VISUAL COMPONENTS 4.0 ADD-ON

SURFACE MAKER

Here is the Add-On attached with this community post. Please download the attachment and unzip the file. Then move the unzipped file to the location –

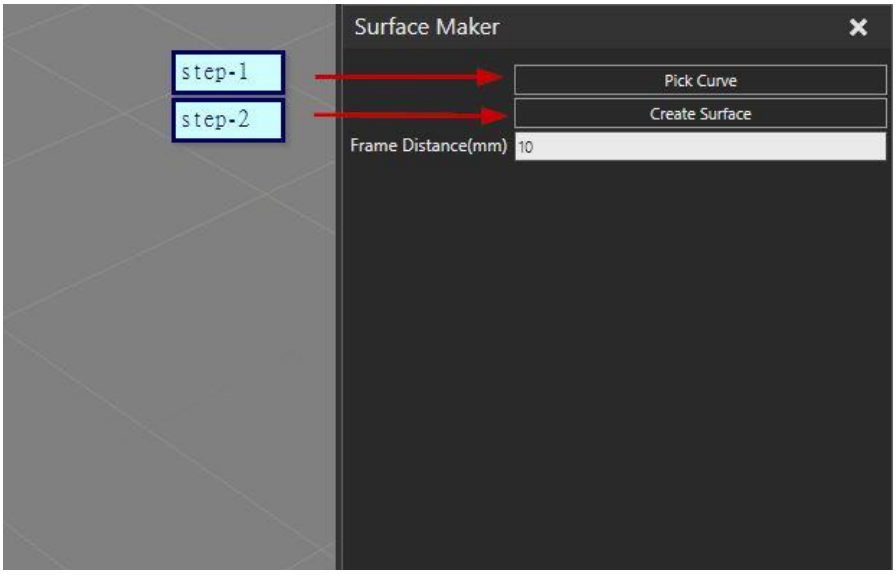
C:\Users\muhamJa1\Documents\Visual Components\4.0\My Commands

There is also a *.vcm component which is for the tutorial purpose. Please download the file [CAD_Test.vcm] as well.

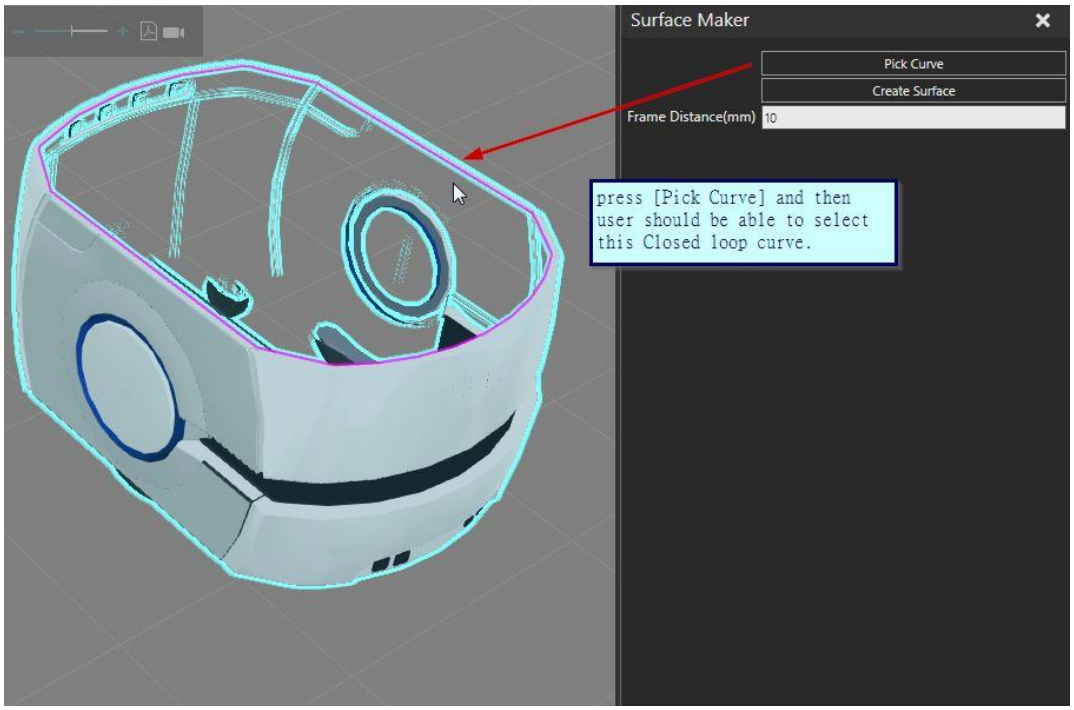
Now open VC Premium and then load the CAD_Test.vcm into 3D world. Next go to Tab > Modeling and there user will find the Add-On in

