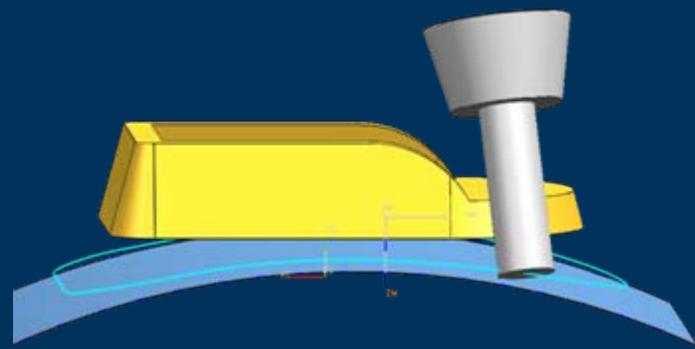
Follow floor



Automatic Auxiliary Floor



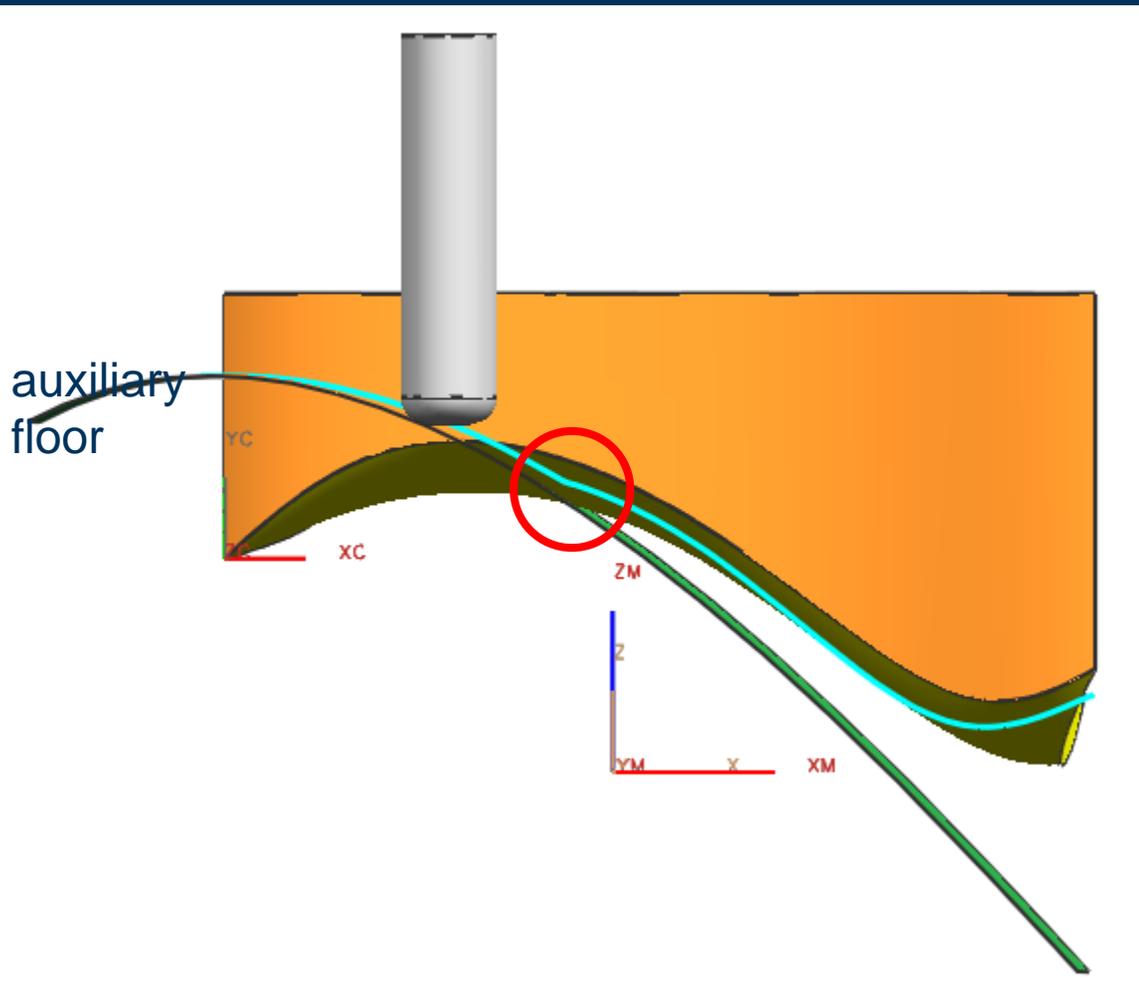
Follow wall bottom



Follow Auxiliary Floor



# Multiple Floors



The generated tool path follows the wall bottom, when the auxiliary floor is below the wall edge. When the auxiliary floor is above the wall bottom, the tool path is placed on the auxiliary floor (because this is encountered first by the tool)



