



HGTECH

Laser Cleaning Series Solutions

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HGTECH

If you want to have a deeper understanding of our company and products, you are welcome to visit our company! We will wholeheartedly provide you with services such as company visit, sample observation, sample printing, process discussion, etc. The contents of this book are subject to research and review by our company at the time of publication, and are subject to change without notice.

HGLASER/2022-06



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BUZZ Series

STORM Series

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U-rib Laser Cleaning Automatic Production Line

Fully Automatic Laser Cleaning Line for Locomotive Brake Discs

Tire Mold Online Intelligent Laser Cleaning Equipment

Tire Mold Offline Intelligent Laser Cleaning Equipment

Electric Core PET Film Laser Cleaning Intelligent Equipment

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COMPANY PROFILE

WUHAN HUAGONG LASER ENGINEERING CO.,LTD

HGLASER is the pioneer and leader of laser industrial application in china. It is the world's leading provider both of laser equipment and intelligent manufacturing solutions, the core subsidiary of the well-known national high-tech listed company HGTECH.

With the deep understanding of the manufacturing industry trend, HGLASER constantly enrich products and solutions, adhere to exploring the integration of automation, informatization, intelligence and manufacturing industry, and provide various industries with laser cutting system, laser welding system, laser marking series, complete sets of equipment for laser texturing, laser heat treatment system, laser drilling machine, Laser and various supporting devices, special laser processing equipment and plasma cutting equipment, as well as the overall construction scheme of automatic production line and smart factory.

-  Laser Cleaning
-  Laser Cutting
-  Laser Welding
-  Automobile Equipment Automation
-  Sheet Metal Assembly Line
-  Digital Factory Solution

Innovation Fuels a Better World



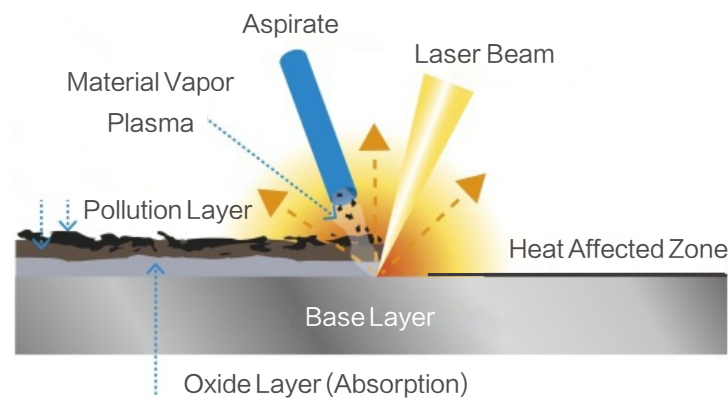
TECHNICAL ADVANTAGE

HGLaser cleaning products conduct high-density and high-energy beams through optical fibers, and use non-contact methods to process parts flexibly and quickly in three dimensions. Its flexibility, speed and high stability solve the problems of low efficiency and high loss of traditional cleaning.



- / **Silent and environment-friendly:** laser cleaning belongs to dry cleaning, which produces less smoke and dust. The cleaning residue is recycled through a vacuum cleaner, which will not cause environmental pollution.
- / **Labor saving:** manual cleaning is labor-intensive, laser cleaning only requires one person to operate, and the work intensity is low.
- / **High economy:** laser cleaning is one-time investment, with low operation cost in the later period, and no consumable loss.
- / **Good controllability:** high flexibility, real-time cleaning of selected areas.
- / **Low failure rate:** compared with traditional automatic grinding equipment, laser cleaning equipment is simpler in structure, more stable and reliable.

Laser Cleaning Principle:



- / The beam energy emitted by the laser is absorbed by the pollution layer on the surface to be treated;
- / The absorption of large energy forms a rapidly expanding plasma (highly ionized unstable gas), generate shock wave;
- / The shock wave makes the pollutants evaporate or peel off instantaneously.
- / With correct laser parameters and optimal wavelength, the base material will not be damaged or melted.

Effect Comparison:



Advantage Comparison:

Comparison items	Laser cleaning	Chemical cleaning	Mechanical grinding	Dry ice cleaning	Ultrasonic cleaning
Cleaning method	Laser, non-contact	Chemical cleaning agent, contact type	Sandpaper, contact type	Dry ice, non-contact	Cleaning agent, contact type
Workpiece damage	No	Yes	No	No	No
Cleaning efficiency	High	Low	Low	Medium	Medium
Consumables	Only power on	Chemical cleaning agent	Sandpaper	Dry ice	Special cleaning agent
Cleaning effect	Excellent	General, uneven	General, uneven	Good, uneven	Good, small range
Safety/ environmental protection	Pollution-free	Environmental pollution	Environmental pollution	Pollution-free	Pollution-free
Manual operation	Easy, hand-held or automatic	Complex, high requirements for operators	Labor cost, protective measures required	Easy, hand-held or automatic	Easy, manual addition of consumables required
Cost input	High initial investment, no consumables, low maintenance cost	Low initial investment, high cost of consumables	Low initial investment, high labor cost of consumables	Medium initial investment, high cost of consumables	Low initial investment, medium cost of consumables

Applied Range:

- / Rust removal of metal surface
- / Surface paint removal
- / Cleaning of oil and dirt on the surface
- / Surface coating removal
- / Pretreatment of welding surface/spraying surface
- / Removal of dust and attachments on the stone statue surface
- / Rubber mold residue cleaning, etc

Application Industry:

Automobile surroundings, ships, rail transit, aerospace, rubber molds and environmental protection industry, etc.



