

GF Machining Solutions



AgieCharmilles

LASER P 400 U





Caps` mold

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Market segment	Packaging
Material	Hardened Steel (50 HRC)
Laser (Type / Power)	Ytterbium Fiber / 50 Watts
Characteristics	Engraving time 2h 20'
Technical challenge / Highlight	Process optimization
Machine used	Laser P 400 U





Success in one setup

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3 Operations done , 1 Set up realized

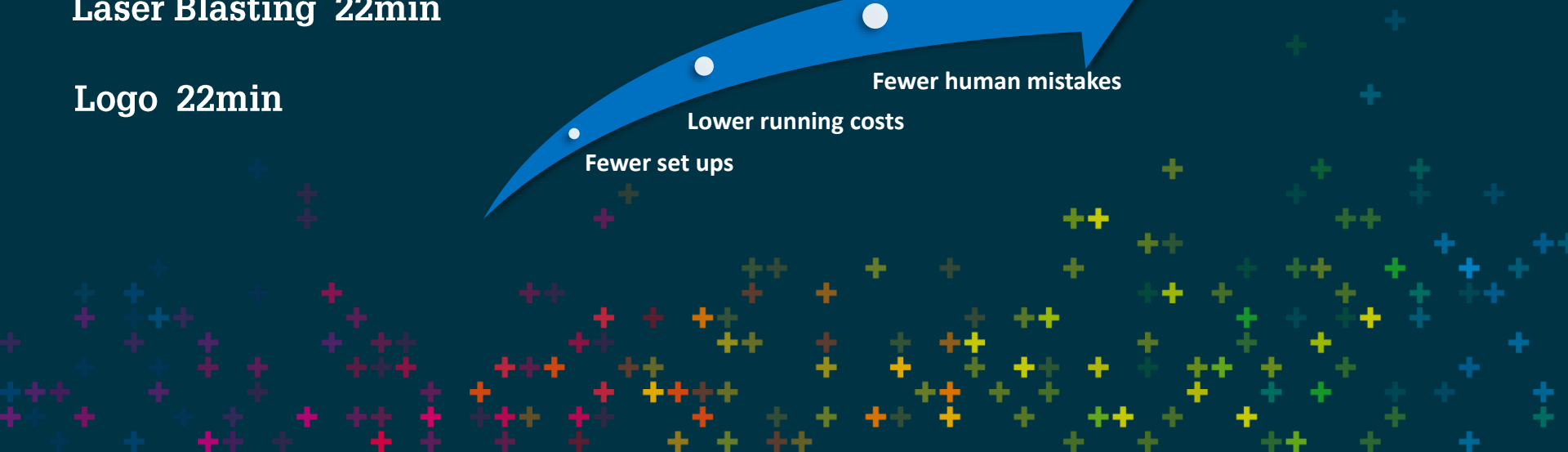
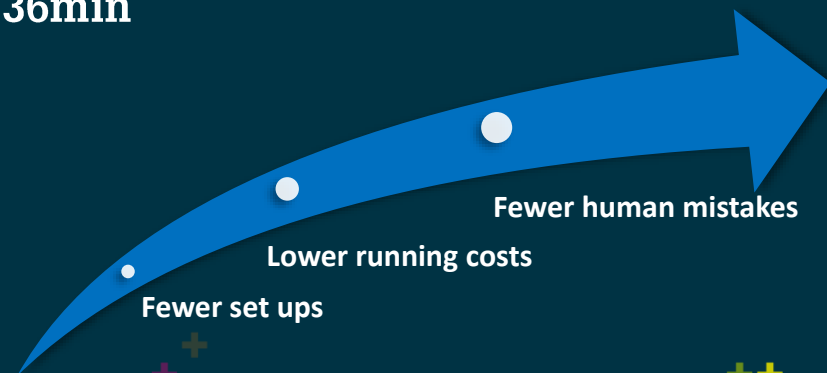
Grooves Machining 1h 36min

Laser Blasting 22min

Logo 22min

Greater

Productivity and
Design possibilities





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Plastic box

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Market segment	Packaging
Material	Aluminium
Laser (Type / Power)	Ytterbium Fiber / 50 Watts
Characteristics	Laser Blasting & texturing
Technical challenge / Highlight	Process optimization
Machine used	Laser 1000 5Ax





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Surface homogeneity on 3/5 axis