# VAP Controlling Your Region



**Contour Profile Method**

Start of Cut  
 User Defined  Automatic

Select Reference Point

Extend Specify

Distance 0.0000

Tool Axis Automatic

End of Cut  
 User Defined  Automatic

Select Reference Point

Extend Specify

Distance 0.0000

Tool Axis Automatic

Display Preview Path

OK Back Cancel

## Star and End of Cut:

- Automatic– the system determines where to start/end cutting based on wall information
- User Defined– programmer has control of where to start, within the region defined by the wall

Extensions: available for both start and end of cut

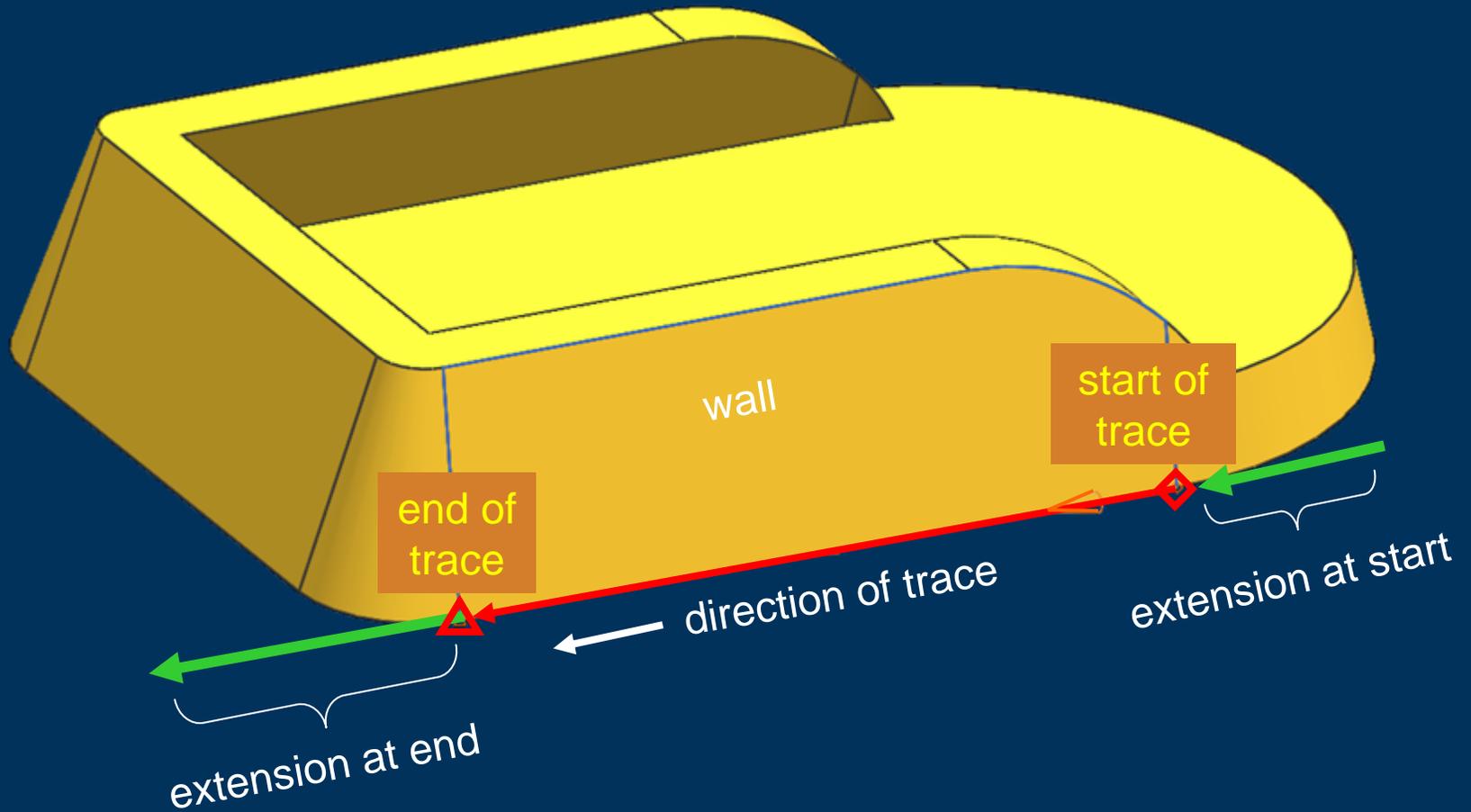
## Tool Axis:

- Automatic– the system determines the tool axis based on wall information
  - Guided– the user can define approximately the desired tool axis
- Access Vector (used only for NO FLOOR cases):

