

High quality • High credibility



RESEARCH AND DEVELOPMENT OF PLASMA POWE SUPPLY

PLASMA (PTA) AND WELDING (PAW) SYSTEM

COMPLETE SOLUTIONS FOR INDUSTRY AUTOMATION

Shanghai Duomu Industry Co.,Ltd.

Profile

Shanghai Duomu industrial developed into a high-tech company of production, R&D and sales after years of progress, which come into being ourselves superiority in the R&D of the welding source. We developed out the series of precision argon welding, plasma welding, plasma powder hard facing and the series of STIG that based on digital exploit with the programming control, communication control, data storage. It realized the perfect integrate welding machine and automatic system that improved greatly product quality and production efficiency to meet the requirements of the automated industrial production. The work piece we deal with has extended the various areas, such as aerospace military industry, nuclear power, petrochemical, coal mines, etc.

Our vigorous growth is profit from our continuous investing in R&D. So far, we have the independent power source research institute, welding lad as well as keep leaning in the technology of the chopper, phase shifting, inverter, have accumulates plenty of experience to make sure the small current passes the power supply and the micro current controlled precisely and stably that the products adapted to market needs are launched. Meanwhile, we are able to suffice for customized products. For example, the power Development Institute have done the geomagnetic probe emission source for the project of nation 863 that is applied extensively in the area of exploration of oil and ocean.



Representative institutions: Xi'an Jiaotong University, East China institute of technology, Dalian, Xi'an University of technology, Beijing Jiaotong university, Harbin Institute of Technology (Wei Hai), Shanghai university, Shanghai university of engineering science, Shanxi University of technology, Lanzhou Jiaotong University of science and Engineering University, Beijing, the Chinese people's liberation army (PLA) rocket army armored force engineering college, Jiangsu University of science and technology, automobile of Hubei province Industrial university, Wen Zhou University, Northeastern University, Shenyang University, Shenyang Chemical industry University, China University of measurement, Tianjin industrial big science, central south university, sun Yat-sen University, University of Manila mountain, Xuzhou engineering university, Zhengzhou university of technology, Bao Ding agricultural university, Heilongjiang agricultural reclamation university, China university of mining and southeast of Xia men university, Hunan university, Nanchang university, Kunming, Guizhou University of Science and Technology, Shanghai Institute of Physics, Chinese Academy of Sciences, Shenyang Institute of Metal Research, Chinese Academy of Sciences, China Ordnance Research Institute, etc.

Representative Enterprises: Shanghai Baosteel, China National Nuclear No. 5 Construction, Anshan Iron and Steel, China Shipbuilding 711 Institute, Great Wall Motor, Shanghai Valve Factory, Shanghai Kemei, Zigong Cemented carbide, Yantai Jerry, Shanghai First Nuclear Group, Voith Paper, China Railway Equipment, Wuhan Jiangzuo, Xi 'an Coal, Zhangjia China Coal, Aluminum Corporation of China, Hebei Guanneng Petroleum, Luoyang Qinghua Research Institute Research institute, Zhuzhou Sidi, Wuxi intelligent, Shanxi Tianyuan, Baotou Steel Co., LTD., Shennan Industry, Huaibei Mining, Zhejiang Lianda Group, Shanghai IMI fluid, Shandong Fangda Engineering, etc.

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Honor

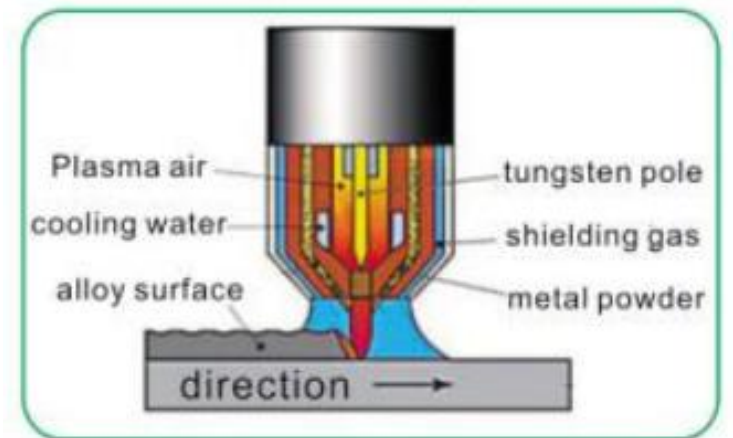
- The national product certification(CCC) in 2013
- The ISO9001 management system certification in 2017
- The national high-tech enterprise certification in 2018
- The Achievement transformation Project certification in 2021
- The Austria CERT GMBH Certification in 2021



Plasma powder hard facing is the one of the valid approach to enhance surface proof wear and erosion and dent resistance to fusion the specific alloy powder via the hyperthermy generated by the Plasma arc as well as put the fused powder on the surface of the work piece to alter its properties. This technology is quite popular in various area. Because it would be regulated parameter freely in the range, such as the thickness, width, dilution rate etc, that is benefit from the plasma arc is an accessibility, hyperthermy, conductivity, stability, controllability of penetration depth.

The characteristics of Plasma surfacing

- 1 Rapid surfacing, low dilution rate.
- 2 High degree of binding, the surfacing alloy layer is metallurgically bonded to the matrix.
- 3 The surfacing layer with compact structure and fine shape
- 4 Plasma arc has high temperature, high energy density, and wide range of option on surfacing materials, especially for some hard alloys which are not easy to be made into wire but can be done into powder that would form good surfacing layer.



All-in-one with multi-function Configuration

Continuous Plasma welding + Pulsed plasma welding + Precise Argon welding + Precise Pulsed welding

The characteristics of plasma power supply

- 1 Apply DSP digital process, fast and precise control
- 2 Unique digital inverter technology, stable current output and extensive adjustment range.
- 3 To design the high voltage to ensure starting arc fluency, the arc of the stiffness and length.
- 4 It would be adjustable to arc striking current and base current.
- 5 Small pilot arc to reduce the load of torch and it is adjustable (3-20AU)
- 6 It would be adjustable to the time of current rise and decline, the time of gas delay.
- 7 Data storage module, various channel storage of data, convenient and flexible.

The characteristics of the system all-in-one

- 1 Highly integration: main arc power supply, pilot arc power supply, powder feeding system, control system, cooling system
- 2 Integrated design, simplify, optimization the layout and links of each part of the equipment to reduce the failure rate.
- 3 Integrated design, programmed control, convenient and flexible operation.
- 4 Automatic powder feeding, manual powder feeding, ahead powder feeding and delayed powder feeding can all be flexibly selected.
- 5 High-power refrigeration: to meet the needs of the cooling system of high-load surfacing work for long term.



DML-V02BD(100A)



DML-V03AD(160A)



DML-V03BD(300A)

High-power plasma surfacing machine

Application of new technology and material

- 1 Upgrade to high-quality smart chips: digital computing capabilities are stronger and faster; make the system greater ability of anti-interference, more reliable and stable.
- 2 The use of the new SIC power tube makes the inverter circuit simple and efficient, low loss, high efficiency and strong reliability. The output efficiency of the whole machine is over 85%, the load duration rate is 100% at 500A.
- 3 Secondary rectifier: the use of multiple current rectifier topology (welding equipment new rectifier mode) : high frequency transformer core utilization rate, stable output current.
- 4 Water-cooled arc ignition device: reliable arc ignition, concentrated arc ignition energy, high coupling efficiency, and current density per unit load area is up to 5 times that of conventional.

Multiple functions and protection configurations

1. Multiple remote control methods, 485 communication, analog communication, CAN communication (optional)
2. More comprehensive protection: grid phase loss, overvoltage, undervoltage protection, power component overtemperature protection, overcurrent protection, water flow fault protection.