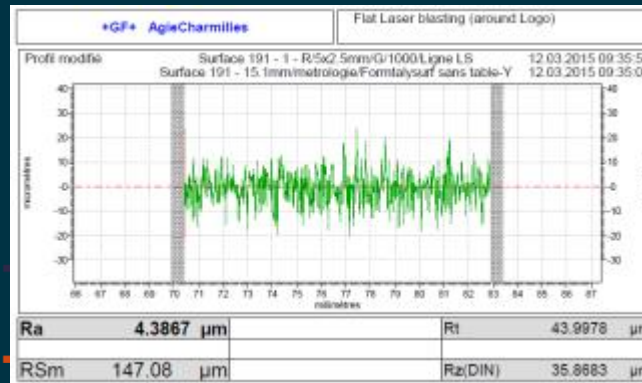
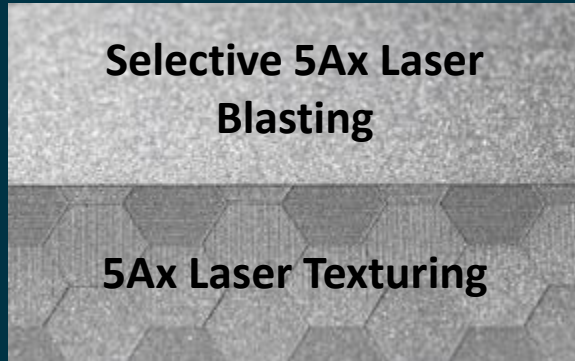
From Milling to Laser

All in-house without polishing operations

Outstanding surface homogeneity

100% Digital from Milling to Laser

Additional design possibilities





Undercuts without compromises on quality

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Market segment	Demo
Material	Aluminum
Laser (Type / Power)	Ytterbium Fiber / 50 watts
Characteristics	Laser Texturing
Technical challenge / Highlight	Undercut capability
Machine used	LASER 600 5Ax



Undercuts without compromises on quality

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Unique undercut capability

Without compromises on quality



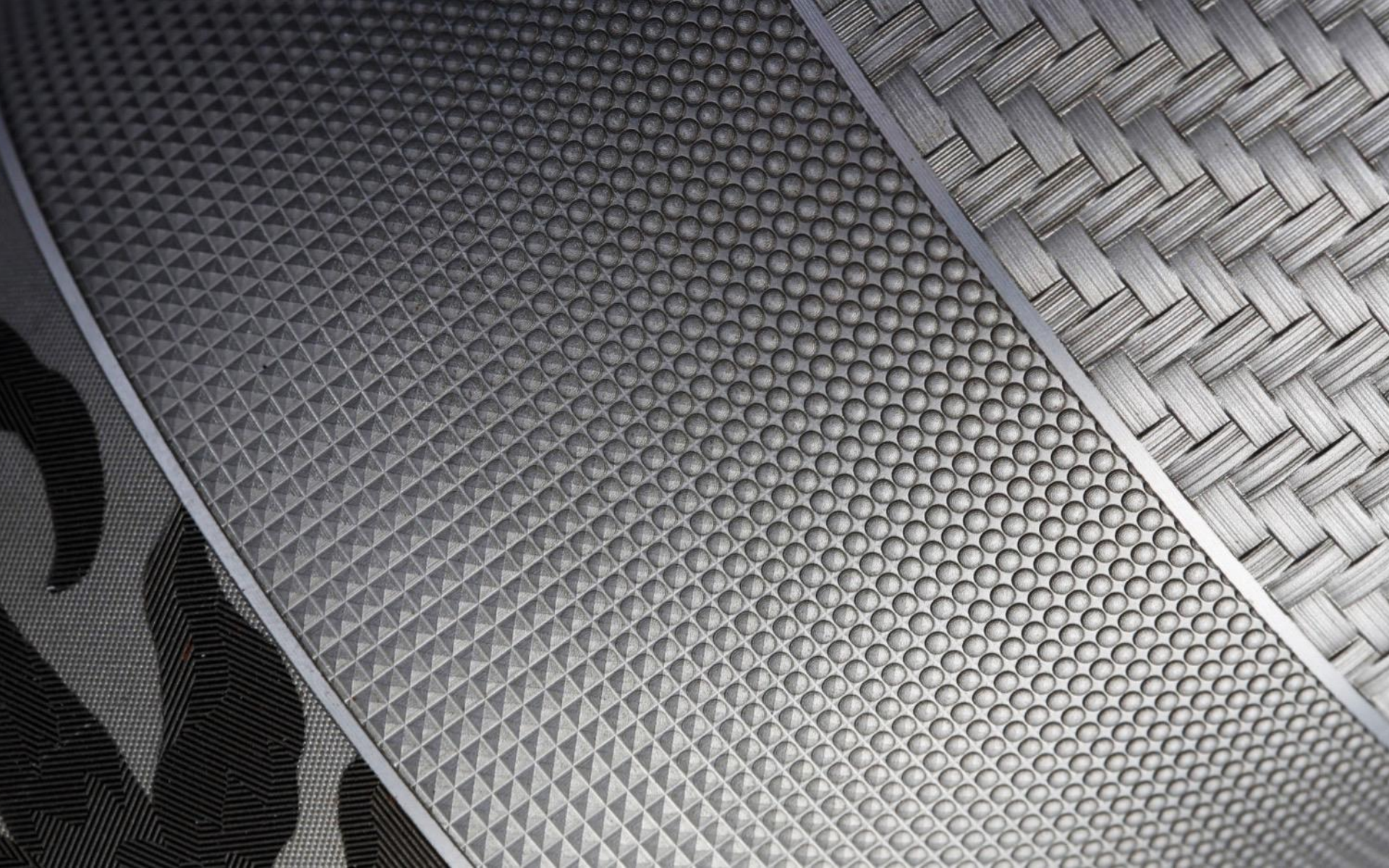


Embossing Roller «Molette»

