

High-power Argon-Hydrogen Plasma Cutting/Gouging Equipment

Outline

Our Plasma Unit provides an argon-hydrogen plasma cutting and gouging equipment that can be used in building storage tanks for LNG, liquefied hydrogen, etc., which are major targets in line with the global trend towards carbon neutrality. The main features and applications are as follows.

Features

- 1 Performs both plasma cutting and gouging.
- 2 Check condition settings and equipment status appear on a touchscreen panel.
- 3 Main arc ignition characteristics are significantly improved over previous models.
- 4 Comes with interfaces to external devices as a standard feature.
- 5 Simple torch structure facilitates maintenance.
- 6 Less wear and tear on electrodes and tips, allowing cutting and gouging over longer periods of time.



Plasma cutting

- Applicable material: Nonferrous metals
- Applicable gas: Combinations of Ar, H₂, and N₂
- High-power plasma arc enables dross-free cutting from thin to thick plates (up to 100 mm for stainless steel)



Stainless steel cut example



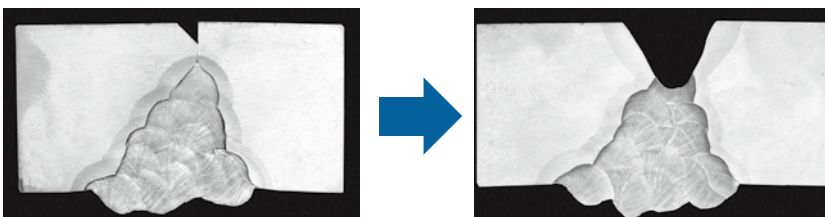
Aluminum cut example



Plasma gouging

Back chipping during full penetration welding such as SAW

- Applicable material: Various metals
- Applicable gas: Ar+H₂ or Ar
- Generates less fumes and dust with less gouging noise, and offers a smoother gouge surface finish compared to arc air gouging.
- Since no carbon rods or air are used, there is less carbon entanglement and nitride layers on gouged parts, resulting in less grinding for post-processes.



Back chipping cross section

Plasma welding resolves issues in piping welding

Outline

Since plasma welding produces fewer defects, it is often used for welding pipes that require high quality welding.

Plasma welding offers good compatibility with automatic welding equipment so it is often used in combination with automatic equipment.

Depending on the piping, plasma welders can be used with simple equipment to save cost and space instead of relying on an elaborate setup.

You can see a combination of simple equipment and our plasma welder at our JIWS booth.




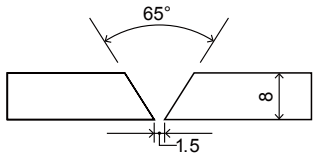
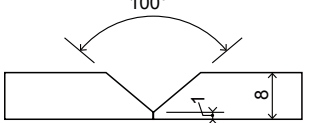
Simple pipe welding

Features of plasma welding and equipment

Features

- 1 Keyhole welding, which is a feature of plasma welding, enables defect-free single-sided full-penetration welding.
- 2 Capable of I-groove welding for easier groove processing (one-pass welding possible on stainless steel up to a plate thickness of 8 mm)
- 3 Better product value with clean weld beads and consistent back beads
- 4 Enables high-speed welding and low-distortion work
- 5 Equipment is compact and mobile; saves space
- 6 Preset welding conditions make it ideal for small-lot, large-variety welding machines.
- 7 Automatically follows pipe deformations with height tracing function (choose roller tracing or sensor tracing) (optional)
- 8 Remote monitor welding on a welding monitoring camera (optional)
- 9 Remote wire aim position adjustment (optional)
- 10 Remote torch height with sensor tracing adjustment (optional).

Comparison with different welding methods (100A_SCH80 equivalent)

Welding method	Plasma	MAG	TIG (first layer only) + MAG
Groove shape			
Passes	1 pass	2 passes	4 passes
Root face	—	Approx. 1mm	1mm
Gap	0mm	1.5mm	0mm
Bead appearance	Good	Average	Good
Distortion	Good	Average	Poor
Pre-processing +welding time +post-processing	Good	Average	Average
Remarks	<ul style="list-style-type: none"> •Reliable back bead shape •Less overlay amounts required 	Difficult to manage gap	<ul style="list-style-type: none"> •Larger groove angles to achieve complete penetration •Workpiece end face requires precise machining