

PRINTING TECHNOLOGY & INNOVATION DAYS FOR FLEXIBLE PACKAGING



PRINTING TOOLS AT ITS BEST

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Janoschka – APE Malaysia



There are challenges in the Market...





Introduction of High-Speed Machines in Rotogravure...



Introduction of Toluene-free inks...

A close-up photograph of several hands assembling wooden puzzle pieces. The pieces are in various colors: orange, white, green, and red. The hands are positioned around the pieces, with some fingers holding them steady and others placing them into place. The background is a blurred, dark blue-grey color.

New Market requirements,
the introduction of high-speed printing-machines
and toluene-free ink require:

1. Perfectly balanced cylinder-bases
2. Very accurate diameter of the entire cylinder-length
3. Perfect cylinder surface and structure
4. Specific engraving parameters



- 1. Perfectly balanced cylinder-bases**
2. Very accurate diameter of the entire cylinder-length
3. Perfect cylinder surface and structure
4. Specific engraving parameters

High Quality Steel Bases

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- Respect cylinder drawing and technical specifications
- Use of best grade materials
- Finishing the inside of the tube or cylinder
- Respect the requested wall-thickness
- Precise turning and finishing of the steel bases (± 0.03)
- High Precision Balancing with below 20 grams
- Anti-Vibration turning-tool for inside grinding



High Quality Steel Bases

Janoschka

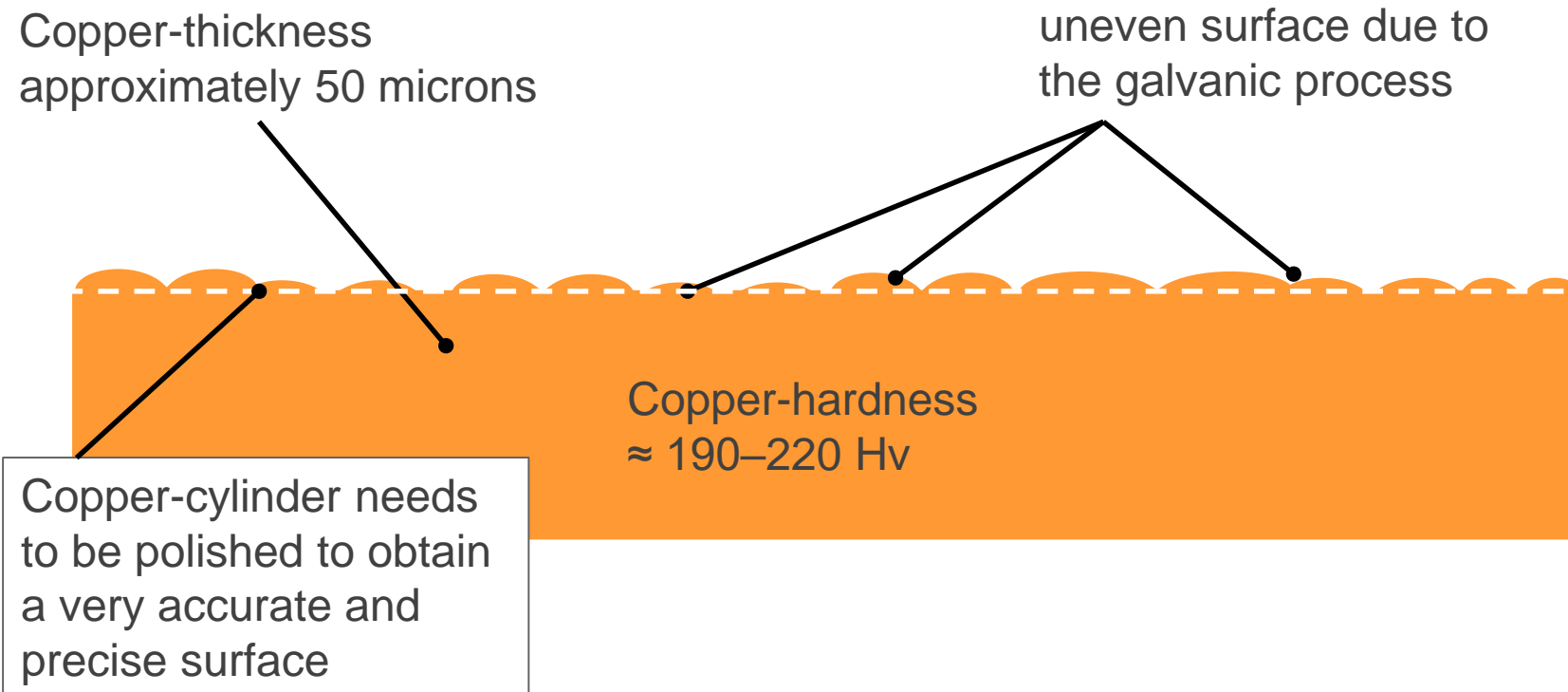
- Best runout control with special devices
- Precise Balancing < 20 g equivalent on both sides





1. Perfectly balanced cylinder-bases
2. **Very accurate diameter of the entire cylinder-length**
3. Perfect cylinder surface and structure
4. Specific engraving parameters

Cylinder surface after copper-plating



Perfect surface polishing

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Polishmaster – Finishmaster (Finishstar) - CFM



Cylinder surface after polishing

janoschka



Polishing and Finishing

Modern printing-machines reach production speeds of up to 800 meters per minute.

Therefore the diameter and of the cylinder needs to be extremely accurate.

→ And this over the full length of a cylinder



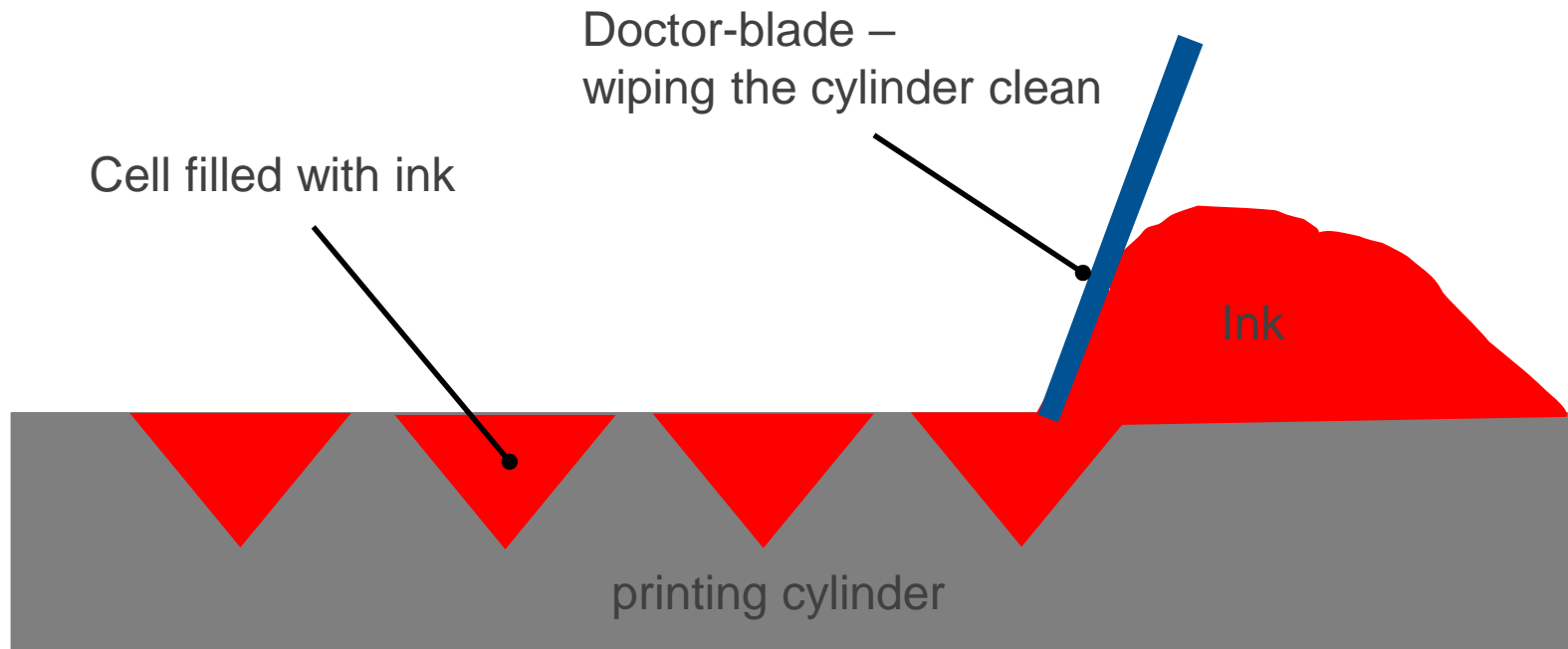
→ any irregularity cause problems with web-tension,
register problems and printing defects and as a result cause customer claims !



