

2. Laser Solution of hairpin stator welding

➤ Laser System Specifications:

Option: 1

Laser: IPG/Customized 6kW **Multimode** laser
Galvo: Model: CHS 30
Laser Core Diameter: 50µm



Option: 2

Laser: IPG/Customized 8kW **Ring** laser
Galvo: Model: CHS 30
Laser Core Diameter: 50/ 150µm

- Working Area:180*180mm;
- Single shot range 2 slots;
- Welding immediately after taking pictures, no servo motion mechanism, low production cycle



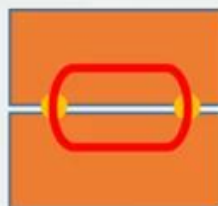
3. Intelligent application of laser welding vision for hairpin stator

➤ Intelligent trajectory of laser vision

- With a variety of visual tools, flexible solutions, easy to customize, you can grab points, lines, circles, ellipses and their complex graphics;
- For pins with a slightly larger fit gap, you can visually skip the gap, and then continue welding after the gap is fused.



Before the gap is filled



After the gap is filled



4. Difficulties and solutions for laser welding of hairpin stator

➤ Laser welding spatter

Plasma cloud suppression (Ring Air Knife)



Air Knife



Without Air Knife

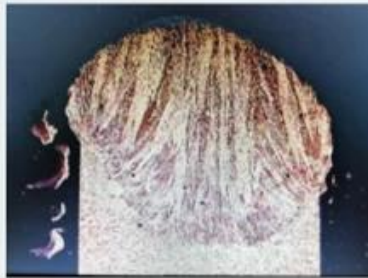


5. Excellent welding quality

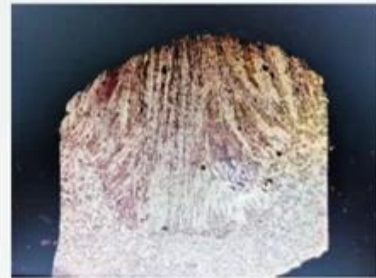
- The flow area of the welding is more than 1.5 times that of the base material