DML · V03CD(500A)

High-speed pulse welding function

(No base current high-speed pulse welding, less thermal influence)

Equipped with a high-power chiller with a cooling capacity of 8500W

Premeter

Parameter and type	DML-V02BD				DML-V03AD				DML-V03BD		DML-V03CD		
	Ionic welding		Argon welding		Ionic welding		Argon welding		Ionic welding		Ionic welding		
	Continuous	Impulse	Continuous	Impulse	Continuous	Impulse	Continuous	Impulse	Continuous	Impulse	Continuous	Impulse	Continuous
Pilot arc current(A)	3-10A		/		3-20A		/		3-20A		3-50A		
Welding current(A)	2-125	2-125	2-125	2-200	2-160	2-200	2-160	2-200	3-300	3-300	5-500	5-500	5-500
Background current(A)	2-125	2-125	2-125	2-200	2-160	2-200	2-160	2-200	3-300	3-300	3-300	3-300	3-300
Current rise time(s)	0-5.0		0-5.0		0-5.0		0-5.0		0-5.0		0-5.0		
Current fall time(s)	0-5.0		0-5.0		0-5.0		0-5.0		0-5.0		0-5.0		
Pulse welding time(ms)	/	1-1999	1-1999	/	1-1999	/	1-1999	/	1-1999	/	200-999	1-200	/
Interval time (ms)	10-990		10-990		10-990		10-990		10-990		10-990		
Advance powder feeding time	0-5		/		0-5		/		0-5		0-5		
Lag powder feeding time	0-5		/		0-5		/		0-5		0-5		
Advance powder stopping time	/		/		0-5		/		0-5		0-5		
Lag powder stopping time	/		/		0-5		/		0-5		0-5		
Shielding gas lag	1-20		1-20		1-20		1-20		1-20		1-20		
Shielding gas advance	0-20		/		0-20		/		0-5		0-20		
Input voltage (V)	AC220V, 50HZ				Three phase 380V, 50HZ				Three phase 380V		Three phase 380V		
Rated input capacity	3.75				9.2				17.8		25.6		
Cooling water tank	Air cooled circulating cooling water tank				The cooling water tank				The cooling water tank		The cooling water tank		
Weight(KG)	46				152				161		79		
Size	720X410X970				650X490X1470				800X500X1558		740X360X830		

Communication of welding machine: it means that the welding machine communicates with the automation system or other peripheral equipment through the communication protocol to realize the remote control of the welding machine. Various parameters (such as welding current, time, starting and stopping arc, powder feeding speed, etc.) can be implanted automatic procedures, according to your needs, to realize the changes of parameters in the automated welding process to meet the needs of high-quality automatic welding machines.

Independent research torch

With the continuous development of the company, we have also made comprehensive progress in the research and development of plasma powder torch that forms our own unique style and possesses a number of national paten.

Torch mode: covering a variety of mode 50A-500A, such as for hand, for automatic, for inner hole

Superior performance: The company's investment in research and development as well as unceasing update to torch to tailoring customer's various needs. At present, we have increase the performance of high temperature resistance of the torch that the inner hole would adapt to the temperature 400 degrees and the powder utilization rate can up to 95%.



Torch of inner wall

300A
 $>\Phi 80\text{mm}$
 $\Phi 60\text{mm}$

160A
 $>\Phi 65\text{mm}$
 $\Phi 48\text{mm}$

Customized is available

Mode	DNPT30019	DNPT16019
Maximum current	300A	160A
Maximum volume powder	6kg/h	4kg/h
Electrode diameter	3.2-4.8mm	2.4-3.2mm
Nozzle cooling	Direct water cooling	Direct water cooling
Electrode cooling	Indirect water cooling	Indirect water cooling

The mode of high temperture resistant: it would be woking in the hale of the temperture 400 °C.

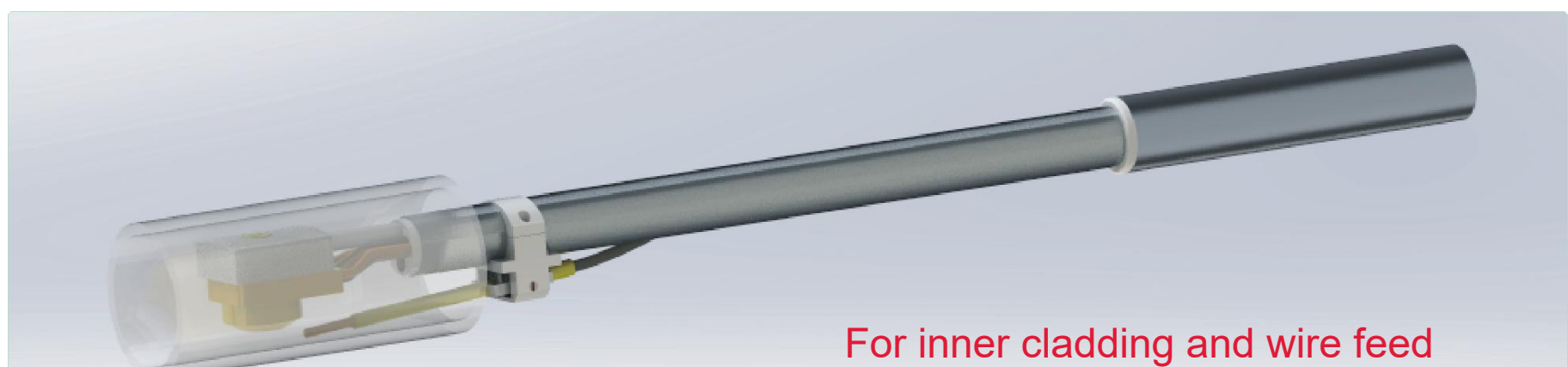
$>\Phi 110\text{mm}$
 $\Phi 76\text{mm}$

Customized is available

Mode :DNPT50019

Max current: 500A
 Max volume of molten powder: 7.5kg/h
 Electrode diameter: 4.8-6.4mm
 Nozzle cooling: direct water cooling
 Electrode cooling: indirect water cooling
 Protection cover cooling: direct water cooling

The type of heat resistant, it is possible to working in 400 °C.



Service customization

Mode:DPT20019

Maximum current: 200A(MAX)

Maximum volume powder: 4kg/h

Electrode diameter: 2.4-3.2mm

Nozzle cooling: Direct water cooling

Electrode cooling: Indirect water cooling



Mode:DPT30016

Maximum current: 300A(MAX)

Maximum volume powder: 6kg/h

Electrode diameter: 3.2-4.8mm

Nozzle cooling: Direct water cooling

Electrode cooling: Indirect water cooling



Mode:DPT50019

Maximum current: 500A(MAX)