- Defines which half of the space to work in

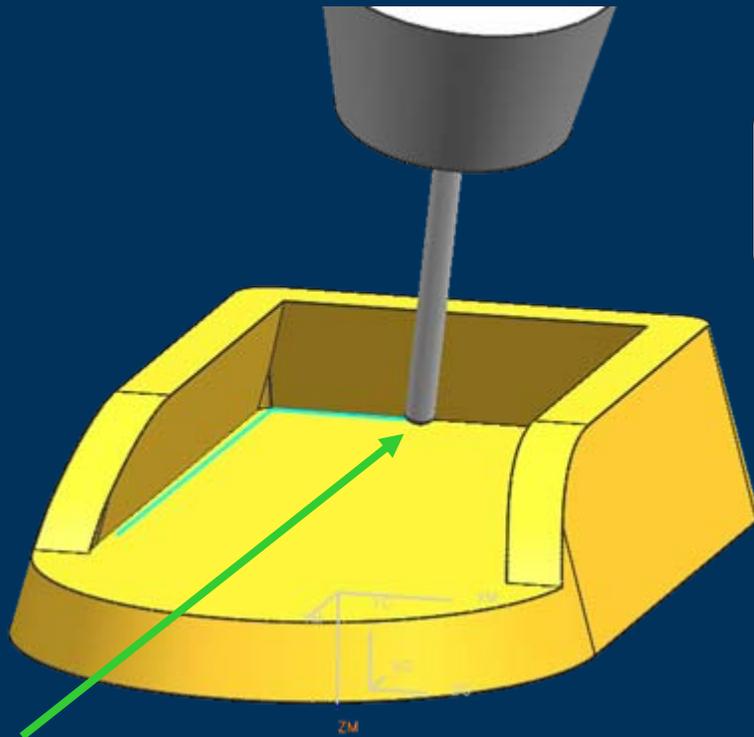


# Start and End of Cut

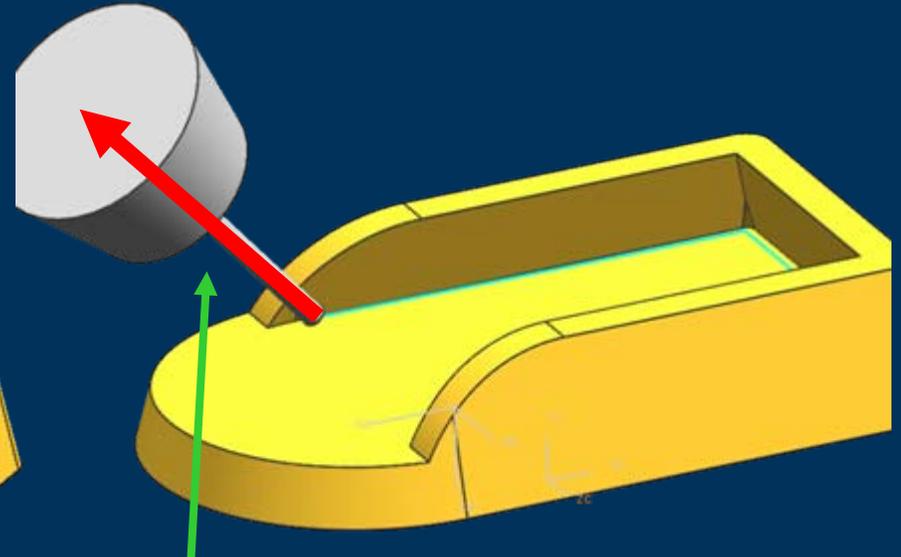




# Guided Tool Axis



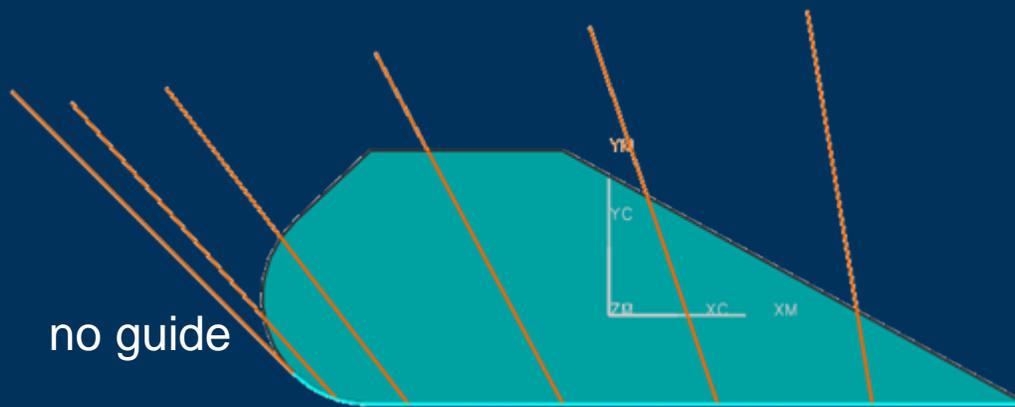
AUTOMATIC tool axis extracted from wall by processor