12.23mm²

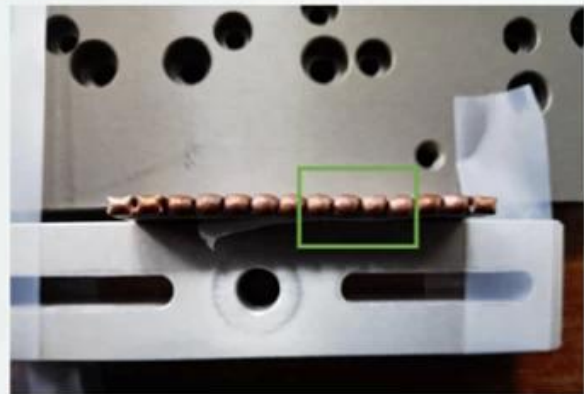


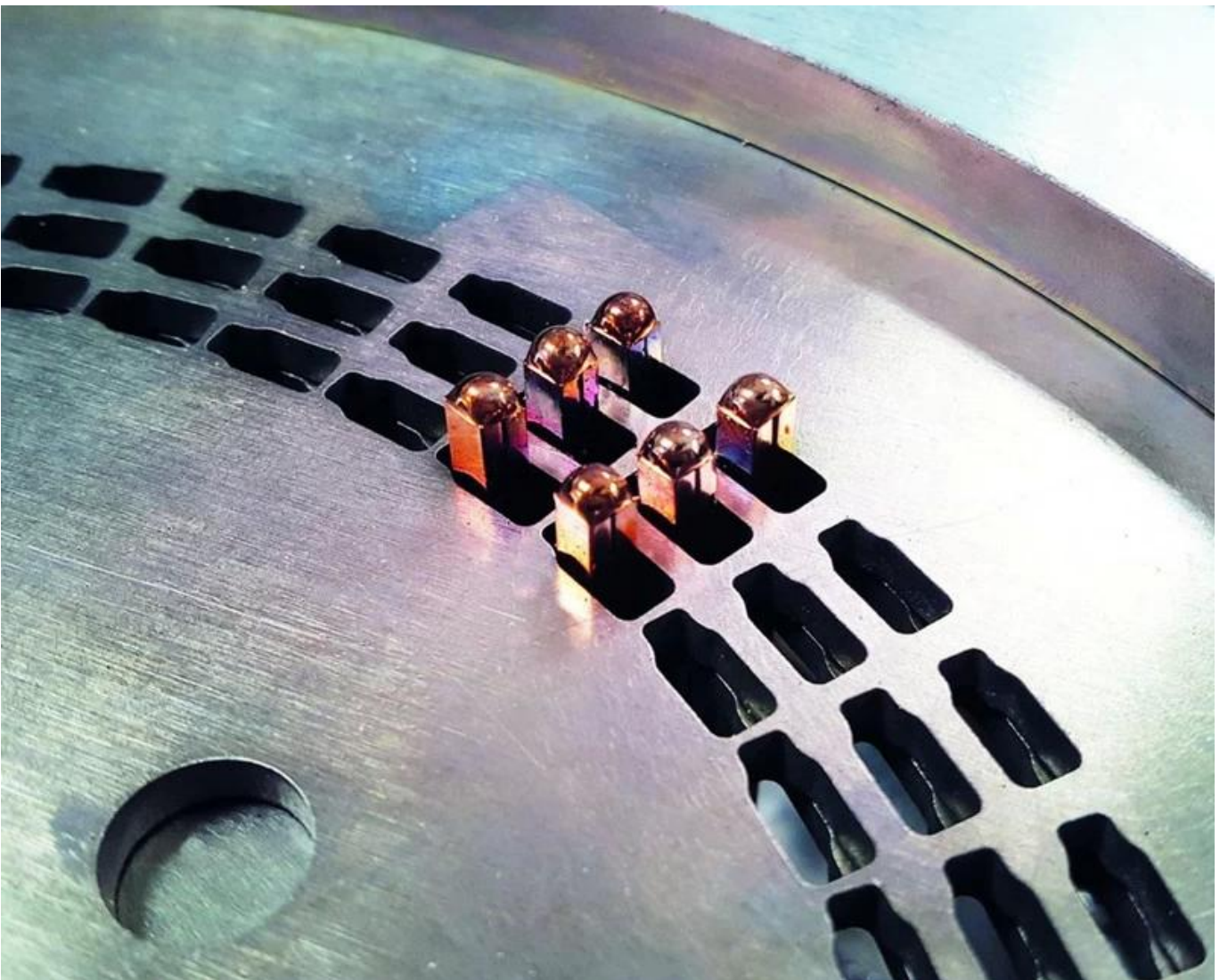