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Market segment	Packaging
Material	Hardened Steel
Laser (Type / Power)	Ytterbium Fiber / 50 watts
Characteristics	Flower: 9h / Carbon: 8h / Textile: 10h / Morphing 14h
Technical challenge / Highlight	Perfect 360° continuity
Machine used	LASER 600 5Ax





Perfect 360° continuity

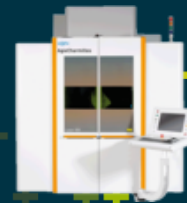
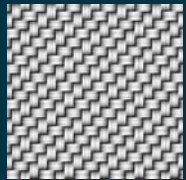
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Laser Digital process Vs. Manual operation:

- Perfect 360° continuity
- Repeatability of results
- Freedom of design



Direct laser engraving on hardened steel > 54Hrc (for carbide also)





Watch model

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Market segment	Demo
Material	Steel
Laser (Type / Power)	Ytterbium Fiber / 30 Watts
Characteristics	Selective laser Blasting \ 5 axis Texturing & Engraving
Technical challenge / Highlight	Accessibility & Undercut
Machine used	Laser P 400 U





Multi machining strategies combined

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Burr Free Engraving



Laser texturing



ROCTOOL



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Dare to innovate

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Market segment	Demo
Material	Stainless steel (Mold)
Laser (Type / Power)	Ultra short Pulsed Laser (Femto)
Characteristics	Ripples texture (Light diffraction)
Technical challenge / Highlight	Nano scale texturing
Machine used	Laser P 400



Dare to innovate

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Mold texture replication , thanks
to the combination

