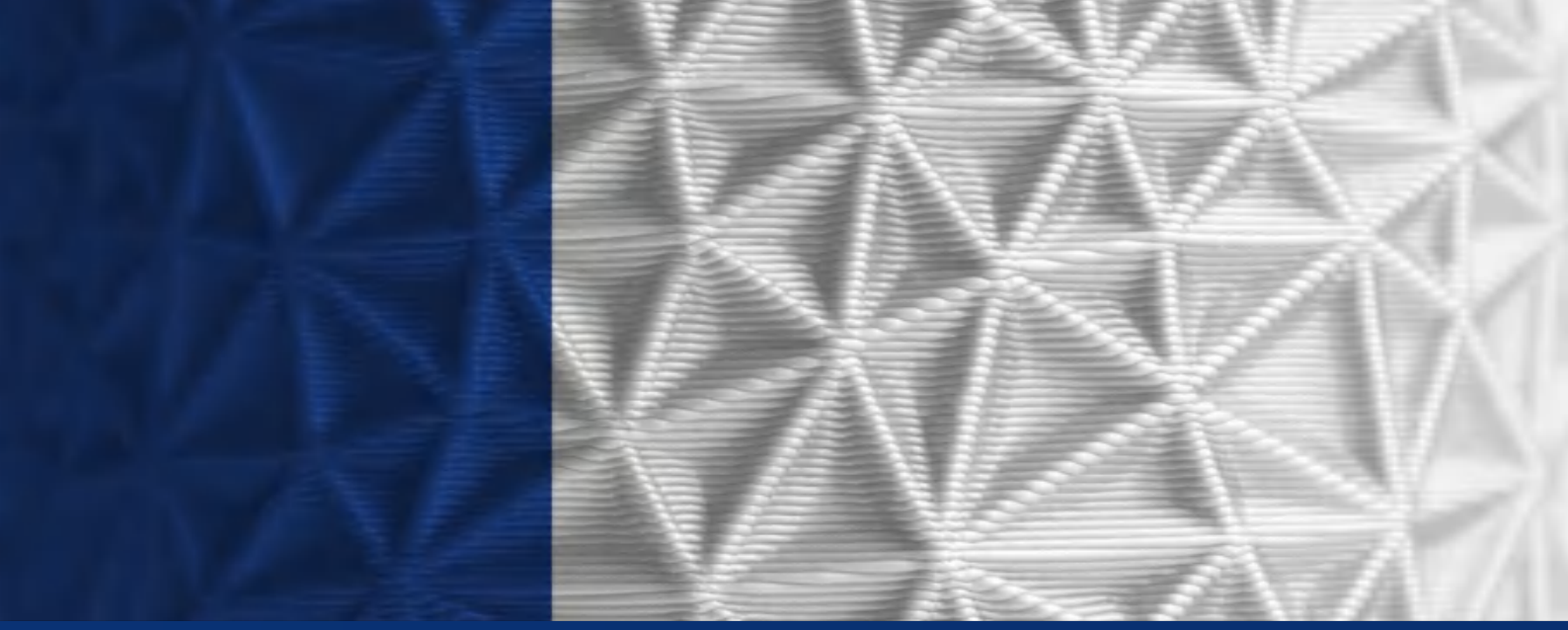
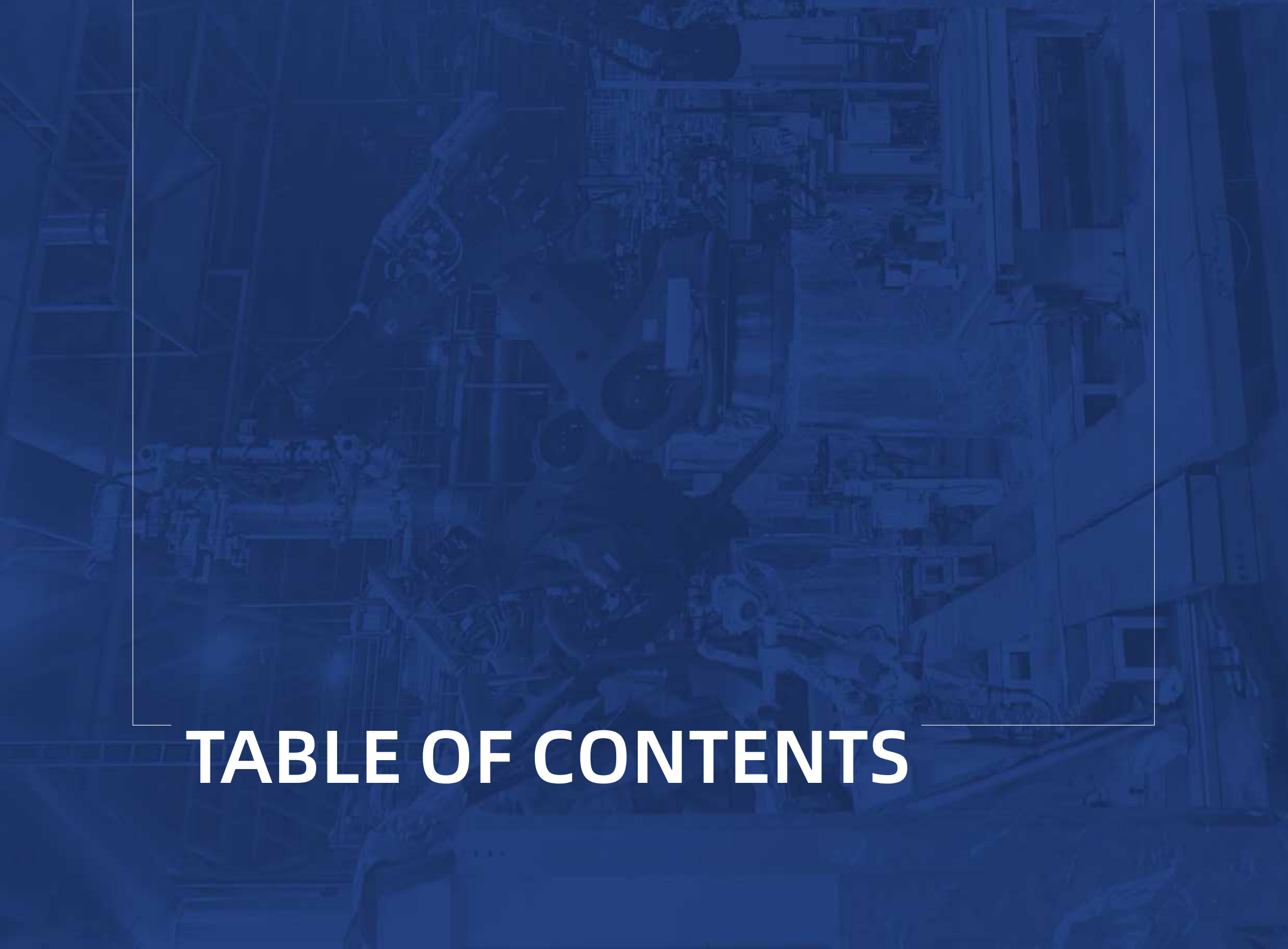


