星泽
STARLINK

模具激光纹理工藝及設計的可能性

by Jason Ying 2026.6

华南星泽激光纹理技术中心

South China Starlink Laser Texture Technology Centre

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starlink laser technology

YICK SANG 益新

INTRODUCTION TO STARLINK LASER TECHNOLOGY

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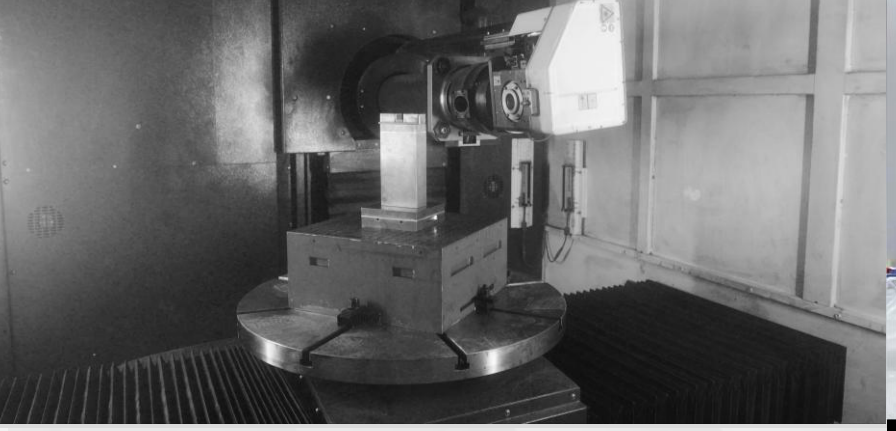

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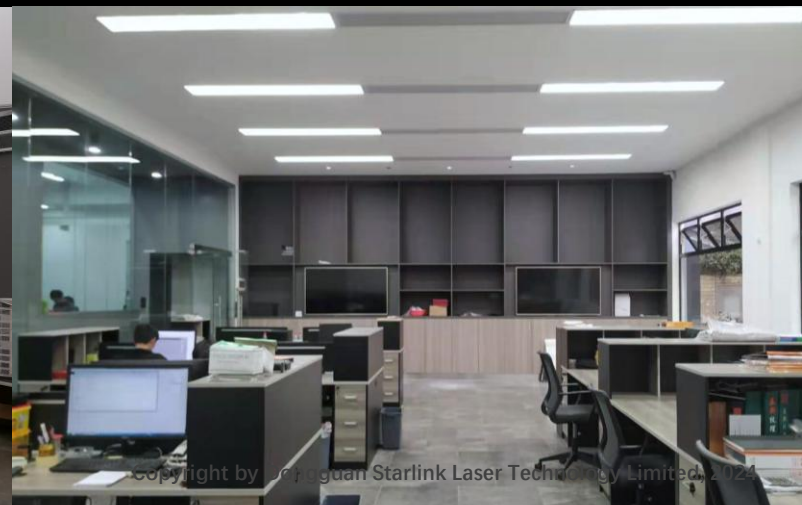
Starlink Laser Technology provides research, design, and processing services for five-axis laser texturing in China's mold industry.



Pioneers in Mold Texturing

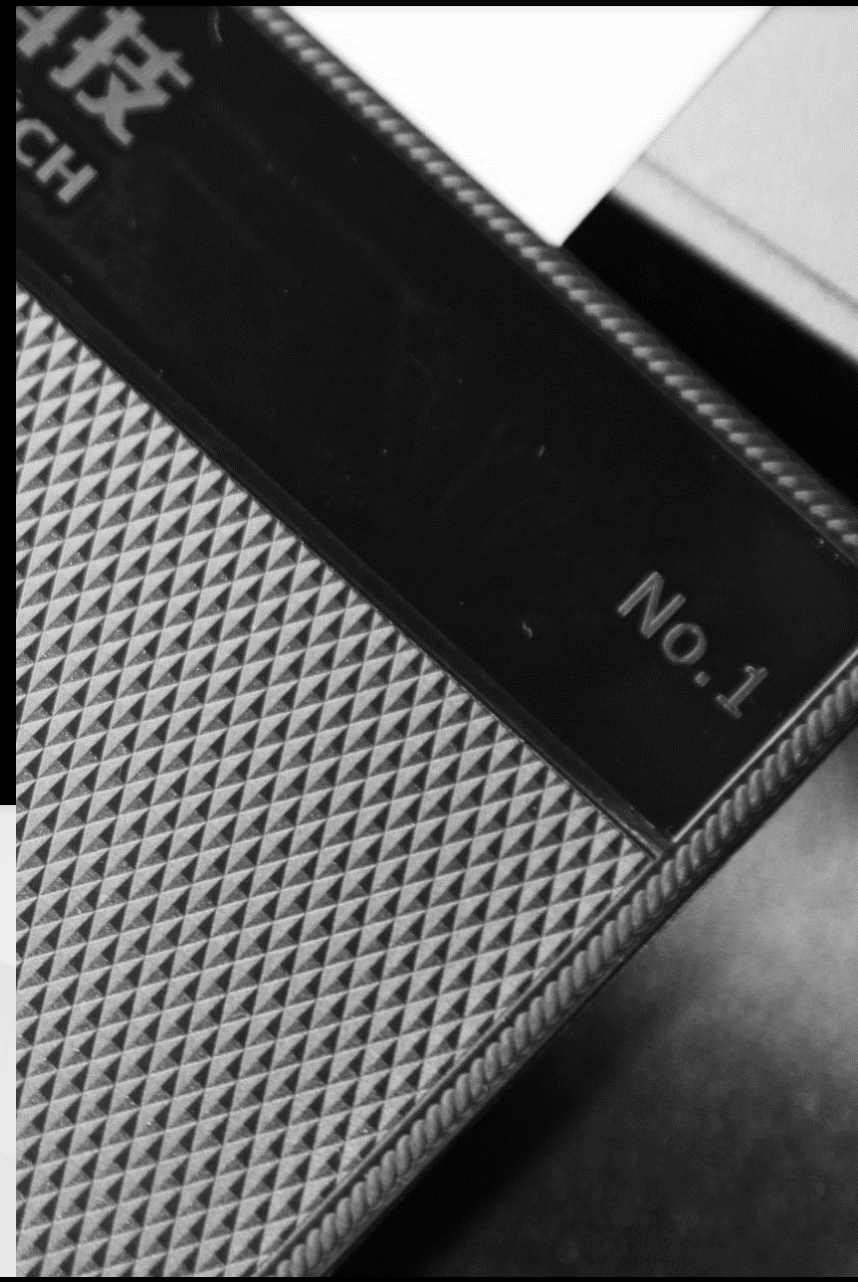
Yick Sang, we are pioneers in mold texturing with over 40 years of experience. We operate more than 20 factories in southern, eastern, and western China, employing over 800 staff members.

SINCE

1981

YICK SANG

益 新



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Geographical Market Strategy

Our headquarters is located in Hong Kong, with 20 processing service points across China.

- Pearl River Delta (Shenzhen, Dongguan, Huizhou, Zhongshan, Guangzhou)
- Yangtze River Delta (Shanghai, Kunshan, Suzhou, Hangzhou)
- Chongqing

#The most convenient and efficient mold texturing processing services in China

YICK SANG
益新

SINCE
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All-In-One SERVICE

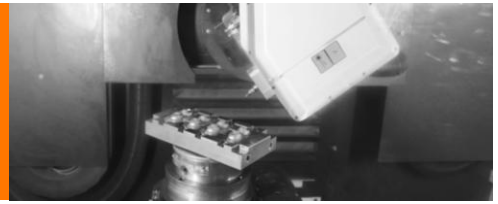
星泽激光科技

At Starlink, our emphasis on an All-in-One texturing service ensures that clients can have full confidence in a seamless process. From design and proposal to testing, production, quality assurance, and post-service, all aspects are expertly handled within our facilities in South and East China.

POST-SERVICE

QUALITY ASSURANCE

PRODUCTION



TESTING & PROTOTYPING

PROPOSAL

DESIGN

COOPERATION

星泽激光科技

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REICHLE TECHNOLOGIEZENTRUM

We are a China-based global production partner, strategically collaborating with partners in Germany. Our streamlined processes, superior quality, and competitive pricing deliver value to clients worldwide.

South China Starlink Laser Texture Technology Centre

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Efficient Laser Texturing: Factory Precision, Quality Finishes

Our factory's laser texturing production zone delivers precise, efficient services for top-quality finishes across industries.

12 engraving machines,
(11 GF+, 1 DMG) including lastest S2500 and Femto Laser Machine.

Total 18 engraving machines.

Completed QA Equipments.

A: 1/F Major Laser Texturing Area
B: Quality Assurance Area
C: S2500 Laser Texturing Area

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CMF Texture Library

Introducing our CMF (Color, Material, Finish) Texture Showroom! Explore a curated collection of innovative textures for diverse industries. From luxurious metallic finishes to rustic wood grains, find the perfect textures to elevate your designs. Visit us to unleash your creativity with our diverse CMF textures!

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STARLINK DESIGN STUDIO

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星泽 创新设计室 DESIGN STUDIO
STARLINK

Innovation: Bespoke Texture Design at Starlink Design Studio

Rooted in a profound understanding of Eastern and Western art and design principles and driven by a commitment to pushing creative boundaries of mold textures, our studio serves as a vibrant hub where art and creativity intertwine.