**LASER P 400 & Heat and Cool
molding process**



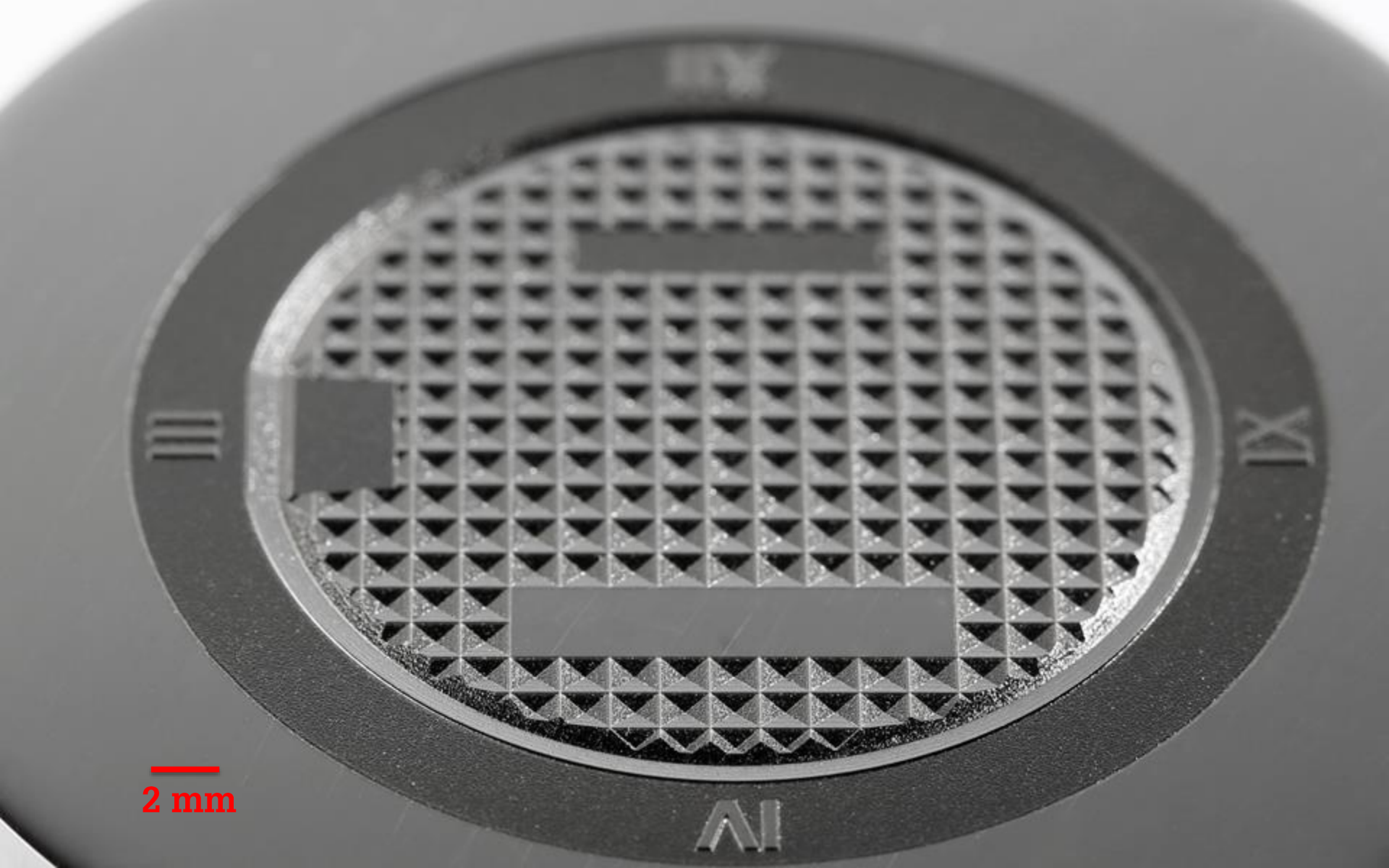


Embossing dies

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Market segment	Watch, Mint & Medal industry
Material	Hardened Steel
Laser (Type / Power)	Ytterbium Fiber / 30 Watts
Characteristics	Perfect 3D engraving shape
Technical challenge / Highlight	High repeatability on fine details
Machine used	Laser P 400





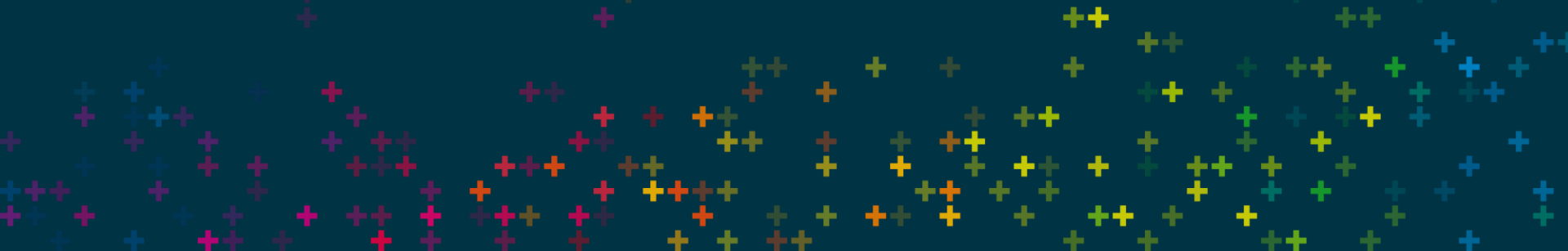
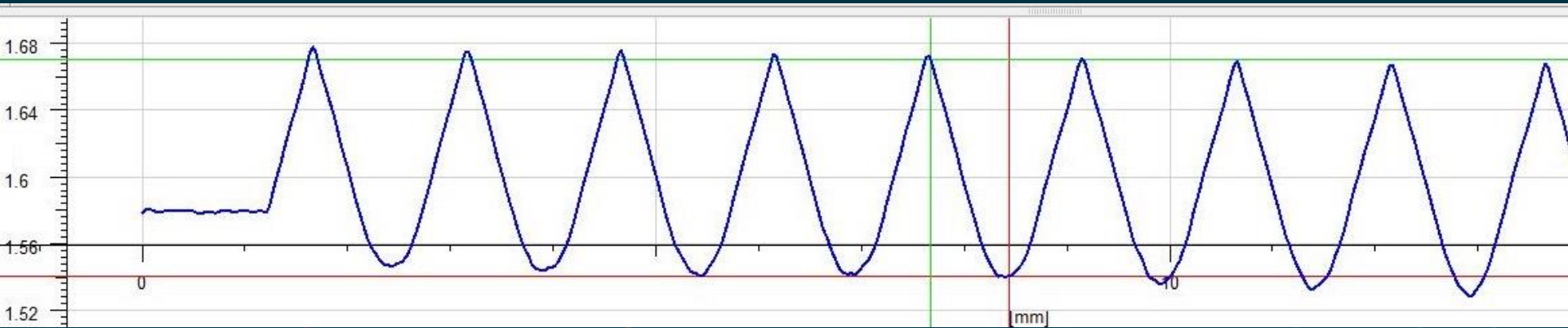
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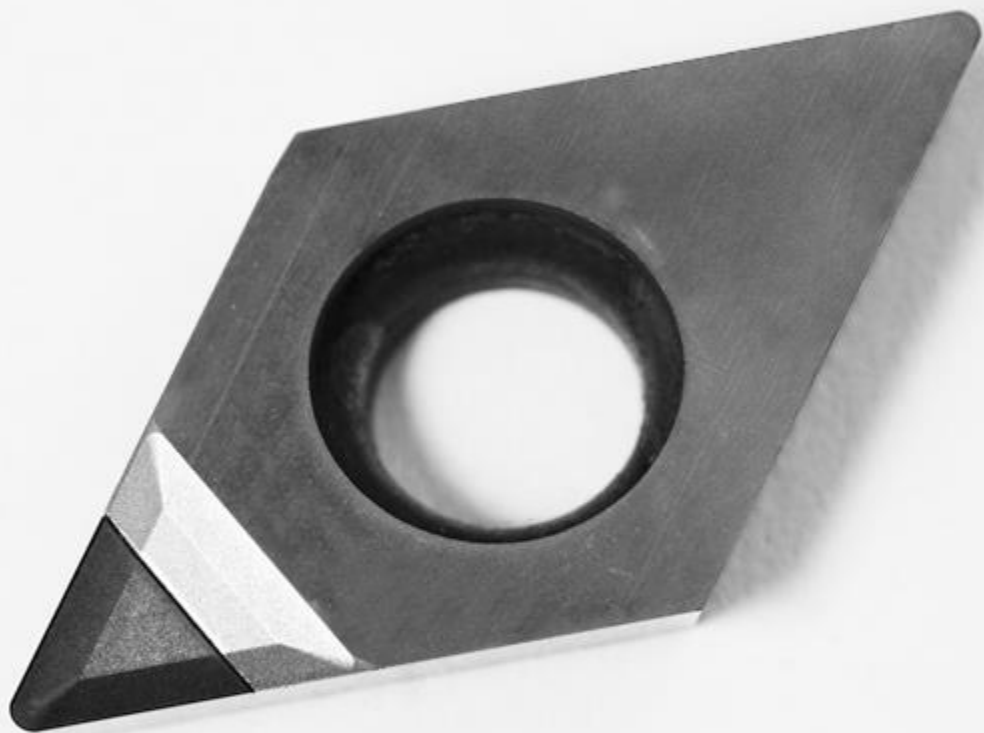
Extreme engraving quality