LASER CLEANING PRODUCT SERIES



Laser cleaning is a new generation of surface cleaning technology, the use of high power density laser beam irradiation workpiece surface, so that the surface of the dirt, rust spots or coatings occur instantaneous evaporation or stripping, so as to achieve a clean process. It has the advantages of easy manipulation, easy automation integration, no chemical reagents, fitting curved surface cleaning, high cleanliness, high precision, high efficiency, environmental protection, safety and reliability, almost no damage to the surface of the substrate, and can solve a variety of problems that can not be solved by traditional cleaning.

HGLaser focuses on creating a wide range of laser cleaning products, covering marine, automotive repair, rubber mold, high-end machine tools, rail and environmental protection industries, and the development of customized products for different industry customers, for the object surface resin, paint, oil, rust, coating, plating, oxide layer and other pollutants, to provide multi-dimensional and efficient solutions. The product range is stable and reliable, easy to install, operate and automate, and suitable for mass production. We are committed to creating maximum value for our customers and contributing to the high quality development of the manufacturing industry.



BUZZ series

Handheld Laser Cleaning Machine

/ BUZZ Series adopt high power fiber laser, photoelectric system and the appearance of handheld design integrated integration, with high precision, high efficiency, high cost performance, etc., can remove the object surface resin, paint, oil, rust, coating, plating, oxide layer and other pollutants, and have a wide range of industry applications, covering ships, automotive, rail transportation, rubber mold, high-end machine tools and environmental protection, etc..



/ The laser cleaning light source can be selected according to the cleaning object. The range of cleaning object is more extensive, the whole machine is compact and portable, the processing quality is higher, the cleaning effect is more delicate, the thermal effect is small, and the damage to the substrate is extremely low, suitable for various precision processing industries.

Non-contact	non-abrasive, non-contact cleaning, to avoid secondary pollution.
Accuracy	high cleaning precision and controllability.
Safety	no consumables, strong environmental protection.
Convenience	easy to manipulate, power on, handheld or with robot to achieve automated cleaning.
Efficient	high cleaning efficiency, saving time.
Stability	stable system, long life.
Economy	one-time investment, economic and efficient.

Equipment Parameters

Equipment model	BUZZ-0050	BUZZ-0070	BUZZ-0100	BUZZ-0200
Laser Working Medium	Yb doped fiber			
Laser Power	50W	70W	100W	200W
Laser Wavelength	1064nm			
Pulse Frequency	50-100kHz	20-400kHz	20-200kHz	10-50kHz
Cooling Mode	Air-cooled		Water-cooled	
Overall Dimensions	760 × 780 × 790		1100 × 950 × 700	
Operating Weight	55-60Kg		66Kg	178Kg (including water tank)
Overall Power	400-500W		≤1500W	≤2500W
Scan Width	10-80mm			
Options	Manual / Automatic / Actual Customization			
Operating Ambient Temperature	5-40℃			

Equipment model	BUZZ-0300	BUZZ-0500	BUZZ-1000	BUZZ-2000
Laser Working Medium	Yb doped fiber			
Laser Power	300W	500W	1000W	2000W
Laser Wavelength	1064nm			
Pulse Frequency	20-50kHz	10-50kHz	20-50kHz	
Cooling Mode	Water-cooled			
Overall Dimensions	1015×730×1100		Actual Customization	
Operating Weight	178Kg (including water tank)	240-260Kg (including water tank)	Actual Customization	
Overall Power	≤3500W (including water chiller)	≤4500W	≤7500W	≤20000W
Scan Width	10-80mm	10-60mm	10-120mm	
Options	Manual / Automatic / Actual Customization			
Operating Ambient Temperature	5-40℃			

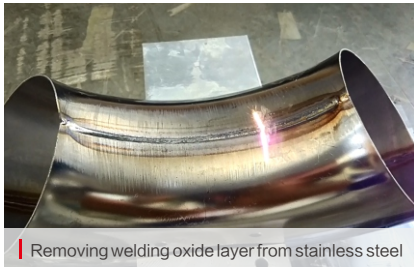
Application Example



Degreasing the surface of stainless steel wheel hub



Removing rubber from tire mold



Removing welding oxide layer from stainless steel

STORM series

Handheld Laser Cleaning Machine

STORM series adopt integrated portable design, easy to install, control and realize automation. Stable continuous light output, simple operation, high power cleaning efficiency; It has the advantages of manually adjusting the focus, cleaning the fitting surface, and cleaning the surface with high cleanliness.



- Non-contact** non-contact cleaning, without damaging the part matrix.
- Accuracy** precise cleaning, can realize selective cleaning of precise position and size.
- Safety** no chemical cleaning solution, no consumables, safety and environmental protection.
- Convenience** easy to operate, power on, can be manually or with a manipulator to achieve automatic cleaning.
- Efficiency** high cleaning efficiency, saving time.
- Stability** stable laser cleaning system, almost no maintenance required.