GUIDED tool axis provided by user

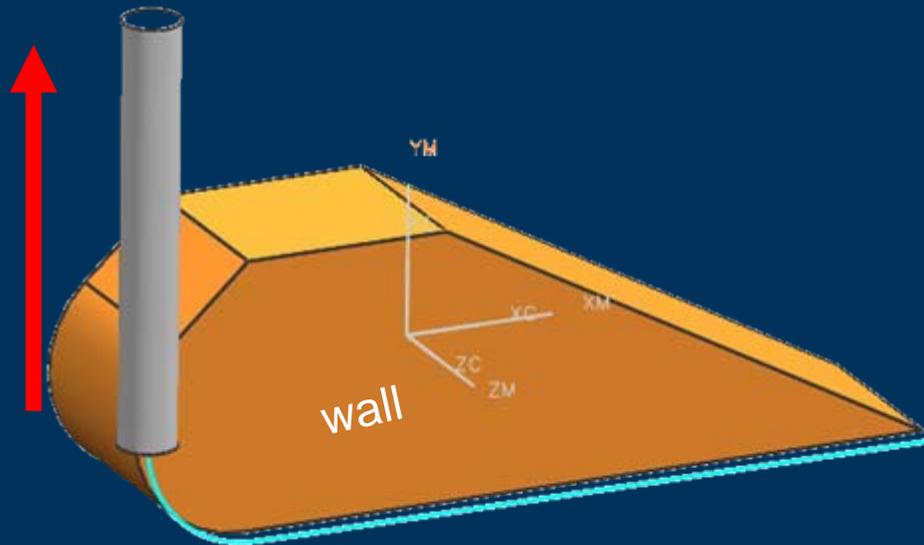


# Guided Tool Axis



Tool Axis= automatic

The system may not be able to obtain a good tool axis from the wall geometry

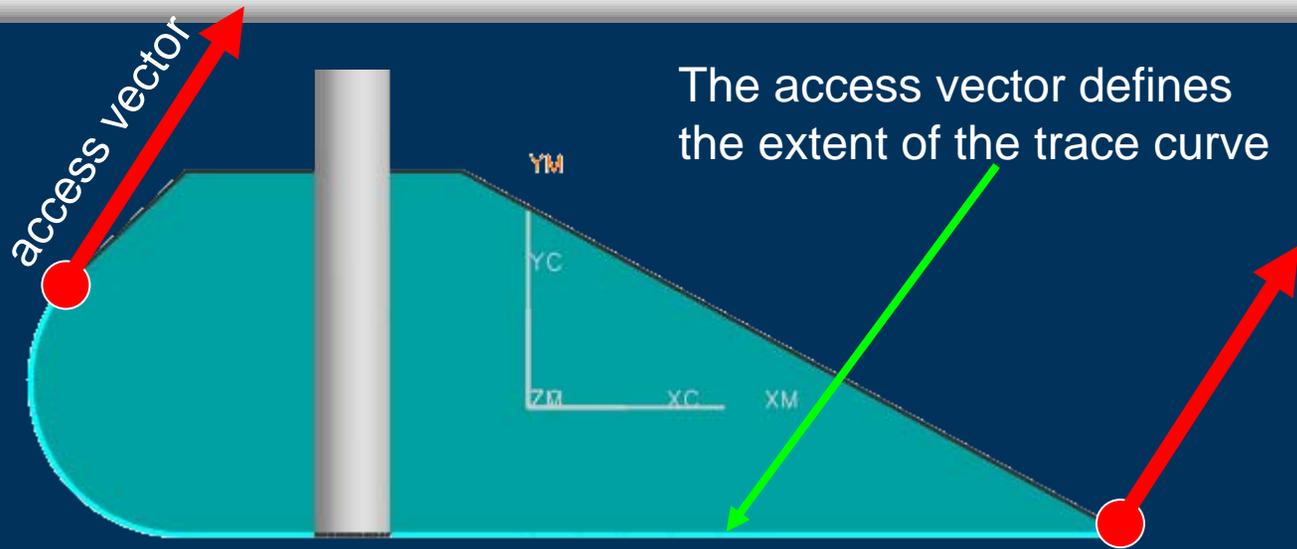


Tool Axis= guided

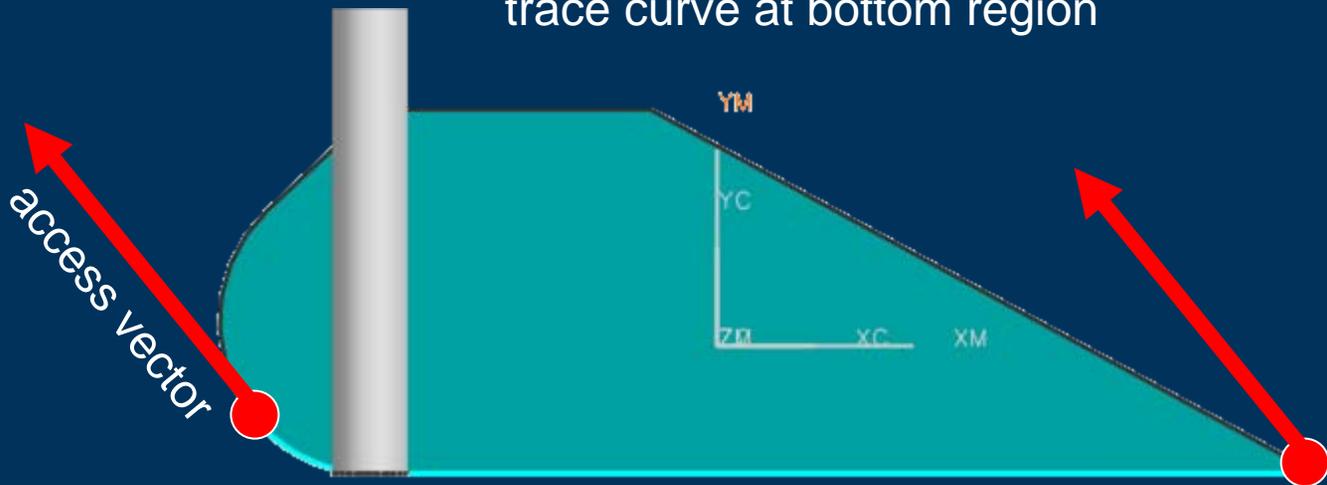
By the programmer providing a desired tool axis at the end, better results are obtained