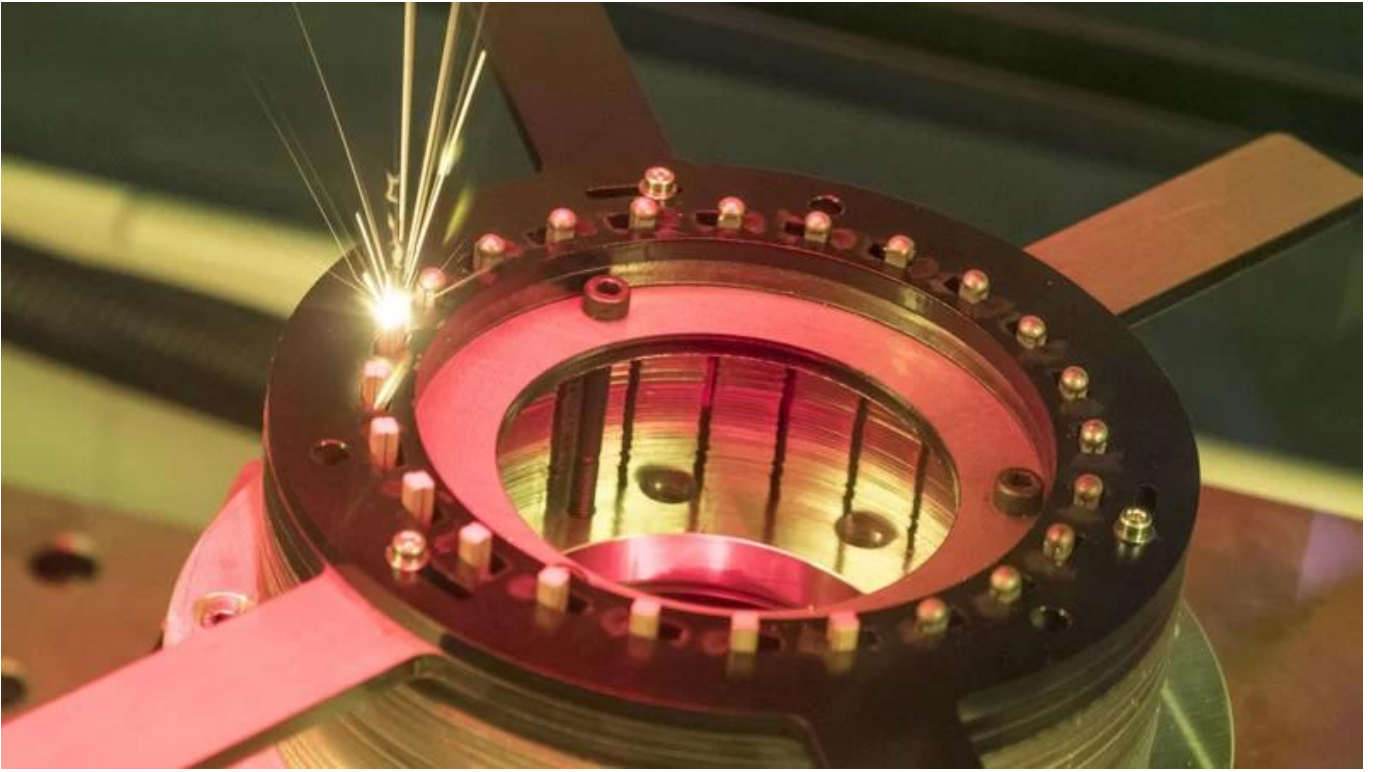
15.21mm²