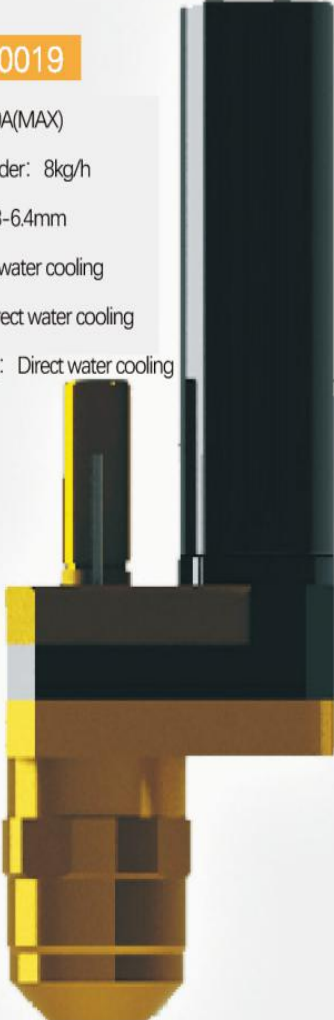
Maximum volume powder: 8kg/h

Electrode diameter: 4.8-6.4mm

Nozzle cooling: Direct water cooling

Electrode cooling: Indirect water cooling

Protective cover cooling: Direct water cooling



Torch for hand



Mode:DPT10016



Mode:DPT16016



Mode:DPT30016

Torch of abnormal shape



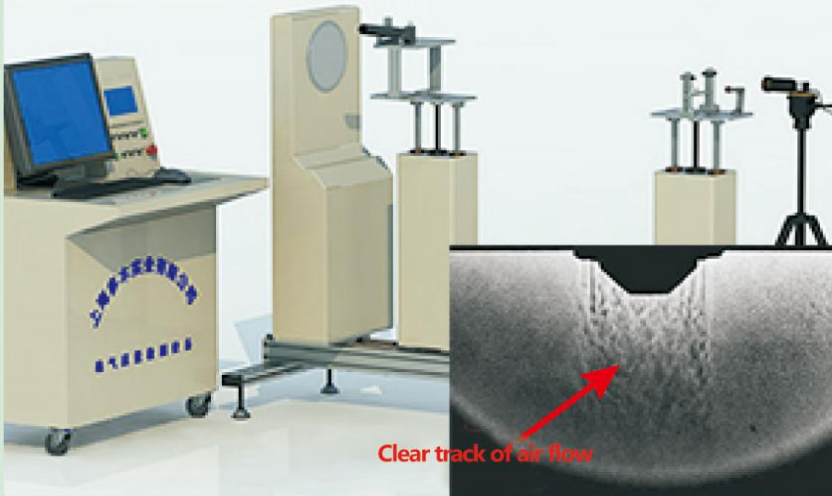
For deep hole



The pen shape



For cone bit



Gas state detector

(Gas fluid shape observation and gas leakage detection)

Strictly control the quality of each torch

Accurate measurement of feeding powder quantity



Precise feeding powder Keep feeding powder

Mode	DMS-3-1	DMS-3-2
Powder feeding volume(g/min)	3-50	5-120
Powder feeding motor	Stepping motor	Stepping motor
Powder Feeding accuracy(%)	≤5	≤5
Powder tank capacity (kg)	10	10
The powder size (Mesh)	80-300	80-300
Powder feed airstream (m³/h)	0.2-3	0.2-4
Powder feed pneumatic (MPa)	≤0.4	≤0.4

Characteristic

1. Accurate quantity of feeding powder. The digital display is visualized.
2. Only one moving part, stable and long service term.
3. Work Window that service condition and the powder allowance are clearly visible.
4. Discharge port is convenient for powder replacement.(It is time consuming to pour out and delivery out by motor.)
5. Unique airflow structure, suitable for long-distance transmission.
6. No powder clogging, powder breaking, and powder volume fluctuations.

Grain planting surfacing feeder

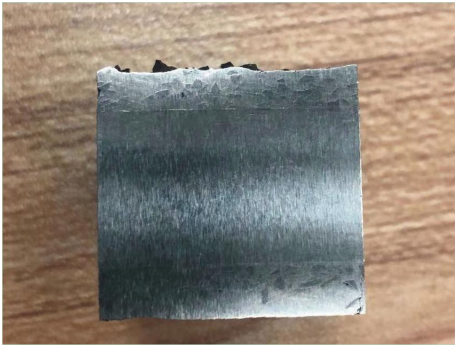


Particle planting surfacing is a new type of cladding surfacing process of which is implanted large alloy particles with wear resistance and high hardness, which is mostly tungsten carbide, to improve product performance. This technology is applied in the parts industry of coal, mining, agricultural.



(Patented products)

It solved the problem of powder feeding amount controlled accurately and clogging by the granular irregularity.



Resistance of wear, corrosion and high temperature



Copper nozzle of torch



Gas shield



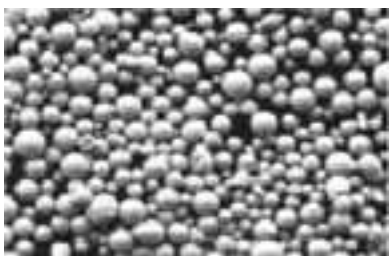
Tungsten electrode, central, Proofreader



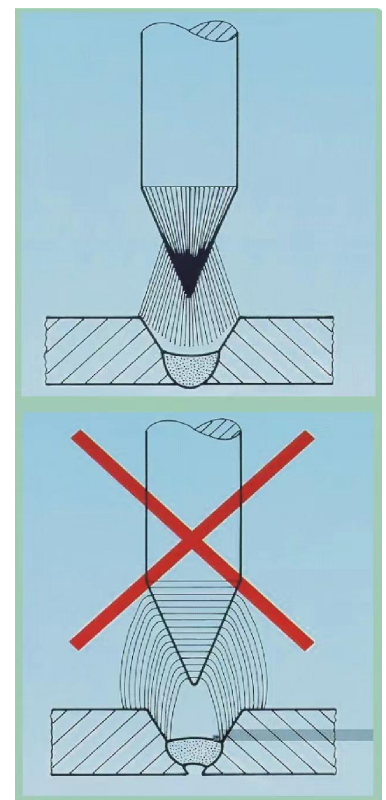
Large diameter tungsten grinding machine

Powder Model:

Iron-base alloy	Nickel-base alloy	Cobalt-base alloy	Other
Fe304	Ni25	Co1	Copper base alloy
Fe316	Ni55	Co6	Non-magnetic alloy
Fe60	Ni60	CoU	High-entropy alloy
Fe+Wc	Nr+Wc	Co21	
Fe+Cr	Ni+Ceramic	Cg\Nc	



It would obtain a denser coating by the powder compared with the electrode. The ratio would be adjusted as your wish to implement various performance needs. It required that the granularity of regular powder 60-240 Mesh.



The influence of tungsten grinding on arc

Plasm powder surfacing application

- 1, Steel, coal industry: cold (hot) rolling, middle groove, wear plate, pick bits, etc.surfacing.
- 2, Power, cement industry: steam turbine blade, roller, etc. strengthen surfacing.
- 3, Petroleum, chemical industry: drill pipe, drill bit, valve surfacing.
- 4, Construction machinery, mining machinery industry: rotary teeth of shield machine, roller sprocket, bucket tooth of excavator, track shoes etc.

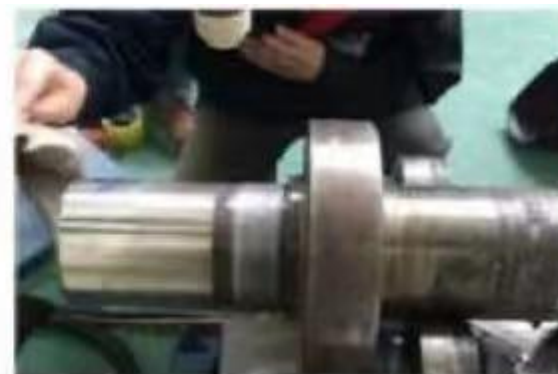
Green remanufacturing repair industry application

Precision imitation laser welding
Pulse powder cladding

Both in one

Low heat affected
Small deformation
High precision welding
Metallurgical combination, high strength
Suitable for mold repair
Foundry defect repair
Shaft wear repair
(such as motor shaft, hydraulic rod, etc)



Mechanical application in mining and metallurgical industry**Petrochemical equipment application****Construction machinery application**

High sensitivity arc voltage tracker



The high speed chip is used to constantly deal with the digital change of arc voltage and send instructions to the motion control unit to accurately control the rise and fall of torch that the tracker would be going along the shape of work piece to make the welding well.

- 1, Suitable for TIG, MIG, PTA and other welding equipment;
2. It can be used with integrated tooling or independently;
- 3, High frequency interference isolation, more stable use;
- 4, Quick response, high operation efficiency, stable tracking effect.

Welding wig-wag



DMBD-02

- 1, Use of advanced MCU control, all input and output ports are photoelectric isolation, high frequency interference resistance, reliable and stable performance, moving parts with high load module. Suitable for working for a long time without interruption.
- 2, Adjustable parameters during operation;
- 3, The speed of manual/automatic set separately, accurate positioning.