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3D engraving

Perfect repeatability





PCD cutters

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Market segment	Cutting tools
Material	PCD
Laser (Type / Power)	Ytterbium Fiber / 30 Watts
Characteristics	Perfect 3D engraving & Depth accuracy – 1min 44 sec
Technical challenge / Highlight	High repeatability on fine details
Machine used	Laser P 400

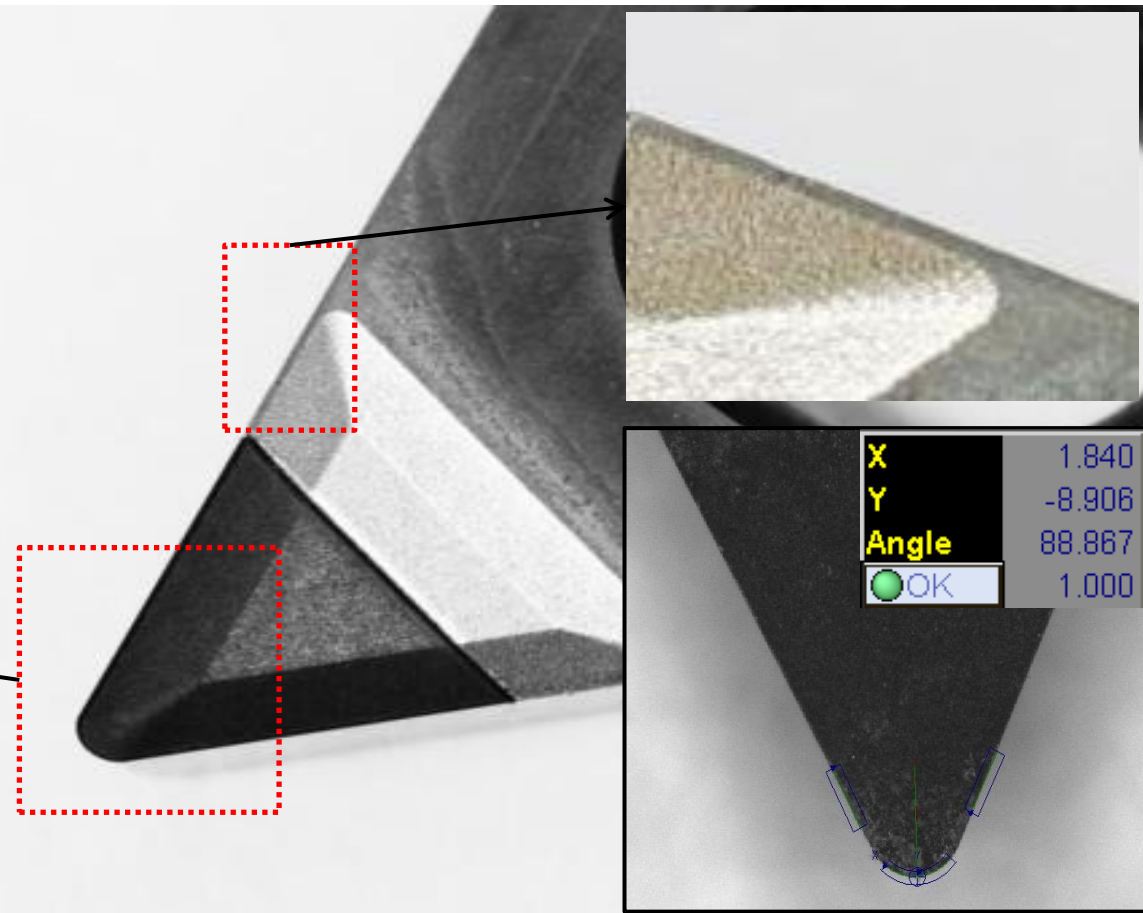
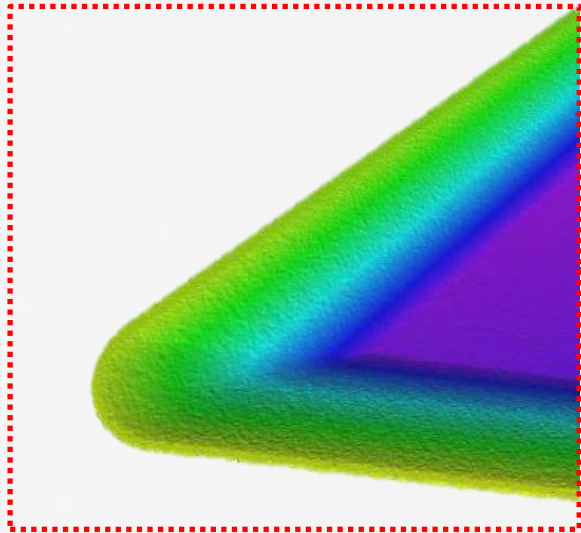