# No Floor and Access Vector



trace curve at bottom region



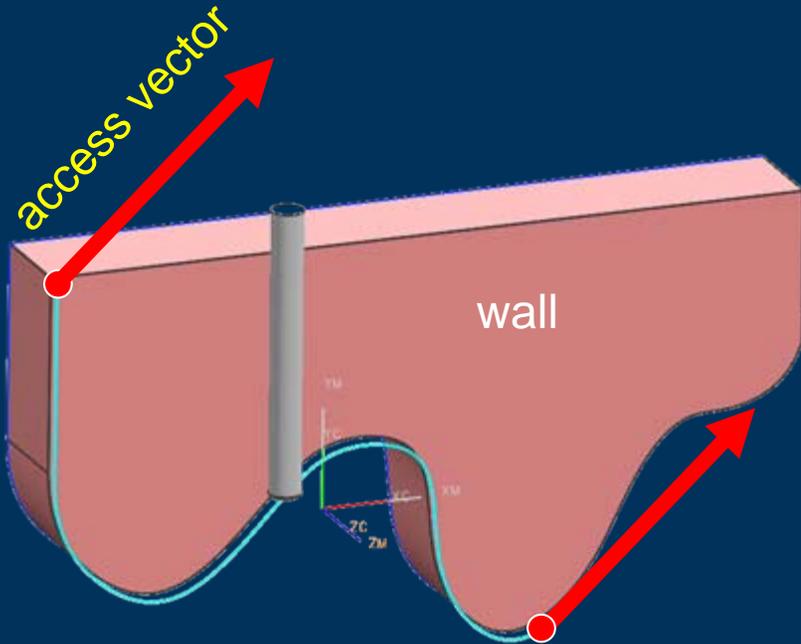
trace curve at bottom region



# Extending Trace by defining new start of