Input power	AC 220V
Swing distance (mm)	1-80
Swing speed (mm/s)	1-50
Left pause time (ms)	0.1-1
Right pause time (ms)	0.1-1

The standard positioner



General positioner



L positioner

Cradle positioner
(RV) Reduc

General positioner

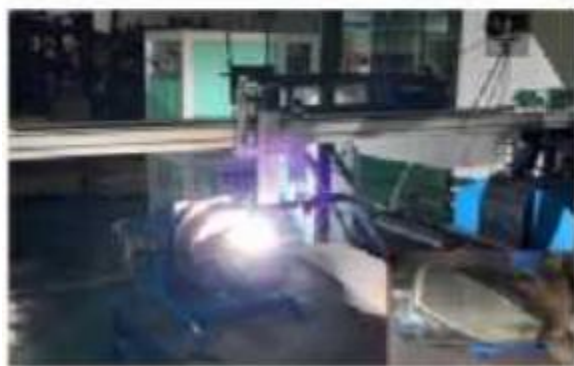
Conventional manipulators and positioners



High NUMERICAL control system automatic cladding machine

- 1, A variety of control system combination, can realize PLC assisted NUMERICAL control system, support more external coordination;
- 2, It can support the operation of a separate oscillator, arc voltage tracker, welding machine communication and interface expansion;
- 3, It can choose two axis CNC system, four axis CNC system.
- 4, CNC G code program editing, convenient and fast, graphic diversification;
5. Welding track of complex graphics (such as plane graphics and circumferential rail graphics);
- 6, Simple operation, one key start to complete automatic welding.

Support the function of CAD graphics import and teaching



Robot workstation/Robot automatic cladding machine

Duomu plasma welding machine can cooperate with the transfer arm of Yaskawa, ABB, Turing, Kanoop and other well-known brand. It can be customized and developed robot system according to customer demand.

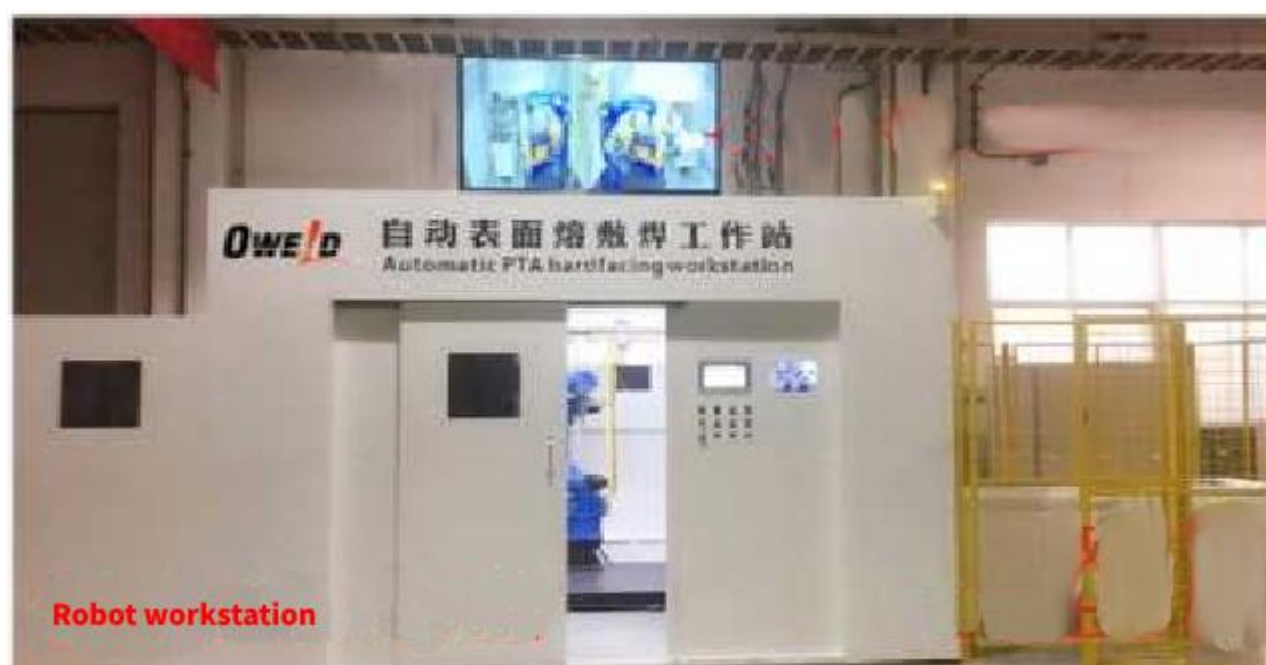
Multiple control combinations:

Robot system

Robot system + external shaft positioner control.

Robot system +PLC coordinates the external axis and abundant external interfaces.

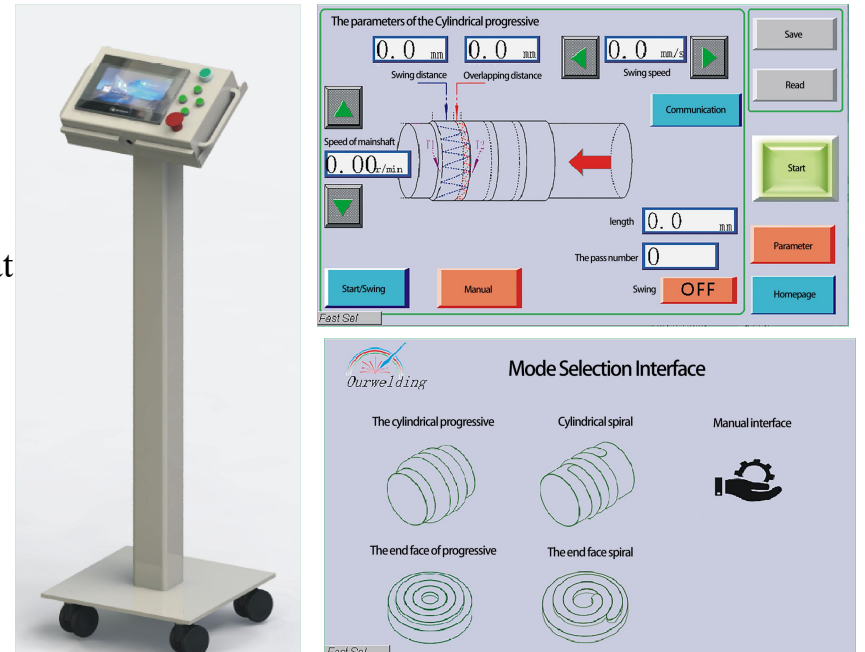
Realize different requirements of welding control, such as multi-station work, a variety of external equipment cooperation. (Such as high-frequency heating, etc.)



Unique mobile control box by hand

Duo mu automatic welding tools are mobile control platform, which composed of hand-held control box, mobile base.

- 1, A 7-inch touch screen with external buttons is equipped in the control box that is convenient parameter setting and control system.
- 2, Aluminum alloy material is light, small size can be hand-held control operation as well as did on the mobile platform.
- 3, Customized operation interface, built-in standard automation program, also can write non-standard program according to customer needs.
4. Various welding action modes can be selected, with welding trajectory simulation diagram and corresponding graph trajectory welding parameters attached, mode selection is intuitive and convenient, and the parameter setting is clear.



Cutting pick is a key component of coal mining, of which the plasma powder cladding is to overlay the alloy layer with high hardness and wear resistance on the working face in front to extend the service term and improve efficiency. Meanwhile, it would almost have a performance without spark as the super alloy layer rubbing with hard substance like rock that it greatly ensures the safety of high gas mine.



Features:

- 1 Digital control system, multi-axis linkage control.
- 2 Using stepper motor (optional servo motor) stable operation, high precision.
- 3 High degree of automation, the surfacing process is once for all, high efficiency.
- 4, Stable system , strong anti-interference ability.
- 5, High efficiency, each one have done wLthin 1-2 minutes.
- 6, Small heat effect due to low current operation, working well to the picks of brazing alloy head that it is clear and does not fall off.
- 7, Various types of picks would have done as well as circular work piece.