12.35mm²

- Appearance of welding with different defocus





(2) 3D printing technology

3D printing technology, also known as additive manufacturing, is a process of creating three-dimensional objects from a digital file. It involves building the object layer by layer, using a variety of materials and techniques.

" 3D printing - Additive manufacturing

(1) Introduction:

3D printing is a process of creating three-dimensional objects from a digital file. It involves building the object layer by layer, using a variety of materials and techniques. This technology has revolutionized manufacturing, allowing for the production of complex, custom parts and prototypes.

(2) Applications:

3D printing has a wide range of applications, from prototyping to final production. It is used in various industries, including aerospace, automotive, healthcare, and consumer goods.

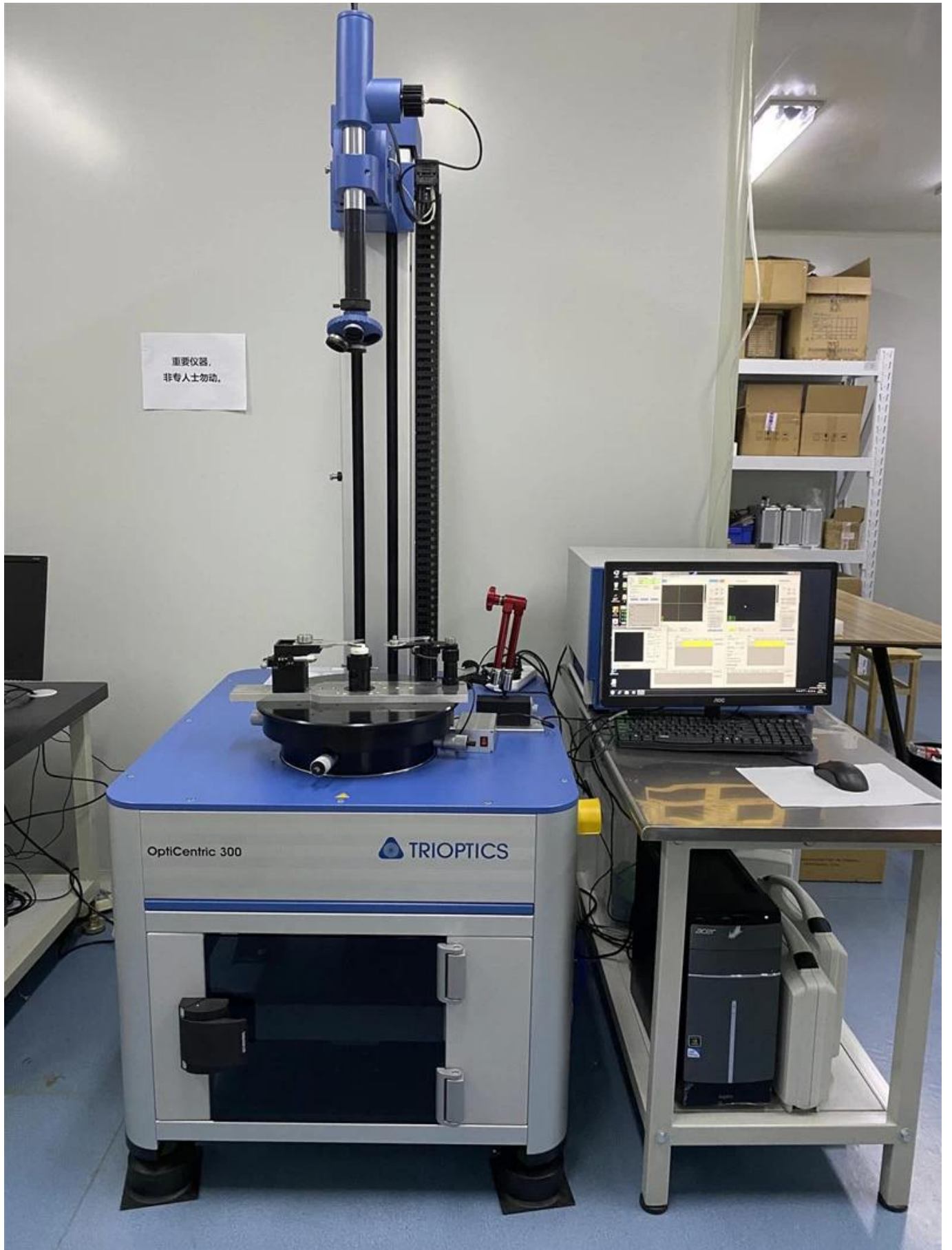
- 1. Mechanical parts and components
- 2. Gas / fluid flow components
- 3. Optical components
- 4. Programming and software
- 5. Advanced materials and structures
- 6. Laser-based printing technologies

3D printing technology is a key component of the [Industrial Revolution 4.0](#) and [Wholesales](#) industry.