LEADING INTELLIGENT MANUFACTURING OF KEY COMPONENTS AREAS

康硕集团®
KANGSHUO GROUP



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01 ABOUT KANGSHUO

GROUP INTRODUCTION

Founded in 2010, Kangshuo Group is a leader of intelligent manufacturing in the field of key components in China. As a national high-tech enterprise and a national SRDI "Little Giant" enterprise, Kangshuo Group is committed to basic research, development, production and achievement transformation in the field of key components, involving multiple fields such as new materials, new processes, new equipment and intelligent manufacturing. It is a domestic provider of intelligent manufacturing system solutions in the field of key components, and has been recognized by the Ministry of Industry and Information Technology as a chassis platform for the industrialization of innovative achievements in key components, and awarded the title of Pilot Demonstration Plant of Intelligent Manufacturing.

On the basis of additive manufacturing solutions, Kangshuo Group has expanded its reach in a variety of advanced manufacturing and testing technologies such as equal material manufacturing, subtractive manufacturing, green and intelligent manufacturing, low-stress manufacturing, and non-destructive testing. It can implement the full process of R&D, pilot production and mass production of key components. Its products have been widely used in the aerospace, energy and power, rail transit, automotive and other industries.

- Kangshuo Electric Group Co., Ltd.
- Kangshuo (Shanxi) Intelligent Manufacturing Co., Ltd.
- Kangshuo (Chongqing) Intelligent Manufacturing Co., Ltd.
- Kangshuo (Henan) Intelligent Manufacturing Co., Ltd.
- Kangshuo (Jiangxi) Intelligent Manufacturing Co., Ltd.
- Kangshuo (Deyang) Intelligent Manufacturing Co., Ltd.
- Kangshuo Future Intelligent Technology (Beijing) Co., Ltd.
- Kangshuo (Shanxi) Institute for Residual Stress in Manufacturing
- Kangshuo (Shanxi) Smart Manufacturing System Technology Research Institute
- Kangshuo (Chongqing) Smart Manufacturing System Technology Research Institute