Design Services

Texture Research & Development

Laser Texture Design

Rendering

Prototyping

Test & Report

Specification

Mold Engraving

BASICS OF LASER TEXTURING

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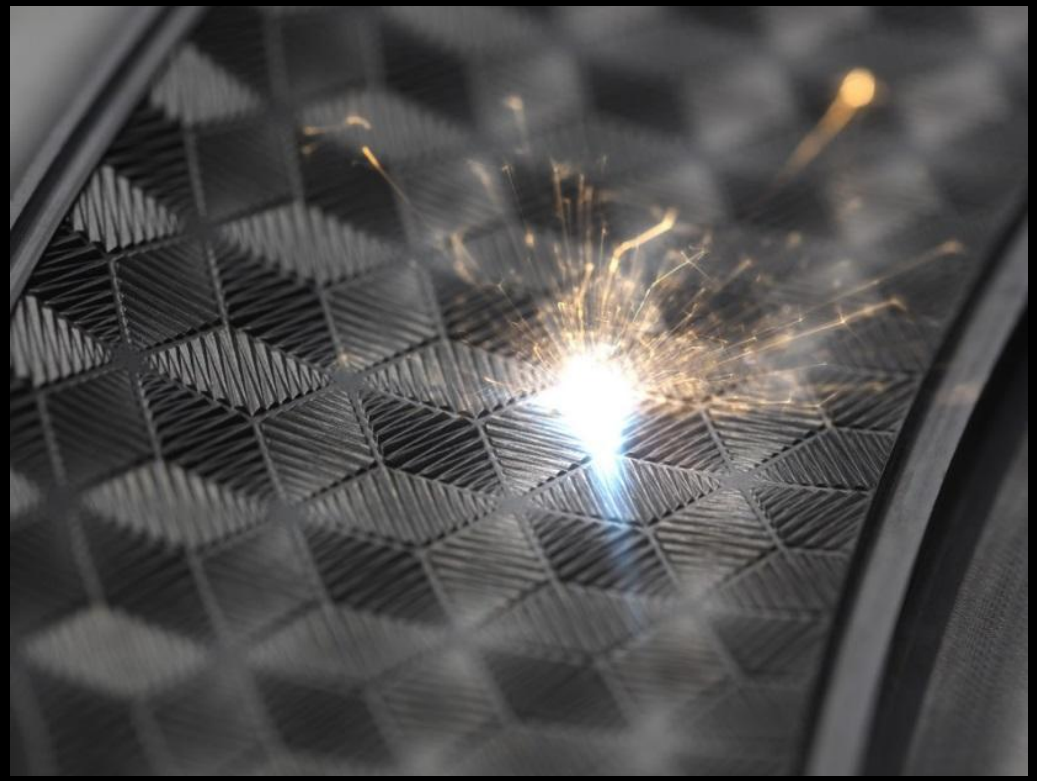

The laser heats and vaporizes the material, resulting in precise engraving.

Laser Source: A focused laser beam is generated, often from CO2 or fiber lasers.

In Starlink, the laser beams are infra-red 1064 nm, fiber lasers.

Absorption and reflection are key concepts in understanding how materials interact with light.

Note: depth could be
minimized down to 0.1 μm

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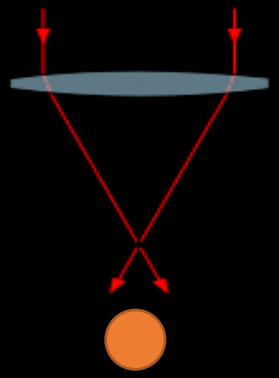
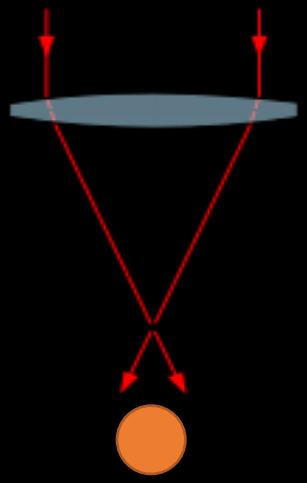
Focal 63



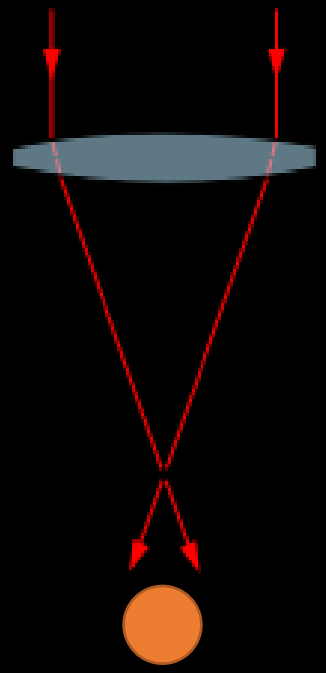
19 μm

Focal 100



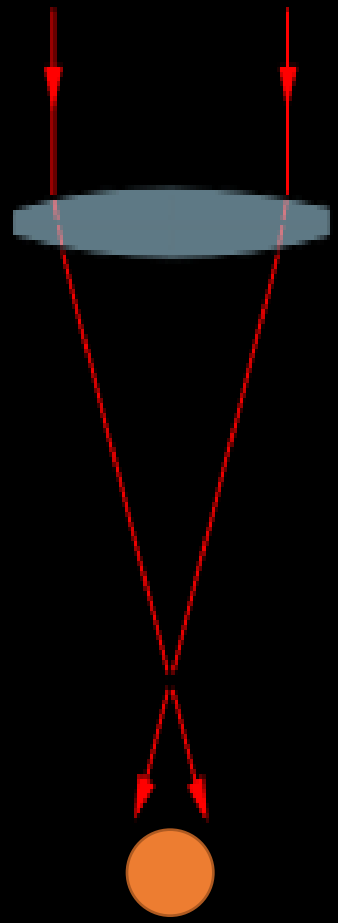
30 μm

Focal 160



48 μm

Focal 254



77 μm

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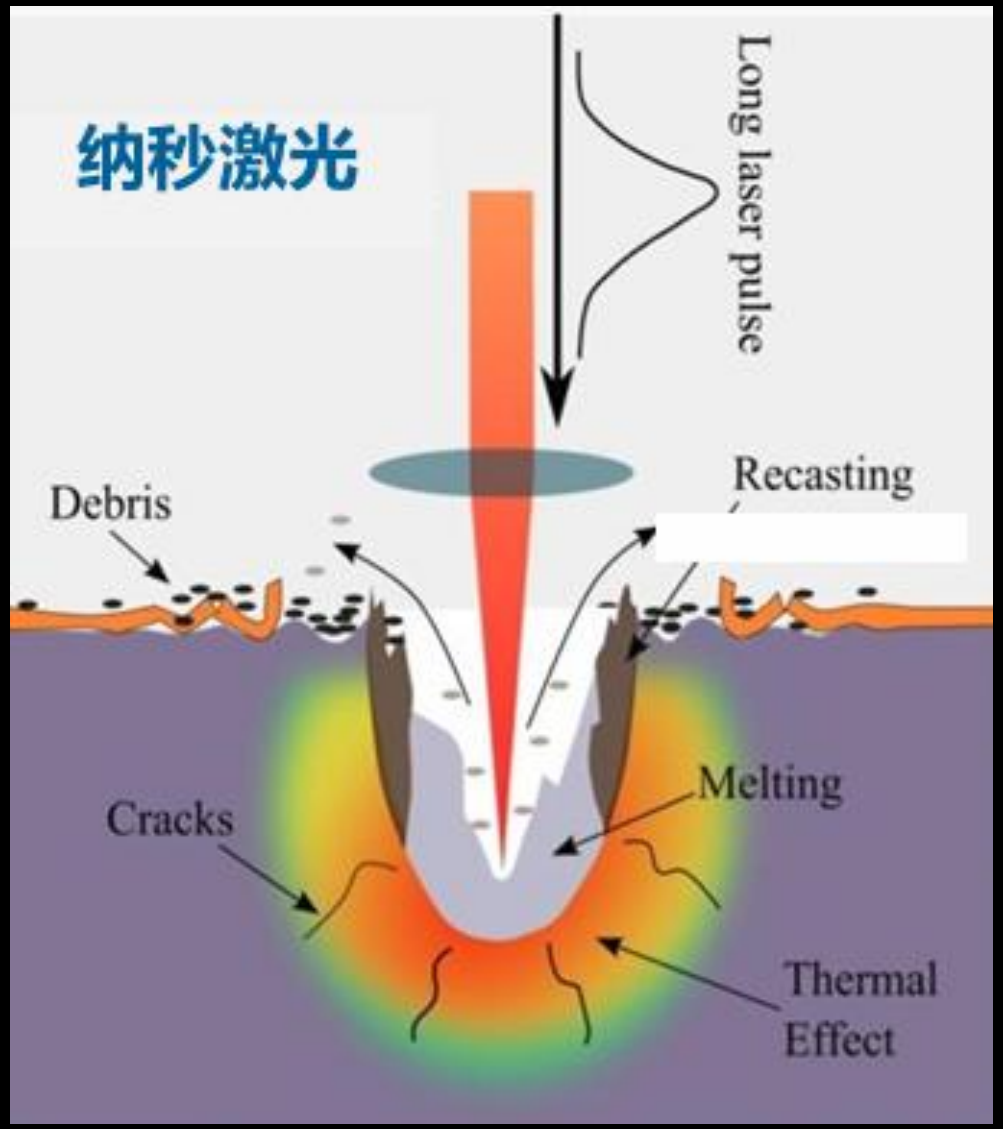

Nanosecond laser (10-9sec)

Nanosecond Laser Applicable Areas

•**Surface Granulation Processing**: Enhances scratch resistance and durability of surfaces.

•**VDI Texturing and Laser Dotting**: Suitable for complex texture designs, achieving high precision and a variety of surface effects.

•**Complete Processing of Mold Textures**: Ensures standard quality and repeatability in production, improving product consistency.

•**Rough and Pre-Finishing Processes**: Lays the groundwork for subsequent finishing, increasing overall processing efficiency.

Limitations

•**Burr Issues with Nanosecond Processing**: There can be burrs around 20 microns, which may require additional treatment to ensure surface smoothness.

•**Material Limitations**: Primarily effective on metal materials; the processing quality on other materials may be limited.