PCD cutters

Perfect position accuracy

Impeccable depth consistency

1`44sec machining time





Sapphires engraving

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Market segment	Watch
Material	Saphir
Laser (Type / Power)	Ultra short Pulsed Laser (Femto)
Characteristics	Gems, ceramics, polymers
Technical challenge / Highlight	New machining capabilities
Machine used	Laser P 400





XII

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Texture new materials, with confidence.



Stainless steel

Gold

Silicon carbide

*Polymers**

Copper

Aluminum

*Zirconia**

*Diamond**

*Glass**

Steel

*Sapphire**

molybdenum

Stainless Steel

Silver

Titanium

*Technical ceramics**

Brass

Superalloys

Platinum

Graphite

*Ruby**

Nickel

PCD

** With ultra-short pulsed Laser (femto)*



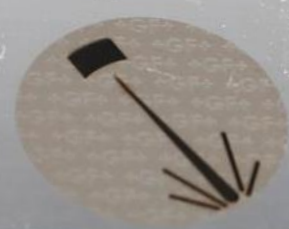


Dual Laser
Femto - Nano

+ G F +

Femto Femto Femto Femto Femto Femto
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Nano Nano Nano Nano Nano Nano
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One-of-a-kind, Dual Laser (Nano \ Femto) solution

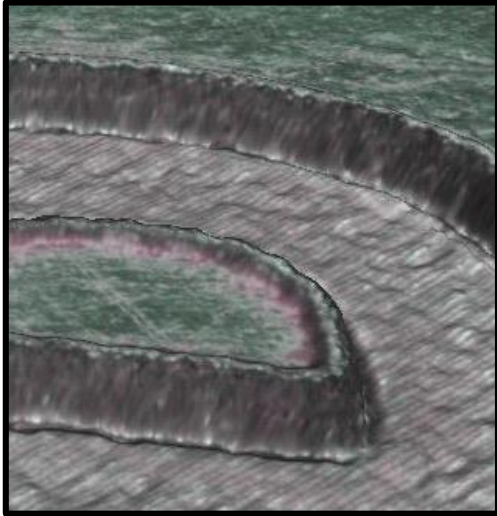
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Market segment	Demo
Material	Stainless steel
Laser (Type / Power)	Ytterbium Fiber (Nano) & Ultra short Pulsed Laser (Femto)
Characteristics	Burr free Spikes & ripples capabilities
Technical challenge / Highlight	Nanotexturing capabilities
Machine used	Laser P 400



Sharp, Clean & Innovative

NANO



FEMTO



Burr Free



RIPPLES
(Light diffraction)



SPIKES
(Deep dark)