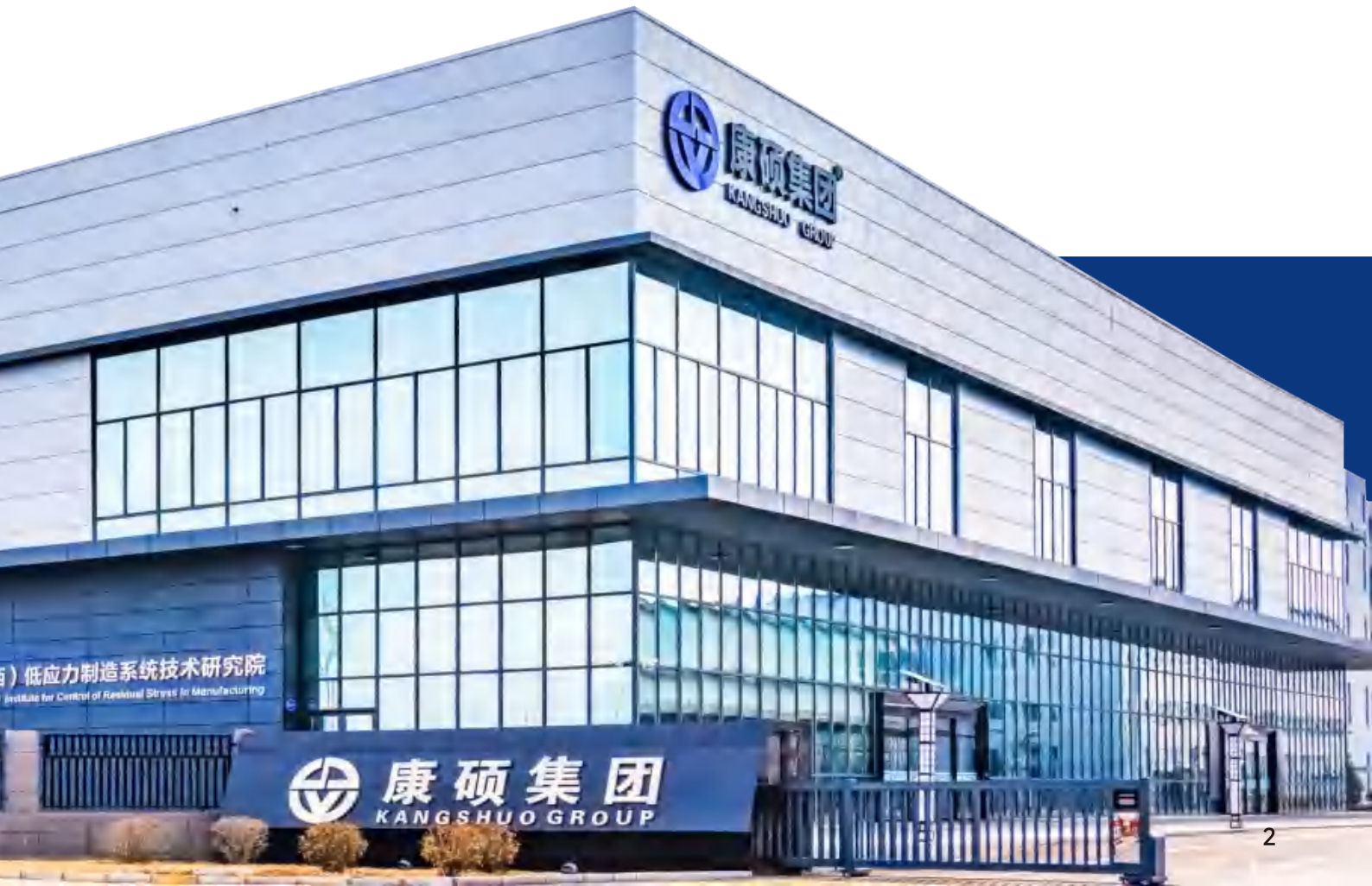
INTELLECTUAL PROPERTY RIGHTS & HONORS

80+ honors awarded in total

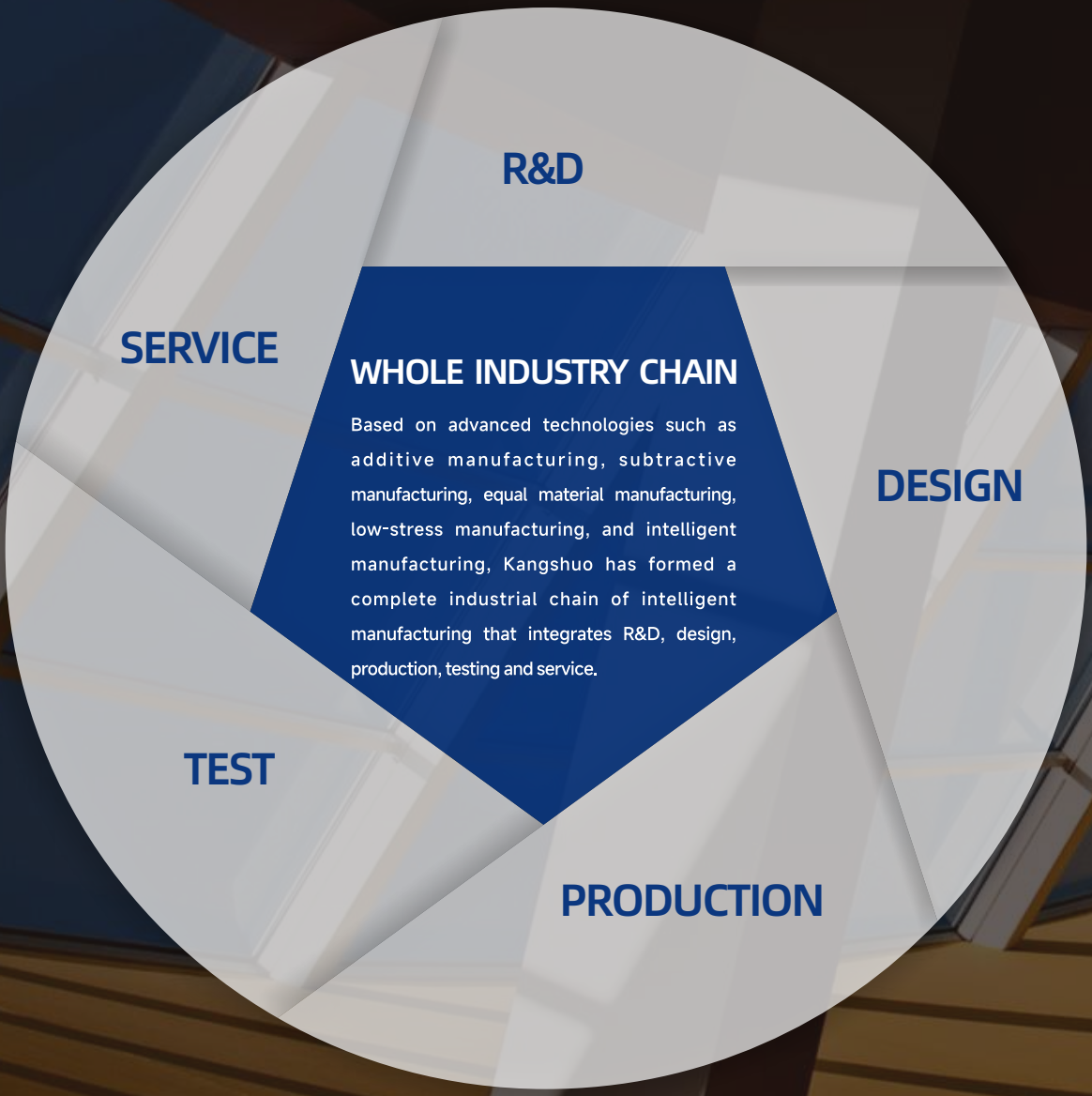
80+

500+ intellectual property rights accumulated

500+



02 SERVICE AND SUPPORT



INTEGRATED SERVICES

Intelligent Manufacturing Equipment

R&D And Supply Of Raw Materials

Mechanical Processing

Software Development

Key Components Manufacturing

Inspection And Testing

Process R&D

Low-stress Service

3d Printing Service

Innovative Design

MANAGEMENT SYSTEM

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM CERTIFICATE

Kangshuo Electric Group Co., Ltd.

GB/T45001-2020 / ISO45001:2018

Electrical & Mechanical Equipment, General Equipment, Electronic Products, 3D Printer Sales, Additive Manufacturing (3D Printing) Technology Development, R&D of 3D Printing Complete Equipment and Related Management Activities

Certificate of Registration

IATF 16949:2016

ISO9001

QUALITY MANAGEMENT SYSTEM CERTIFICATE

Kangshuo Electric Group Co., Ltd.

GB/T19001-2016 / ISO9001:2015

Electrical & Mechanical Equipment, General Equipment, Electronic Products, 3D Printer Sales and Service, Additive Manufacturing (3D Printing) Technology Development, R&D and Services of 3D Printing Complete Equipment

ISO14001

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Kangshuo Electric Group Co., Ltd.

