

MAS 863  
*How To Make (almost) Anything*  
2009

**Waterjet Cutter, NC Mills**

By using a waterjet cutter, I want to fabricate my face. As a first step, I traced my face using projector. I traced vertical face contours in 3D program and made a 3d geometry from traced curves. However the geometry was not precise enough to fabricate my face form. As an alternative, I used a ready-made face geometry. I cut frontal part of a face and sliced every 1/16 inch a thickness of aluminum sheet. I generated intersection curves and used them for cutting lines. I divided all intersection curves into three layers for three aluminum sheets.

Process

0.0 Idea : Fabricate Human Body / Face

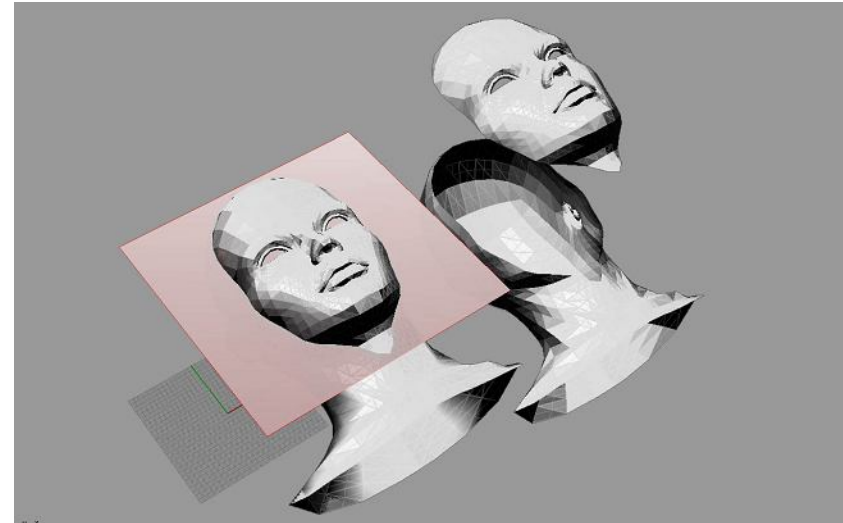