Mode: DJC-LC305



CNC middle slot plasma surfacing machine

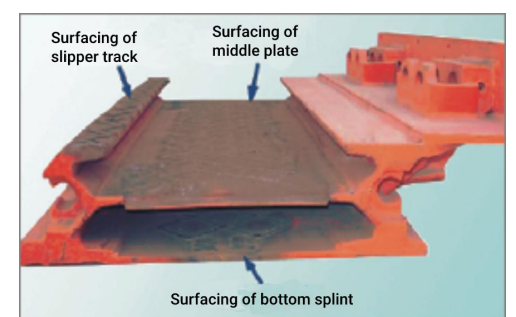
Middle slot is the main parts of scraper conveyor, which is the equipment use mostly in the coal mine, as well as the one worn most and the average service life (coal passing capacity) is only about 500,000 tons, which is up to 30000 pieces due to wear to unavailability in coal industry every year, in addition to this, the loss of stoppage caused by replacing equipment. Recently, the technology of hard facing has been widely used in the middle slot that it improves overly the service term because the high automatic, high wearable alloy powder, precisely controllable pass.



CNC surfacing machine features



- 1 Adopting the compound control of the organic system and PLC, it supports the import of CAD graphics to make pattern conversion handy. Simple
- 2 Equipped with self-adaptation function, the height of torch can be adjusted by itself for welding of Surface graphics, such as groove, convex, ramp pan.
- 3 The machine tool has a high rigidity, a heavy-duty structure, strengthened programming method that the torch would be fine turned as welding.
- 4 Arm length up to 3.5 meters and welding the interlayer of middle slot.
- 5 High configuration, the system adopts servo motor, stepper motor, multi-axis linkage wheel to set Q6, all parts of the system are fully linked (welding control, motion control, powder feeding control, cooling control) surfacing welding machine is completed at one time with high efficiency.
- 7 After the middle slot being overlaid, the abrasion loss reduced, strength increased, the operation failure rate reduced, the number of maintenance reduced and the maintenance time shorten.
8. Plasma surfacing has simple process and easy to use.



Versatile CNC valve Surfacing machine (closed type)

- 1 The use of PLC and CNC composite system would achieve multi-axis linkage, multi-component collaborative linkage and the three eccentric valve surfacing to be overly difficult.
- 2 Integrated plasma power supply that would be opted specifications and models according to the different products.
- 3 The numerical control code that would meet the needs of different shapes of work piece.
- 4 The welder can communicate with PLC to set the different welding current by the welding positions to achieve perfect overlaying,
- 5 LCD touch screen, easy to operate.
- 6 Multi-axis linkage (3-6 auxiliary optional) to achieve automatic surfacing to various shapes products in high quality and efficiency.
- 7 It is possible to opt swing welding or equipped with the device of independent linear welding.
- 8 It would be equipped with welding positioner of which super long cylinder can also achieve welding that it is free from the size of the body, the overturning of 90 degree of the head angle to meet the needs of different products.
- 9 The system runs stably and be a strong anti-interference ability.
- 10 machine equipped with high precision motor (servo motor, stepper motor), ensure the accuracy of surfacing.



The machine for double cone cylinder

It is specialized in developing the surfacing products for the inner hole of double barrel as well as for the surfacing of the outer circle, inner hole of shaft parts, pipe parts and repairing the damaged surface.

- 1 PLC numerical control system and five axis linkage.
- 2 Specially developed welding procedures, simple input related parameters can achieve different welding pass layout welding of different products.
- 3 With the reinforced side beam walking, beam telescopic, vertical beam lifting welding torch walking mechanism, the main shaft drive adopts double servo motor synchronous drive, the barrel rotation is stable with accurate angle, that avoid the phenomenon of rotating skid.
- 4 1.2T adjustable welding tug bracket with movement to forward and backward and the function of angle modulation that would meet the requirements of different lengths products
- 5 With communication control function, all welding parameters are implanted in the welding program.
- 6 Simple operation, one key start, complete the welding process.

The torch with long length handle for inner hole would work stably within 400 °C



Screw automatic surfacing equipment adopts the design of horizontal machine tool, integrated processing, high mechanical strength, good stability, compact structure and the main thing is for screw surfacing and wear remanufacturing.

- 1 High quality linear slide guide, high precision, small movement clearance.
- 2 Gear and rack meshing transmission, no crawling, no jitter.
- 3 The machine tool numerical control system +PLC control system, programmed control, one key complete surfacing, convenient operation.
- 4 Equipped with professional welding swing device, real time fine-tuning in welding process.
- 5 It can meet the needs of screw surfacing of fixed pitch and variable pitch..



Customized machine tool series



Automatic surfacing machine for three eccentric valves

According to the characteristics of the eccentric valve, the data processing system we research and develop independently would automatic cladding to three eccentric valve and double eccentric of different angle.

- 1 To develop the specific program for three eccentric on the basis of PLC control system.
- 2 Configuration of welding slope plate (non-slope plate can be selected, which the rate and accurate of commissioning are lower than slope plate.)
- 3 Configuration of the detection mechanism to irregular welding edge detection to reduce the impact of low machining accuracy on welding effect.
- 4 Configuration of arc voltage tracking function that the torch would be going along the welding surface, even if the height changed.
- 5 By optimizing mechanical structure and electrical tracking that makes them perfect cooperation so as to perform automatic cladding sealing surface of three eccentric, high efficiency and high quality.
- 6 One button starts operating, handy to turning as your wish with the situation in working.



Multi-station cladding machine for valve

We research output the multi-station machine tool, according to the characteristics of small valve body, valve ring, short working hours and batch processing.

- 1 High precision electric indexing plate, high speed of rotation.
- 2 Applying PLC programming to setting up the technical operating steps according to the welding process from station.
- 3 Targeted development at fixture (Fast loading and unloading, good heat absorb protection).
- 4 Automatic welding flow operation, high efficiency.
- 5 One-button boot mode which would complete cladding by multi-station. The way of operation is simple and easy to learn that improves productivity and greatly reduces the labourers.



Spiral reamer automatic cladding machine

According to the product characteristics of spiral cutter and spiral propeller, the design of machine tool of spiral reamer. One-button start-up reduces labor greatly and production costs.

- 1 PLC control system is the special programs to corresponding to products that would realize automatic surfacing screw with fixed pitch and variable pitch.
- 2 Equipped with boundary detection and tracking mechanism, accurate tracking screw diameter change.
- 3 The configuration of arc voltage tracking function, automatically adapt to the height of the welding surface.
- 4 The configuration of welding swing device to increase the welding width that meets the needs of single pass welding or multi-pass welding.
- 5 There is a watch window on the protection sliding door for surfacing small spiral reamer and the video screen for doing big one that is easy to observe the pool state.
- 6 One-button start operation and interface operation simple and handy that greatly reducing the qualify for staffs.



The machine for big spiral propeller



Double column gantry machine tool

It can meet the demands of welding shaft, plate, special-shaped parts and the double column gantry machine tooling is researched and developed.

- 1 The control system adopts double compound system mode of numerical control operating system and PLC control system.
- 2 According to different requirements, PLC control system can extend arc voltage tracking, current communication and multi-expansion mode.
- 3 The design of double column gantry structure, it is more solid and more stable for walking.
- 4 Transmission adopts high precision sliding guide, rack and pinion meshing, small gap, high precision.
- 5 Double system structure that would be welding abundant kinds of product.