cut location

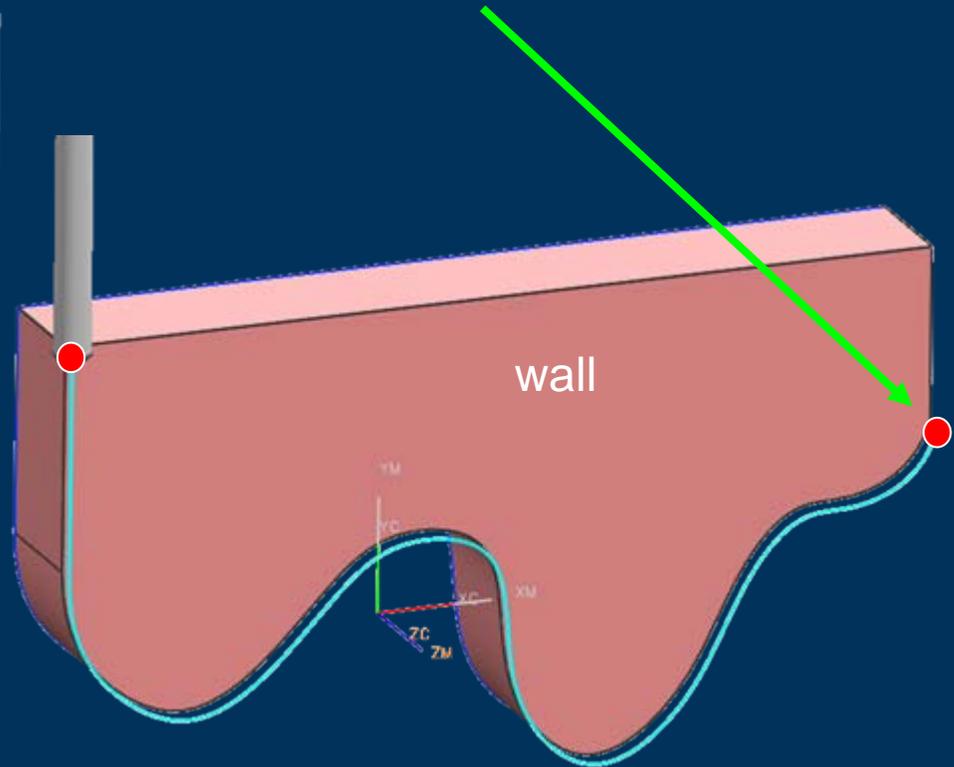


access vector



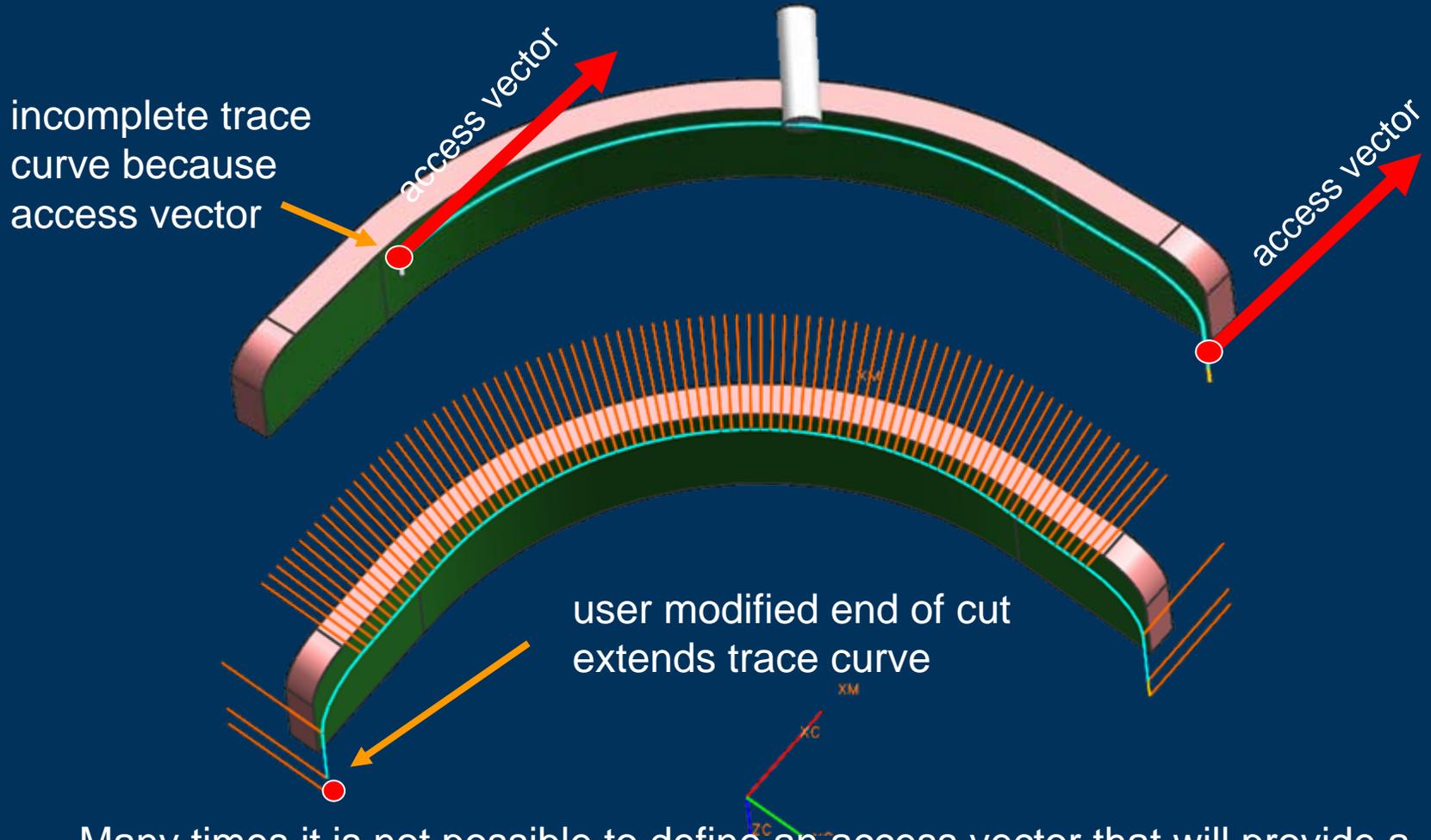
trace curve at bottom region  
may not provide desired coverage

