# CASE STUDY THICK MATERIAL PROFILING

Client Sector: Aerospace
Material: Aircraft grade aluminium
Maximum thickness of cut : 178mm

Requirement. To profile a billet 178mm square - 1100mm long, with longitudinal cuts, to produce two blanks for final machining.

Final stock piece ready for CNC machining
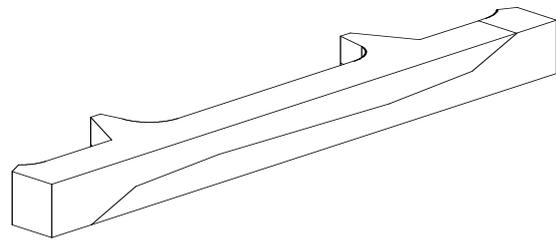
Waterjet profiled material providing two final stock pieces

Background. Previously one billet was required to produce each finished component. With the advantages of ultra pressure waterjet cutting and the use of a Dynamic® cutting head, it is possible to cut the billet in such a manner that two, oversized, blanks could be produced, suitable for final machining.

Trial. A test cut was conducted in the material to establish the 'uncorrected' cut taper. Over the depth of cut of 178mm - an 'uncorrected' taper of just 0.67mm was observed. This could have been removed completely by applying a corrective factor within the software that controls the Dynamic® cutting head - however in this case it wasn't as the cut was well within tolerances.

Cut 1
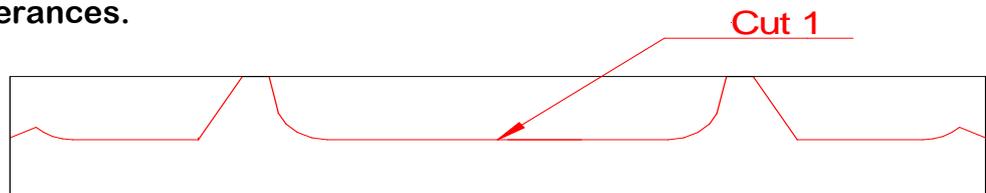
Cut 1

The first cut (full thickness of 178mm) removes material above the red line - instead of being swarf it is now valuable material available for smaller parts.

Cut 2

Cut 2
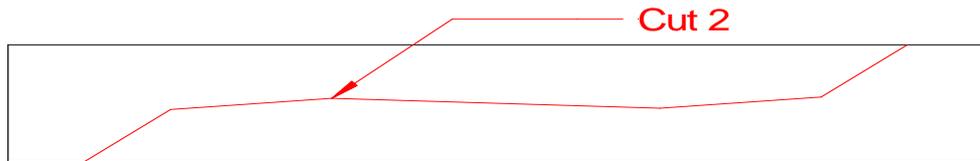
The stock from cut 1 is rotated 90 degrees and a second cut (common cut) is completed. Manipulation of the cutting programme compensates for the varying thickness of cut, from full thickness of 178mm down to 83mm at its thinnest.
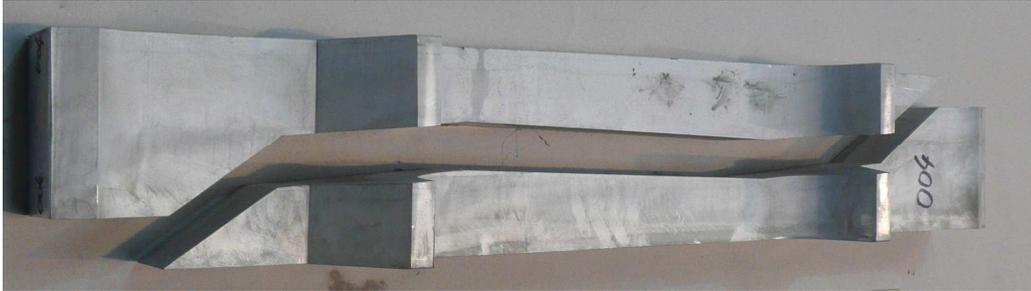
Result:

1. Material yield <u>doubled</u>
2. Material offcuts - formerly waste swarf - are now useable for the manufacture of other components.

If you have a 'problem' like this - then talk to the 'problem solvers' at Hydromar.

Paddy Lightfoot - Managing Director

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