Hydraulic rod automatic cladding machine

The design of horizontal machine tool is applied in hydraulic rod automatic cladding equipment that is mainly for remanufacturing due to surface wear of shafts and hydraulic rod, integrated processing, high mechanical strength, good stability, compact structure,

- 1 PLC control system, LCD touch screen, programmed control, one key start to complete surfacing, easy to operate.
- 2 The work piece movement is smooth and rotation is driven by servo motor + reducer + three claws.
- 3 Lifting wheel support, thimble tail seat on machine tool, moving as you wish that it is better to position the work piece of long axis.
- 4 Gear rack meshing transmission, high accuracy, no crawling, no jitter.
- 5 Removable protective door with guardian glass to easy to observe the welding situation in case the hurt from arc light.
- 6 Professional welding swing, real-time fine-tuning in welding.
- 7 It is possible to change of CNC control system to welding oil drilling pipe, centralizer and other abnormal shape shaft work piece.



Tips

Remanufacturing process of hydraulic rod wear-resistant and corrosion-resistant

Rough turning wear layer ➤ Clean and remove oil ➤ Overlaying on surface ➤ Measure ➤ Penetrant inspection ➤ Turning surfacing layer ➤ Fine grinding on surface

Automatic inner hole cladding machine

The design of integrated machine tool without splicing is applied in inner hole cladding machine that is mainly for remanufacturing due to wear and cladding to the inner hole of work piece, high mechanical strength, good stability, compact structure.

- 1 The axis of translation, swing and lifting are guided by high-quality linear slide guide, high precision, small movement gap.
- 2 PLC control system, programmed control, one-button start to complete surfacing that it is easy to operate.
- 3 The devices of lifting fine-tuning and swing are driven by ball screw, running fixedly.
- 4 The camera of miniature pinhole can observe the welding pass to adjust welding position.
- 5 The wheel supports torch that would make it swing smoothly without shaking in the inner hole.
- 6 Portable operating platform, easy to operate.

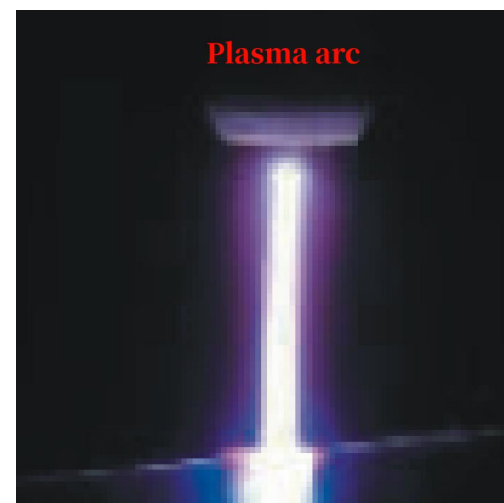
The inner hole torch with heat-resisting and long arm, running stably in 400 °C



Plasma arc welding machine (PAW)

The merit of Plasma arc welding

- 1 High arc energy, slender arc column, strong penetration, no need to make a bevel for thin work piece that shorten preparation time.
- 2 The welding speed is 3-6 times as much as argon arc welding.
- 3 Arc column is rigid, because of the small hole effect, it would perform one-side welding with back formation due to small hole effect.
- 4 Excellent production, electrode shrink in the nozzle, not easy to pollute and burn, long term for service.
- 5 Arc stability is high to keep working for a long time that is suitable for a mass of repetitive production.



Precision micro-beam plasma welding machine

Function configuration
 Continuous ion welding
 Pulse ion welding
 Precision pulse welding (imitation laser welding)



DML-V02A(0.2-30A)

- 1 DSP digital processing technology, the control and output are accurate. Adjusting accuracy of 0.1A.
- 2 The current fluctuation can be fine adjusted to meet the needs of welding process.
- 3 The arc starting current adjustable.
- 4 Data storage module can store data in multi-channel, storage and transfer are handy.
- 5 The time would be adjustable of gas supply ahead and stop lag.
- 6 Multi-signal output port, automatic online function.



High power plasma welder

Function

Countinuous ion welding
Pulse ion welding



- 1 DSP digital processing technology, accurate control, accurate export..
- 2 Inverter power supply, quick response, high efficiency, light weight.
- 3 Data storage module can store 99 groups, welding parameters, convenient storage, handy transfer.
- 4 Pilot arc current. base value current, main arc current, all are adjustable.
- 5 The time of current rise and fall can be adjusted.
- 6 Gas delay time is adjustable.
- 7 Equipped with high-power chiller, the system stable and can work for a long time with high load.
- 8 High efficiency, it can weld thick steel plate 10mm.

Plasma torch and parts



PT-30(30A)



PT-80(80A)



PT-300(300AJ)



PT-500(500A)



PT-180(180A)



SPT-50/100

Applied range

- 1 Instrumentation, electronic appliances, medical instruments.
(Metal bellows, motor armature sheet, galvanic couple, etc.)
- 2 Automotive, shipbuilding, aerospace.
- 3 Welding mold and repair the defects of parts.
(Repair of all kinds of casting defects, such as shafts, teeth and rollers)