Laser Technology

Perfect decoration capabilities

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Market segment	Demo
Material	Stainless steel
Laser (Type / Power)	Ultra short Pulsed Laser (Femto)
Characteristics	Burr free engraving & decoration
Technical challenge / Highlight	Sea water resistant engraving High quality watch decoration
Machine used	Laser P 400



Perfect decoration capabilities

DECORATION QUALITY

PRODUCTIVE Realized in minutes

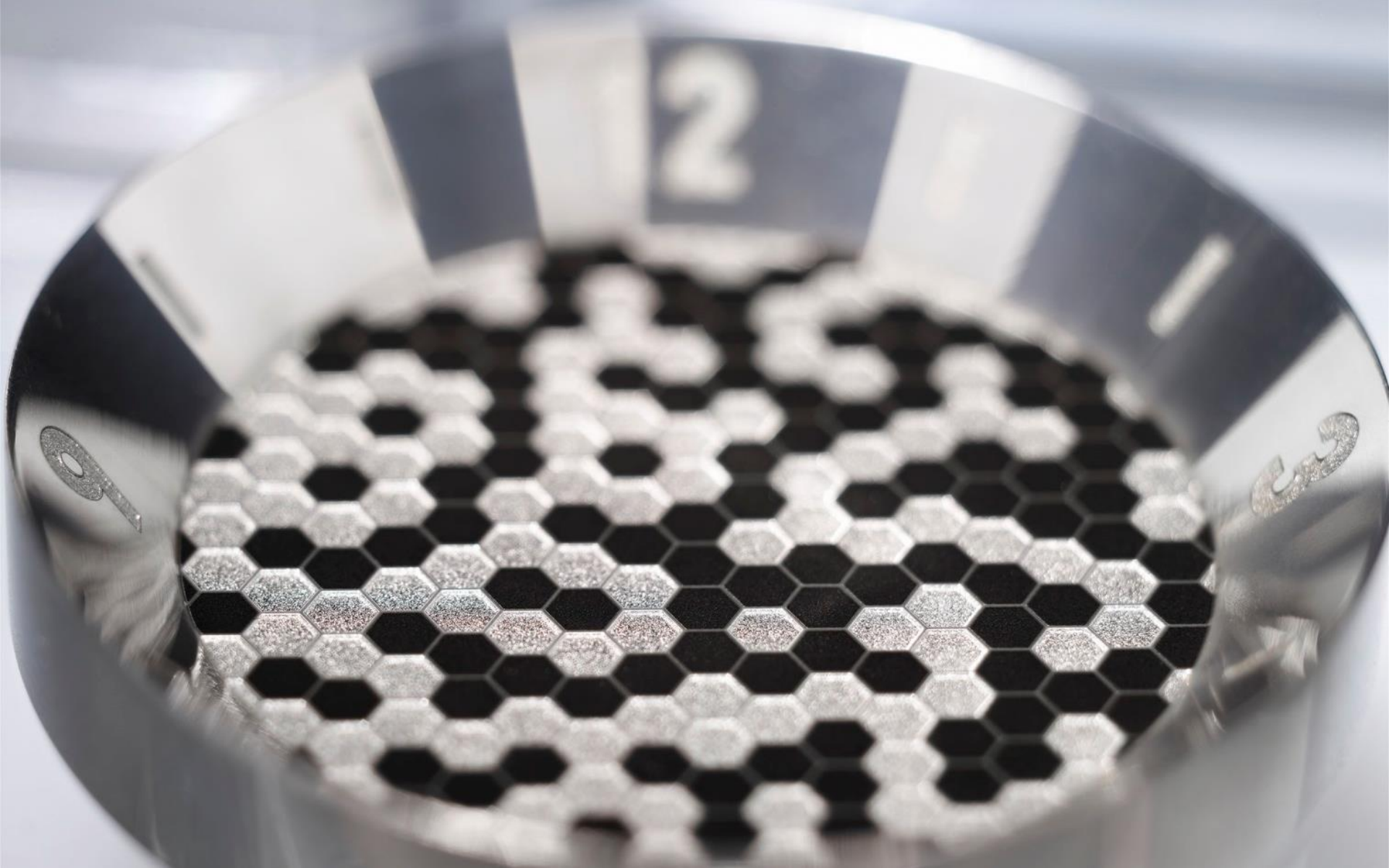
DIGITAL No risks of mistakes

PERFECT ENGRAVING CAPABILITY

CLEANER Than Chemical etching

RESISTANT to sea water





Perfect decoration capabilities