Wizards > My Add-On > Surface Maker

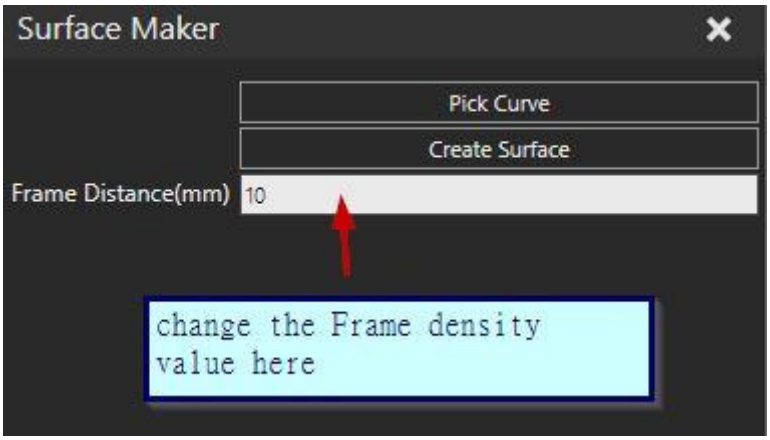
Now the Add-On will open as following.



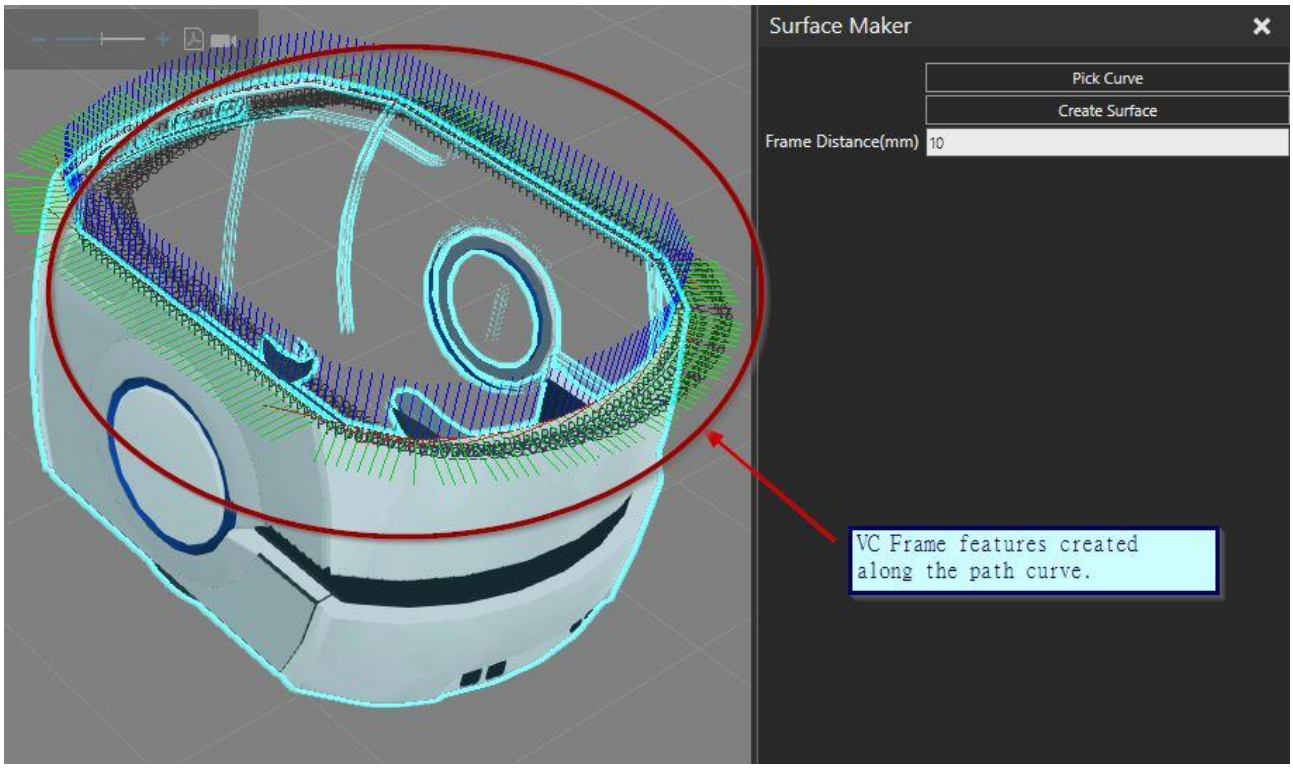
Now click the button > [Pick Curve]; now we need to select the curve on the hollow surface of the CAD file. Here “interactiveTopologyPick” is used to get handle to topology of the CAD file.