3D printing





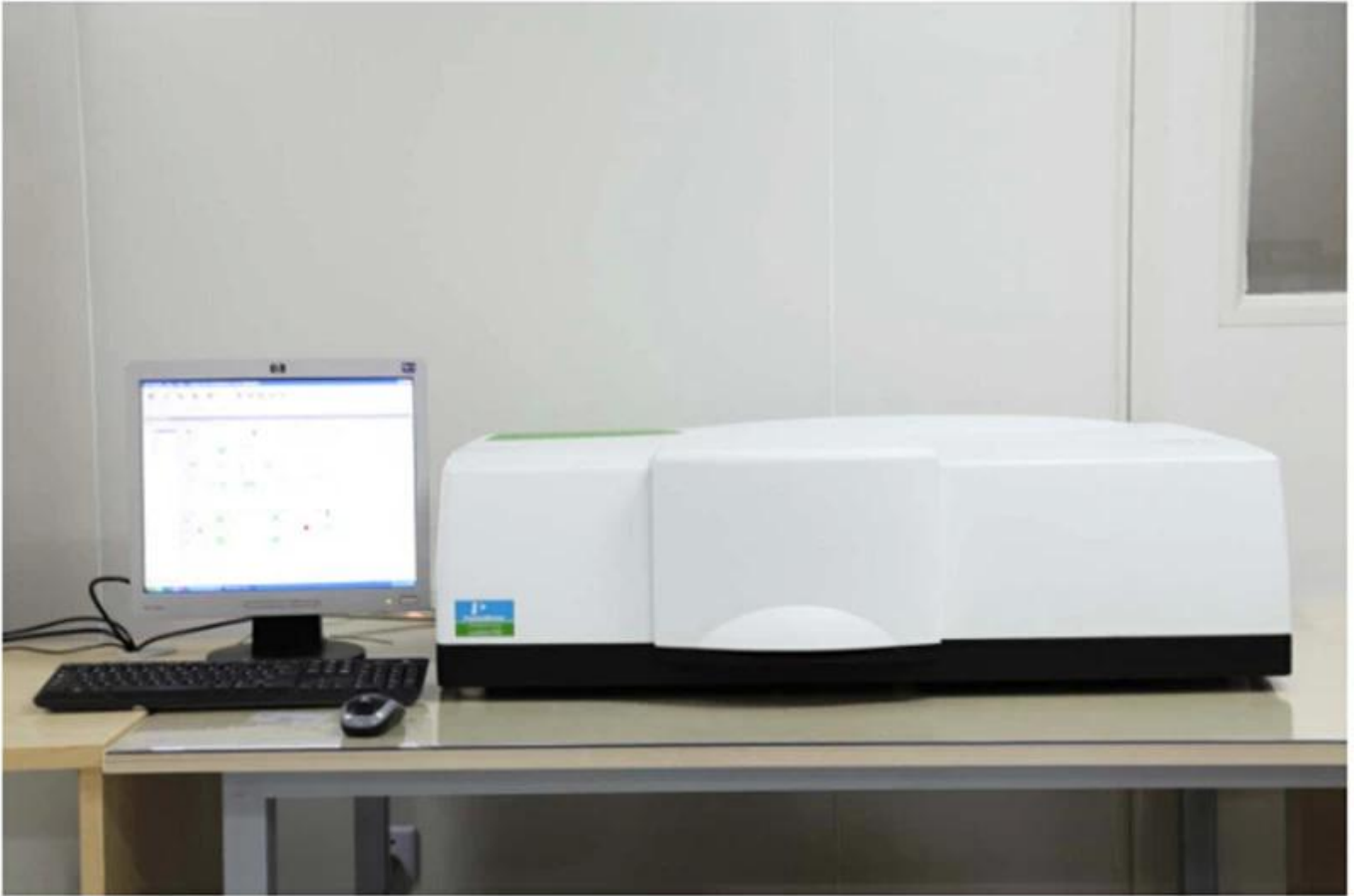


重要仪器,
非专业人士勿动。

OptiCentric 300

TRIOPTICS





PerkinElmer Lambda 950---Testing Transmission and Reflectivity



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CERTIFICATE

ATTESTATION CERTIFICATE OF MACHINERY AND LOW VOLTAGE DIRECTIVES

Technical file of the company mentioned below has been observed and audit has been completed successfully. 2006/42/EC Machinery Directive and 2014/ 35/EU Low Voltage Directive have been taken as references for these processes

Company Name : **Camman HAAS Laser Technology (Suzhou) Co., Ltd.**

Company Address : No 155, West Road Suhong, Suzhou Industrial Park, Suzhou City, Jiangsu , P.R.China

Related Directives and Annex : **Low Voltage Directive 2014/35/EU
Machinery Directive 2006/42/EC**

Related Standards : **EN ISO 12100:2010; EN 60204-1:2006+A1:2009+AC:2010**

Product Name : **Laser Marking Machine**

Report No and Date : SD-90049717.09.08.2018

Product Brand/Model/Type : LMCH-3W,LMCH-5W,LMCH-10W,LMCH-15W,LMCH-20W,LMCH-25W,
LMCH-30W,LMCH-50W,LMCH-60W,LMCH-70W,LMCH-100W,
LMCH-120W,LMCH-150W,LMCH-200W,LMCH-300W,LMCH-500W