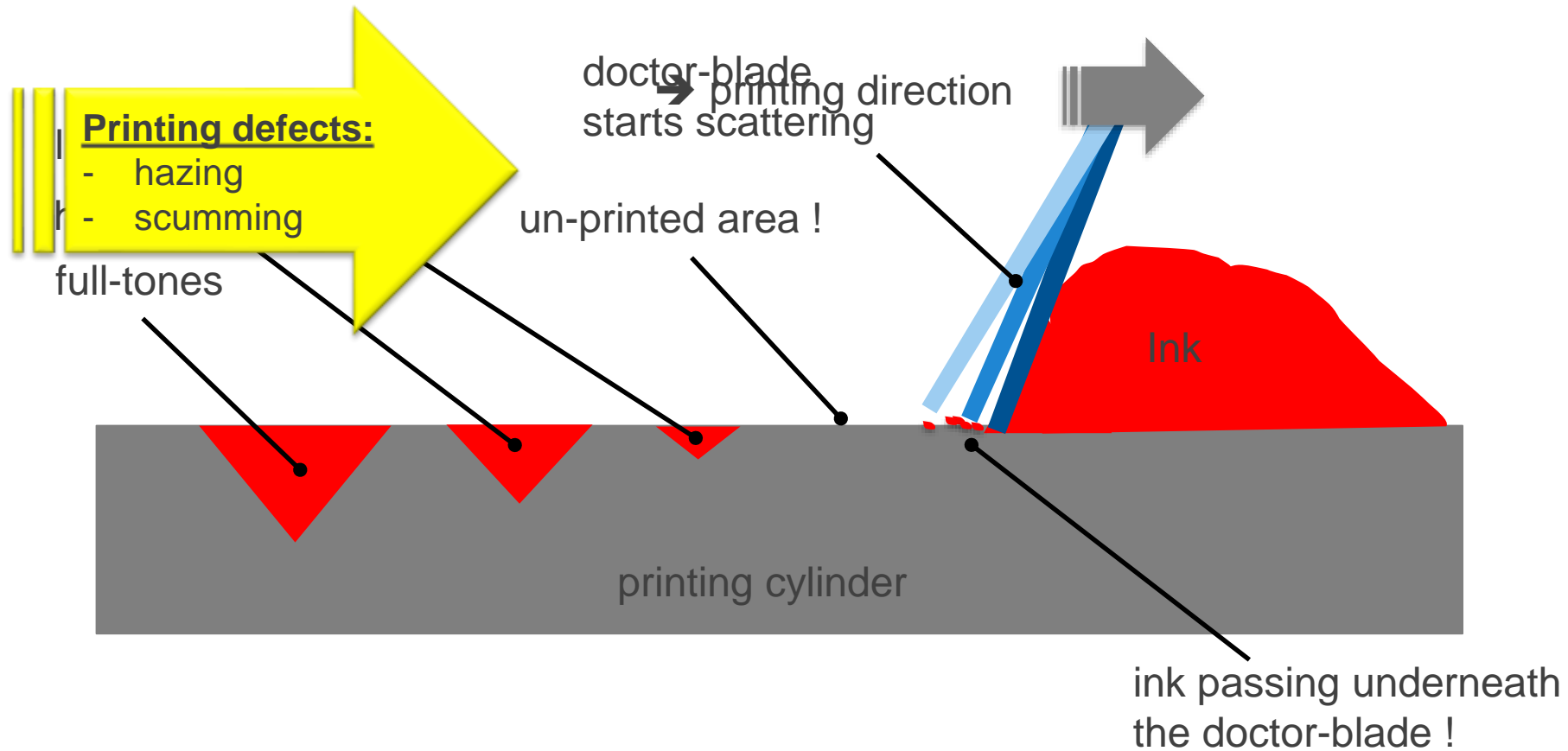


1. Perfectly balanced cylinder-bases
2. Very accurate diameter of the entire cylinder-length
- 3. Perfect cylinder surface and structure**
4. Specific engraving parameters