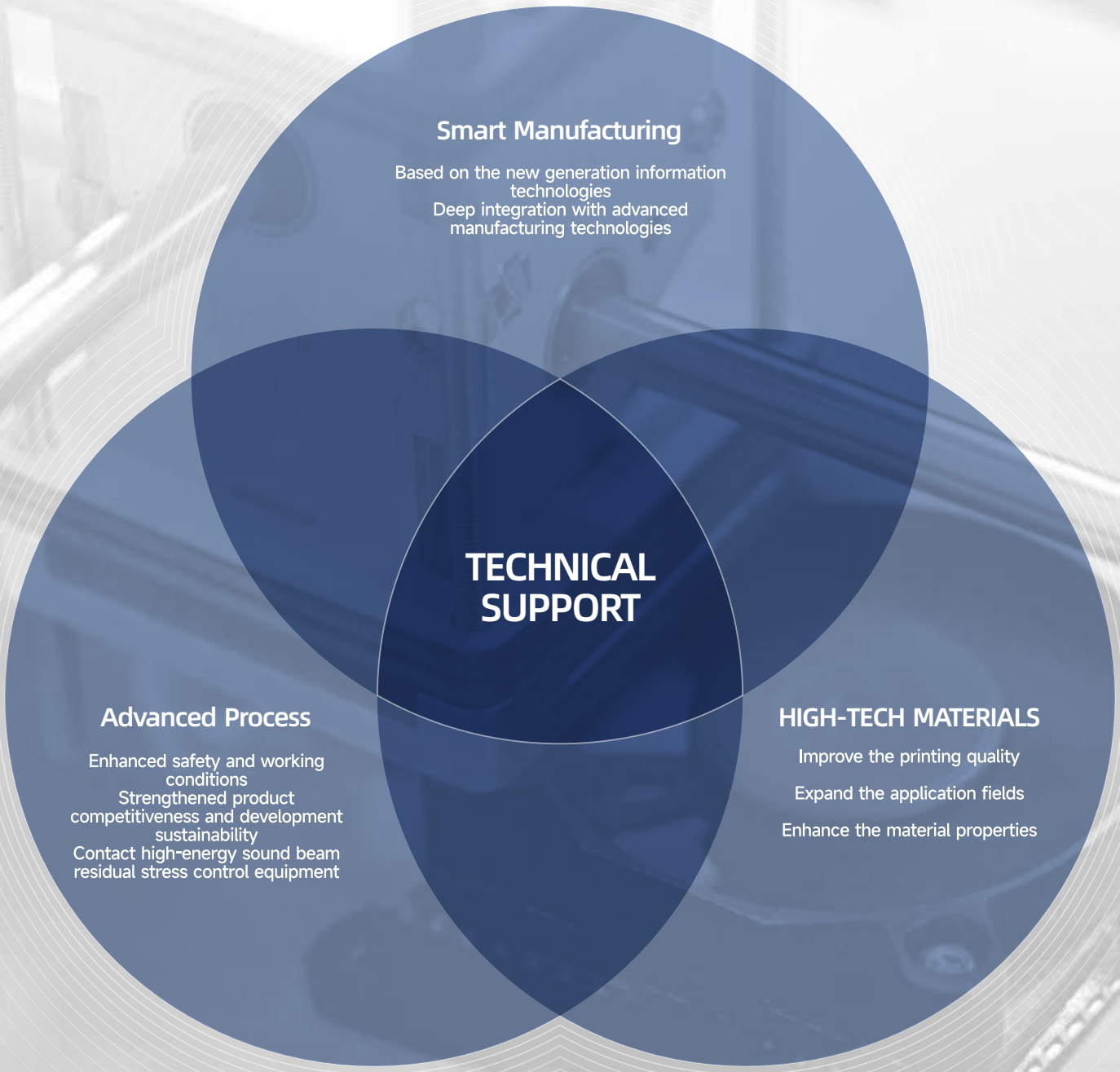
GB/T24001-2016 / ISO14001:2015

Electrical & Mechanical Equipment, General Equipment, Electronic Products, 3D Printer Sales, Additive Manufacturing (3D Printing) Technology Development, R&D of 3D Printing Complete Equipment and Related Management Activities

MANAGEMENT SYSTEM

03 R&D AND PRODUCTION

Kangshuo Central Research Institute, established especially, is aimed at the sore points and needs of high-end equipment manufacturing industry and oriented towards intelligent manufacturing, advanced technology and high-tech materials. It actively pursues the study on applications, strenuously develops the field of intelligent manufacturing, and keeps continual innovation and breakthrough.