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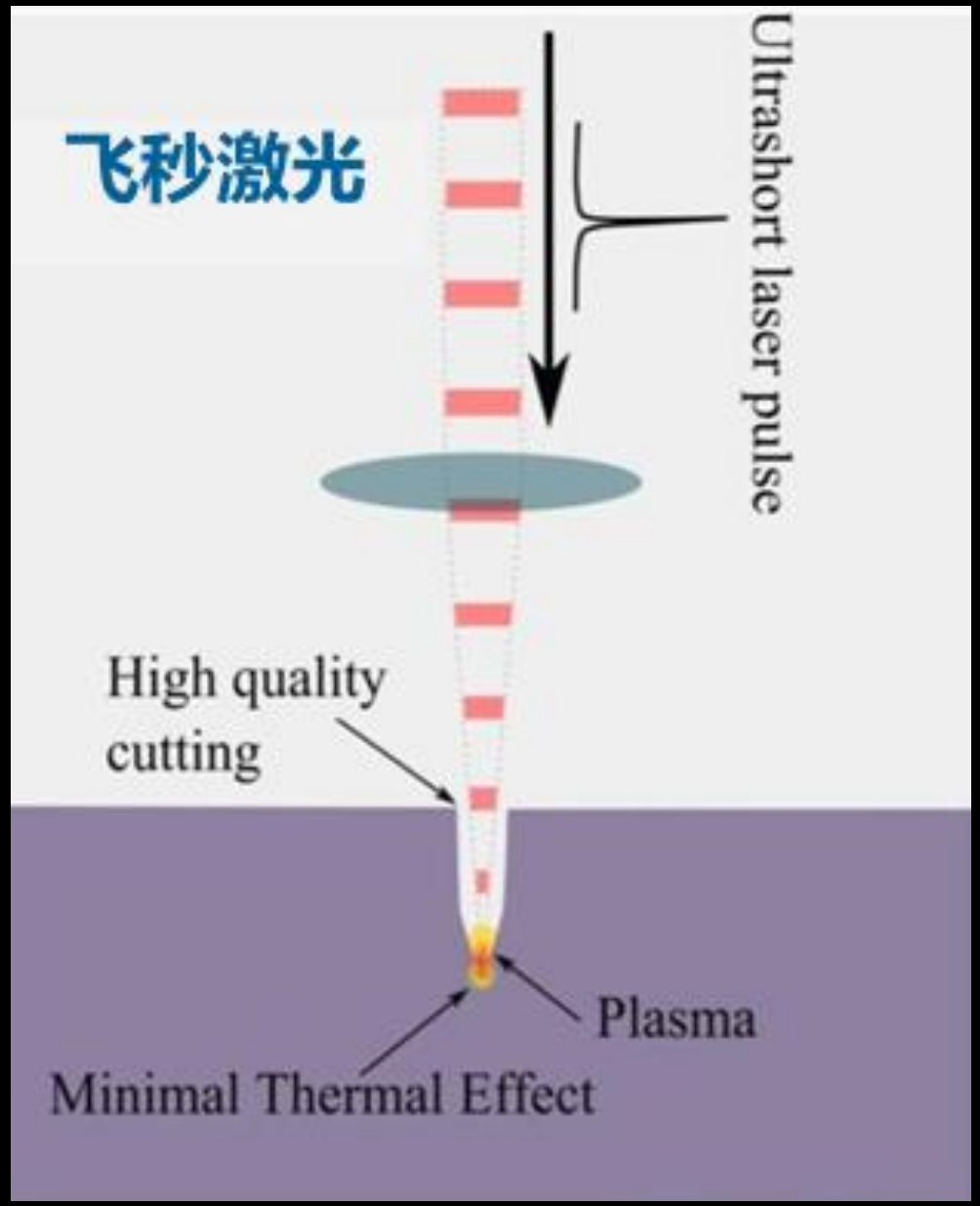

Femtosecond laser (10-15sec)

Femtosecond Laser Applicable Areas

- **Fine Engraving**: Produces high-quality results with sharp edges and minimal or no burrs.
- **Colorful Textures**: Ability to create vibrant, multicolored surface textures.
- **Hard or Brittle Materials**: Suitable for various materials, including heat-treated metals, hard metals, glass, technical ceramics, polymers, and precious metals.
- **Multiscale Structures**: Capable of producing features at micro and nano scales, allowing for intricate designs and applications.

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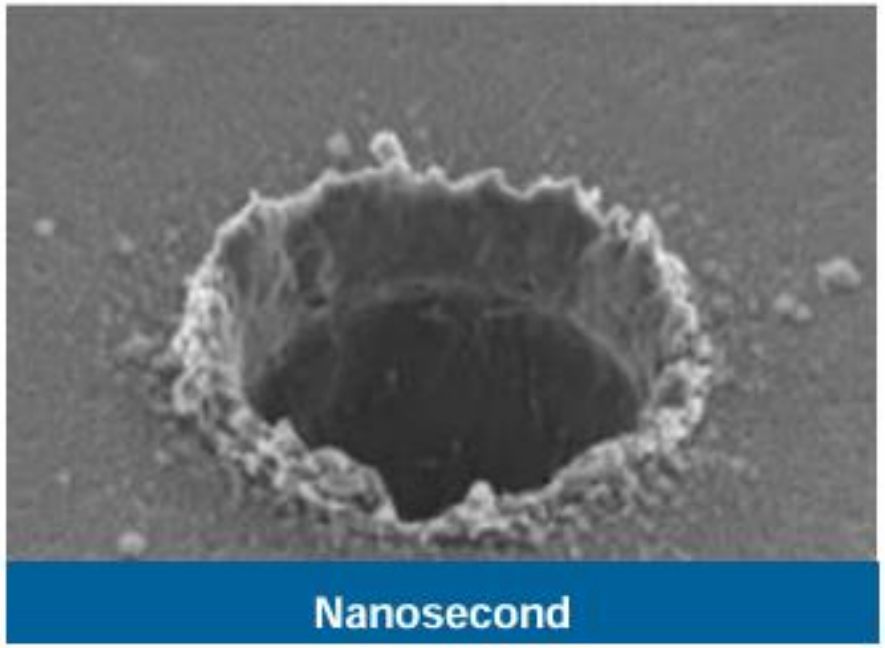

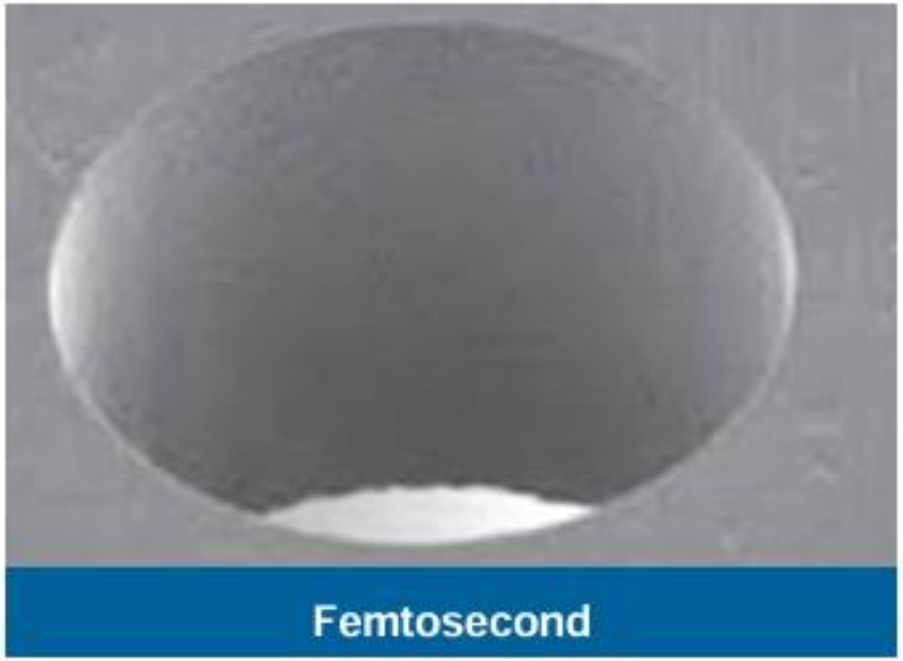

The Heat-Affected Zone (HAZ) can lead to burrs of approximately 20 μm, which may cause variations in details and textures. This effect can impact the precision and quality of the final surface finish, potentially altering the intended design and functionality.

Without a Heat-Affected Zone (HAZ), burrs can be reduced to about 0.2 μm, resulting in minimal deformation. This processing method allows for higher detail retention and texture consistency, ensuring the quality of the final product

Considerations
1. Moire
2. Post-Processing Needs

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CHEMICAL ETCHING VS LASER ENGRAVING TEXTURE

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- **Layer Count Restriction**: The process is typically limited to 3-5 layers, restricting the complexity of designs.

- **Low Repeatability**: Texture replication relies heavily on manual work, leading to variations in quality.

- **Difficult Surface Joining**: Achieving seamless connections on curved surfaces depends on the artisan's skill, making it challenging.

- **Depth Tolerances**: The depth tolerance is approximately 0.1 mm, with a variability of 10% to 20% depending on the mold structure.

- **Positional Tolerances**: Positioning tolerances range from 0.3 mm to 0.5 mm, again influenced by the mold structure.

- **Low Design Feasibility**: Implementing complex textures can be difficult, limiting design options.

CHEMICAL ETCHING
(YICKSANG)

STARLINK

- **Full Five-Axis Machining**: Enables complex sculpting with high precision and flexibility in design.

