

Product introduction of the pulse cleaning machine



GROUP GLOBAL LLC-FZ
جو جروب جلوبال ش.ذ.م.م-منطقة حرة
◆ When Experience Meets Technology... ◆

date:



LC 1403WD-V-QCS
Laser cleaning of the vibrator lens system

Physical pictures of the pulse cleaning equipment

100W backpack style



200W-300W pull rod type



[catalogue]

- 1: the principle of laser cleaning
- 2: pulse cleaning characteristics
- 3: the advantages of pulse cleaning
- 4: laser cleaning should be in the field
- 5: Rail transit cleaning case
- 6: laser cleaning industry development status
- 7: Pulse cleaning case
- 8: Pulse cleaning vibrance lens parameters
9. Basic parameters of the equipment
- 10: configuration of main accessories



Using the interaction between the high-energy laser and the surface material of the cleaned workpiece, the cleaned material can instantly gasify or swell off from the substrate under the action of the high-energy laser, so as to achieve the purpose of the workpiece cleaning and purification process. Despite the high energy, the laser pulse has little effect on the matrix surface.

- 1) Non-contact cleaning, without damage to the part matrix.
- 2) Accurate cleaning, which can achieve precise position, precise size and selective cleaning.
- 3) Do not need any chemical cleaning solution, no consumables, safe and environmental protection.
- 4) Simple operation, power can be used, can be handheld or cooperate with the manipulator to achieve automatic cleaning.
- 5) Cleaning efficiency is very high, save time.
- 6) The laser cleaning system is stable and almost without maintenance.

2.2 Advantages of the cleaning machine

Traditional industrial cleaning:

1. Mechanical friction
2. Chemical corrosion
3. Sand blasting
4. Ultrasound

Belongs to high energy consumption, high pollution, low efficiency, high labor cost.

Laser pulse cleaning: no consumables, low pollution, high efficiency, precision and control, no damage substrate.

applied range

Applicable substrate

- metal
- pottery and porcelain

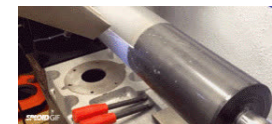
Application industry

- shipping
- rail transit
- aerospace
- new energy
- mould
- Large steel components

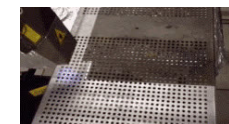
application scenarios



rust cleaning



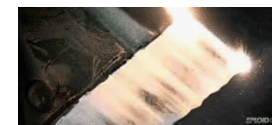
Deoxide layer



uncoil



Except for attachments



paint removal

Global laser cleaning application area

- North America and Europe: Laser cleaning technology started early. Automotive and aerospace, electric power, antique restoration and other industries to achieve large-scale commercial applications.
- China: It is in the exploration stage of laser cleaning process and technology. Mould, rail transit, power battery and other industries have a small number of applications.

Single column frame repair time-consuming

project	Traditional cleaning (when manual)	Laser cleaning (when manual)
cleaning	1040	300
rust cleaning	200	40
paint removal	155.5	50
sum up	1395.5	390
conclusion	Single column to save 1000 labor	

Single column overhaul takes time

project	Traditional cleaning (when manual)	Laser cleaning (when manual)
cleaning	1135	300
rust cleaning	134	30
paint removal	311.5	100
sum up	1580.5	430
conclusion	Single column saving 1100 labor	

Estimated savings in four years (231 xx subway frames and 134 overhaul trains in the next four years)

time	prime cost						practice thrift	remarks
	Traditional outsourcing		Laser cleaning outsourcing					
	manpower	consumptive material	manpower	power rate	depreciation	maintenance		
2019	697.156	118	192.4	1.5	177	0	444.256	The use of laser cleaning can greatly reduce labor costs, four years of "independent cleaning business" is expected to save
2020	1589.09	264	436.8	1.5	177	0	1237.79	
2021	1540.38	268	427.68	1.5	177	0	1202.2	
2022	558.2	100	156	1.5	177	17.7	306	
amount to	4384.82	750	1212.88	6	708	17.7	3190.24	



Ship industry

In shipbuilding and repair, cleaning as a must process, compared with the traditional artificial scrub, mechanical grinding, chemical cleaning and sandblasting operations, laser cleaning with energy saving and environmental protection, no consumables, surface treatment of high quality, facilitate automation control, conform to the national policy of saving resources and protect the environment, also more in line with the requirements of the Chinese ship green smart.