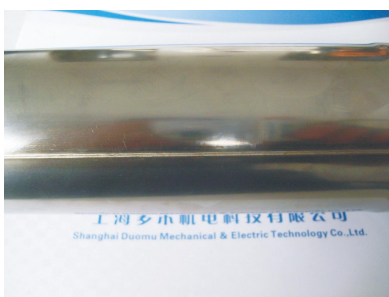
Steel strip welding



Sensor welding



Pressure vessel welding



Pipe Welding



Plate welding

Machine tool for welding of longitudinal and circular seam



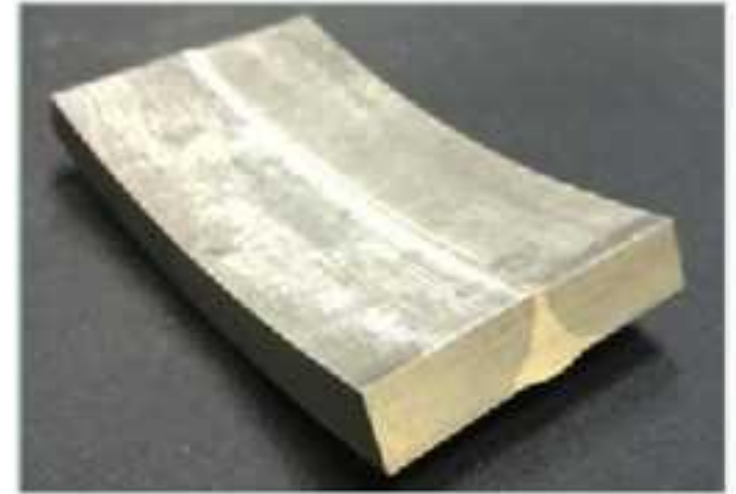
Non-standard machine tool



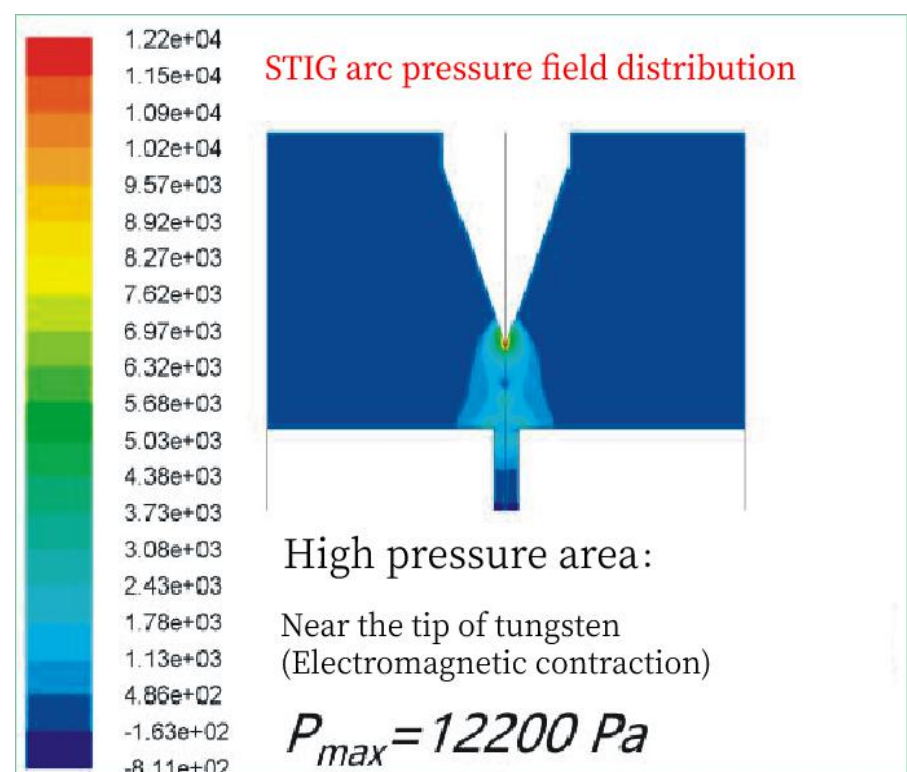
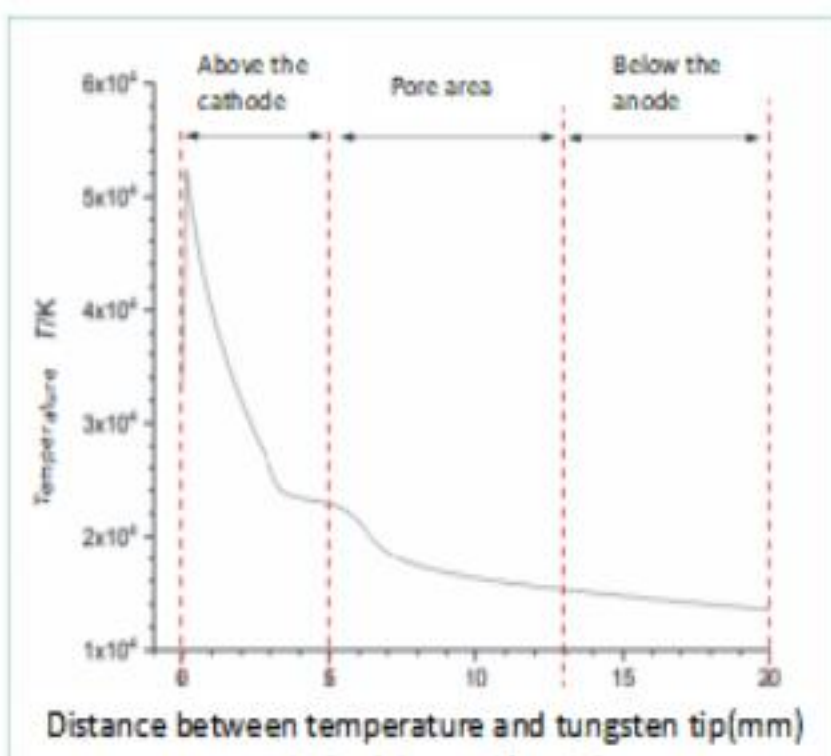
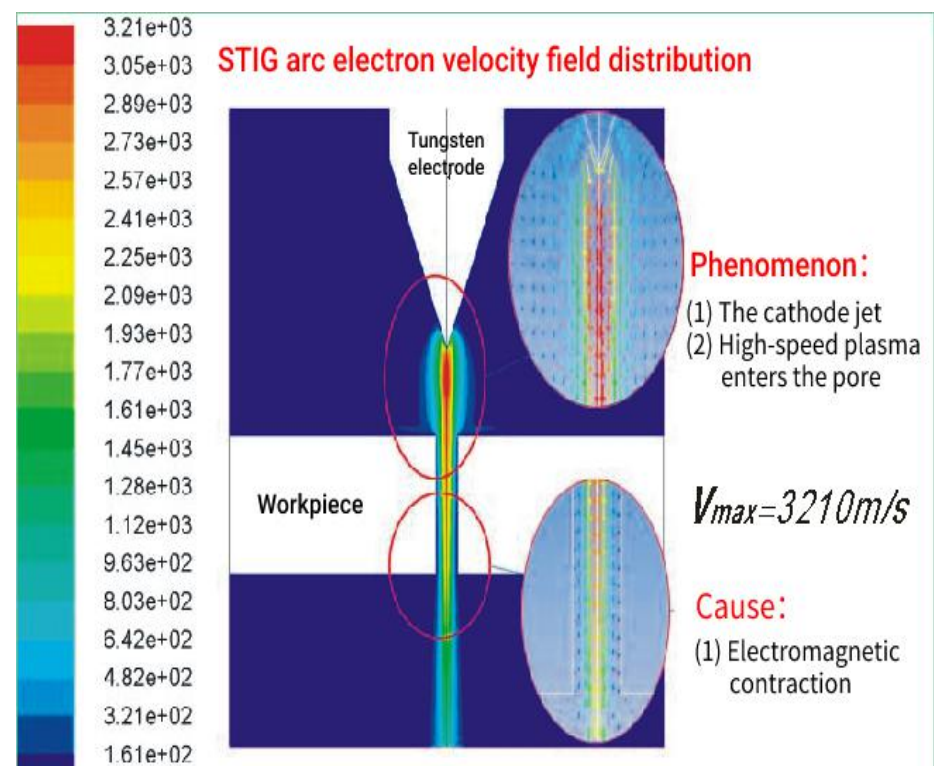
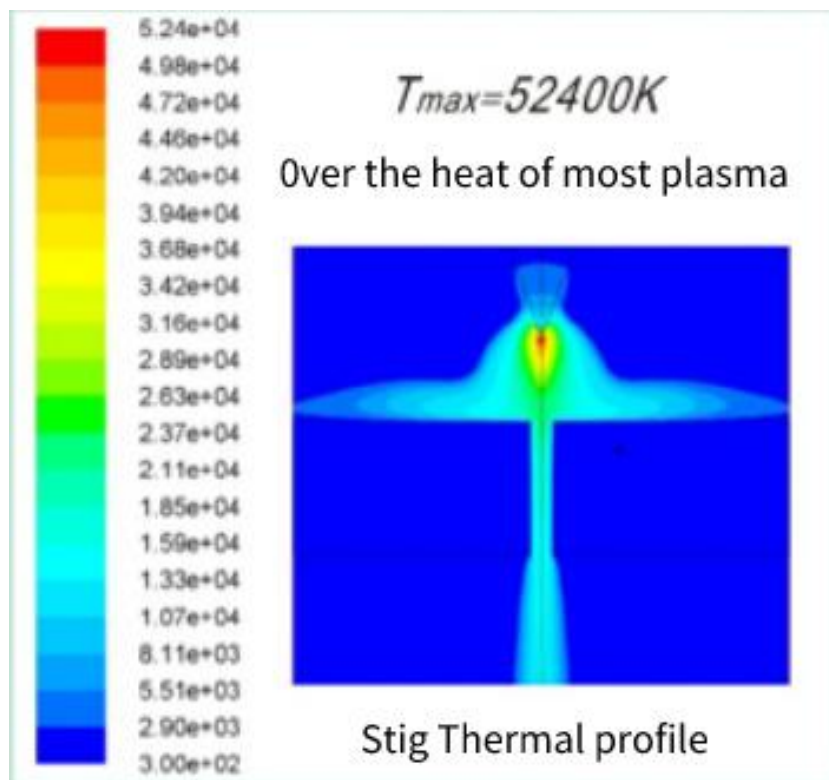
New STIG welding system

Principle of Stig welding

Super tig welding system (SWS-1000) we developed is a new arc welding system that it would achieve the effect of plasma arc by efficiently compressing electromagnetic arc. As welding, the arc energy is concentrated and the arc voltage is balanced with the surface tension of weld pool to form keyhole effect that it would provide adequate penetration, which would be done fully on Titanium alloy plate within 10mm, stainless steel sheet(304) within 14mm. It is a kind of the new welding process between the tig and Plasma welding. In other words, it is not only super penetrating from plasma welding.