Equipment Parameters

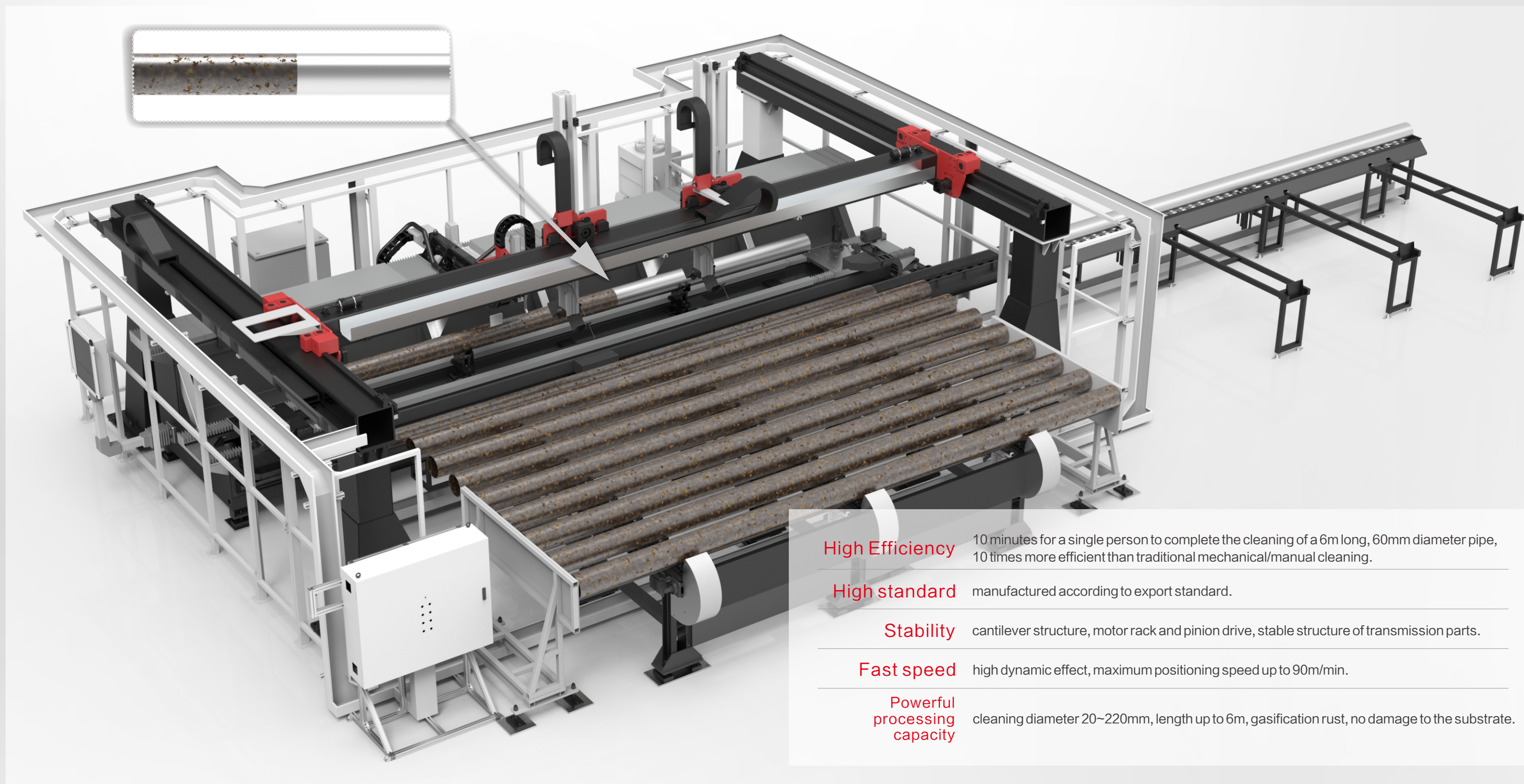
Project	Main Technical Parameters		
Equipment Model	STORM-1000	STORM-1500	STORM-2000
Total Mass Of Equipment	About 340kg		About 350kg
Weight Of Cleaning Head	1.3kg		
Average Laser Power	1000W	1500W	2000W
Power Regulation Range	10%~100%		
CWL	1080nm		
Working Mode	Continuous/Pulse		
Polarization Direction	Free		
Beam Quality Factor	M²<1.8		
Laser Linewidth	Length: 5mm~150mm available		
Laser Pulse Frequency	1kHz~5kHz available		
Fiber Length	8m		
Minimum Fiber Bend Radius	200mm		
Laser Output Stability	< ± 3%		
Cooling Method	water cooling (deionized water)		
Guiding Laser Function	Equipped		
Anti High Reflection Function	Equipped		
Machine Size (mm)	570 × 950 × 940		
Working Environment Temperature	0℃~40℃		
Working Environment Humidity	<80%		
Applicable Scenario Model	F210 / F254 / F330 / F420 Optimize the model according to the actual working condition		
Power Supply	Triphase 380V TN-S		
Total Power	6KW	8KW	10KW