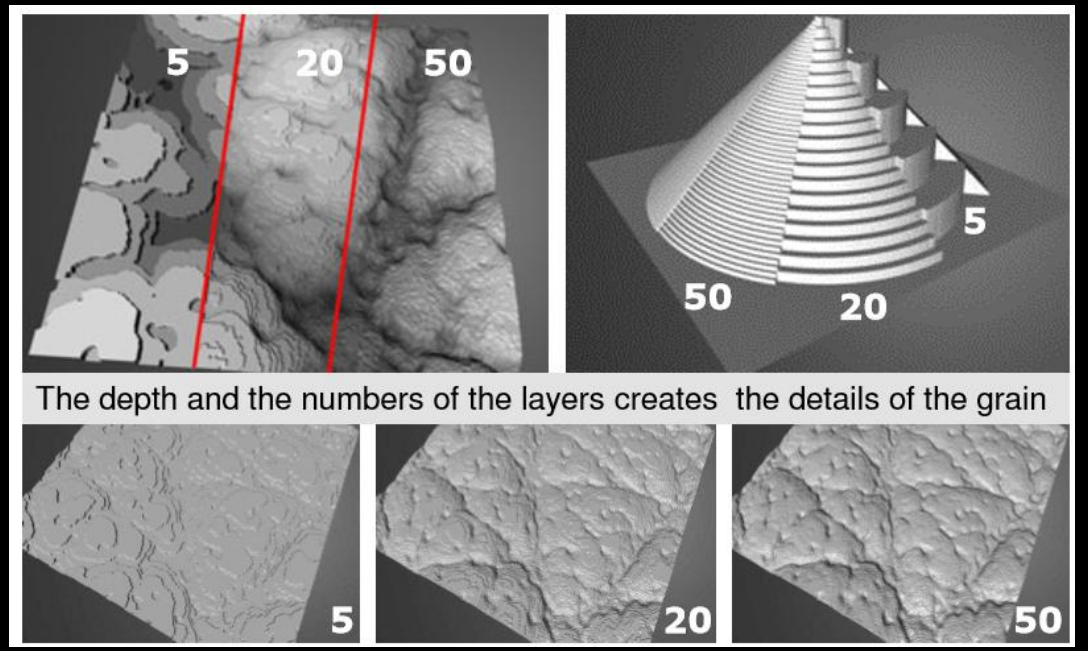
- **Data-Driven Production**: Utilizes grayscale images as production data, allowing for up to 256 layers of engraving.

- **High Repeatability**: Ensures consistent texture effects across factories in Europe, America, and China.

- **Laser Hardening**: Increases the lifespan of mold textures through enhanced durability.

- **Gradual Texture Fade**: Allows for a smooth transition at the parting line, facilitating easier demolding.

- **Tight Tolerances**: Depth tolerance of 0.003 mm and positional tolerance of 0.03 mm ensure high accuracy, depending on patterns



LASER TEXTURING
(STARLINK)

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TEXTURE DESIGN

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Texture design plays a crucial role in shaping the narrative of surface aesthetics, utility, and durability, in the context of dematerialization .

What Is Texture Design ?

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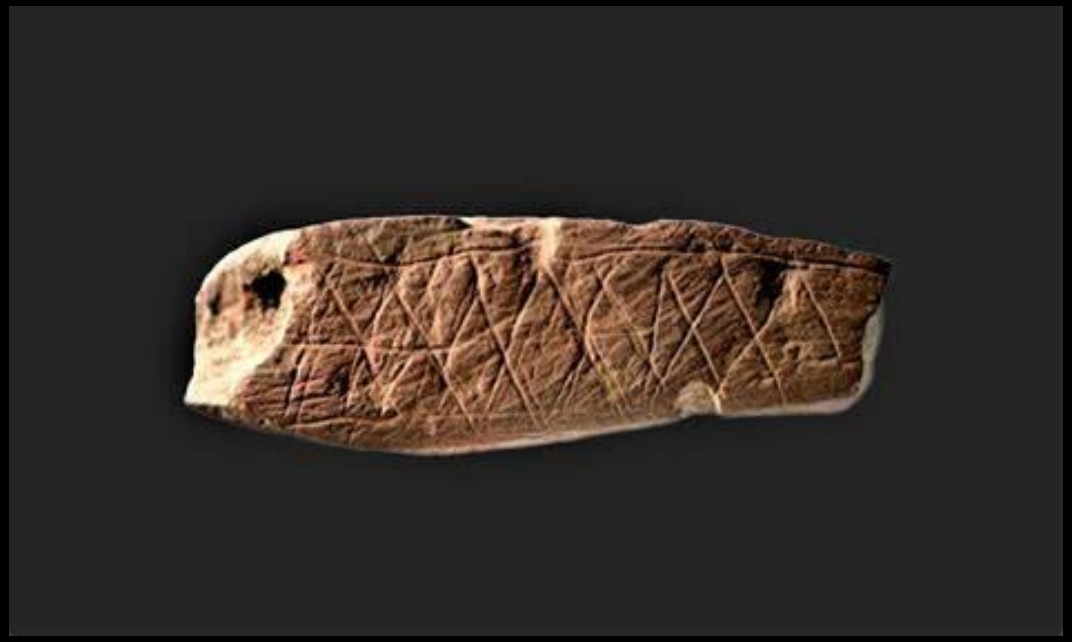
CRAFTSMAN X MASS PRODUCTION



HOMO ERECTUS'S ENGRAVING STONE / SHELL
> MARKING EVENTS / NUMBERS

73,000 years before present (BP)

THE HP-35, THE FIRST HANDHELD ELECTRONIC CALCULATOR

10 billion are given in decimal form

Date Made: 1972

1000 years for decompose

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CRAFTSMAN X MASS PRODUCTION / AESTHETIC

NORTHERN SONG

DYNASTY FLOWER TEXTURE

A.D. 960–1127

THE ARCHITECTURE

OF THE BEIJING

FORBIDDEN CITY

A.D. 1420 to 1924

TEXTURE FOR CHINESE AUTOMOTIVE BRAND

WITH CLASSIC ART DNA

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HOW / WHERE YOU USE THE PHONE

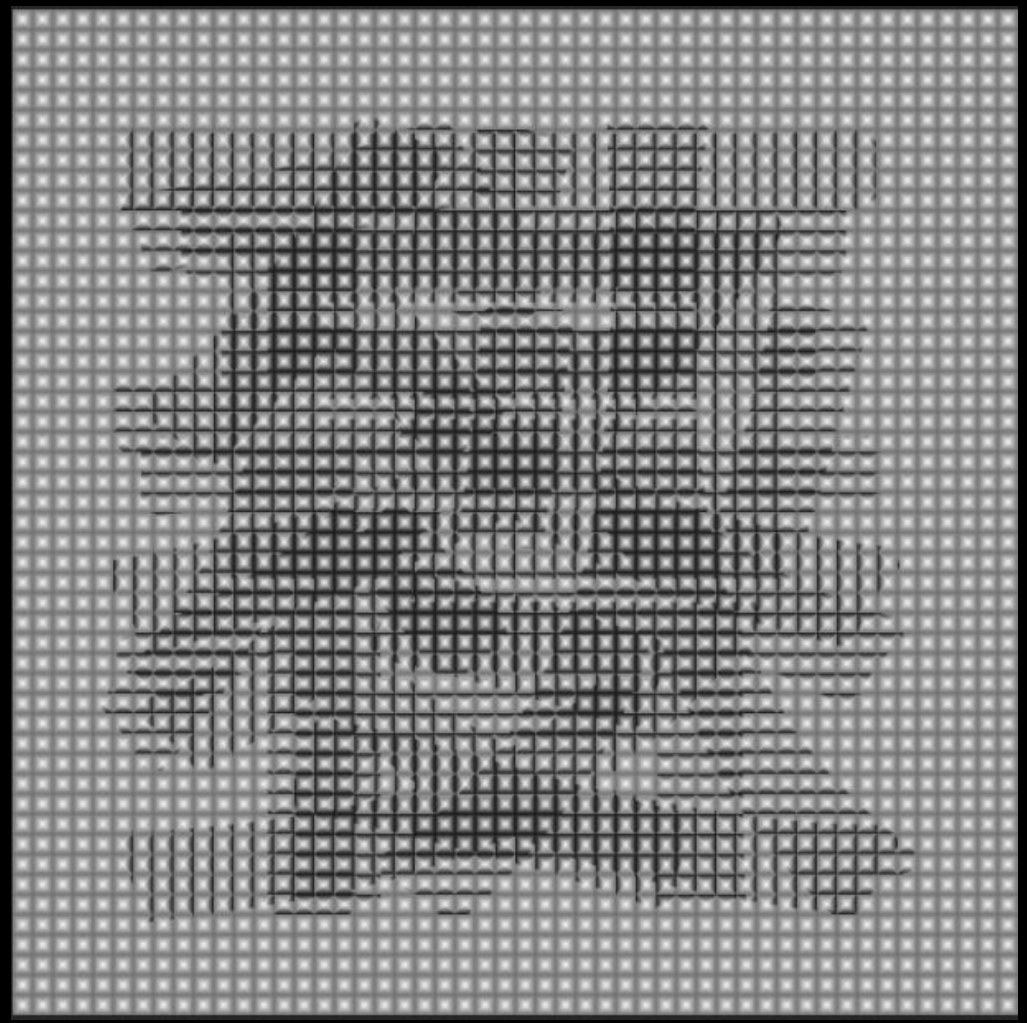
Bakelite Type 232 telephone made in the 1930s.