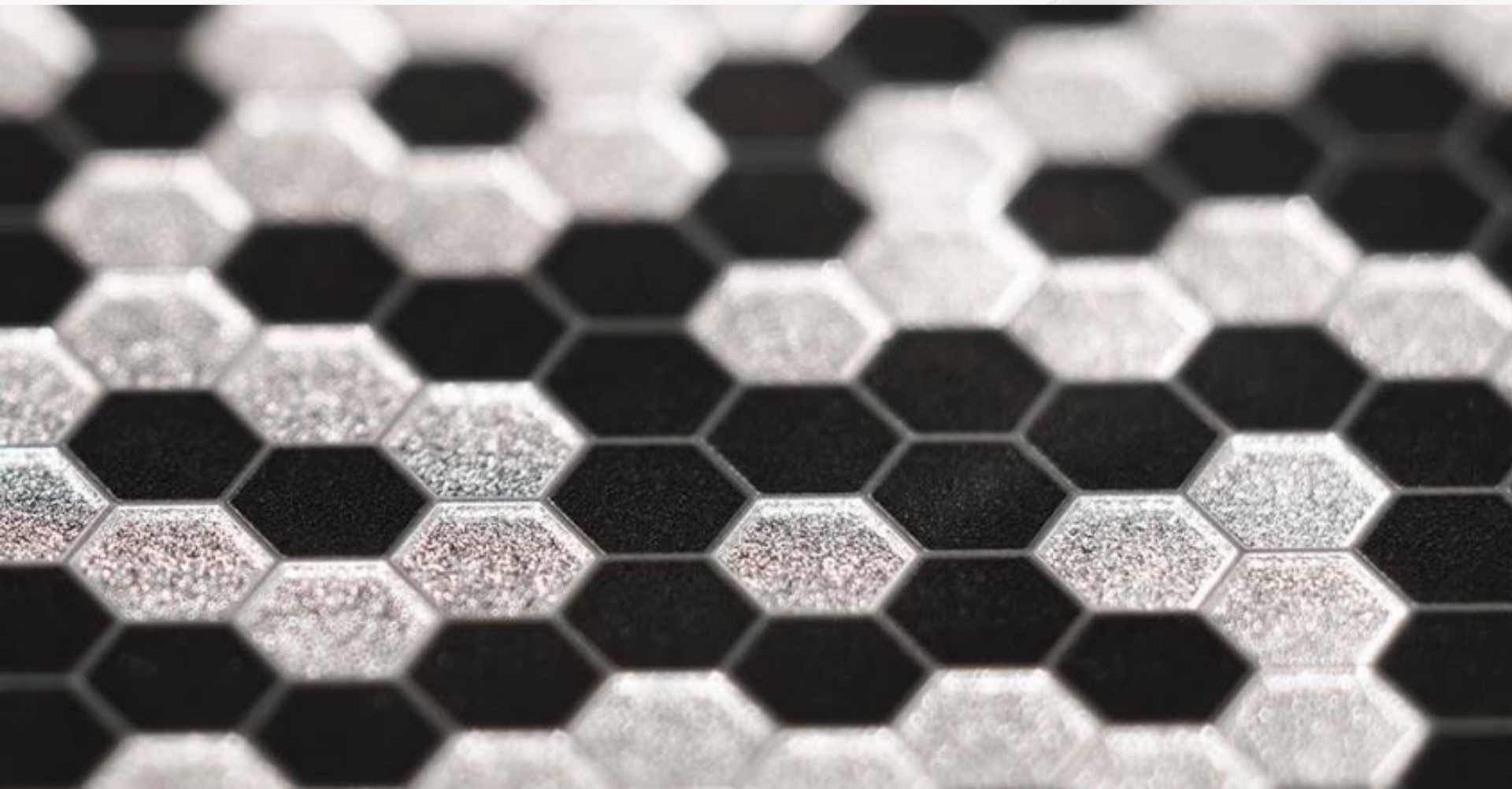
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Market segment	Demo
Material	Stainless steel
Laser (Type / Power)	Ultra short Pulsed Laser (Femto)
Characteristics	Deep Dark & Laser Blasting
Technical challenge / Highlight	All operations in 1 set up
Machine used	Laser P 400



Perfect decoration capabilities

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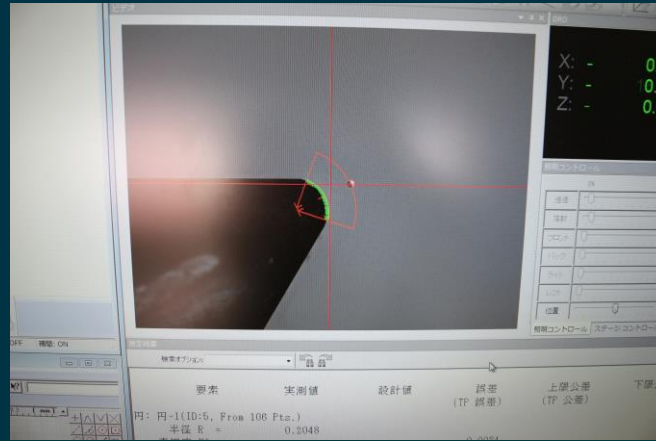


Matrix in Optical measuring

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Tooling



System 3R CMM application

+ Matrix thru hole allows back-light
for contour measuring