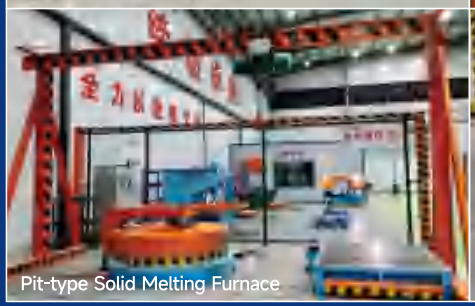
FOUNDRY EQUIPMENT

The equipment is capable of foundry production of non-ferrous alloy materials, cast steel materials, and cast iron materials on the basis of gravity casting, low-pressure casting, differential pressure casting, and other green rapid-casting technologies.


Sand Mixer


One-for-two Intermediate Frequency Furnace


Aluminum Alloy Crucible Melting Low-Pressure Casting Machine


Pit-type Solid Melting Furnace


Electromagnetic melting furnace


Bench mold furnace


CNC Boring and Milling Center

PROCESSING EQUIPMENT

High-precision centers include five-axis machining center, four-axis machining center, three-axis machining center, drilling and milling center, milling center, boring and planing center, and grinding center, which can machine large, medium and small components.


CNC 4m Gantry Five-sided Milling


High-precision Bridge Type Automatic Coordinate Measuring Machine


Double Table with Five Axes


High-precision 800 Cradle Type Five-axis Machining Center


High-precision Dual Table Horizontal Machining Center


Double Table with Five Axes

04 BUSINESS CLASSIFICATION

AEROSPACE

As key "members" of aerospace manufacturing, aerospace key components, including airframe parts, engine parts, avionics components, airborne equipment and other components, play an important role in the industry.

APPLICATION FIELDS

Commercial Aviation

Aerospace Exploration

Aviation Power System

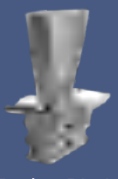
Engine Crankcase

Engine Blade

Aviation Multiple-unit Valve

Engine Crankcase

Core Parts



Engine Blade

Commercial Aviation

POWER SYSTEM

Power system refers to the energy conversion system that drives the operation of mechanical equipment, including engine, transmission device, power steering system, etc. In all kinds of mechanical equipment, the power system is a very important part, and its role is directly related to the performance and efficiency of the equipment.

APPLICATION FIELDS

INTERNAL COMBUSTION ENGINE SHIP FIELD

Ship Power System

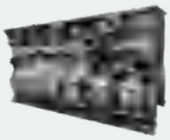
Ship Cylinder Head

Ship Cylinder Block

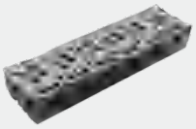
Intake and exhaust system

INTERNAL COMBUSTION ENGINE COMMERCIAL VEHICLE FIELD

Power System of Commercial Vehicle



Cylinder Block of Commercial Vehicle



Cylinder Head of Commercial Vehicle

Transmission Case

INTERNAL COMBUSTION ENGINE PASSENGER CAR FIELD

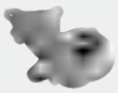
Power System of Passenger Vehicle

Automotive Cylinder Head

Automotive Cylinder Block

Transmission housing

Intake and exhaust system



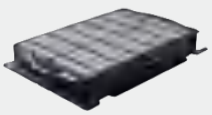
Automotive Turbocharger Housing

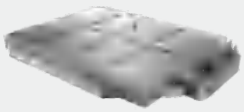
Automotive Stator Housing

Automotive Supercharger Housing

INTERNAL COMBUSTION ENGINE PASSENGER CAR FIELD

New energy battery





Battery Case

Motor shell

Sub-frame

ENERGY INDUSTRY

Energy industry refers to an industry that focuses on the development, production and utilization of various energy resources, including petroleum, natural gas, electricity, coal, nuclear energy, solar energy, wind energy, geothermal energy, hydropower, etc.

APPLICATION FIELDS

PETROLEUM AND PETROCHEMICAL FIELDS

Fracturing Truck

Cryogenic Circulating Pump

Natural Gas Compressor

Fracturing Pump

Wind Power Field

Yaw Pitch Gearbox

Wind Turbine Gear Ring

Output Shaft Gear

Wind Turbine Casing

Construction Machinery Field

Gearbox

Turbocharger Housing

Turbocharger Housing

Closed Housing

3D PRINTING EQUIPMENT

3D printing is a kind of rapid prototyping technology, also known as additive manufacturing, is a new process based on the principle of material stacking layer by layer. Compared with the conventional precision printing process, 3D printing is advantaged by low cost, high precision, and multi-extension.

Kangshuo has a number of independently developed 3D printing equipment and software systems, as well as multiple printing materials such as metal, ceramics and sand moulds, meeting the needs of production and rapid development of multi-size prototypes, with characteristics such as high precision and stable operation, providing customers with advanced 3D printing solutions.