Science Museum Group Collection

WEAR-RESISTANT HIGH-GLOSS TEXTURE

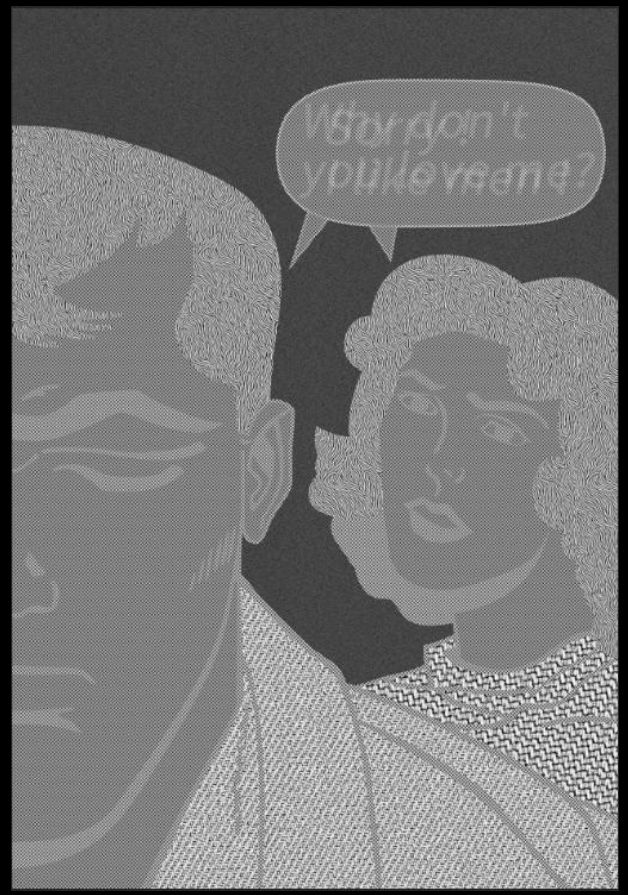
STONE-LIKE TEXTURE

PLAYFUL / ART



Four season by Starlink Design Studio

星泽纹理项目



Reproduce: Forget it! Forget me! By Starlink Design Studio

FUNCTION AND BRANDING

VIKING SWORD

A.D. 790 A.D. 800 to the 11th century

Glock PISTOL

PLAYSTATION 5 CONTROLLER

DESIGN OR NOT

NATURAL WOODEN TEXTURE

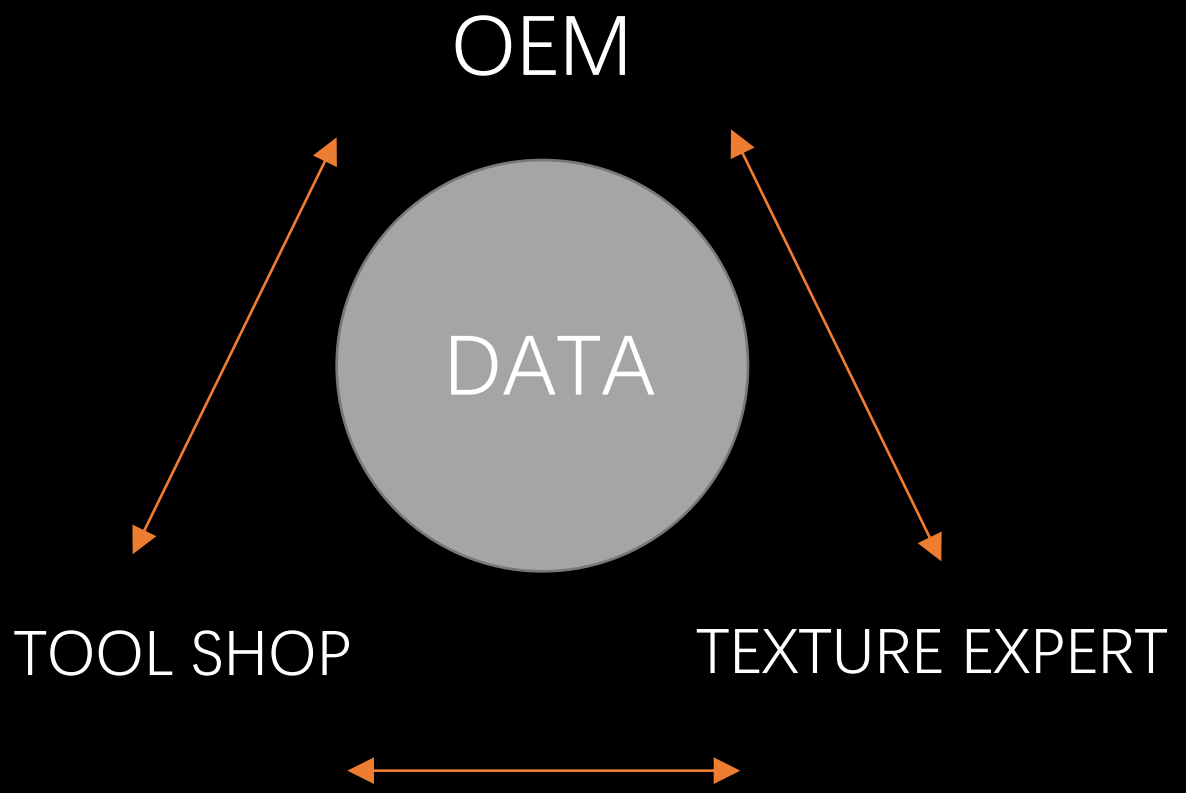
WOODEN TEXTURE IN PLASTIC

(PROTOTYPING)

From the old days in cave to the modern digital context, textures continue to play a vital role in art, architecture, product design, shaping how we experience and interact with the world around us.

SPEEDS UP THE TEXTURE CREATION PROCESS

Highly data-driven production transforms the texture processing ecosystem through tools such as design proposals, rendering, prototyping & sample validation.



CASE STUDIES

Case Study: 3C Products (VDI Texture)

PRODUCT

MOLD

Durability: Textures designed with VDI standards are often more resistant to wear and tear, prolonging the life of the product.

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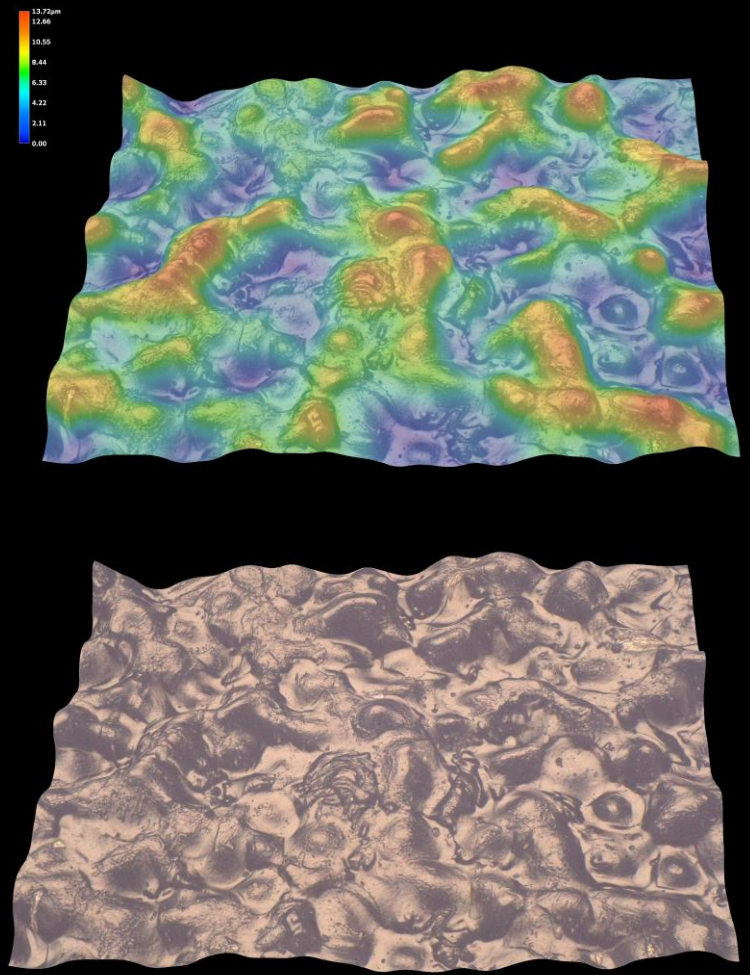
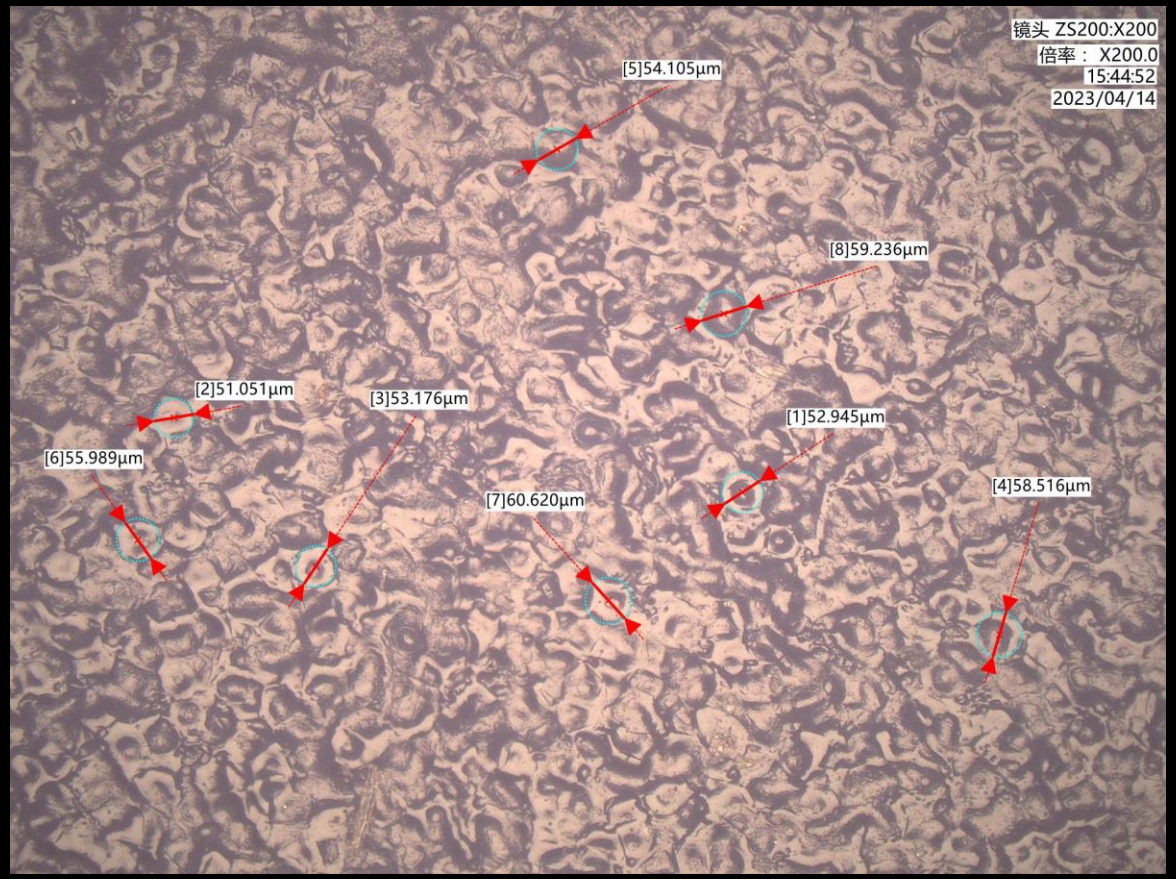
Case Study: 3C Products (VDI Texture)