Application Example

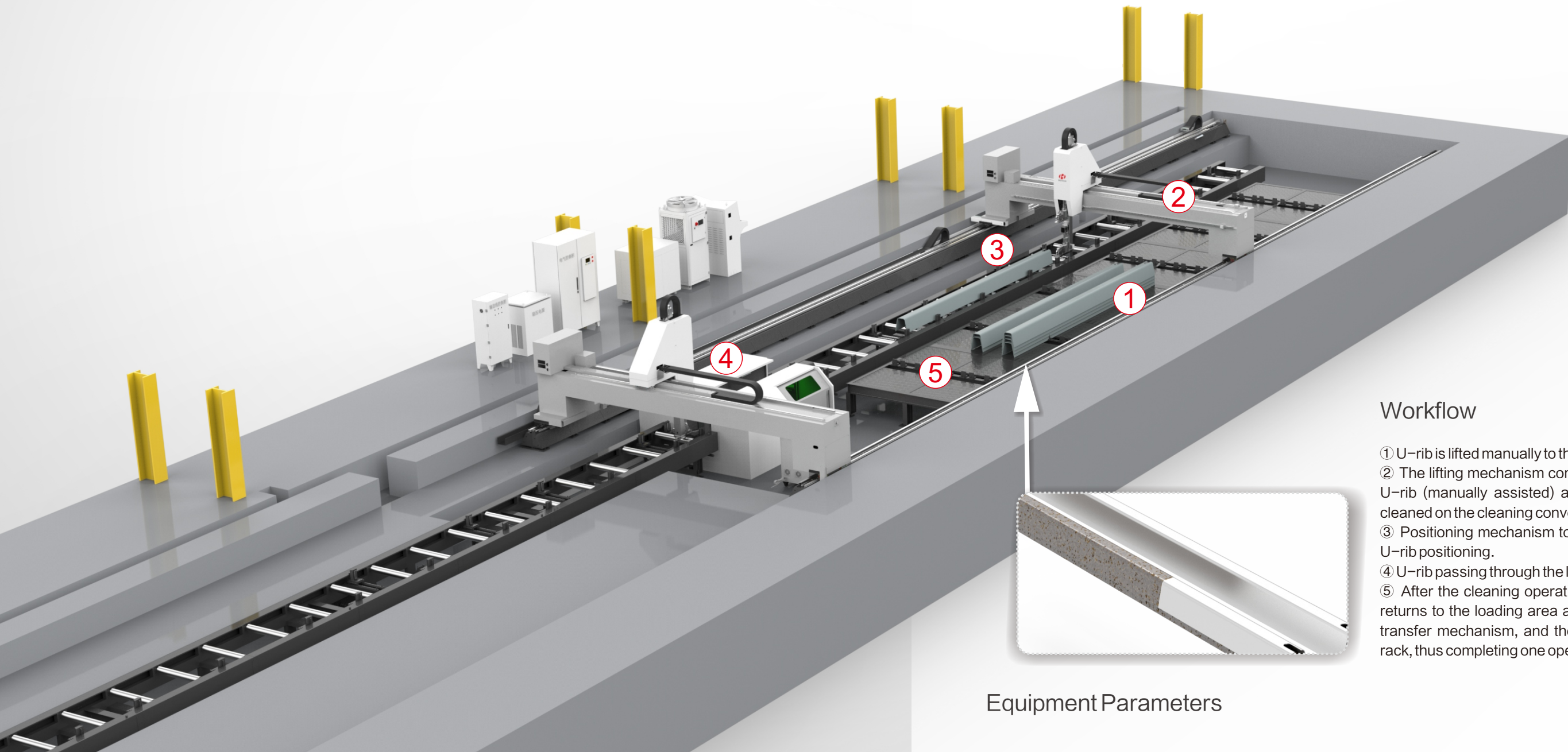


HIGH POWER LASER PIPE CLEANING AUTOMATED LINE

Customized for metal pipe processing and energy industry, it can laser clean round, square, rectangular, elliptical, shaped pipe and other profiles.



- | | |
|-------------------------------------|--|
| High Efficiency | 10 minutes for a single person to complete the cleaning of a 6m long, 60mm diameter pipe, 10 times more efficient than traditional mechanical/manual cleaning. |
| High standard | manufactured according to export standard. |
| Stability | cantilever structure, motor rack and pinion drive, stable structure of transmission parts. |
| Fast speed | high dynamic effect, maximum positioning speed up to 90m/min. |
| Powerful processing capacity | cleaning diameter 20~220mm, length up to 6m, gasification rust, no damage to the substrate. |



Workflow

- ① U-rib is lifted manually to the U-rib storage rack.
- ② The lifting mechanism completes the pickup of single U-rib (manually assisted) and places the U-rib to be cleaned on the cleaning conveyor line.
- ③ Positioning mechanism to complete the alignment of U-rib positioning.
- ④ U-rib passing through the laser cleaning station
- ⑤ After the cleaning operation is completed, the U-rib returns to the loading area and is unloaded by the load transfer mechanism, and the U-rib enters the storage rack, thus completing one operation cycle.

Equipment Parameters

Item	Main Technical Parameters
Equipment Model	CBR-3000C
U-rib Height	260-300mm
U-rib Width	300-550mm
U-rib Thickness	6-12mm
U-rib Length	4-20m
Grinding Plate Material	Q345、Q370、Q420、Q500
Main Structure Frame	Moving gantry type (frequency conversion infinitely adjustable speed)
Gantry Moving Speed	2-10m/min
Single Lane Grinding Width	>30mm