Certificate Number : **M.2018.201.N6073**

Initial Assessment Date : 10.08.2018

Registration Date : 13.08.2018

Reissue Date/No :

Expiry Date : **12.08.2023**

U. Saygılı
UDEM International Certification
Auditing Training Centre Industry
and Trade Inc. Co.



The validity of the certificate can be checked through www.udem.com.tr. The CE mark shown on the right can only be used under the responsibility of the manufacturer with the completion of EC Declaration of Conformity for all the relevant Directives. This certificate remains the property of UDEM International Certification Auditing Training Centre Industry and Trade Inc. Co. to whom it must be returned upon request. The above-mentioned firm must keep a copy of this certificate for 15 years from the registration of certificate. This certificate only covers the product(s) stated above and UDEM must be notified in case of any changes on the product(s).
Address: Mithakerezi Mahallesi 2073 Sokak (Eski 93 Sokak) No:10 Çankaya - Ankara - TÜRKİYE
Phone: +90 0312 443 03 90 Fax: +90 0312 443 03 76
E-mail: info@udemtd.com.tr www.udem.com.tr



Certificate of Approval

Certificate No.: 10119Q12565R0M

Awarded to

**Carman Haas Laser Technology(SuZhou)
Co., Ltd.**

Organization Code Certificate No. / Unified Social Credit Code:91320594MA1MF4EP56
Add.:No.155, West Road Suhong, Suzhou Industrial Park, Suzhou City, Jiangsu Province, P.R. China. 215000

Beijing ZhongLianTianRun Certification Center (ZLTR) certify that the
Quality Management System of the above organization has been assessed and found to be
in accordance with the requirements of the standard:
GB/T19001-2016 / ISO9001:2015

SCOPE OF CERTIFICATION/REGISTRATION

The Research and Development and Production of Optics Lenses (Except the limits of national laws and regulations.)

This certificate is made valid when used with certification scopes and the requirements of applicable laws and regulations. These requirements include, but are not limited to, administrative permits, scopes of qualifications, and CCC requirements.

Subject to operation conditions in requirements conformity with Quality Management System.

This Certificate is valid for a period of three years only.

Date from: Mar 13th,2019 To: Mar 12th,2022

The effectiveness of this Certificate shall be Validated by periodic surveillance audit of ZLTR for maintenance.

Information of this certificate can be found on the official website of Beijing Zhonglian Tianrun Certification center (<http://www.zltr.com.cn>)



