



Services Four Automation

S4A Training Programs

## Toolpath filtering

Mastercam's toolpaths can be filtered to produce smoother motion and/or arcs in place of linear moves. This geometry is a 1" by 2" ellipse. If a simple 2D contour is chained with the default cut tolerance of .001" The code is all G1 moves...

```

%
O1005(TOOLPATH FILTERING)
G20
G0 G17 G40 G49 G80 G90
T1 M6
G0 G90 G54 X-1.375 Y.0058
G43 H1 Z.25
Z.1
  
```

Filter ratio	Off
Filter tolerance	0.001
Cut tolerance	0.001
Total tolerance	0.001

```

G1 Z0. F16.0
X-1.125 Y.0002
X-1.1209 Y.1854
X-1.1082 Y.3708
X-1.0874 Y.5522
X-1.0588 Y.7276
X-1.0229 Y.8956
X-.9803 Y1.0547
X-.9317 Y1.2039
X-.8779 Y1.3422
X-.8194 Y1.4692
X-.7571 Y1.5845
X-.6915 Y1.688
X-.6232 Y1.7798
X-.5526 Y1.8601
  
```

Now if we go back to the filter settings and set a 2:1 Tolerance ratio Mastercam will either combine small linear moves or replace them outright with longer smooth arc moves.

Most toolpaths in Mastercam can be filtered.

```

%
O1005(TOOLPATH FILTERING)
G20
G0 G17 G40 G49 G80 G90
T1 M6
G0 G90 G54 X-1.375 Y.0031
G43 H1 Z.25
Z.1
G1 Z0. F6.42
X-1.125 Y.0003
G2 X-1.0391 Y.8247 R3.9385
X-.8873 Y1.3195 R2.9545
X-.7394 Y1.6141 R2.1318
X-.5725 Y1.8387 R1.4894
X-.3934 Y1.9962 R1.0777
X-.1426 Y2.1088 R.7463
X.2483 Y2.075 R.6379
X.4334 Y1.9673 R.8005
X.6082 Y1.7979 R1.0886
X.8188 Y1.4703 R1.6682
X.9884 Y1.0267 R2.5811
X1.1106 Y.3432 R3.5796
X1.0561 Y-.7418 R4.0602
  
```

Filter ratio	2:1
Filter tolerance	0.001333
Cut tolerance	0.000667
Total tolerance	0.002
<input type="checkbox"/> One way filtering	
<input checked="" type="checkbox"/> Create arcs in XY	
<input type="checkbox"/> Create arcs in XZ	
<input type="checkbox"/> Create arcs in YZ	
Minimum arc radius	0.005
Maximum arc radius	100.0