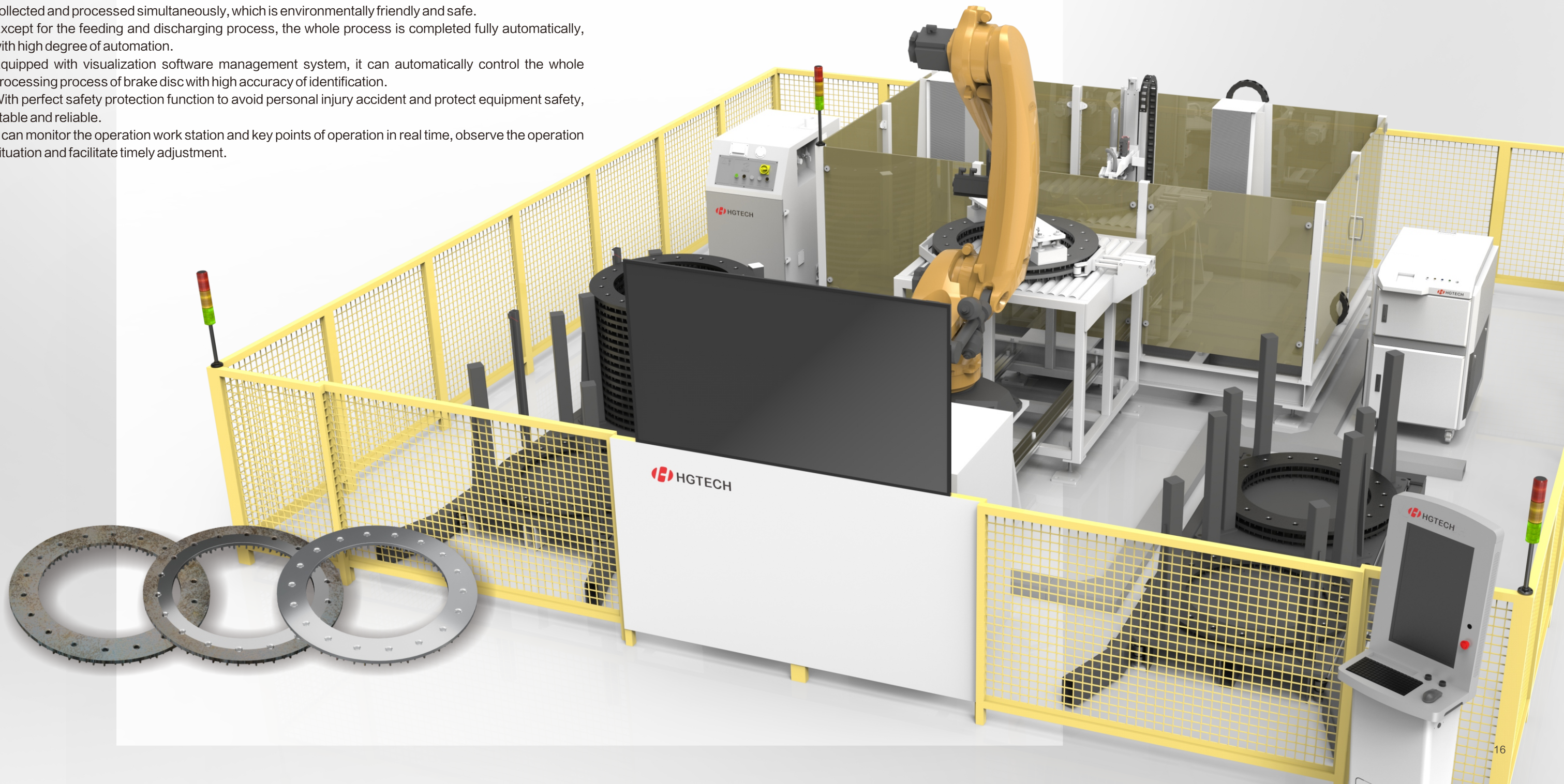
U-RIB LASER CLEANING
AUTOMATIC PRODUCTION LINE

With the development of bridge technology, U-rib is widely used in the construction of various highways, railroads and bridges with the features of easy construction, uniform force and not easy to deformation, etc. HGTECH provides efficient and stable solutions to the cleaning of bottom paint and floating rust at the to-be-welded position of U-rib in processing, which facilitates the subsequent welding of U-rib and panel to meet the welding quality requirements.

FULLY AUTOMATIC LASER CLEANING LINE FOR LOCOMOTIVE BRAKE DISCS

For the cleaning needs of railroad locomotive brake discs, HGTECH provides a fully automatic laser cleaning line for locomotive brake discs, with the following advantages:

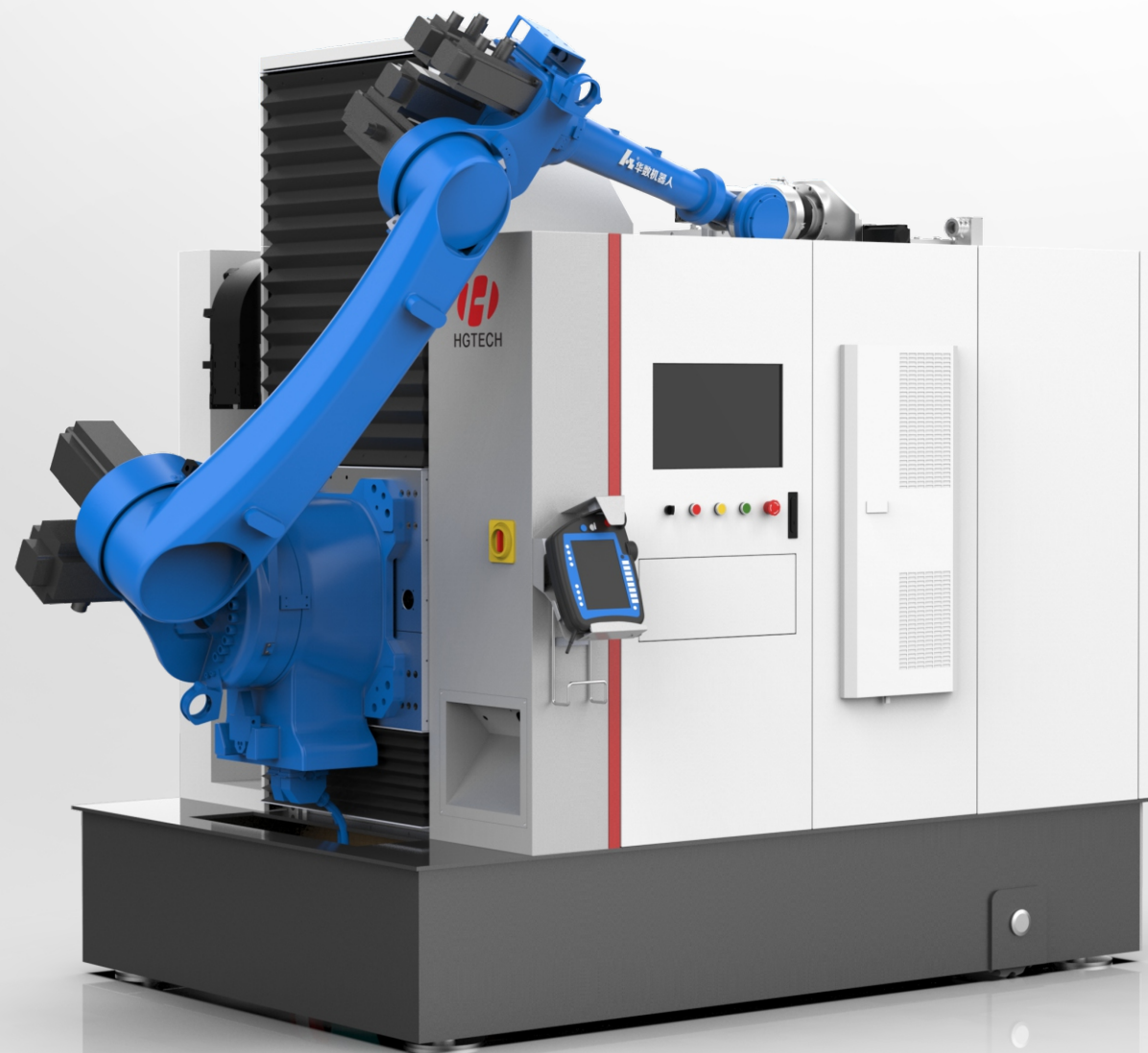
- / Using laser technology to remove rust on the surface of locomotive brake discs, with good cleaning effect.
- / Automatic grinding and polishing of the inside of the brake disc holes with high production efficiency.
- / The fume and dust generated during the laser rust removal and grinding and polishing process are collected and processed simultaneously, which is environmentally friendly and safe.
- / Except for the feeding and discharging process, the whole process is completed fully automatically, with high degree of automation.
- / Equipped with visualization software management system, it can automatically control the whole processing process of brake disc with high accuracy of identification.
- / With perfect safety protection function to avoid personal injury accident and protect equipment safety, stable and reliable.
- / It can monitor the operation work station and key points of operation in real time, observe the operation situation and facilitate timely adjustment.