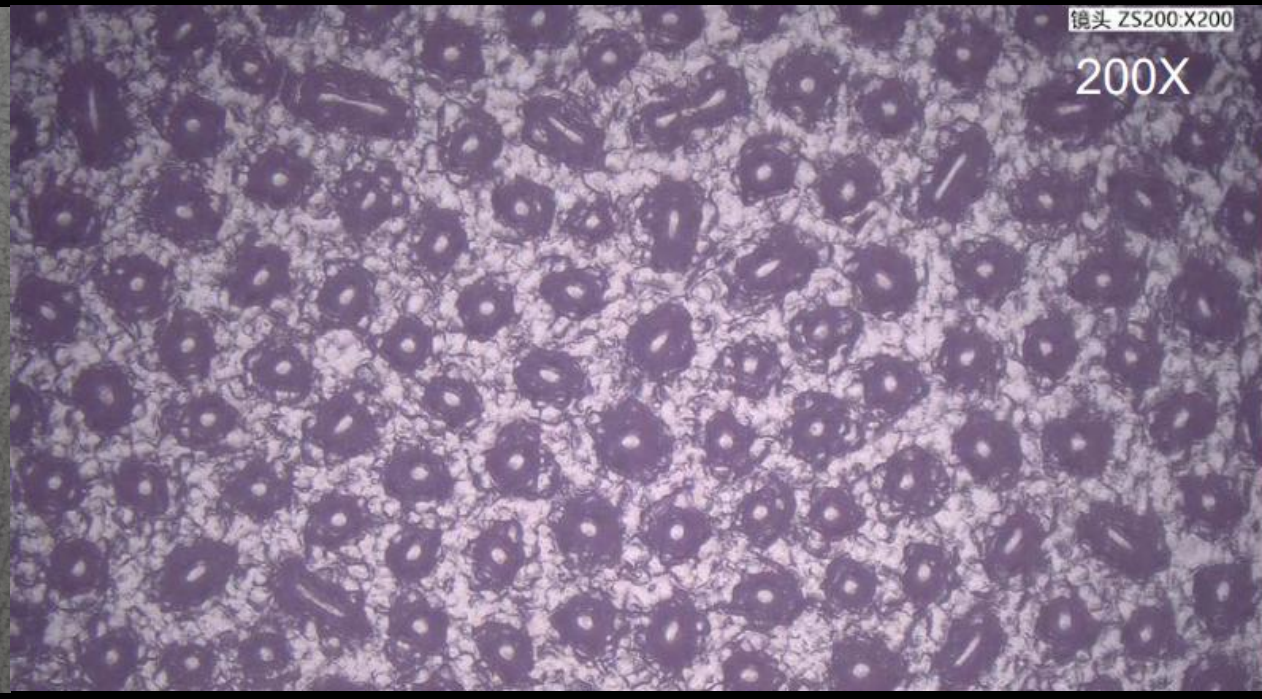




投影

Case Study: ALTERNATIVE CHOICE OF (VDI Texture)

SOFT-TOUCH TEXTURE



Overview: Soft touch textures have emerged as a viable replacement for traditional soft-touch paint coatings in various products, offering significant advantages in terms of cost, production efficiency, and environmental impact.

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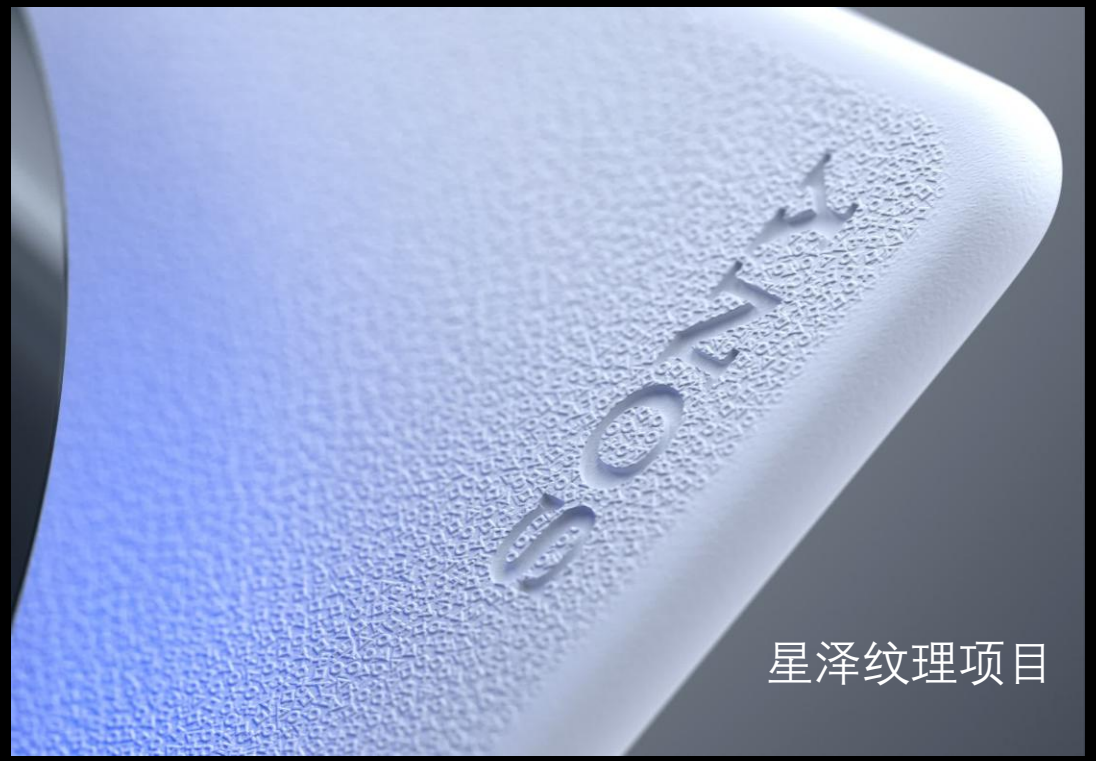
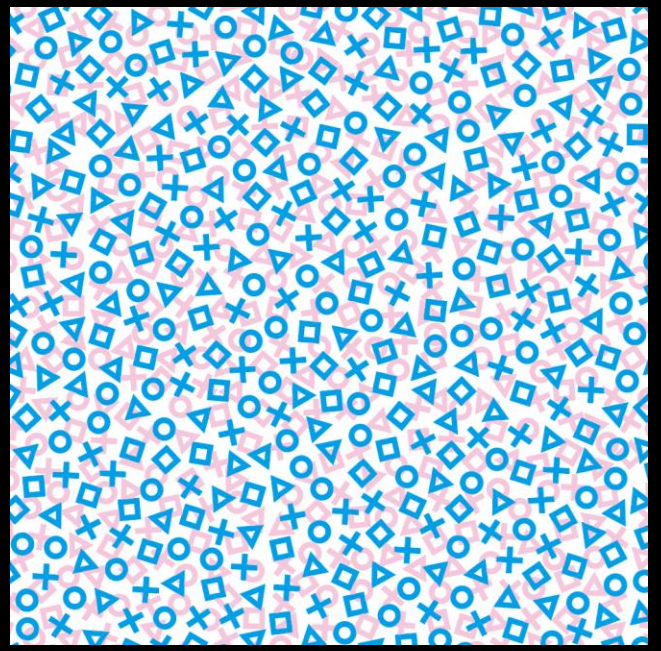
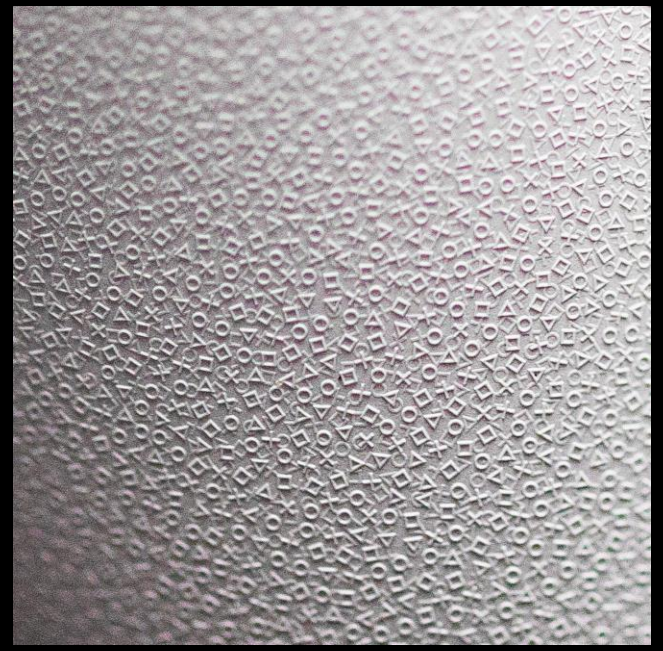
Case Study: DOUBLE LAYERS