APPLICATION FIELDS

Energy and power

Automobile manufacturing

Construction engineering

Medical Treatment & Healthcare

BINDER JETTING SAND MOULD

KSS1800A

3D PRINTING EQUIPMENT

Technical Parameters

Layer thickness	0.35-0.6mm
Molding accuracy	±0.3mm
Motion control accuracy	±0.02mm
Sand laying method	bidirectional sand laying
Sand laying speed	400mm/s

Number of nozzles	8 (1,024 holes per nozzle)
Printing motion speed	1,200mm/s
Power supply requirements	three-phase, 380VAC±10%, frequency of 50-60Hz
Heating power	9KW
Area occupied by complete equipment (L×W×H)	5,300×2,920×3,400mm
Total weight	7.1T
Rated molding size (L×W×H)	1,800×1,000×700mm
Printing resolution	400 dpi
Printing efficiency	162-277 L/h
Consumables	furan resin or phenolic resin, curing agent, silica sand, ceramic sand
Number of work boxes	single work box with independent drive
Sand treatment center	automatic sand treatment + mixing new and old sand in any proportion
Peak power of the machine	11KW
Noise	< 60 dB
Environment requirements	Operating temperature :22-38 °C
Relative humidity	< 55%

"TRIPLE FEATURES"

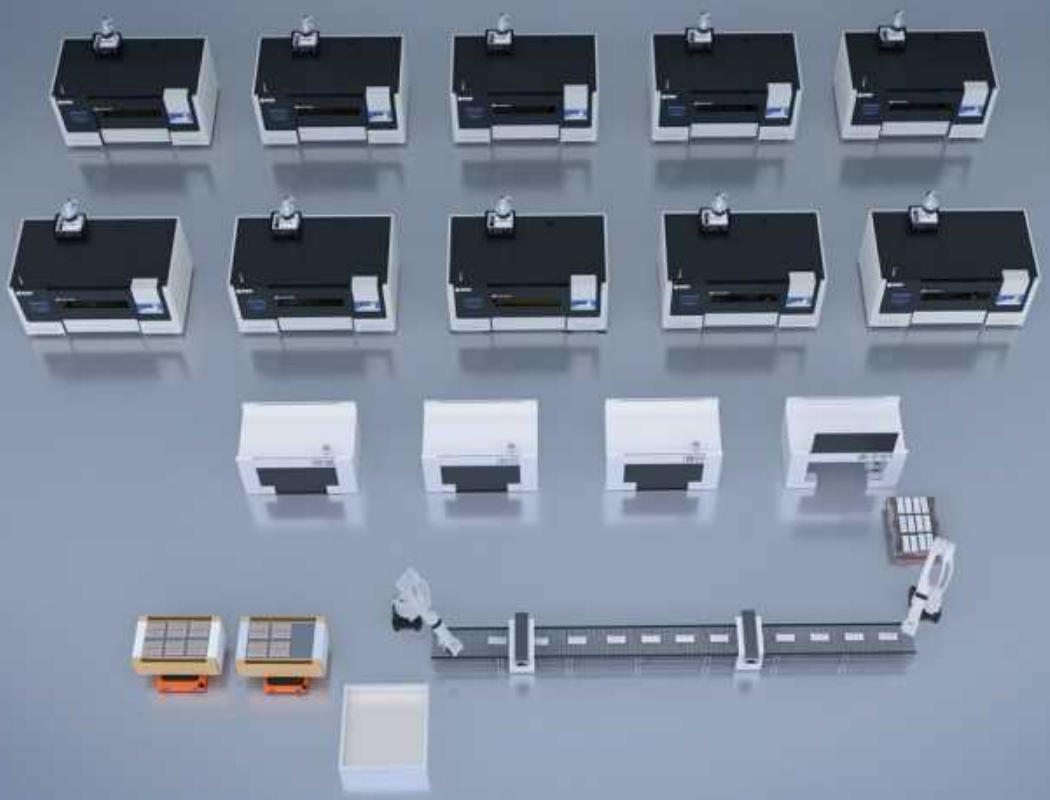
Greenization
Intelligentization
Digitalization

"Six Properties"

Excellent Reliability, Maintainability, Supportability, Testability, Safety and Environmental Adaptability

AUTOMATIC INTELLIGENT ADDITIVE MANUFACTURING PRODUCTION LINE

ACHIEVE FULLY AUTOMATIC INDUSTRIAL APPLICATION OF MULTIPLE EQUIPMENT CONNECTED ONLINE



CERAMICS

KS301C

3D PRINTING EQUIPMENT

Technical Parameters

Net weight	about 1,000KG
Total power	about 5.5KW
Molding size	Max. L×W×H = 300×300×160mm
Molding method	SLA UV curing
Printing accuracy	±0.1mm
Data format	STL
Applicable materials	Aluminum oxide paste, silicon oxide paste, zirconium oxide paste, silicon and zirconium mixed materials, etc.