Rail transit industry

In order to ensure the safe and stable operation of the railway, the train needs to be repaired regularly, and the main processes include cleaning of its parts, flaw detection, spray painting of the overall surface and other operations. Traditional manual scrubbing, mechanical grinding, chemical cleaning and sandblasting operations face the problems of high pollution, high consumables, low efficiency, and uncontrollable quality



Aerospace industry

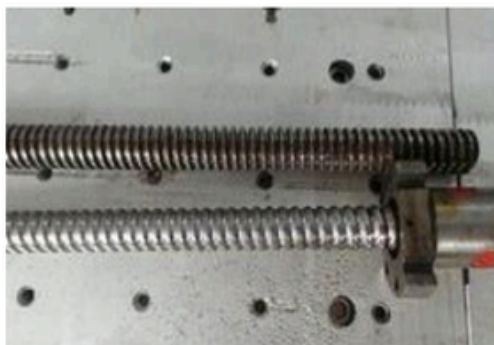
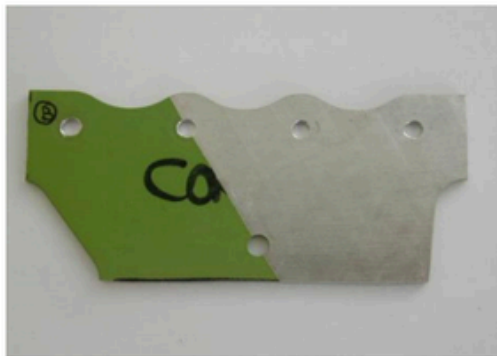
It traditionally uses chemical paint remover, water picks, dry medium blasting and manual sanding. In recent years, the laser paint removal system has been a great success in the U. S. Air Force Base, reducing the F-16 from 7 days to 3 days, and the C-130 from 10 days to 5 days. The laser uses used to remove paint from aircraft structures, as well as aircraft surface cleaning.



Oil pipeline industry

Pollution-free, unconsumable and faster laser cleaning has also begun to replace the traditional manual and chemical cleaning of oil pipelines. At the same time, the wool effect brought by laser greatly simplifies the operation process and gradually becomes the future development direction of the industry.

product superiority



The scanning galvanometer of this system adopts the high-speed motor imported from the U.S.A., and the diameter of the incident spot is 10mm, which has the features of small volume, fast speed, high precision and good stability, and the comprehensive indexes have reached the international leading level technology.

linearity	99.9%
Repeatability	8 μ Rad.
Small Step Response Time	≤ 0.3 ms
Proportional drift	<40PPM/ $^{\circ}$ C
Zero-point drift	<15 μ Rad./ $^{\circ}$ C
Long time drift (8 hours of continuous operation)	<0.5mRad.
Power tolerance range (pulsed laser)	≤ 300 W
Laser Adaptation Range	QCS laser
Standard cleaning width	100*20mm (other formats can be customized)
Rated current	2A
Operating Temperature Range	0 $^{\circ}$ C-45 $^{\circ}$ C
Cooling method	Water cooling (water pipe size ϕ 6mm \times ϕ 4mm)
Storage temperature	-10 to +60 $^{\circ}$ C
Maximum Scanning Angle	$\pm 15^{\circ}$
Input Aperture	10.0mm
Motor weight	45g



model	laser power	packing measurement	tare	cooling-down method
Backpack type	100 W			forced air cooling

model	laser power	packing measurement	tare	cooling-down method
Pull rod type	200 W/300W			forced air cooling

Device name	specifications	unit	quantity	
cabinet	Backpack / pull rod	cover	1	
laser	MAX/ JPT	cover	1	
The vibration mirror system	sino galvo	cover	1	
source	Meanwell power supply	cover	1	