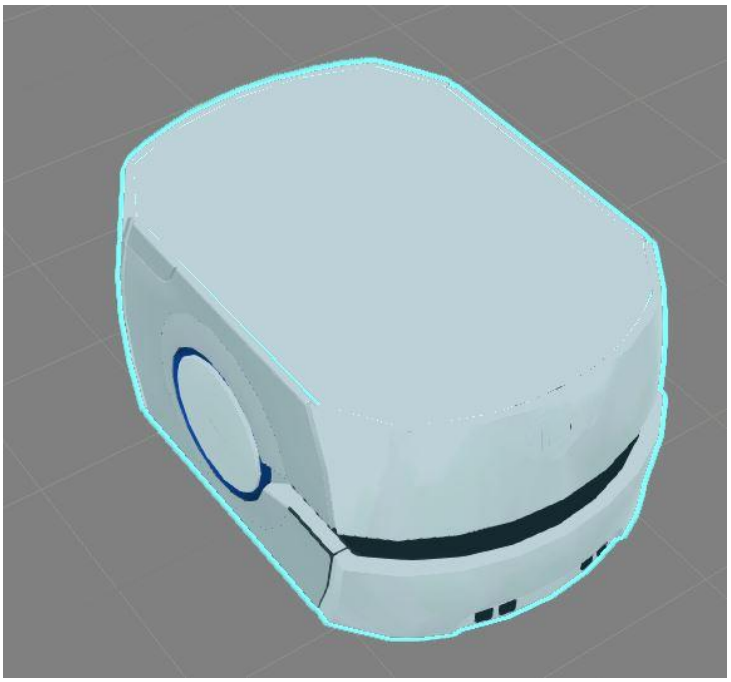
Now after the closed loop curve has been selected press Enter on keyboard. User will see the set of Frames create along the curve. To change the density of the Frames user can change the value of REAL property [Frame Distance(mm)] before the [Pick Curve] operation.