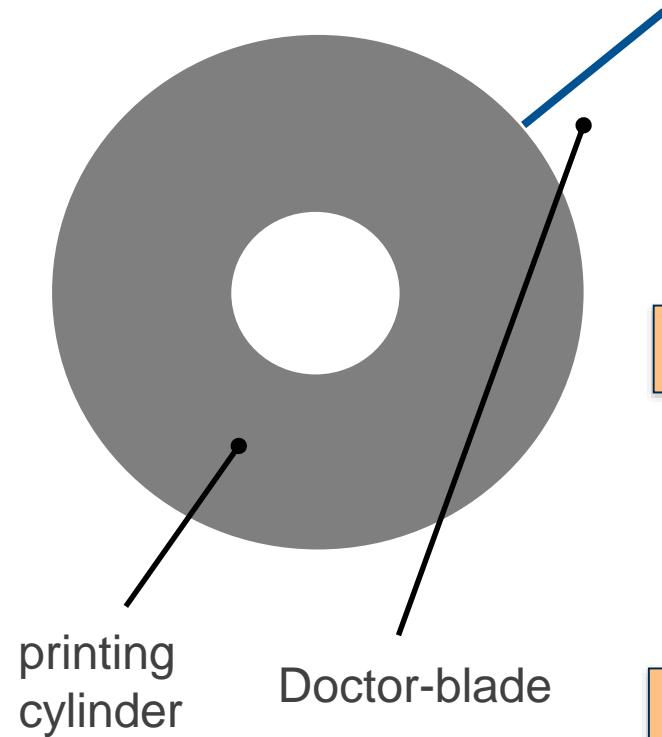
The principles of Rotogravure printing



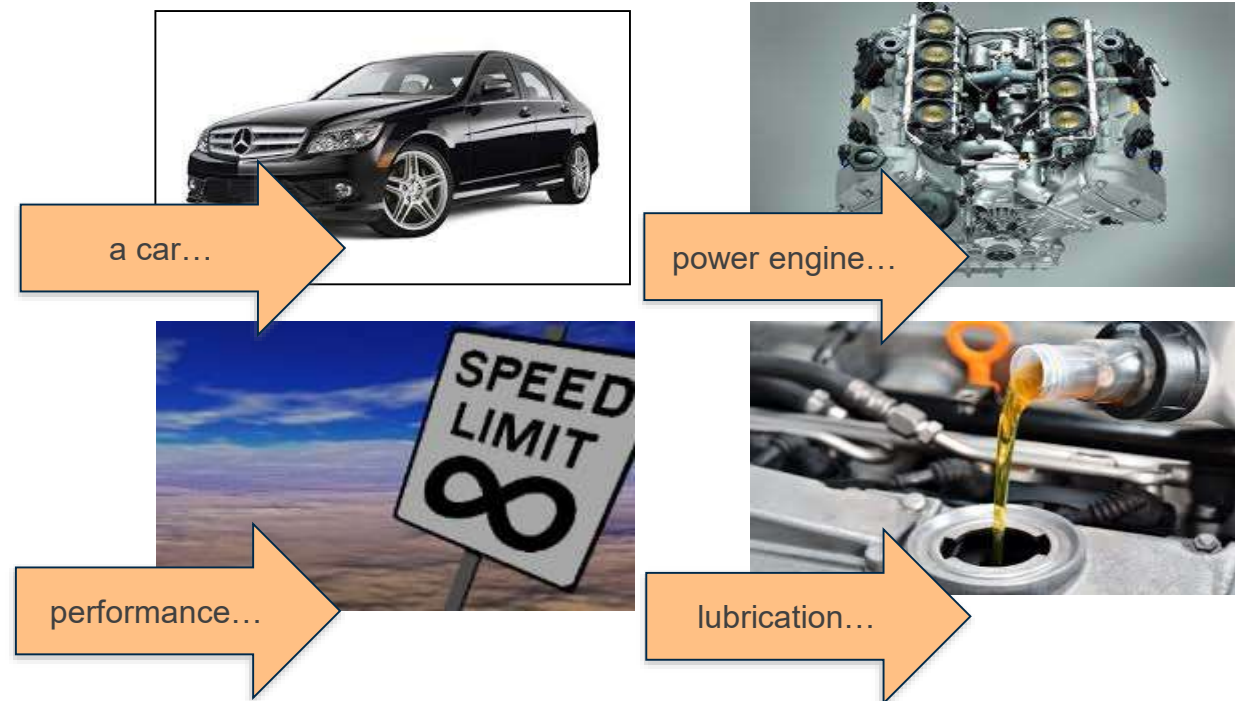
The principles of Rotogravure printing



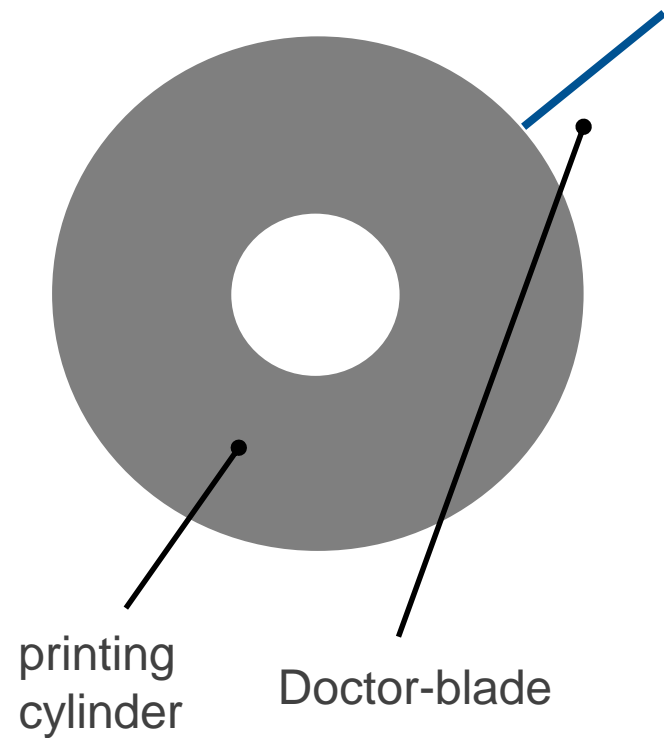
Lubrication: cylinder – doctor-blade



Metal on metal is a resistant, but not a preferred combination of materials.



Lubrication: cylinder – doctor-blade

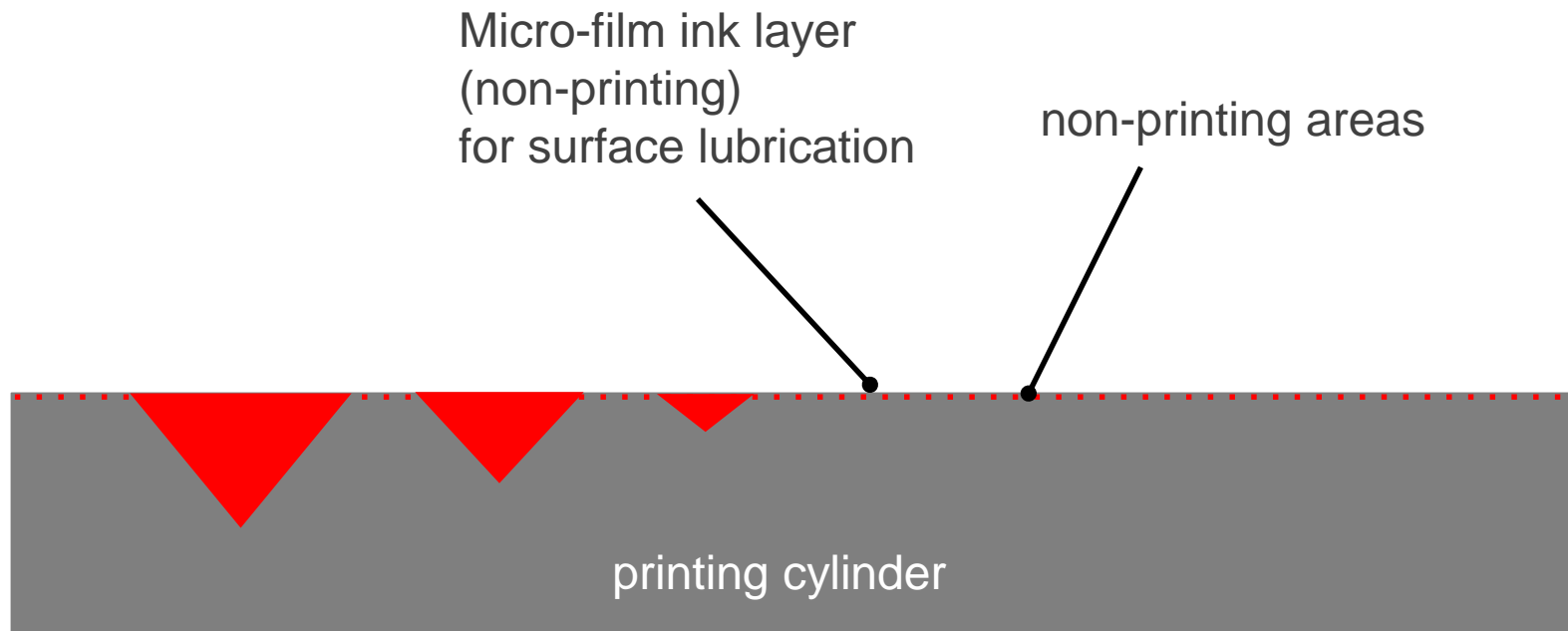


Metal on metal is a resistant, but not a preferred combination of materials.