TIRE MOLD ONLINE INTELLIGENT LASER CLEANING EQUIPMENT

Tire mold online laser cleaning equipment main advantages:

- / Adopting the form of integrated and shake-controllable mobile vehicle to achieve online cleaning during the production of curing presses without dismantling and removing the molds, saving time, which can significantly improve production efficiency and reduce economic costs.
- / The electric transfer vehicle is equipped with LIDAR, which enables detection and contour scanning of certain areas to avoid obstacles.
- / The 3D machine vision system automatically identifies the type of mold and the cleaning head automatically centers the mold, enabling automatic cleaning by the robot.
- / The end of the robot is equipped with anti-collision sensors, which can effectively protect the safety of the robot, devices around the cleaning head and personnel, etc.
- / The smoke and dust generated by laser cleaning is collected and treated simultaneously to protect the surrounding working environment.



TIRE MOLD OFFLINE INTELLIGENT LASER CLEANING EQUIPMENT

Tire mold off-line laser cleaning equipment main advantages:

- / Adopt the form of independent cleaning workstation, independent work shift platform with duplex shift into and out of the mold, the mold does not need to be disassembled and separated to achieve full circumference cleaning of the mold inner cavity surface.
- / The two-dimensional (or three-dimensional) machine vision system automatically identifies the type of mold, and the five-axis movement of the cleaning head mechanism can automatically find the center of the mold to achieve a full range of automatic cleaning without dead ends.
- / Real-time monitoring of the whole laser operation.
- / Large flow industrial dust collector collects and treats the fumes and dust generated by laser cleaning to ensure that the environment in the cleaning area is not polluted.
- / The periphery of the equipment is equipped with a protective fence to ensure the production safety of the surrounding workers.



ELECTRIC CORE PET FILM LASER CLEANING INTELLIGENT EQUIPMENT

- / This equipment is used for the automatic cleaning of blue film on the reworked electric core, replacing the existing manual cleaning of blue film and realizing the automatic cleaning of blue film of electric core; mainly using mechanical structure or robot to place the electric core in the cleaning position, through rotating the electric core and moving the oscillator to realize the all-round laser cleaning of the electric core.
- / Adopt the line sweep laser to remove the blue film on top of the electric core, while removing the blue film, the harmful dust generated during the blue film cleaning needs to be adsorbed to achieve the purpose of explosion-proof and direct discharge.
- / The touch screen has the control function of viewing and changing settings, and the safety protection measures of the equipment (access control, grating, safety latch, etc.) are reliable.



