

CO2 Laser cladding heat treatment machine

1. Technical parameter of each part

1.1. HAN*SGS-TFL-6K laser source

output rating: 6KW;

Discharge mode: needle plate discharge;

Output mode: continuous wave output;

Output power adjustment range:200—6000W;

Output wavelength: 10.6 μ m;

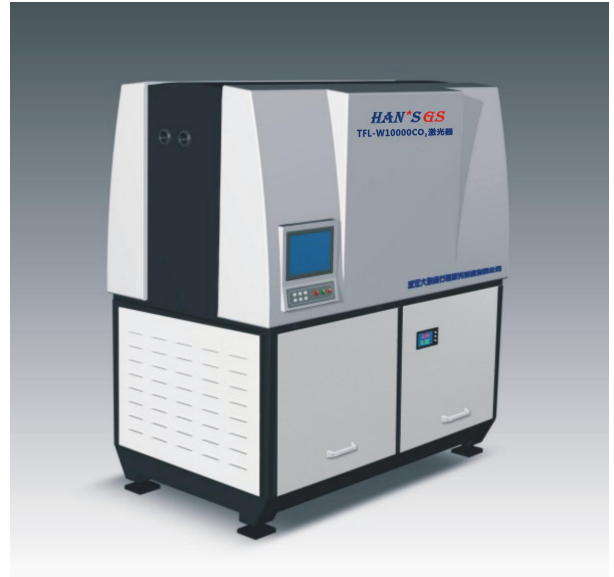
Power instability: $\leq\pm 3\%$;

beam divergence angle: ≤ 5 mrad;

working gas: CO₂,N₂,He;

Power supply: 65KW;

The main parts of the laser have reliable protection device, its voltage, current, water pressure and air pressure are sensor monitoring alarm, and can be in the input power flow, over-voltage, cooling water flow is too low and the gas inside the box is not automatically cut off the power supply, thus ensuring the safety of laser;



1.2 Water cooling unit for Laser source

Function: Providing enough cooling energy for the laser internal gas, laser lens light bridge, resistance box in the resistance and electrical components. provide adequate cooling energy for the Reflector and focal lens in machine bed.

The required amount of customized cold: not less than 6 x 104kcal/ hours;

Working mode: double temperature double water tank. Low temperature water is used for cooling of the laser, the temperature water is used for the cooling o the lens, light bridge, resistance, electrical components and machine tools;

Cooling water temperature: 5 ~ 15 (adjustable) at low temperature,

Room temperature water 10 ~ 30 (arbitrary adjustable);

Control mode: automatic temperature control; accuracy: less than 1 °C;

Cooling water: R22; condenser cooling mode: air cooling

Power supply: 35KW;

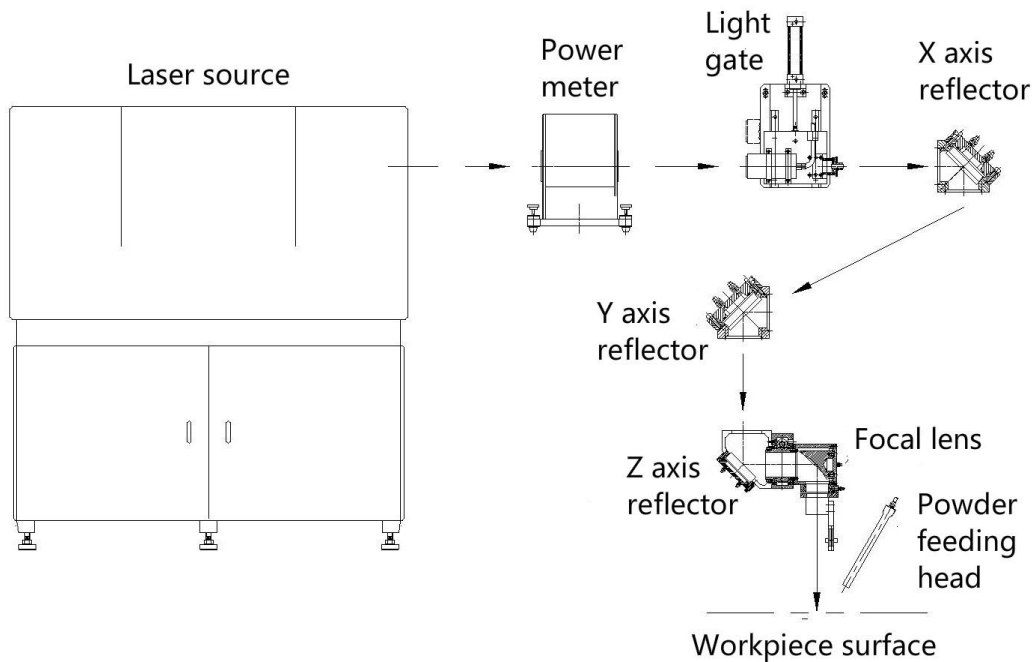
Fully enclosed compressor, stainless steel tank and stainless steel water system.