1.0 Surface Geometry

2.0 OMAX Path

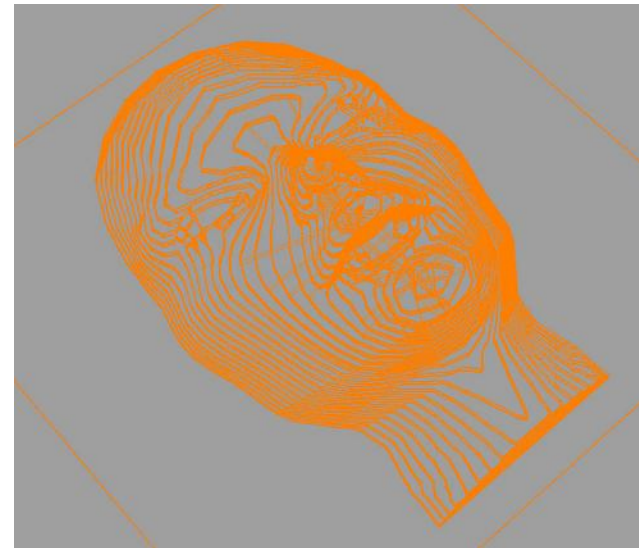
3.0 Waterjet Cut

4.0 Assembly

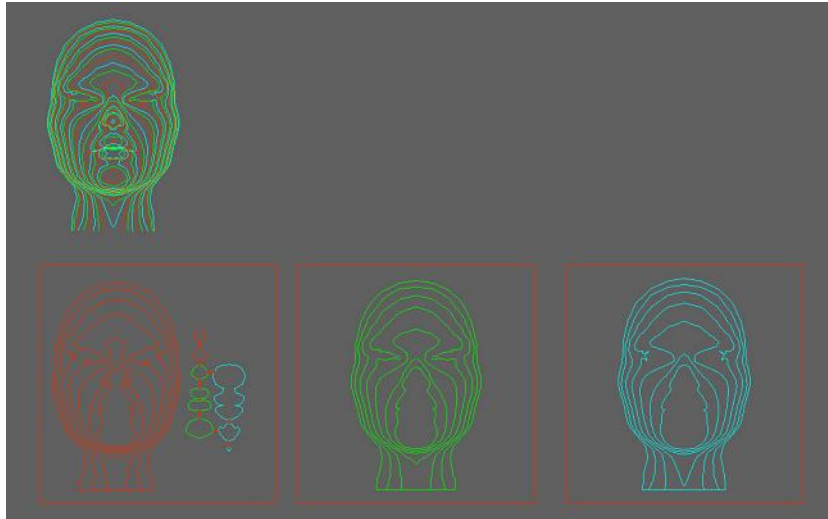
1.0 Surface Geometry



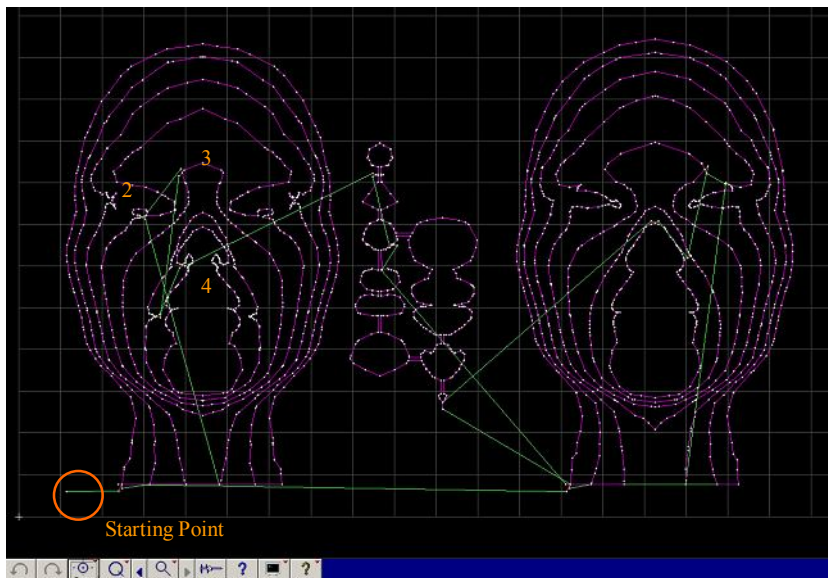
1.1 Preview of Fabricated Face Surface



## 1.2 Contour lines on three layers

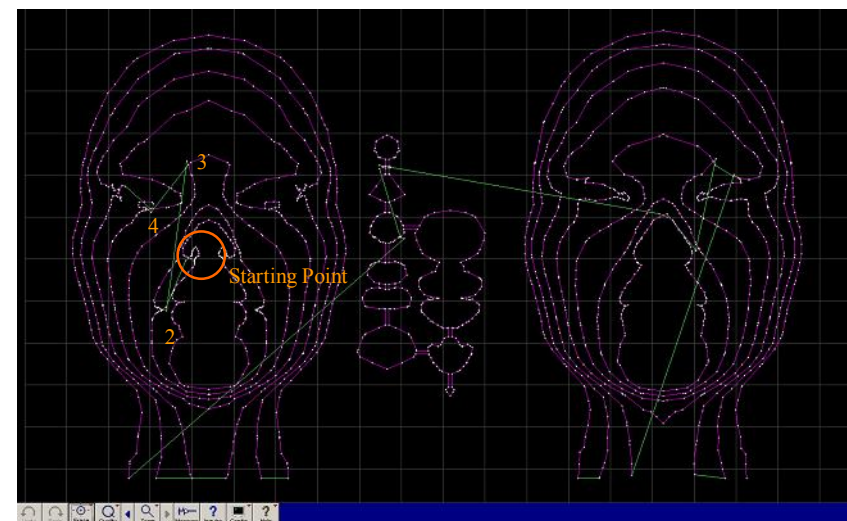


## 2.0 OMAX Path



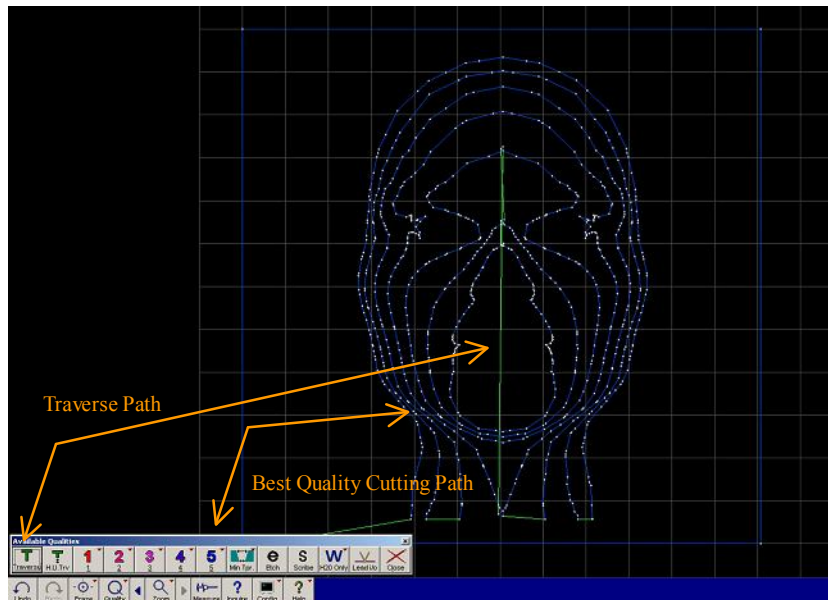
The automatically generated path start from left lower corner and cutting run from outside to inside. This cutting path caused a problem. When the first outline of curve was cut, some part of aluminum started to be bent and push the waterjet nozzle out of curve.