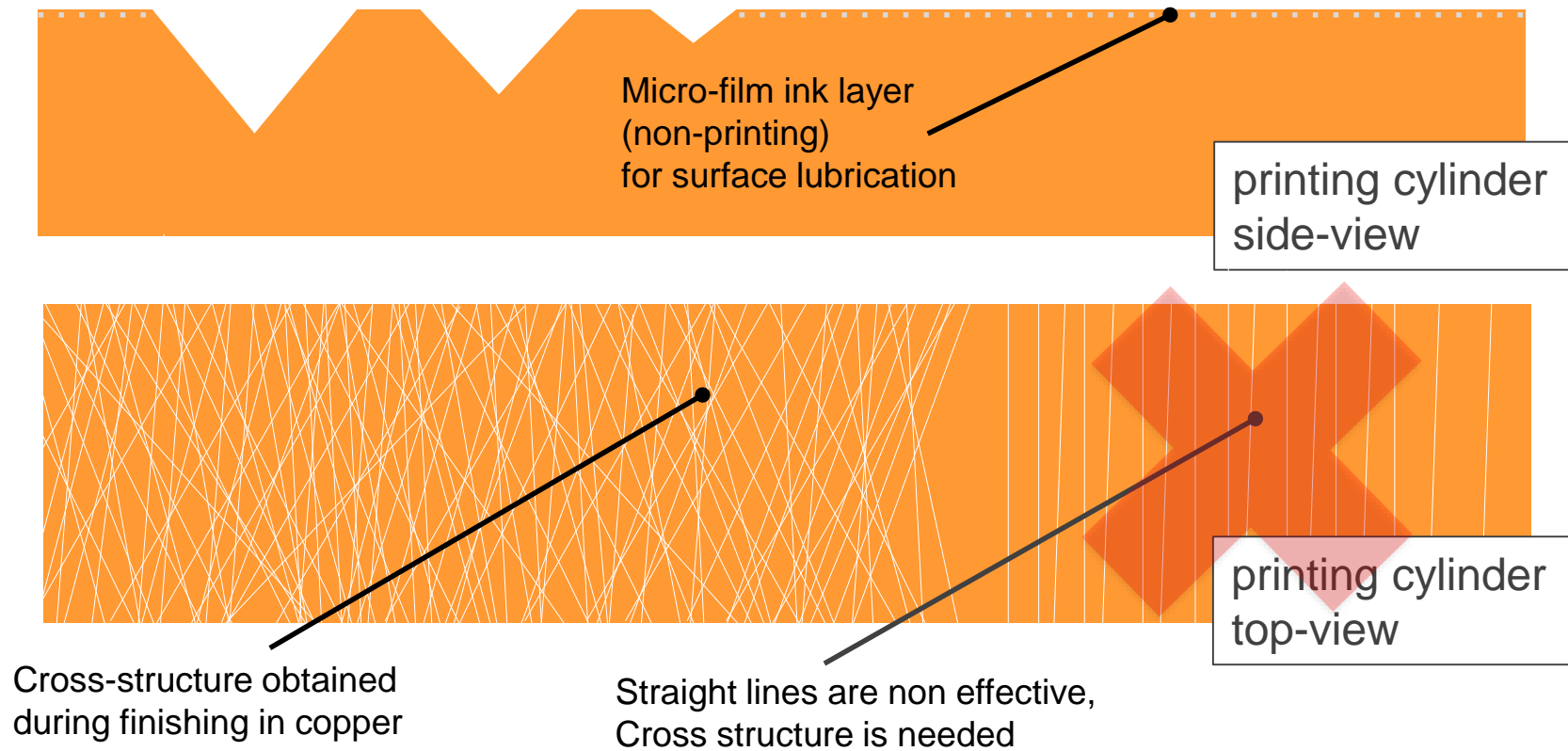
Lubrication is needed to improve **correlation** between the 2 materials



Lubrication: cylinder – doctor-blade



Lubrication and cylinder-surface



Surface Structure

Surface finishing has to be done in copper, After polishing and before engraving.

The structure and the “**Roughness**” needs to be adjusted according to the Printers specifications, taking into consideration:

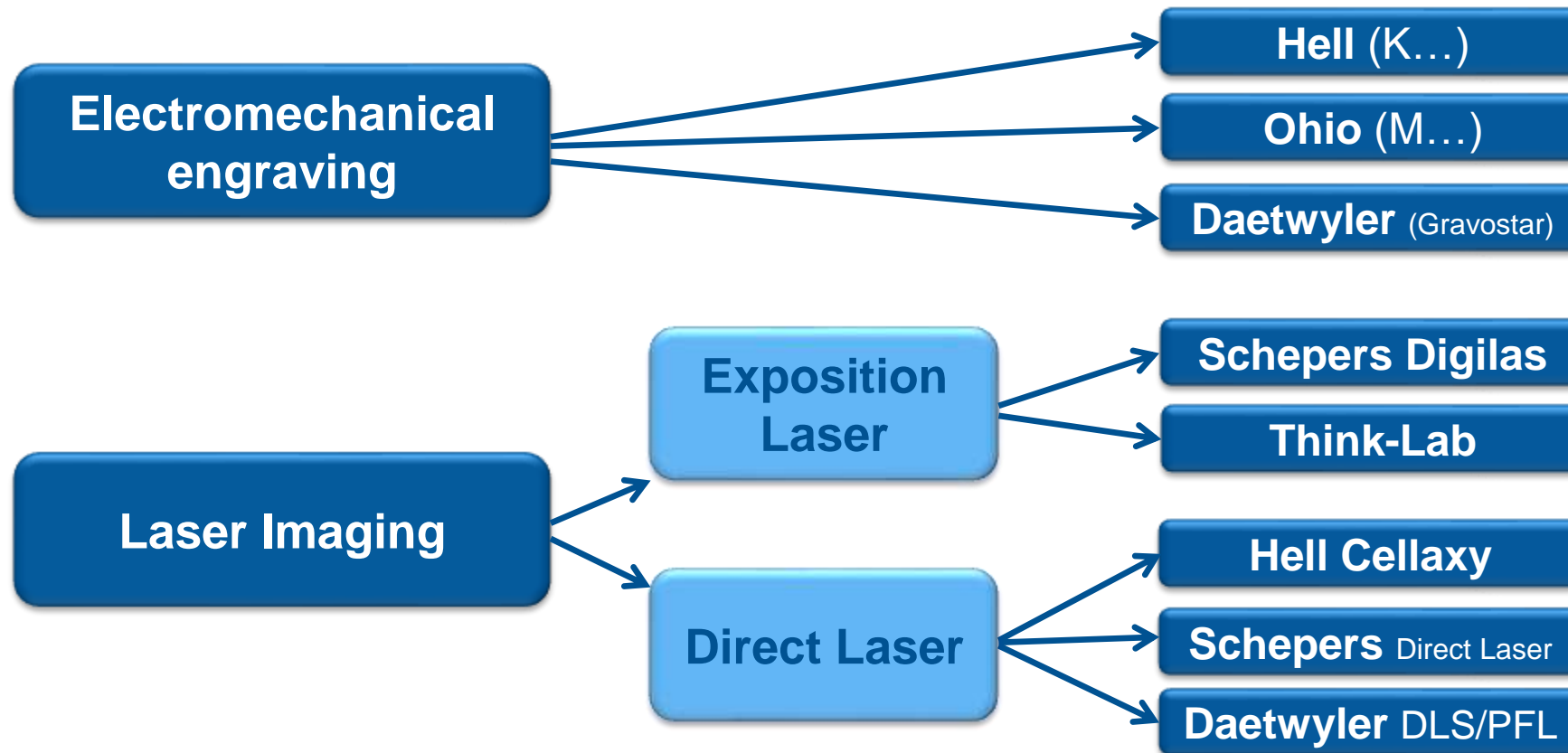
- ✓ Inks
- ✓ Doctor-blade
- ✓ Substrate
- ✓ Machine setting
- ✓ Printing speed
- ✓ ... /