it can be extended by defining a user  
defined start of cut





# Extending Trace by defining new start of cut location



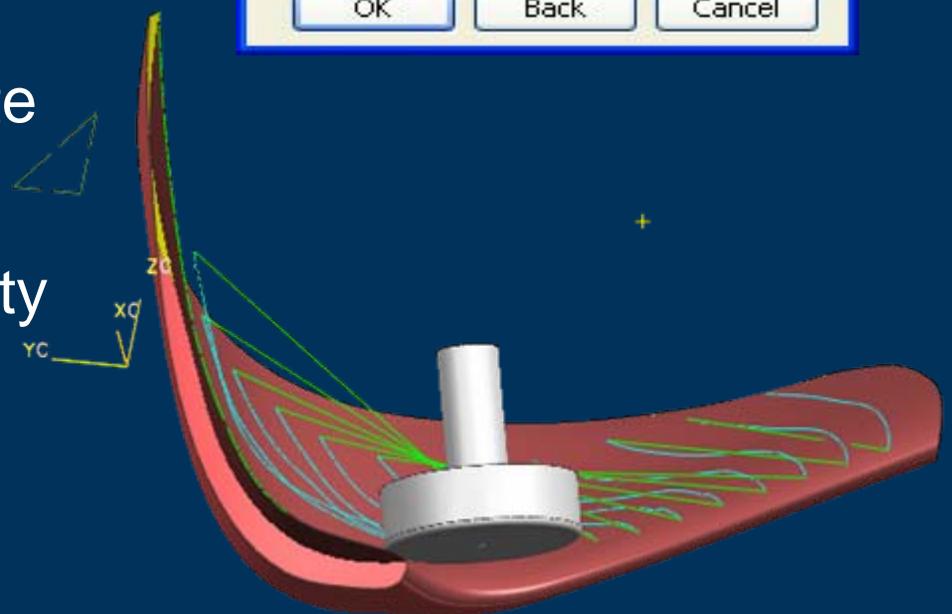
Many times it is not possible to define an access vector that will provide a good trace curve. In that case, users may modify the extent of the trace curve by providing a user defined start or end of cut location



