

PLASMA WELDING

Plasma Transferred Arc Welding (PTA)

Powder Plasma welding system consisting of Controller , power source, column and boom, oscillator, welding positioner, water chiller



Powder Plasma Arc Welding



Plasma Transferred Arc System (PTA) is a high energy, inert gas welding process. Ar is basically used for arc plasma supply, powder transport and molten material shielding. It produces a very high quality deposit offering optimal protection with minimal dilution or deformation of the base material. It is a process that deposits very precise coatings of perfectly controlled alloys on mechanical parts that are subject to intense wear, significantly extending their service life. PTA technology is particularly effective in protection against corrosion, thermal shock and abrasion. A wide range of overlay alloys is available for practically any part. Some alloys are very hard, others are softer with hard

abrasion-resistant particles dispersed in a matrix. Certain alloys are made to rebuild a part to a required dimension while others are designed to be a final overlay that protects the work surface.

HARDFACING of valve seat



Finish after HARDFACING



Powder Plasma Welding (PPW) is used to

1. Prevent corrosion.
2. Prevent abrasion.
3. Metal buildup / Reclamation.
4. For wear resistance.

BENEFITS OF PPW:

1. Reduces Cost: Restoring a worn part to "as new" condition generally costs between 20-70% of a brand new replacement part.
2. Prolongs Equipment Life: Service life increases of 3 to 10 times are common with properly overlaid parts.
3. Reduces Downtime: Parts last longer and fewer shutdowns are required.
4. Less Spare Parts Inventory: There is no need to keep numerous spare parts when worn parts can be rebuilt.



PPAW Power Source &
Water Chiller / Recirculator



Powder Feeder



Oscillator For Weld
Weaving 0-50mm



Welding Positioner with
Motorised Tilting



Column & Boom With
Process Control Panel



200 Amps PTA ID Torch

Technical Specifications of PTA System

SPECIFICATIONS	PTA200	PTA400
INPUT		
Input supply	415VAC/50-60Hz/3-Phase	415VAC/50-60Hz/3-Phase
Max Installed power	11 Hp	24Hp
Input kVA @ 60% duty cycle	9.7	19.4
Input kVA @ 100% duty cycle	7.5	14.9
OUTPUT		
Open circuit voltage OCV	75-85 V DC	75-85 V DC
Current range	20-200A	20-400
Current @ 60 duty cycle	200A	400A
Current @ 100 duty cycle	155A	310A
Pilot Arc Current	5 - 40A	5-40A
Plasma Gas Flow Meter	0 - 5LPM	0 - 5LPM
Shielding Gas Flow Meter	0 - 10LPM	0 - 10LPM
Current Pre-Setting Facility	Provided	Provided
High Frequency Test	Provided	Provided
Water Failure Trip	Provided	Provided
Gas Failure Trip	Provided	Provided
Digital Ammeter & Digital Voltmeter	Provided	Provided
OCV test	Provided	Provided

We can supply custom built PTA systems with automation and accessories to suit the requirements of your job Standard specifications of automation system and accessories

Plasma Torch

- 400Amps capacity, PTA torch with 8meter cable, nozzle with 2 / 4 powder ports
- Water cooled nozzle holder with powder ports and aligning facility for nozzle, provision for shielding gas, 4 mm tungsten rod with collet. Fully dismantable for easy cleaning & part change. No epoxy resin casting. Metal body for long life.

Powder Feeder

Positive Displacement type : suitable to deliver 50-200 micron powder

- Adjustable feed rate upto 5kg/ hr
- Hopper capacity : 5 kg (optional 10kg)
- Digital display of disc rpm

Gravity based Powder Feeder capable of dispensing powder upto 4 kg/ hour, with flow meter for argon gas

Oscillator (Weld weaver)

- Ball screw linear mechanism
- Choice of Analog Control
- Choice of Digital Control with Variable Dwell time, stroke length programmability.
- Range : 0-50 mm

X-Y Slide

- Ball screw linear mechanism
- Manual adjustment
- Stroke : 0-50mm

Controller

- Programmable Logic Control (PLC) based to control Power Source, Positioner, Oscillator & Powder feeder, Water Recirculator Cum Chiller Housed in a separate Control Panel.
- Enables fully automatic operation with single button start.
- Automation Facility :
- Selectable rotation : 0-360°
- Selectable over-lap of weld : 0-25°
- Selectable auto boom stepover : 0-100mm
- Choice of welding cycle programmes : 10
- Choice of interfacing of X-Y (rotation and linear travel) or X-Y-Z (rotation, linear & traverse travel) in fully automatic mode.

Welding Positioners

- Choice of Manual / Automatic control
- Choice of 3-P AC induction or Servo Motor
- Choice of absolute or real time rotation degree measurement
- Range available : Face Plate Dia. 300 - 2000 mm
- Load capacity : 100 - 3000 Kgs.
- Variable speed : as required
- Tilting : 0-90° motorised

Welding Turntable

- Choice of Manual / Automatic control
- Choice of 3-P AC induction or Servo Motor
- Choice of absolute or real time rotation degree measurement
- Range available : Face Plate Dia. 300 - 2000 mm
- Load capacity : 100 - 3000 Kgs.
- Variable speed : as required

Column & Boom

- Choice of Manual / Automatic control
- Choice of 3-P AC induction motor or Servo motor
- Choice of absolute or real time rotation degree and carriage travel measurement
- Choice of fixed Or variable speed for movement of column / boom
- Range : 500 - 3500 mm

Welding Lathe

- Choice of Manual / Automatic control
- Choice of 3-P AC induction motor or Servo motor
- Choice of absolute or real time rotation degree and carriage travel measurement
- Job dia : 100 - 1000 mm
- Bed length : 1000 - 5000 mm
- Torch Carriage : 0-5000 mm
- Variable speed : as desired

Water Recirculator Cum Chiller

- Refrigerated heat transfer type water chiller with 20 Ltr SS tank, 0.5 hp Water Pump, Temperature Control from 8 to 26 degrees. Housed in small portable chassis.

Specifications subject to change for further improvement



Motorcycle
Exhaust
Valve



Gate Plug



Valve Seat



Valve Disc and Stem



Mechanical Seal

OTHER SAMPLE



ID Hard Faced



ID Torch



External Overlay Torch

APPLICATIONS

In a competition with laser surfacing the PTA technology offers much more high productivity, comparable high quality of deposits and significantly lower costs. Typical application areas of the PTA technology are extruding machine screws, valves, valve seats of internal combustion engines (motorcar, marine, locomotive etc.), accessories for ships, petroleum chemistry and power generation, cutting tools (milling cutters, broaches, knives), Equipment for mining, crushing, rolling, road building and tunneling, Process equipment in ceramics and cement production, Molds and forging dies, Pulp and paper industry equipment, Agricultural equipment, parts for nuclear plants, parts for chemical plants

SUMMARY

P.T.A. DEPOSITS SHOW THE FOLLOWING CHARACTERISTICS:

1. An attractive bead with no signs of oxidation, and with little or no ripple.
2. Very low dilution
3. High, density, no porosity & no inclusions.
4. Microphotos or x-rays show the deposits to be of high density & metallurgically bonded to the Substrate

Welding Automation Range of Products: • Welding Gun • Oscillator (weld weaver) • Cold wire feeders • Seam trackers • AVC • Cameras and video displays • X-Y slides (manual and motorized) • Welding turntables • Welding positioners • Welding Turning Rolls • Welding lathes • Column and boom (manipulators)

Represented by :



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Note : Specifications subject to change without notice