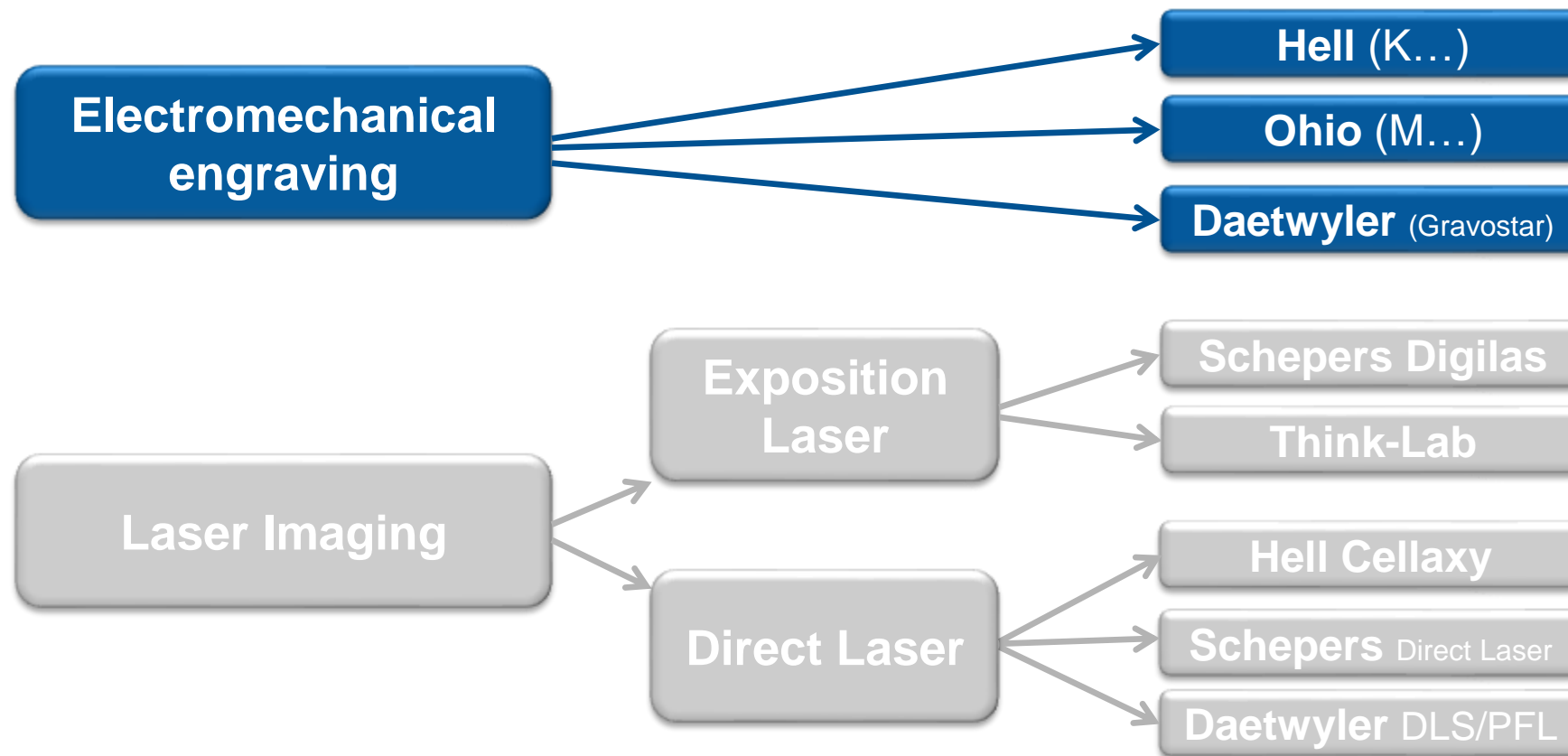




1. Perfectly balanced cylinder-bases
2. Very accurate diameter of the entire cylinder-length
3. Perfect cylinder surface and structure
4. **Specific engraving parameters**

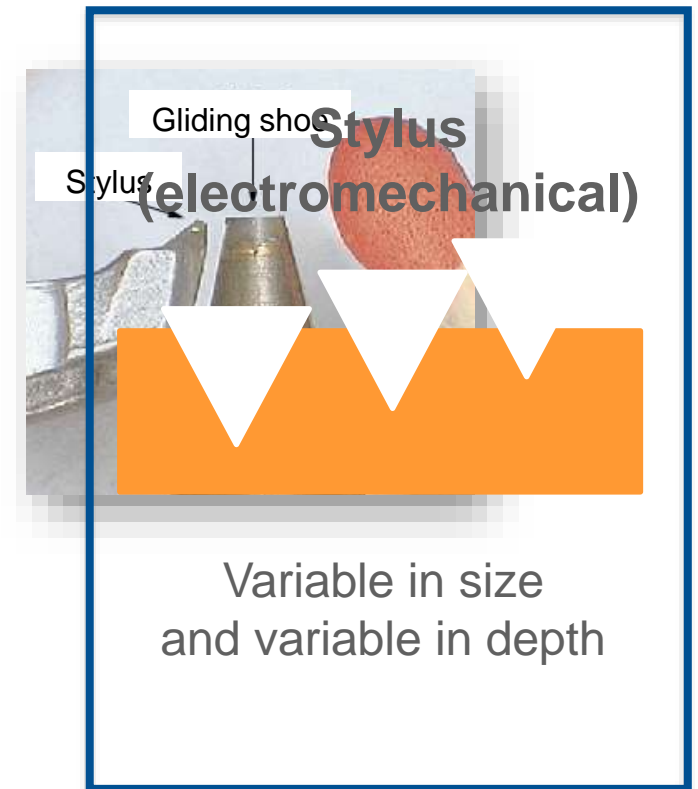
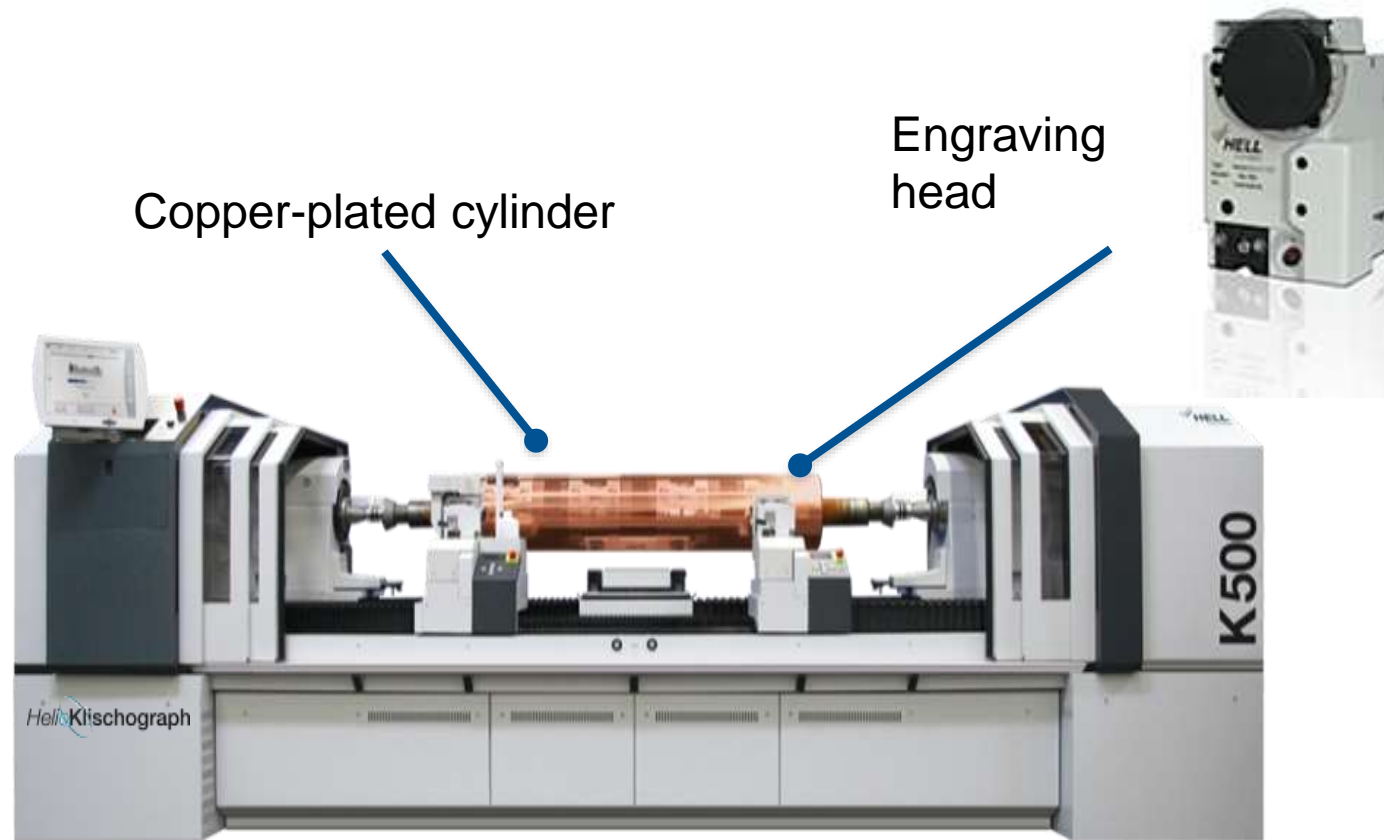
The different engraving technologies