Beijing ZhongLiantianrun Certification Center

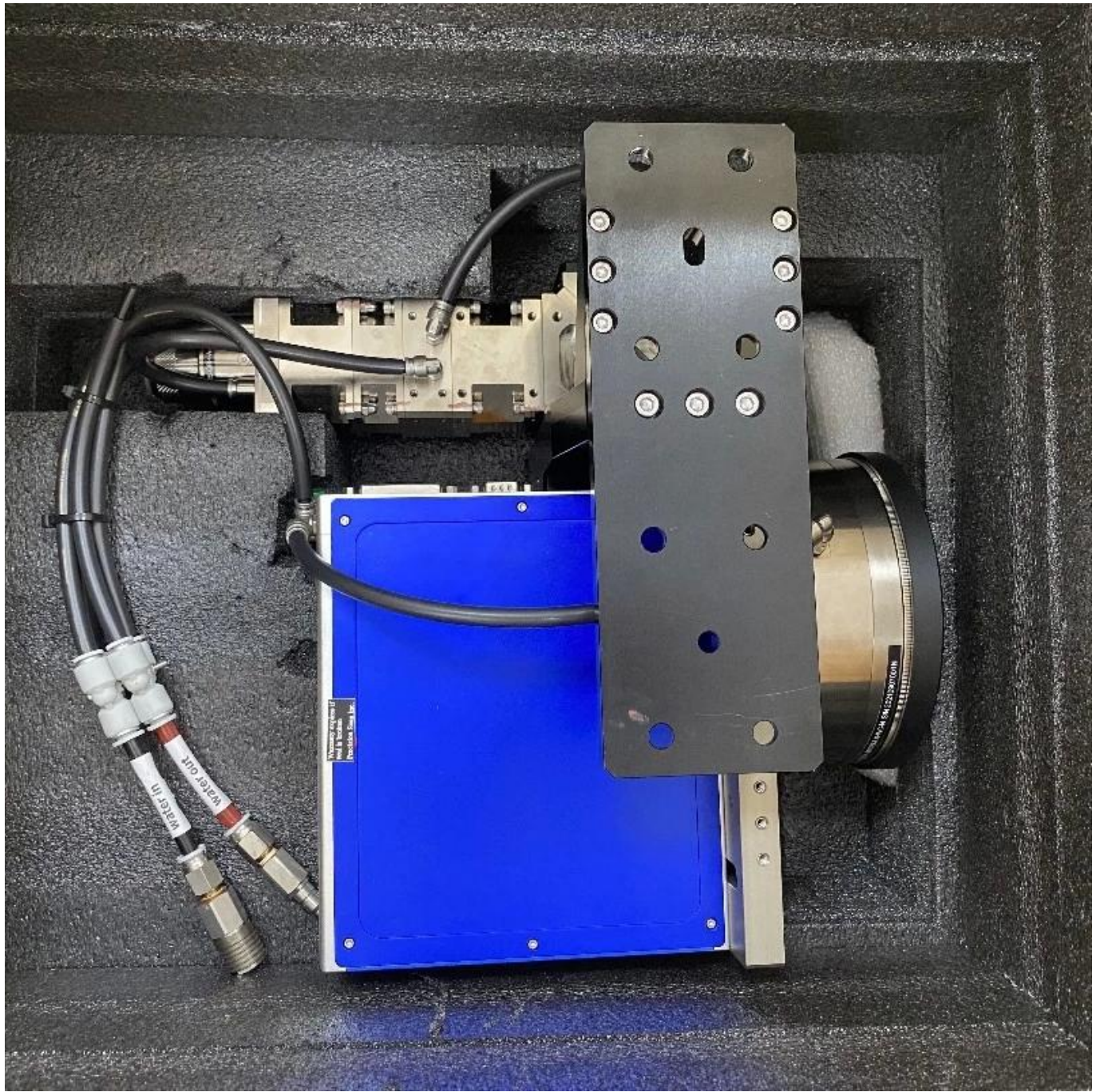
Room2003, 22nd Floor, 2nd Unit, Block 1, No.4 Yard, Qiyang Road, Chaoyang District, Beijing, P.R. China 100022

Information of the certificate can be found on the official website of Certification and Accreditation Administration of the People's Republic of China (<http://www.cnca.gov.cn>)

ISO 9001

ISO 9001





MONITORED TILTOKEE SHIPMENT
防倾倒运输监测显示标签

WARNING 警告

请注意：该货物在装卸及运输过程中，货物承受的力有可能会导致完全倒置时，造成人员伤亡，并可能造成财产损失。请操作人员小心处理，严格按照包装箱上的指示进行操作。以确保货物在运输过程中始终保持直立状态。请勿将货物倒置或倾斜。

Please notice: The indicator is attached please take good care of the goods of the indicator will report the safety operation which could not be avoided if indicator is not do not while although, make indicator in delivery receipt and request for exchange if damage is discovered above it in original packing container and request the carrier to check up immediately.

请操作人员注意：该货物在装卸及运输过程中，货物承受的力有可能会导致完全倒置时，造成人员伤亡，并可能造成财产损失。请操作人员小心处理，严格按照包装箱上的指示进行操作。以确保货物在运输过程中始终保持直立状态。请勿将货物倒置或倾斜。

Description: The indicator should be stick on the top-left corner of both front and side face.

KEEP UPRIGHT
保持直立状态

CAUTION
 小心装卸

CAUTION
 小心装卸

TILTOKEE SHOCKOKEE









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