| Before film removal

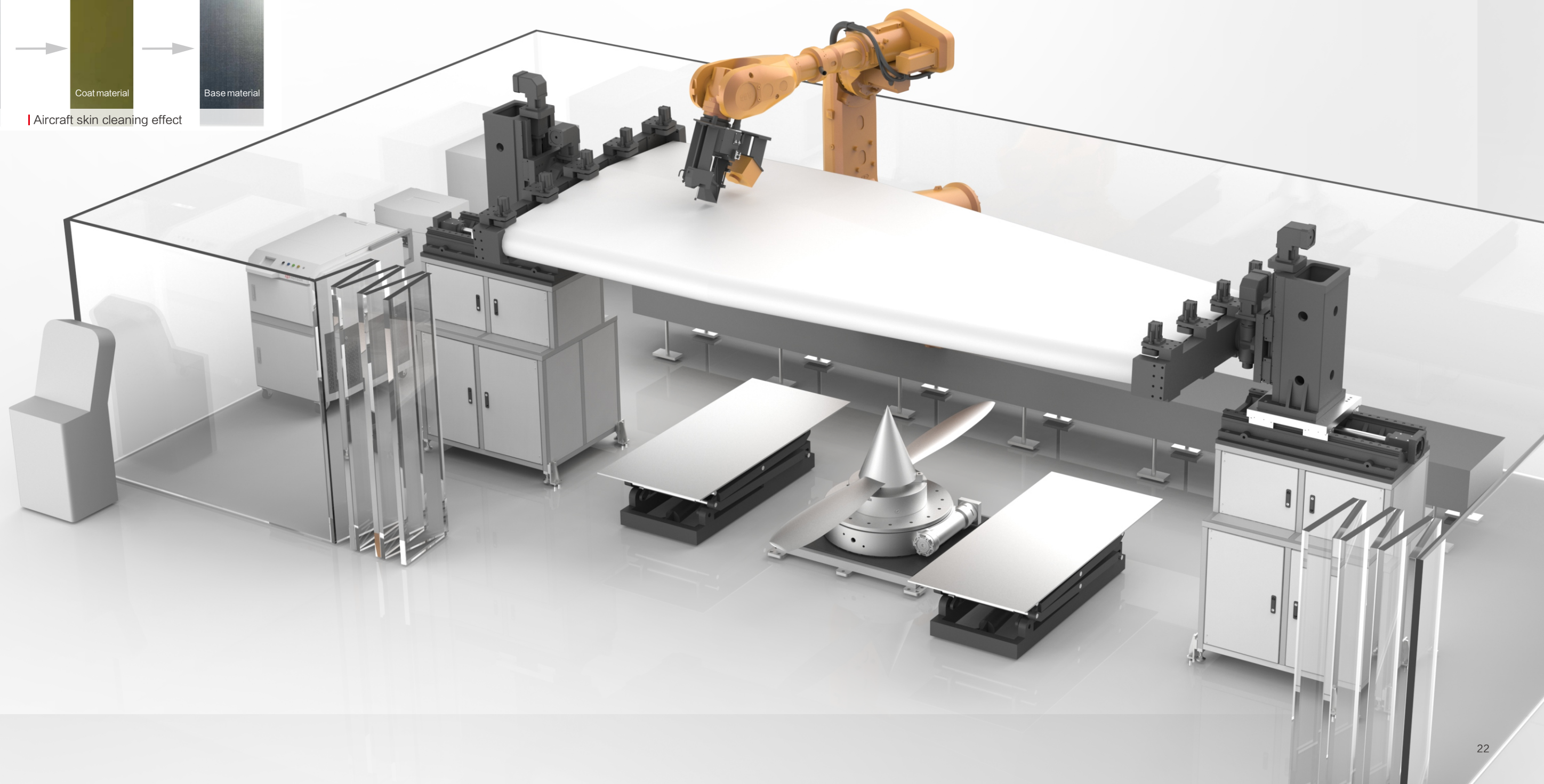


| After film removal



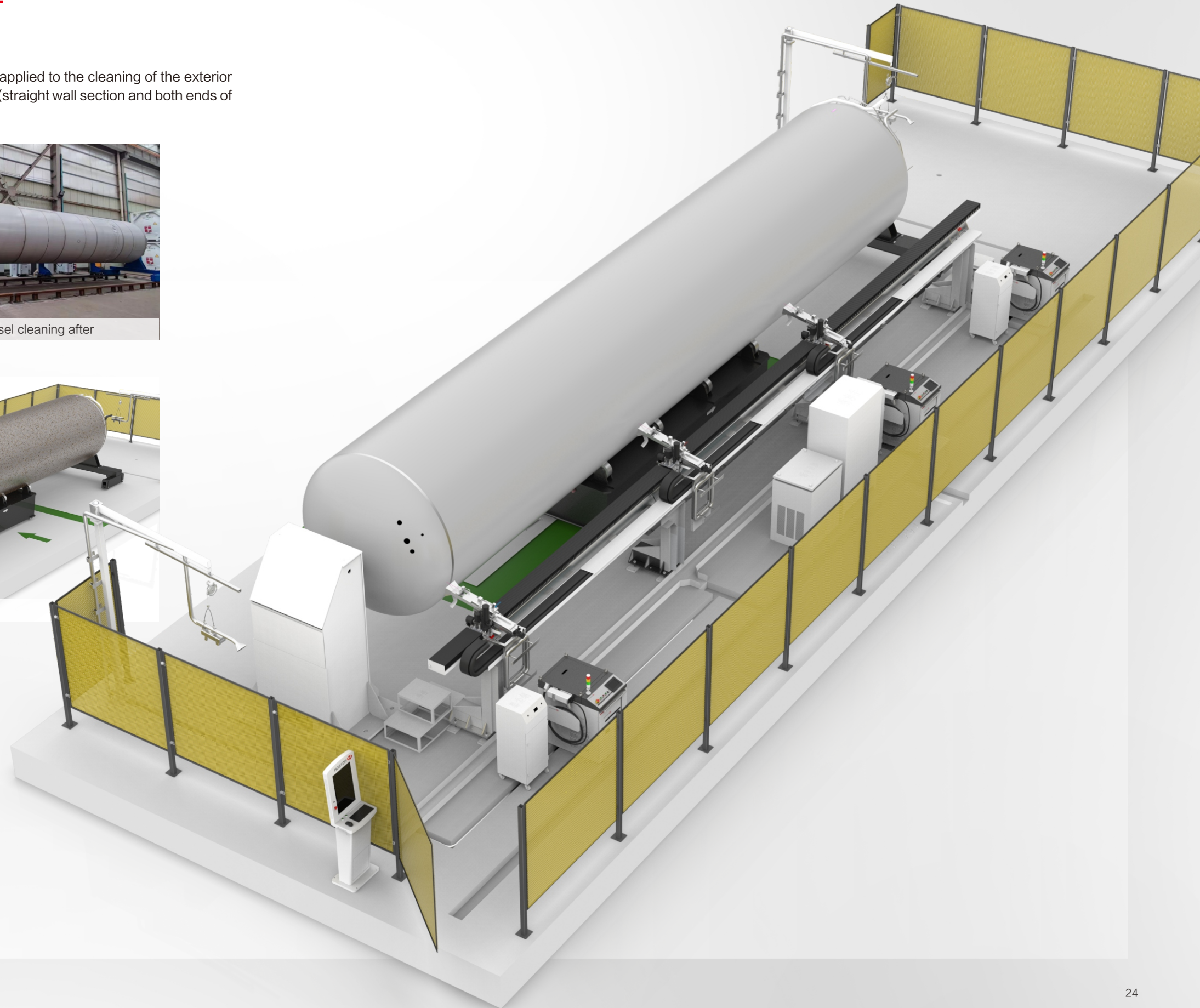
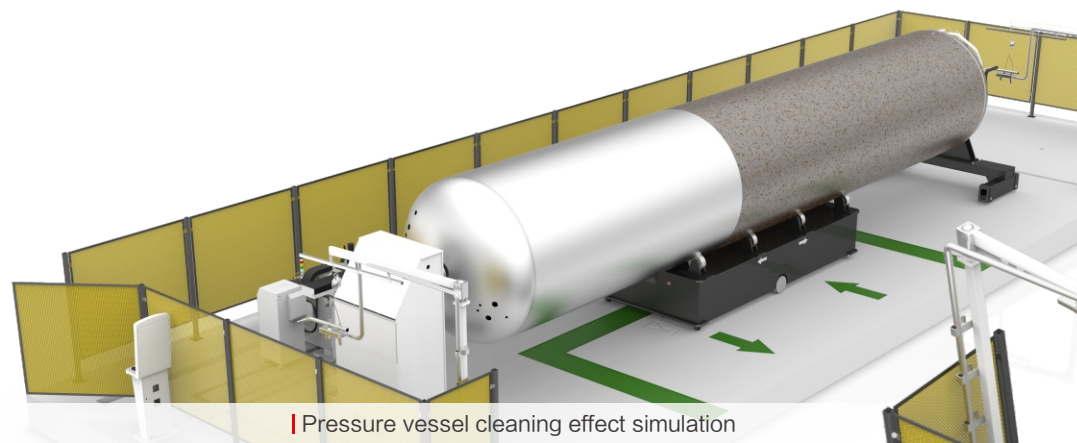
AIRCRAFT SKIN LASER CLEANING INTELLIGENT EQUIPMENT

It is mainly used for the automatic and controlled removal of functional paint layer on the surface of aircraft aluminum alloy skin and composite skin, and can complete the automatic 3D modeling of general aircraft wings and components, and can automatically plan and execute the cleaning track after inputting process parameters. At the same time, the quality monitoring system detects the cleaning effect online, and records and classifies the monitoring results to facilitate subsequent screening of unqualified areas for reprocessing.



PRESSURE VESSEL LASER CLEANING INTELLIGENT EQUIPMENT

CTC-500P pressure vessel laser cleaning intelligent equipment is mainly applied to the cleaning of the exterior wall of LNG inner vessel, including the cleaning of all exterior wall surfaces (straight wall section and both ends of the head), with high automation, strong compatibility and simple operation.



WORLDWIDE SERVICE NETWORK

Relying on forward-looking process research, full series of product system, efficient delivery response and perfect after-sales system, we can provide you with professional and timely services to fully meet your production needs.

We adhere to the globalization strategy of openness and mutual benefit, and have a complete market service system at domestic and international level, with more than 40 offices in China, sales and service organizations in the United States, Australia, India, Korea, Pakistan, Vietnam and the Philippines, and a complete agency system in the United Kingdom, Germany, Poland, Hungary, Italy, Argentina and other countries. We provide professional and efficient services to our customers all over the world.