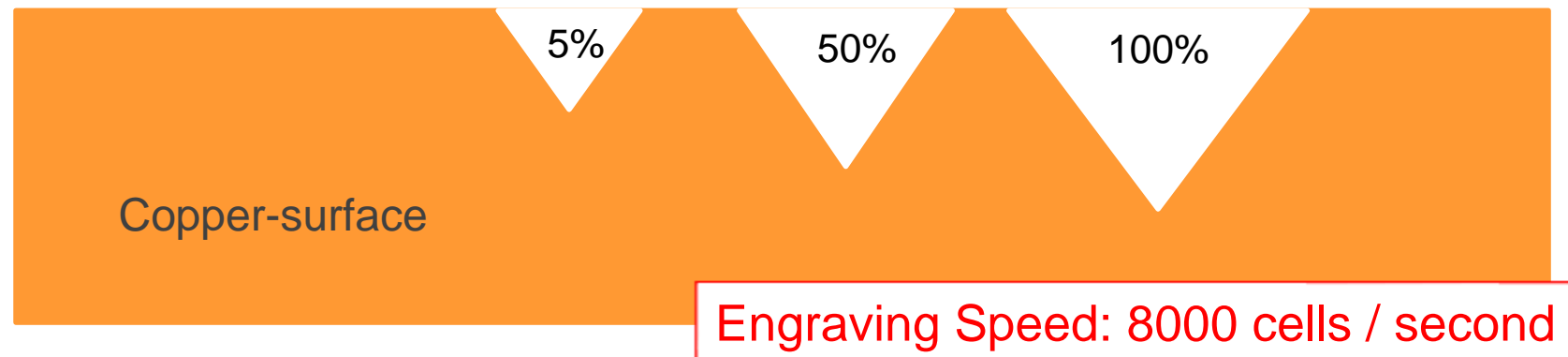
Electromechanical cylinder engraving machine

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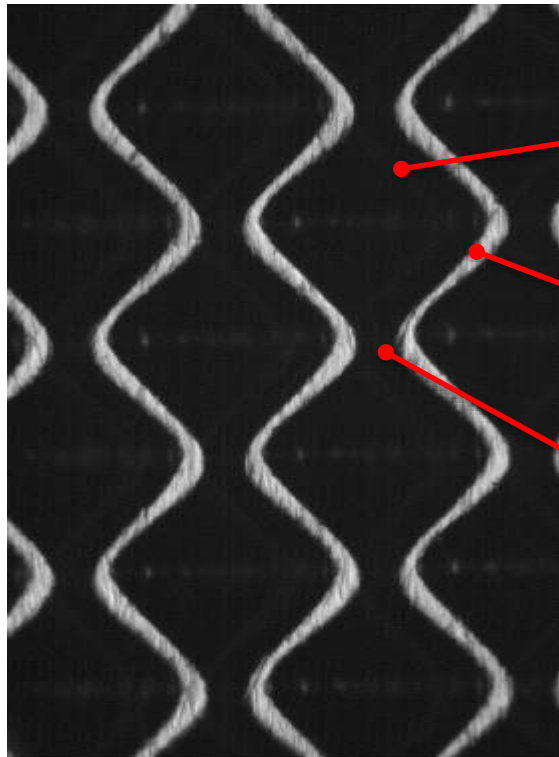


The principles of electromechanical engraving

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The principles of electromechanical engraving

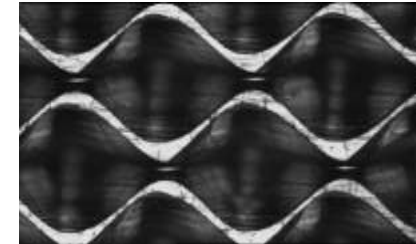


Cell
(ink carrier)

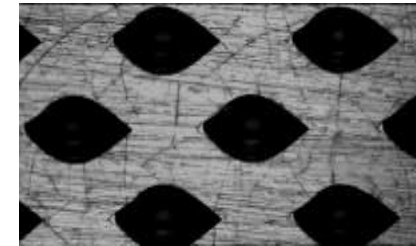
Cell-wall
(doctor-blade holder)

Channel
(ink-flow and
smooth print)