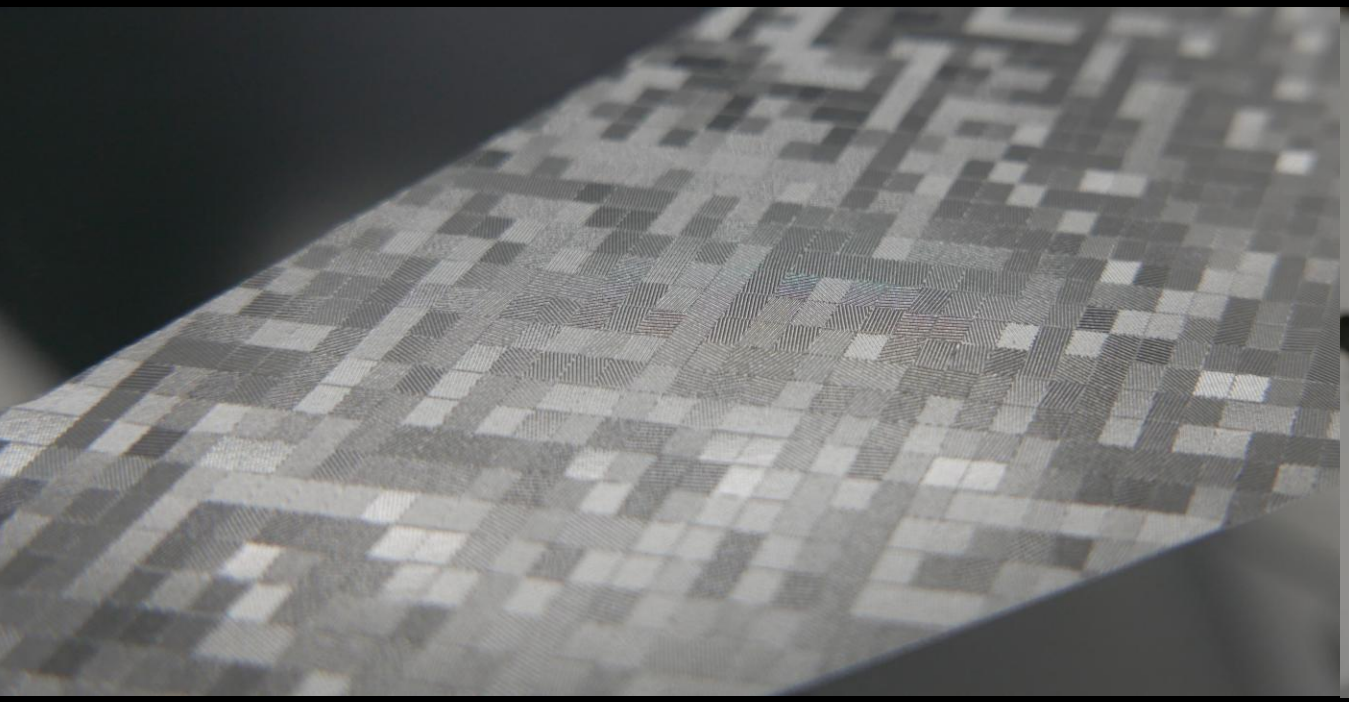






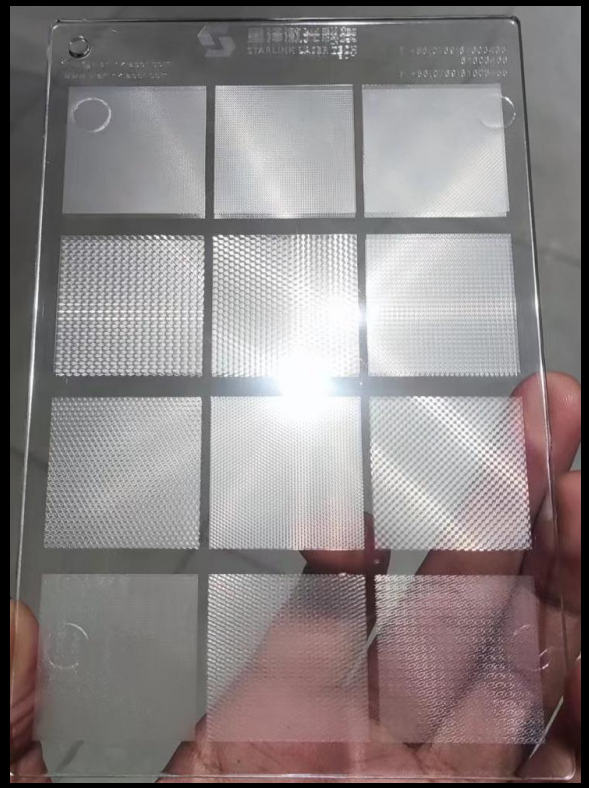
Overview: Data-driven production methods ensures that the design and manufacturing processes achieve high consistency in quality and performance.

Case Study: Rapid prototyping with direct texture



Overview: Rapid prototyping with direct texture engraving accelerates the overall design process and enhances product development efficiency.

Case Study: FUNCTIONAL TEXTURE FOR LIGHTING



Overview: Development of textures on mould for light diffusion purposes .

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Case Study: GRATING TEXTURE FOR HIGHLIGHTS

Boost your operations

YOUR BENEFITS

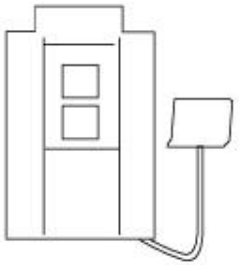
Simplify your three dimensional engraving operations

Boost your productivity, realize marking and engraving operations on the same solution

Embossing dies

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 400



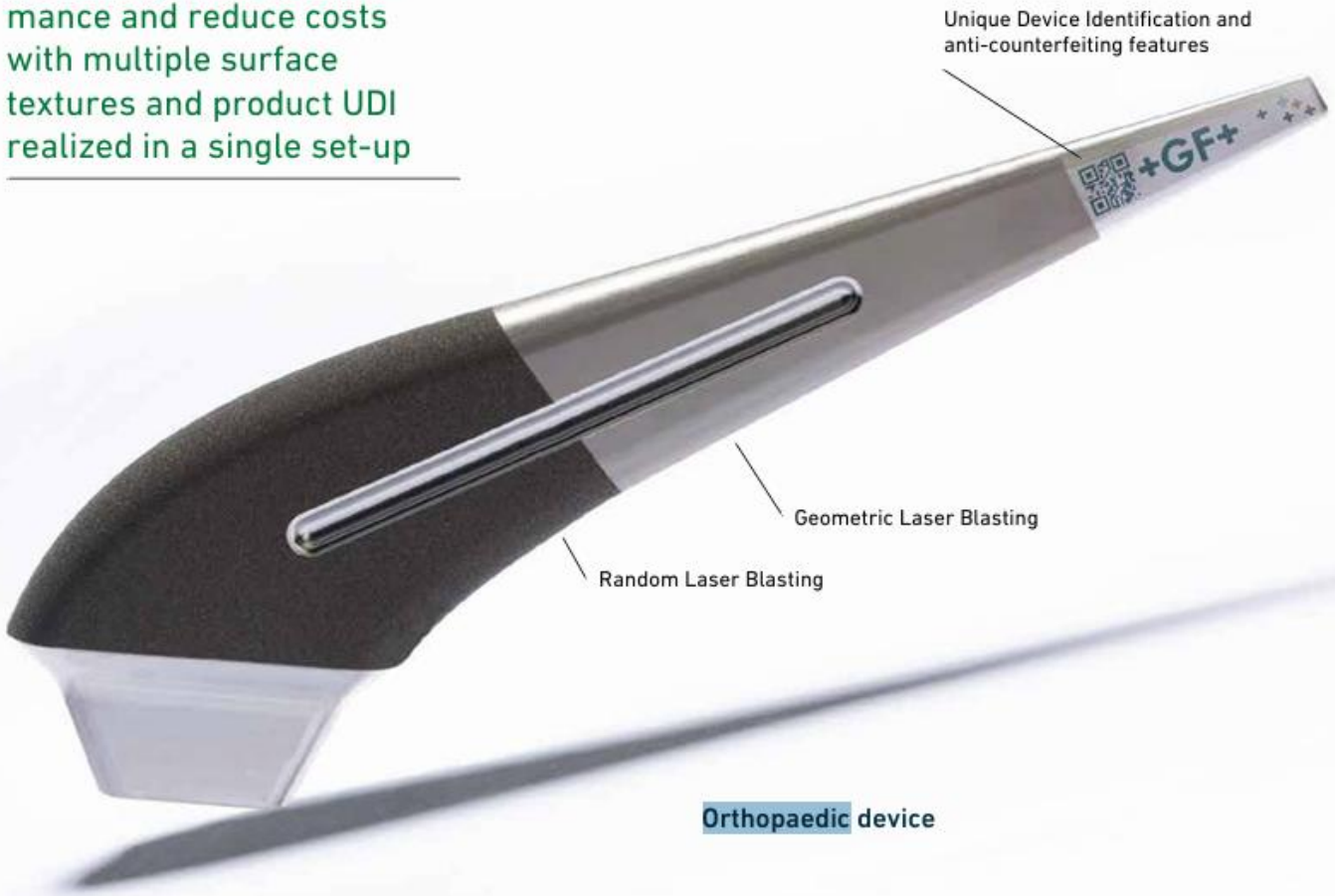
PERFORMANCE RESULTS

Market segment	Watch industry	
Material	Hardened Steel	
Laser (Type/Power)	Femto 20 W FP	
Characteristics	Machining time Max depth	4h 0.2 mm

Drive Medical Implant Innovation

YOUR BENEFITS

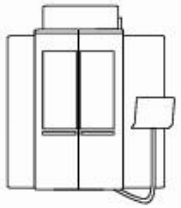
Increase product performance and reduce costs with multiple surface textures and product UDI realized in a single set-up



Orthopaedic device

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 600 U



PERFORMANCE RESULTS

Market segment	Medical
Material	Titanium Grade 5
Laser (Type/Power)	Nano IR 50 W
Characteristics	Machining time 1h12

One single solution advances your flexibility

YOUR BENEFITS

Be flexible:
execute multiple machining operations with the same solution

Master quality with 100 percent digital technology

Achieve total freedom of design

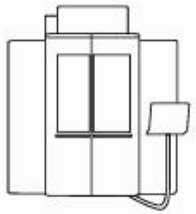
Volcano

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1000 U

Laser texturing, blasting, engraving and machining on the same part

All-in-one Laser software package



PERFORMANCE RESULTS

Market segment	Demo part	
Material	Stainless steel	
Laser (Type/Power)	Nano IR 50 W	
Characteristics	Max. depth	2 mm
	Ra	1.2 to 4.7 µm

Eliminate manual operations with digital solutions

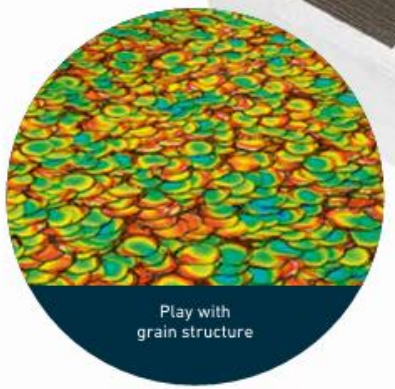
YOUR BENEFITS

Get full control of your surface characterization

Master surface finish to control your production quality

Up to Ra 0.4 µm

100% Digital technology



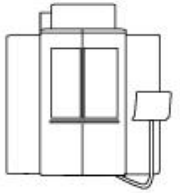
Play with grain structure

Laser blasting ruler

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1000 U

Patented Laser blasting operations



PERFORMANCE RESULTS

Market segment	Demo part
Material	Stainless steel
Laser (Type/Power)	Nano IR 50 W
Characteristics	Average machining time 4 min per zones