# Curvature Matching

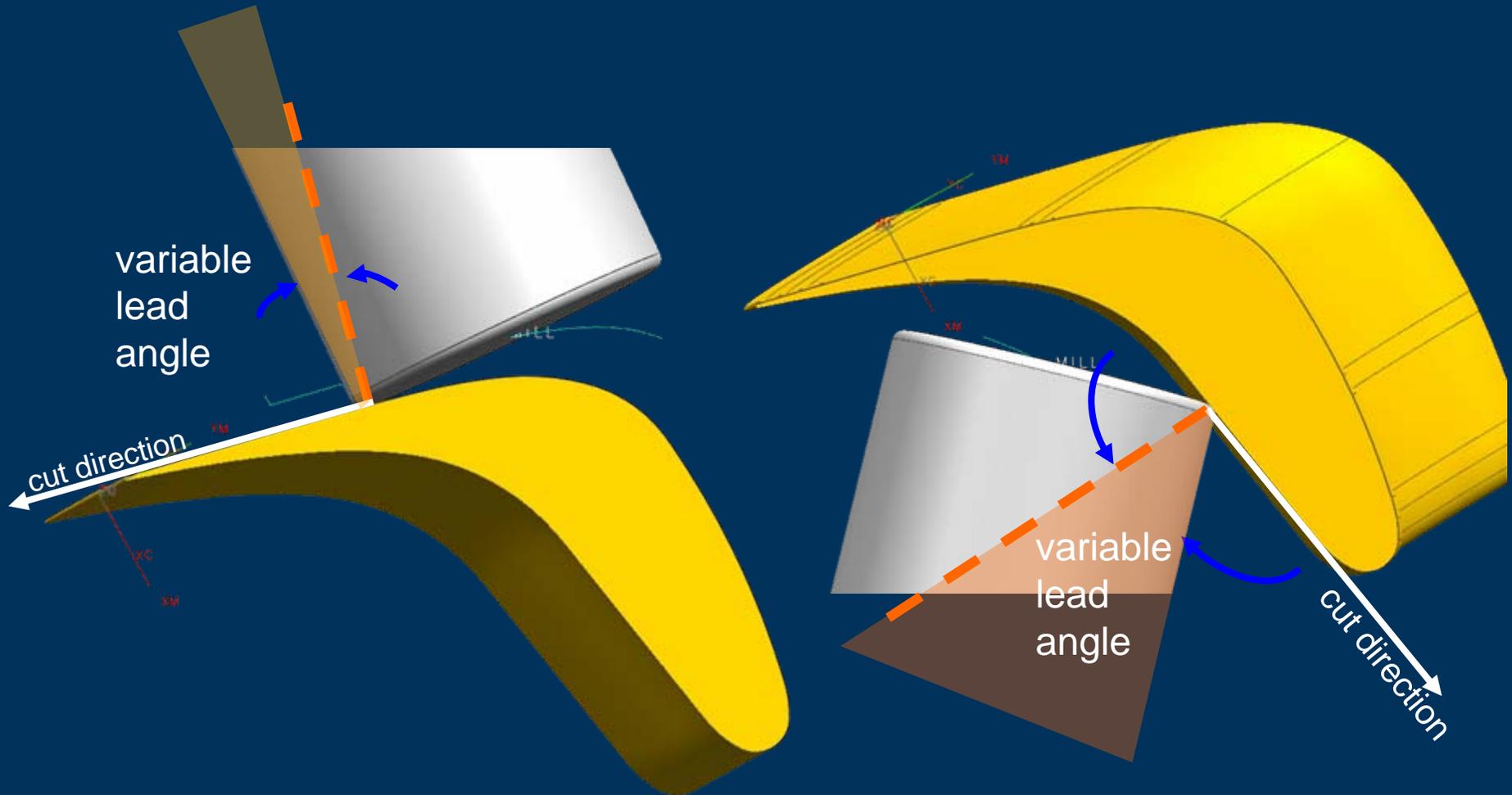


- ▶ Provides dynamic tool axis change to match curvature of part
- ▶ Smoothing option that modifies suggested parameters to generate better tool axis
- ▶ Includes all functionality available in Surface Area



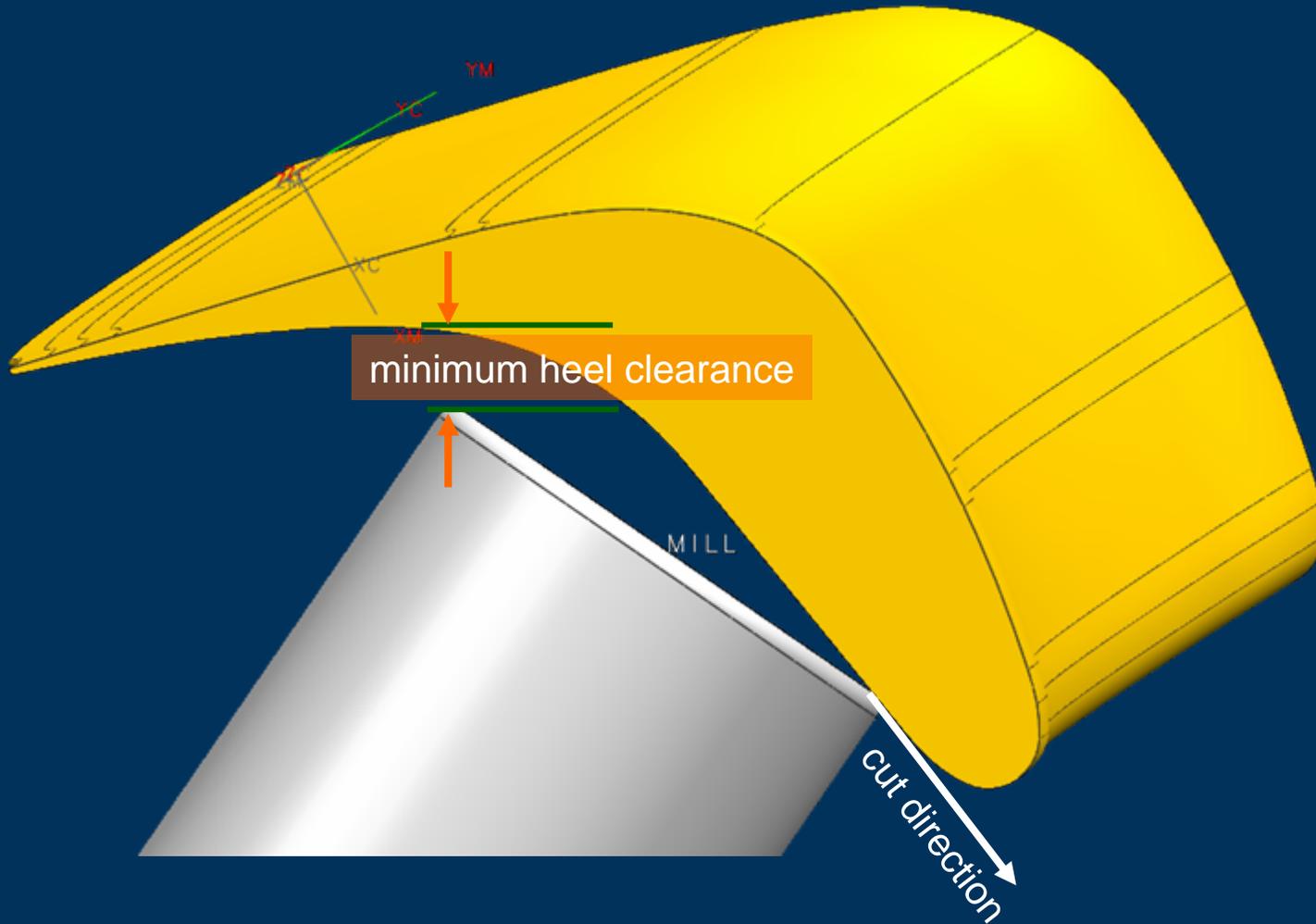


# Curvature Matching





# Curvature Matching





[www.ugs.com](http://www.ugs.com)

Thank you!