## 2.1 Modified OMAX Path



I manually modified the sequence of cutting path from inside to outside. In this path, starting point is left center of a nose. This path worked quite good. Still whenever small parts were cut, I needed to stop the waterjet cutter and took them out.

## 2.2 Tuned OMAX Path



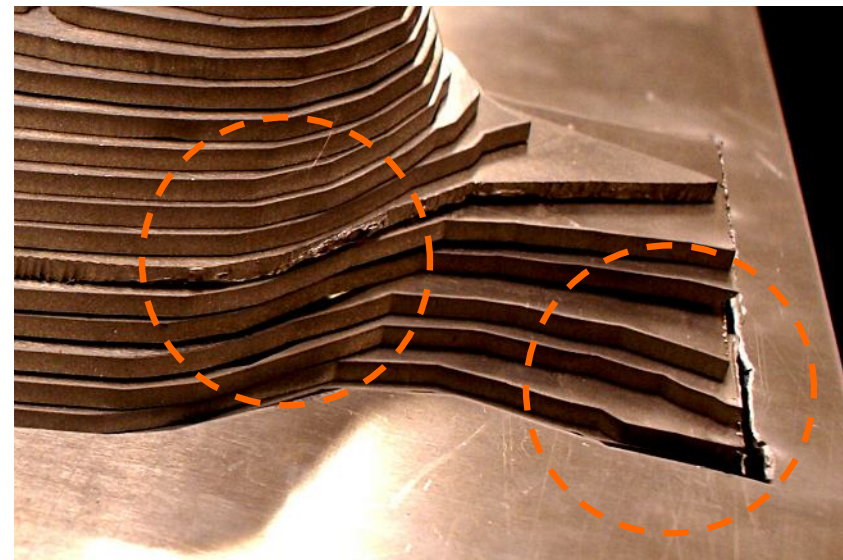
This is the third (last) aluminum sheet. I found out a control panel to change cutting quality and traverse line. Blue curve means the best quality (clean) cut and the green means traverse path.

Overall, cutting finish was good. But the last piece I changed the cutting quality had some unfinished area. I had to cut them by using hand drill and got some rough cut.

## 3.0 Waterjet Cut Detail



## 3.1 Hand Cut Area





#### 4.0 Assembly