Simplify your manufacturing steps and expand design possibilities

YOUR BENEFITS

Be ready to realize the complete process in house—no subcontractor needed

Boost your productivity and quality with Smartpatch

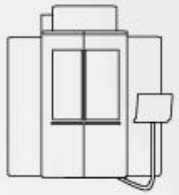
Gain from unlimited texture possibilities to capture new business opportunities

Blow mold

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1000 U

Smartpatch helps boost machining time



PERFORMANCE RESULTS

Market segment	Packaging
Material	Aluminium
Laser (Type/Power)	Nano laser 100 W
Characteristics	
Texture depth max	0.25 mm
Machining time (side)	58 min
Machining time (bottom)	10 min

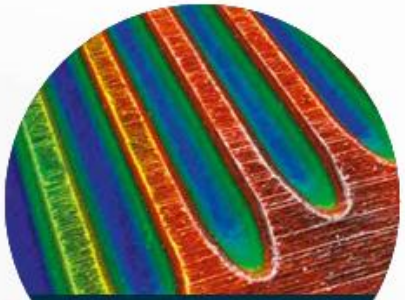
Boost your productivity with one single setup

YOUR BENEFITS

Simplify your process and avoid the need for additional machining steps

Master quality and achieve a consistent shape whatever the production volume

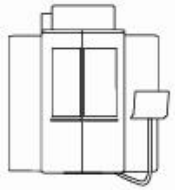
Propose innovative shapes and logos



Cap mold by Laser

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1000 U



PERFORMANCE RESULTS

Market segment	Packaging
Material	Stainless steel
Laser (Type/Power)	Nano IR 50 W
Characteristics	Machining time 1h58 (grooves and logo)

Master quality with stable production output

YOUR BENEFITS

Maintain consistent quality over the time with Laser technology

Easily reproduce your CAD files

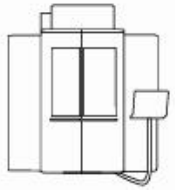
Master profile accuracy with perfect bitmap generation

Neck ring

3D Map process

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1000 U



PERFORMANCE RESULTS

Market segment	Packaging
Material	CX Stainless steel (from AM)
Laser (Type/Power)	Nano IR 50 W
Characteristics	Machining time 3h11

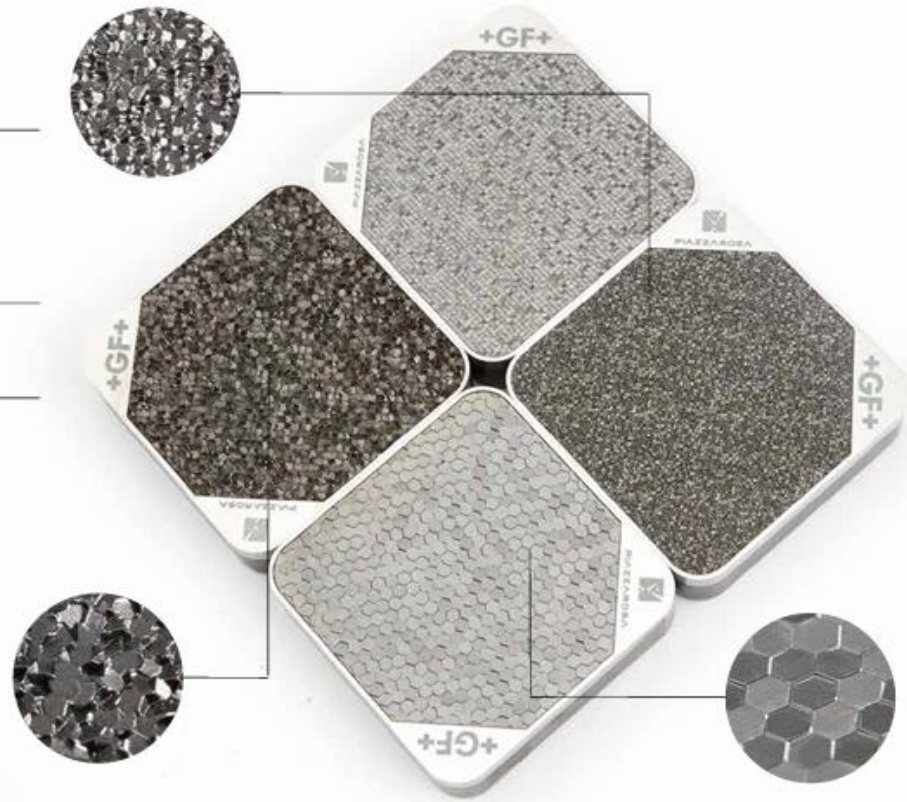
Keep pace with new design trends—with quality

YOUR BENEFITS

Propose additional rear light surface possibilities

Be confident on new design production, produce with higher process stability

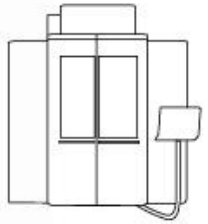
Be able to reproduce sharper details



Total freedom of surface design

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1200 U



PERFORMANCE RESULTS

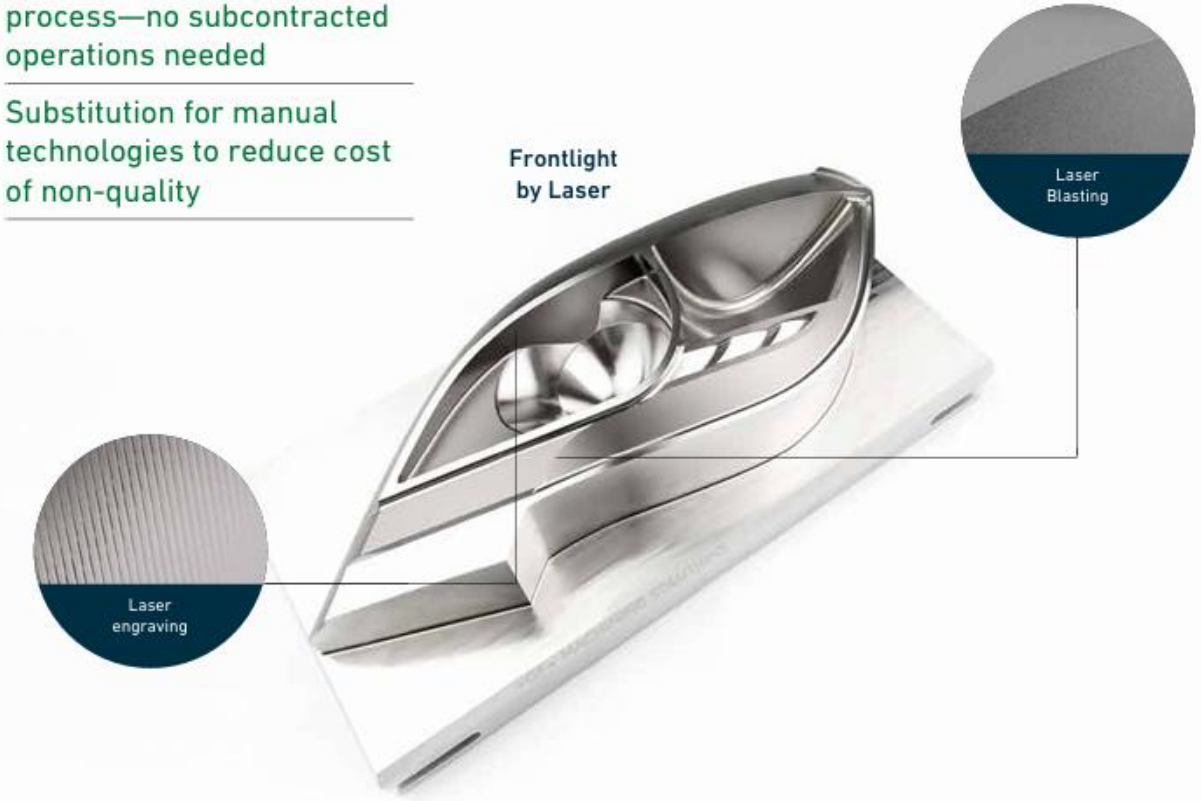
Market segment	Automotive	
Material	Stainless steel	
Laser (Type/Power)	Nano IR 50 W	
Characteristics	Maximum depth Surface finish Ra	0.5 mm 2.6 µm

Master your manufacturing process

YOUR BENEFITS

Optimize manufacturing process—no subcontracted operations needed

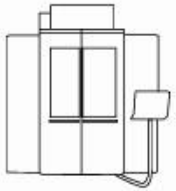
Substitution for manual technologies to reduce cost of non-quality



APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1200 U

Laser blasting combined with Laser engraving



PERFORMANCE RESULTS

Market segment	Automotive
Material	Stainless steel
Laser (Type/Power)	Nano IR 50 W
Characteristics	
Machining time	12h34
Light guides	2h34

Raise your brand's visibility

YOUR BENEFITS

Design without limitations to boost your differentiation

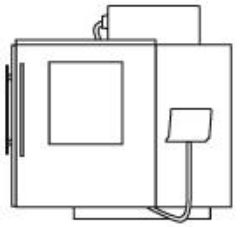
Optimize your process and finish your sidewall on a single operation

Easily reproduces your traditional design without cutting tools

Tire side wall

APPLIED TECHNOLOGIES

AgieCharmilles LASER P 1200 U Dedicated



Dedicated Solutions

PERFORMANCE RESULTS

Market segment	Automotive
Material	Stainless steel
Laser (Type/Power)	Nano IR 100 W
Characteristics	
Carbon	14h58
Logo	1h
Arrows	4h05
Safety letters	16 min

Thank you!

STARLINK