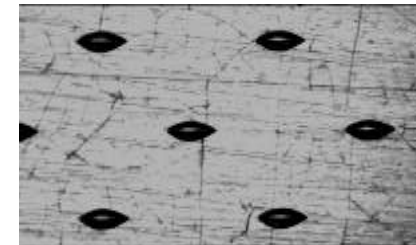
100%



50%

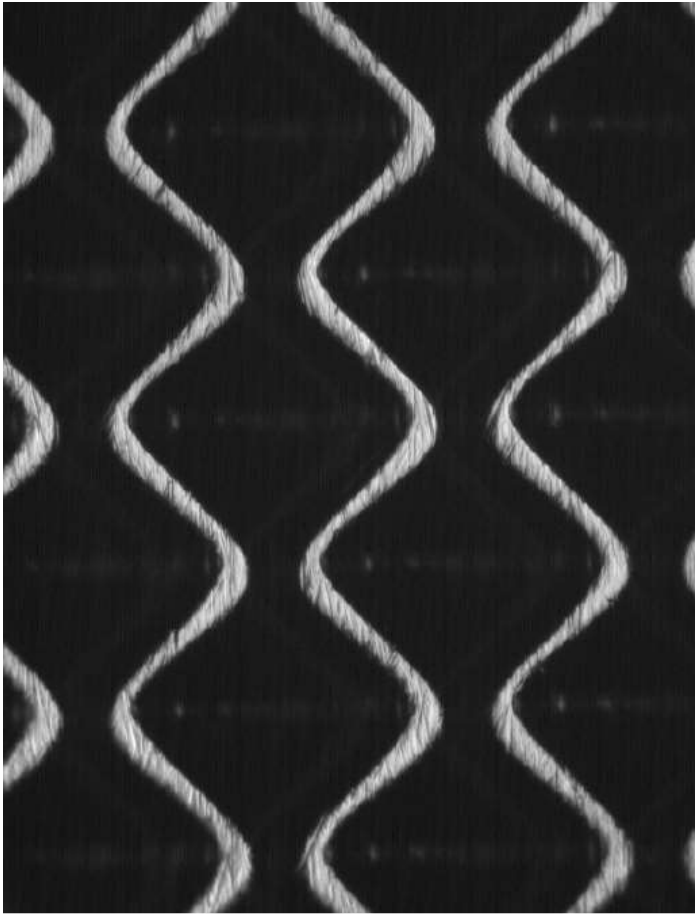


5%

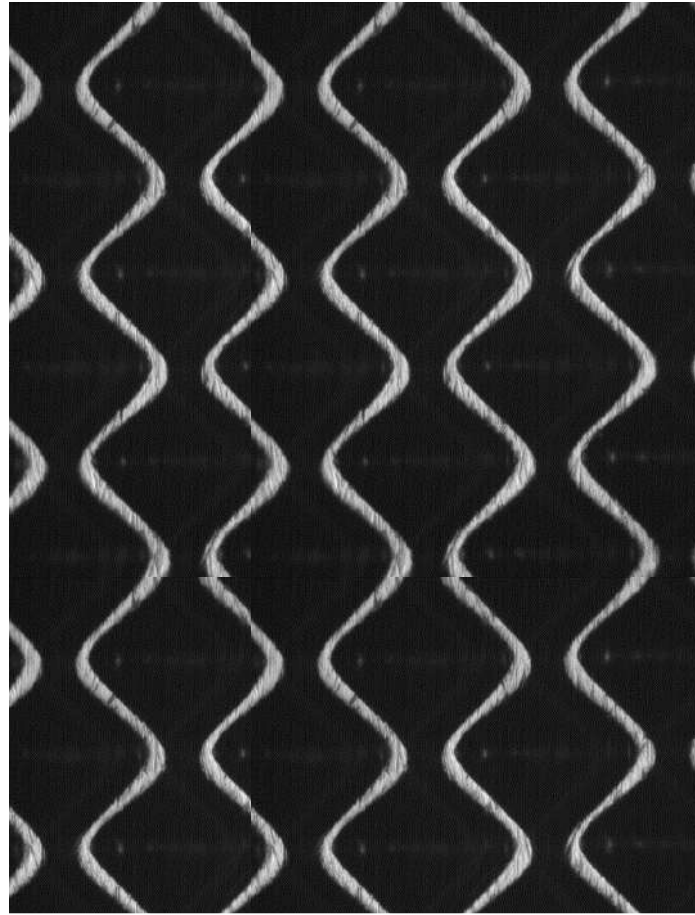


Line-screen per cm

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70 lines / cm

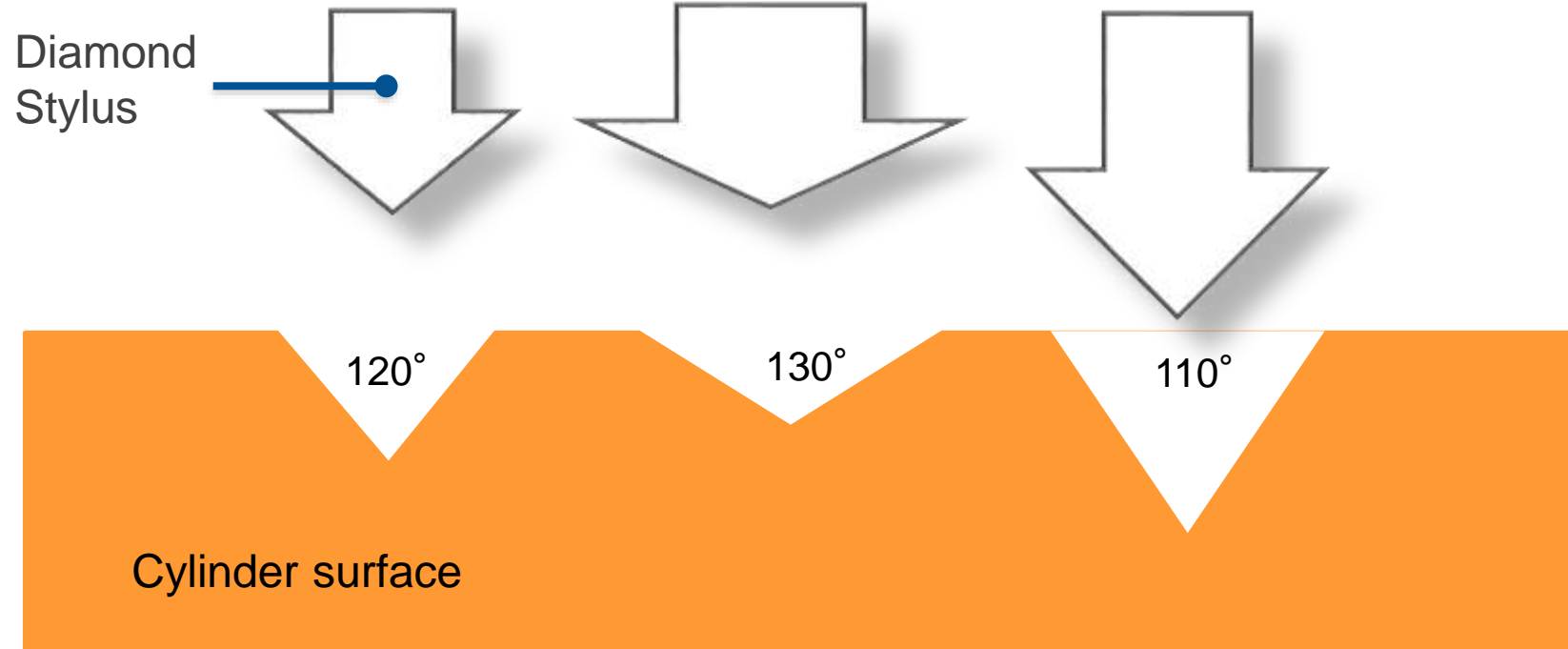


80 lines / cm

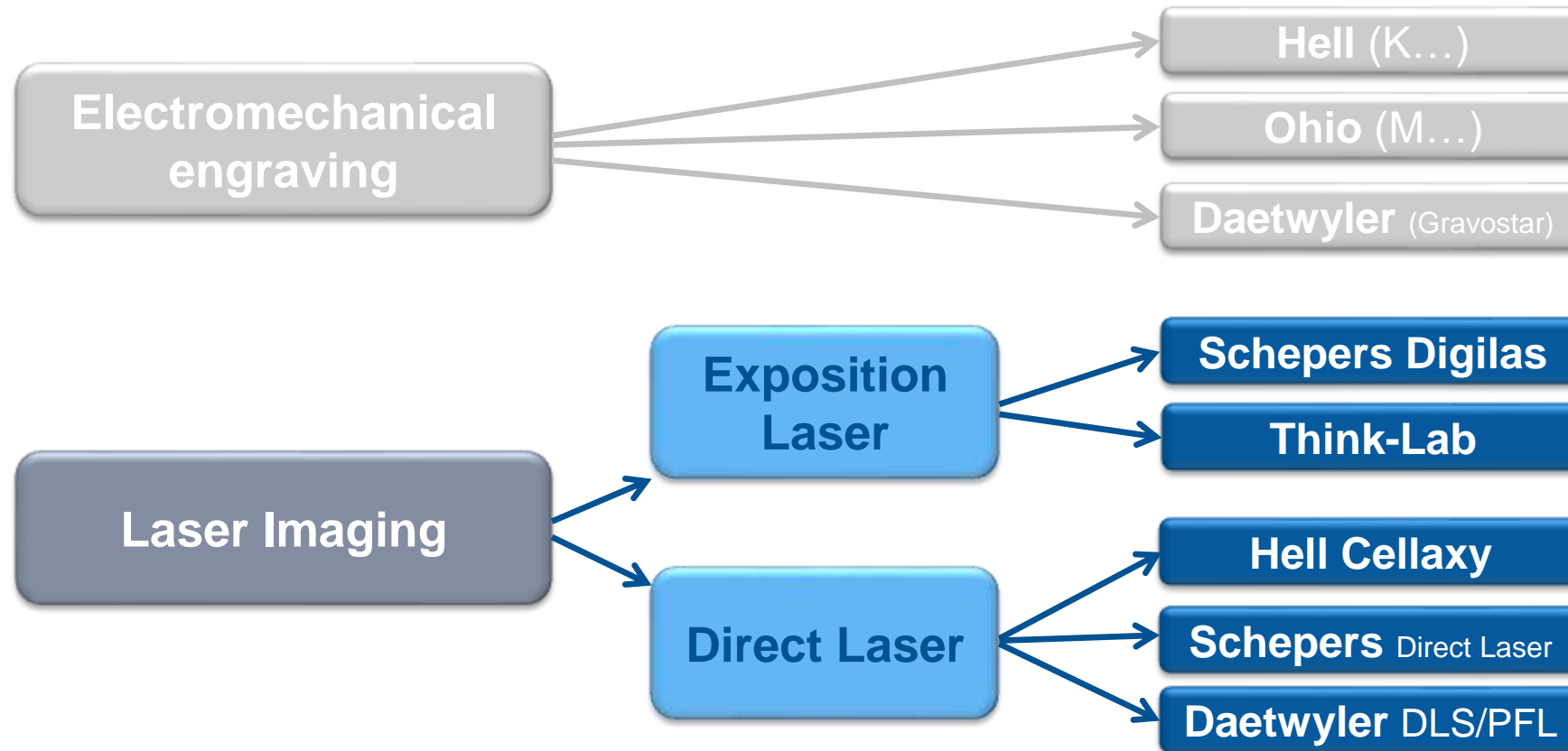


