



PORTABLE CNC NOZZLE PREPPING





The Opportunity

As a part of our continual drive for Process Improvement we identified a bottleneck in the vessel fabrication process with cutting of nozzle penetrations.

The traditional method would be something like this: (example: 7 X 3" normal- entry nozzles in a 12mm thick vessel):

- Marking out of nozzle positions
- Development of hole profile from drawings : 1 hour
- Mark up hole profile: 1 hour
- Cut nozzle entry: 30 minutes
- Cut weld prep: 30 minutes
- Clean & grind prep: 30 minutes
- Time per nozzle: 3 hours 30 minutes
- Time for vessel: 24.5 hours

The Solution

With the assistance of the Ministry for Business, Innovation and Employment we embarked on an exercise to develop CNC equipment that would cut nozzle penetrations using information directly from our computer generated drawings.

We have ended up with the largest CNC Plasma unit in New Zealand with output power of 900A, capable of cutting carbon

steel to 80mm thick and stainless steel to 120mm. The technology eliminates the need to do manual profile developments for complex nozzle entries, such as tangential entry nozzles. These manual hole developments can usually only be undertaken by highly skilled and experienced tradesmen but the new machine enables a higher quality job to be undertaken by less experienced personnel.

For the previous example, using new machine:

- Markout of nozzle positions
- Setup of prepping machine: 45 minutes (one setup for whole vessel)
- Program nozzle layout per drawing: 10 minutes per nozzle
- Etch nozzle layout on vessel: 18 seconds
- Cut nozzle entry: 18 seconds
- Time per nozzle: 17 minutes
- Time for vessel: 1 hour 58 minutes

A tangential entry nozzle by traditional means in a 25mm thick shell would take 8-16 hours to complete – this machine cuts the same entry in a total process time of 86 seconds.

We would be very happy to demonstrate this unit at our workshops and look forward to the opportunity.



Finished prep ready for touch-up grinding



Trial fit into nozzle entry

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