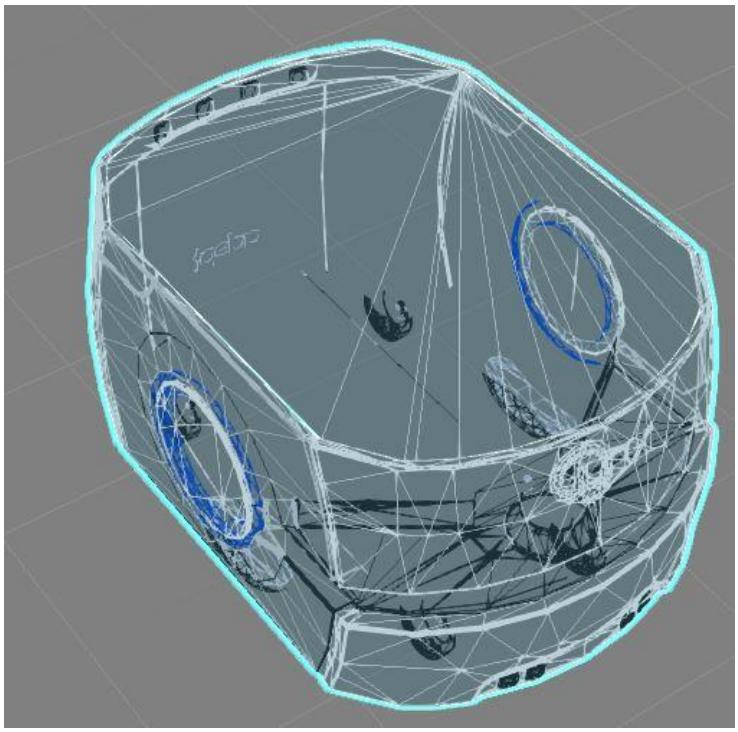


Set of Frames creates along the curve path as following.



Now press the button [Create Surface] and user will see the Surface created utilizing the set of Frames created. User will see as following in mode #Shaded and #WireFrame





The Add-On deletes automatically the Frame features which were created during the Surface Creation process.

The main part of Python code for this Add-On is as following:

```
def picked(cmd):
  global topo_pick, comp
  comp = None
  name_index = 0
  # Delete all frames from the picked component(s)
  for t in topo_pick.TargetCurves:
    node = t[0]
    comp = node.Component
    for i in comp.RootFeature.Children:
      if i.Type == VC_FRAME and 'Pos_' in i.Name:
        i.delete()
  # Use topology data of the picked curves for creating frames along the curves
  for t in topo_pick.TargetCurves:
    node = t[0]
    g_set = t[1]
    curve_index = t[2]
    curve_direction = t[3]
    comp = node.Component
    topo = g_set.Topology
    le = topo.getCurveLength(curve_index)
    a = 0
    transform_node = comp.RootFeature.createFeature(VC_TRANSFORM,"Frames Holder")
    while a < le:
      pos = topo.getCurvePosition(curve_index, a) # returns a matrix position at a certain len
      a += getProperty('Frame Distance(mm)').Value
      name_index += 1
      frame = transform_node.createFeature(VC_FRAME, 'Pos_%i' % name_index)
      frame.PositionMatrix = pos
      frame.rebuild()
  topo_pick.OnTargetSet = None

def nowPick(arg):
    global topo_pick
    topo_pick = app.findCommand('interactiveTopologyPick')
    topo_pick.SnapOnCurve = True
    topo_pick.SnapOnCurveLoop = True
    #topo_pick.SnapOnSurface = True
    topo_pick.ContinousMode = True #allows user to pick a chain of multiple curves
    topo_pick.FaceDisplayMode = VC_FACEDISPLAY_FACE
    topo_pick.OnTargetSet = picked
    topo_pick.execute()
    print 'step-1: Pick curve and then press [Enter]'
    print 'step-2: Press [Create Surface] to create surface along the Frames'

def createCurve(arg):
    global comp, pos_previous_WPR

    geoFeat = comp.RootFeature.createFeature(VC_GEOMETRY, "Surface_Geometry")
    geoSet = geoFeat.Geometry.createGeometrySet(VC_TRIANGLESET)
    child = comp.findFeature("Frames Holder")
    pos_previous_WPR = 0

    for i in child.Children:
        if i.Type == VC_FRAME:
          vec1 = i.PositionMatrix.P
          if notOnSameLine(i):
            geoSet.addPoint(vec1)
          pos_previous_WPR = i.PositionMatrix.WPR

    for i in range(1,geoSet.PointCount-1):
        geoSet.addTriangle(0,i,i+1)

    comp.rebuild()
    frame_holder = comp.findFeature("Frames Holder")
    frame_holder.delete()

def notOnSameLine(pos_current):
    global pos_previous_WPR
    if pos_previous_WPR:
        pos_current_WPR = pos_current.PositionMatrix.WPR
        if pos_current_WPR ==  pos_previous_WPR:
            return False
        else:
            return True
```