1.3 light guide system

Role: the laser beam transmission, focusing on the surface of the processing parts. The laser beam's power is monitored and the optical path is directed, in order to ensure the processing quality.

Pneumatic brake: used in conjunction with the numerical control and manual control, the timely control of laser light path and the closure, the light brake by the compressed air to drive, reaction time 0.5s;



Semiconductor light coaxial indicator a: used to indicate to the processing position; red light semiconductor coaxial life indicator is more than or equal to 1 00000 hours spot, the deviation is less than or equal to 0.2mm

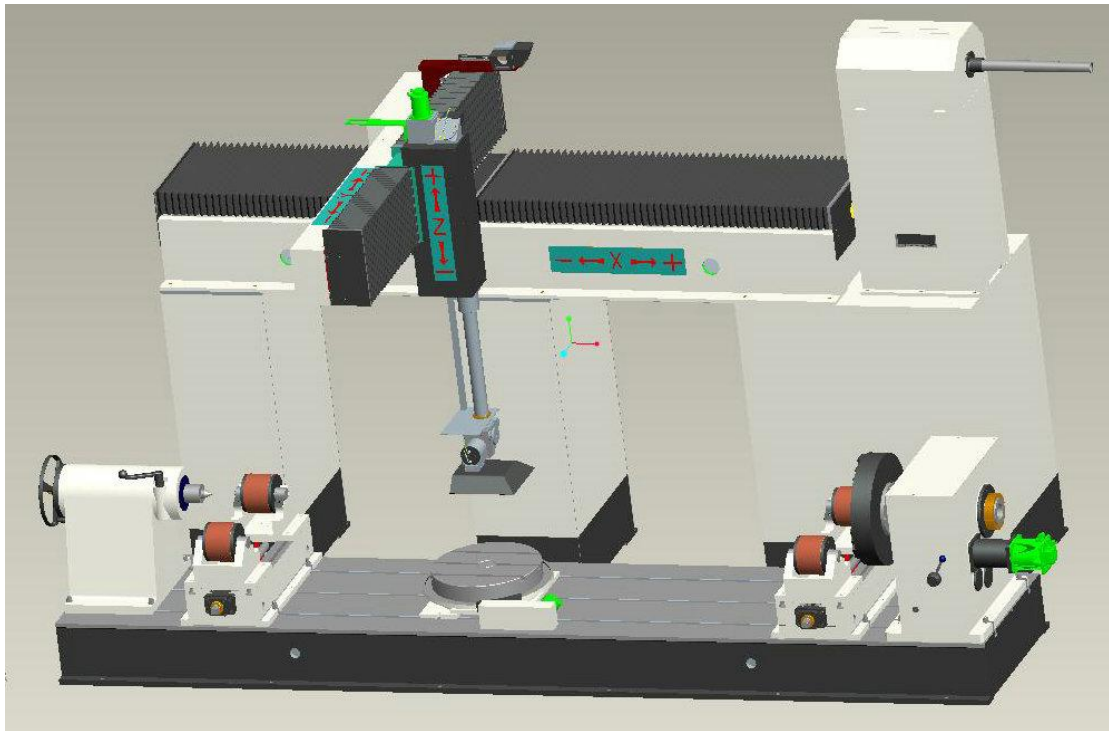
Laser power meter, which is used to monitor the size of the laser power, the automatic adjustment of the laser power.

Signal source ,measurement power of laser from 0-10kw.

One set machine tool guide light system optic lens : 1 piece of parabolic reflect focusing lens (focus f300) ;3 piece of plane reflectors , 1 piece Integral mirror,band width of integral mirror is 30mm x 4mm (Broadband quenching integral mirror)

1.4 Numerical control machine

One set four axis three linkage numerical control machine tool



Adopting **bracket -movement style** flight path movement form,with X Y Z 3 axis linear motion function and swing function; machine tool equipped one horizontal rotary worktable(C axis);X,Y.Z and C axis form a four axis five linkage processing system.

Machine tool main part working : $X \times Y \times Z = 2000\text{mm} \times 600\text{mm} \times 500\text{mm}$

Speed of XYZ axis :0~5000mm/min

Positioning precision : $\pm 0.1\text{mm}/300\text{mm}$

Repeat positioning precision: $\pm 0.05\text{mm}/300\text{mm}$

Equipped with ball screw guide rail and slide block for x y z axis

Laser head swing angel : $-90^{\circ} \sim 90^{\circ}$ (manual)

Horizontal spin table: max chuck diameter $\Phi 500\text{mm}$; Height of center: 500 mm;

Max machining workpiece diameter: $\Phi 800\text{mm}$, the largest workpiece length: 2400 mm;

Horizontal spin station bearing: 3T;

Horizontal rotating speed: 0.05 ~ 10rpm;

With a machine tool base, its installation dimensions: $3800\text{mm} \times 1750\text{mm} \times 280\text{mm}$