Process Flow

Model design	Design the model with 3D drawing software and export STL format
3D printing	Set the layering parameters and machine parameters with the software, and print the blank layer by layer until the end of all printing
Recycling and cleaning	The uncured printing materials are basically 100% recycled and reused, and the surface of the parts is cleaned.
Degreasing and sintering	Remove organic matters in degreasing and sintering process to obtain ceramic parts that meet the requirements.

NON-CONTACT SUPPORT SYSTEM

Support but not directly connected to it

No need to specifically remove after sintering

Improve production efficiency and product accuracy

PERSONALIZED CONFIGURATION

Multiple moulding sizes available

300*100mm/300*200mm

Meeting different application needs

LOW-STRESS SLM METAL

KS281MS

3D PRINTING EQUIPMENT

Technical Parameters

Net weight	About 2,600KG
Total power	About 13KW
Molding size	Max. L×W×H = 280×280×350MM
Applicable materials	Applicable to aluminum alloy, titanium alloy, copper alloy, iron-based alloy, nickel-based alloy, stainless steel, alloy steel, metal powder
Stress control mode	Nine compact ultrasonic transducers are arranged at the bottom of the formed base plate, and the power of each transducer can be set independently.

THE FIRST SET IN THE WORLD

#Independent Intellectual Property Rights of Kangshuo Group#

The world's first

SLM metal 3D printing device integrated

with low stress control technology

ULTRASONIC TRANSDUCER * 9

Improve the comprehensive

mechanical properties and quality of printed products

Enhance the fatigue strength and service life of the product

KANGSHUO GROUP

INTELLIGENT EQUIPMENT MANUFACTURING

LOW STRESS EQUIPMENT

Low stress is a technical method to effectively reduce and eliminate the residual stress in mechanical components and enhance their fatigue strength and corrosion resistance. As an important technical index to ensure the machining quality and service reliability of high-end equipment, low stress is of great significance to the development of equipment manufacturing industry.

FIELDS OF APPLICATION

CONTACT HIGH-ENERGY SOUND BEAM RESIDUAL STRESS CONTROL EQUIPMENT

KS1701C CRS

Technical Parameters

Pre-tightening force	The force between the coupling and the box is adjustable between 0.2Mpa and 5Mpa
Control method	Each point location adopts a separate inching motion mode, and each can adjust the distance independently, and can control flat surfaces and most special-shaped surfaces.
Control range	maximum adjustable size L×W×H = 1.6×1.4×0.8M
Control material	metal components (steel, copper, titanium alloy, aluminum, nickel, magnesium, tungsten, etc.)
Power requirement	220V~240VAC/50HZ

Ultrasonic converted energy
Around 20,000 times per second

High frequency
Efficiency
Focus

Surface metal structure
Occurrence of changes

ROBOTIC ARM LOW STRESS WELDING EQUIPMENT

KS2001AW CRS

Technical Parameters

Applicable materials	Aluminum alloy, stainless steel, copper alloy, low carbon steel, titanium alloy, tungsten alloy, etc
Equipment forming range	2000x2000x1000mm;
Ultrasonic exciter type	20K、15K 20K, 15K
Actuator	Six-axis single robotic arm
Configured software	LUNFOPNT

HIGH WELDING EFFICIENCY

Perform welding without manual operations, unnecessarily considering the harm of harmful gases to human body, allowing for continuous operation.

HIGH WELDING QUALITY

Control the welding process by ultrasonic exciter, effectively reducing welding stress and deformation and improving weld quality.

EASY OPERATION

Proceed to welding automatically through preset program, without the need for manual complex operations, reducing the skill requirements for workers.

LOW LABOR INTENSITY

Reduce the labor intensity of workers and improve work efficiency

INSPECTION AND TESTING SERVICES

METROLOGY & TESTING

Geometric metrology | Thermal metrology | Mechanical metrology

Electromagnetic metrology | Optical metrology | Chemical metrology

500+

05 PARTNERSHIPS

CORPORATE CULTURE 06

MISSION

Guide the way of "intelligent manufacturing" and promote the high-quality development of manufacturing industry.

VISION

Work to develop into a global enterprise that contributes to society by independent R&D.

VALUES

Talents Recruitment -
Have both virtue and competence, put virtue first.

Management -
Combine care with fairness, rule the enterprise with virtue.

Service -
Achieve win-win cooperation, attract customers with virtue.

Responsibility -
Give back to the society, carry the business by virtue.

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