STIG genetic schematic diagram





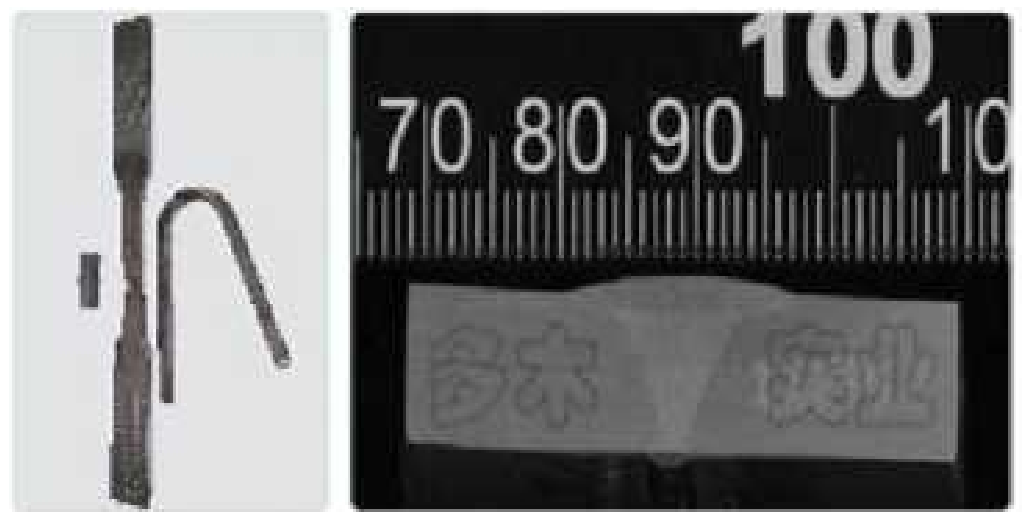
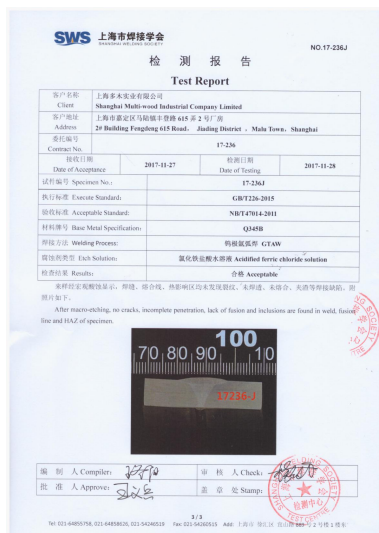
- 1) Arc of high energy and strong penetration.
- 2) Reduce the preparation time without taking a slot.
- 3) It is 3-8 times of argon arc welding with fast speed
- 4) It can have done one side welding with back side formation with hole effect and compression arc.
- 5) The arc has good controllability and adjustability.
- 6) The pore of low sensitivity would avoid welding defects such as blister.

SWS welding system feature


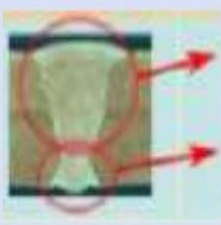




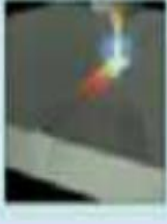

- 1) Integrated design, highly integrated, welding power supply, refrigeration system, control system integrated, low failure rate.
- 2) A variety of welding modes, flexible control, convenient operate.
- 3) STIG high depth welding system adopts digital inverter technology, stable output current, 50-1000A continuous and accurate adjustable.
- 4) The power supply adopts high-speed DSP chip as the control core, the whole welding process adopts waveform control, the welding process is stable, and the power supply dynamic quality is excellent.
- 5) IGBT soft switching technology, power device switching stress is small, long life, energy efficient power supply, high power factor.
- 6) The control panel adopts LCD screen with button knob, the interface display is clear, easy to operate, intuitive, avoid the disadvantage of wearing gloves when touching the screen.
- 7) With a variety of communication functions, according to the need to choose 485, CAN and analog mode, realize the connection between welding machine and automatic tooling control system.
- 8) With the special development of high-power welding gun, effective control of electrical compression to realize the stable lock hole welding of thick plate



SWS 1000 perform test report



The edge of key hole welding SWS-1000

Technical comparison						Saving material: 95%		
Welding technology	Before welding		After welding		Edge contrast	Summary		
TIG/GAWM					Wire filling welding area	Welding material filling consumption up to 1000g/m		
					Self-fusion welding area	Large consumption of consumables and groove materials		
STIG					Wire filling area of the cover	Little welding material consumption		
					The rest are self-fusion areas	The filling amount of welding material is not more than 50/m as the normal 5%		
Welding speed up to 300mm/min, one-side welding with back side formation								
Efficient comparision						Efficiency improved by more than 8 times		
Process flow	Cutting	Slotting	Preweld cleaning	laying out	Front welding	Clearing back side	Back welding	Welding times
TIG/GAWM	✓	✓	✓	✓	✓	✓	✓	≥1
STIG	✓	✗	✓	✓	✓	✗	✗	1
Welding speed up to 300mm/min, one-side welding with back side formation								
Quality comparison								
Welding technology	Welding process		After welding		Summary			
TIG/GAWM					It is easy to have slag inclusion and pore welding by more than one time			
					Welding shape variable is large			
STIG					High requirements to operator			
					The pass rate is less than 90% by taking a photo			
					No slag inclusion and pore by welding one-time penetration			
					Double side formation, welding pass smooth and fine, shape variable is tinny			
					Nail-shaped section structure that enhances the mechanical properties of weld seams			
					The pass rate exceeded 95% by taking a photo			
Note: The above parameters are only for thickness of stainless steel welding is 10mm								

The products application of welding by SWS 1000

It is mainly used for the welding of carbon alloy steel, stainless steel, titanium alloy, cobalt alloy and Hastelloy plate. The high speed and high quality can be widely used in the following fields:

1 Oil and chemical industry 2 Food and pharmaceutical industry 3 Water treatment industry 4 Electric power and nuclear power industry

5 Aerospace industry 6 Automobile, shipbuilding industry 7 Construction machinery, mining machinery industry



New Welding technology



The function introduction of precision pulse imitation laser welding (micro pulse low temperature cold welding)

Imitation laser welding would control precisely the rise time of output current, the hold time of peak current and the fall time (control precision is 1/1000ms), so that the work piece quickly produces molten pool, fast cooling, reducing the heat accumulation that would achieve the effect of cold welding. Precision pulse welding machine has a high demand to circuit control. Even if the current output time of normal welding can control to ms, however, the pulse width is gradually expanding or decreasing as the welder turning on or off to the rise and fall of welding current have a large slope to not meet the needs of turning on and off in the short time, so it can not make the performance of precision pulse cold welder.

The feature of precision pulse welding

- 1, High strength of welding, full metallurgical combination. It can be lathed, milled, grinded after welding.
- 2, Welding heat input is small: small hot spot, small heat impact, small deformation, no deformation after annealing.
- 3, High precision of welding: the minimum diameter of welding spot is 0.15mm, and the edge of cutting can also be welded perfectly.
- 4, Simple operation: non-professional person can operate after simple training.

Precision pulse cold welder function selection skills

Precision single-point pulse welding is suitable for the products with high requirements on precision, heat effect and deformation. Single-point pulse welding means giving a welding instruction first, then outputting a welding according to the parameters set. Continuous precision pulse welding: it is suitable for the products with high requirement on speed and deformation is small, and the work flow is the high precision single point pulse welding has continuously outputted according to the parameters since it received the instruction until the order stop. The heat input is more than single-point precision pulse welding that is less than continuous pulse argon welding.

Welding model: DM-DLH160 DML-V02BD

Application of precision pulse welding

- 1, Precision parts welding, thin wall parts welding (electronic, electrical precision components)
- 2, Mold welding repair (plastic mold, die casting mold, cold stamping mold)
- 3, Copper and aluminum casting repair
- 4, Shaft and roller parts welding repair
- 5, Other parts repair (non-ferrous metal, black metal)