- / 9 domestic subsidiaries, 40+ offices
- / 10 overseas subsidiaries, 40+ sales and service centers
- / More than 60,000 square meters of domestic R&D and pilot test bases
- / 7 regional technical centers
- / 4 overseas R&D centers
- / More than 150,000 square meters of intelligent manufacturing production bases

Canada

USA

Mexico

Brazil

Argentina

United Kingdom

Germany

Poland

Czech

Italy

Turkey

Egypt

U.A.E

Pakistan

India

Vietnam

Indonesia

South Africa

China Wuhan

Thailand

Philippines

Australia

Korea

Japan

HIGH QUALITY AND EFFICIENT SERVICE AND SUPPORT

/ After sales service

We provide free warranty and maintenance within the contracted period and maintenance range, and actively respond to various technical and maintenance requests from customers to ensure normal use of the equipment.

/ Technical support

According to the customer's needs and specific circumstances of the project to make a feasibility analysis and solutions to reduce unnecessary cost, together with the user to build a stable application environment.

/ Daily services

Consulting services, technical support, project evaluation, free training. A comprehensive service management system and a sound service process are the basis for ensuring quality services.

/ Engineering services

To provide customers with on-site installation, commissioning and testing, maintenance and warranty services, in order to achieve the system operating environment, operational safety and stable application requirements in the project.



Innovation Fuels a Better World

HGTECH is dedicated to the total solution of laser intelligent equipment, automated production line and intelligent factory to create value together with customers.