100 lines / cm

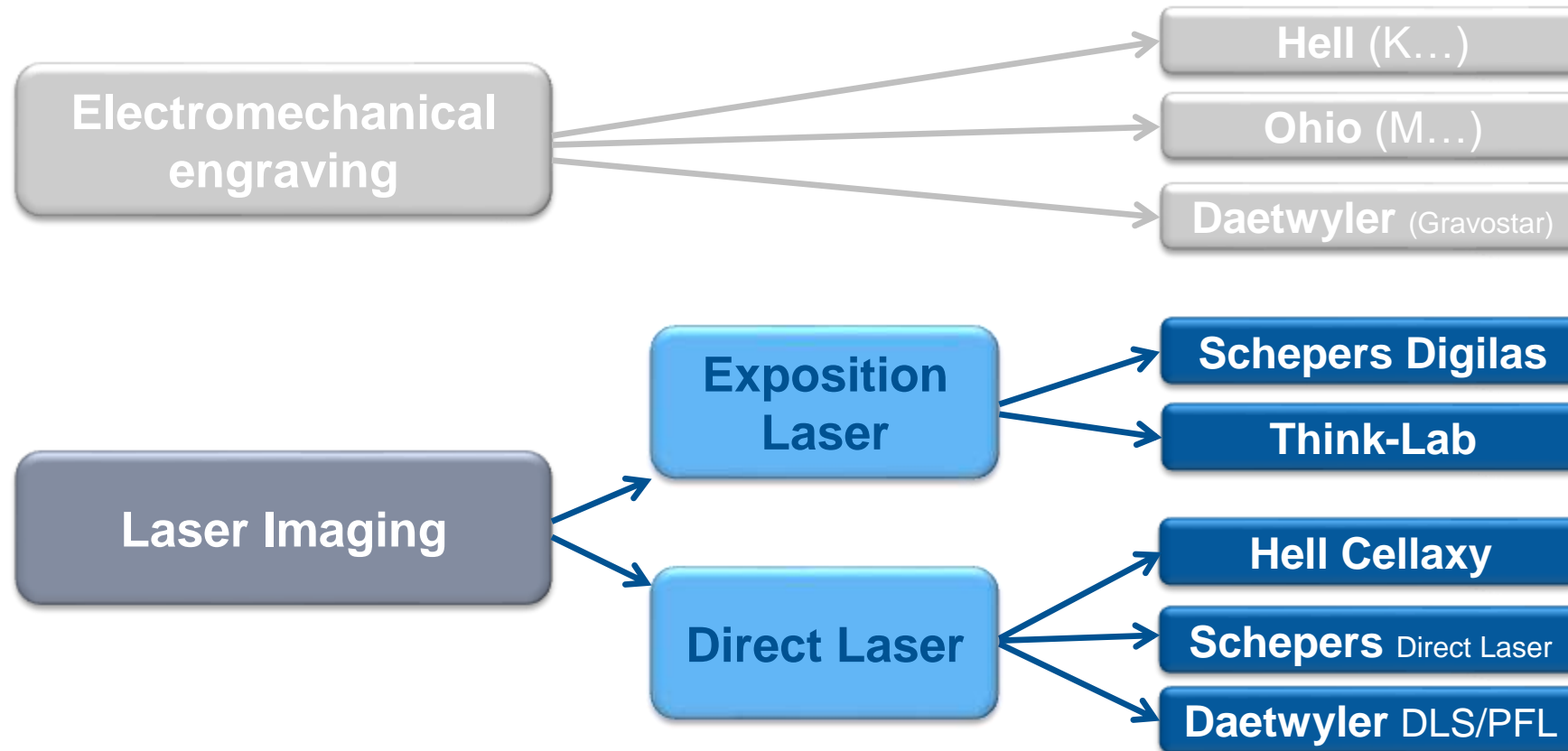
Different stylus angles



The different engraving technologies



The different engraving technologies



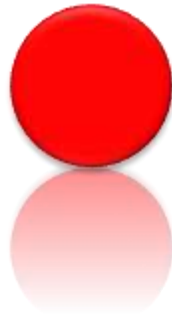
Laser Technology – another dimension...

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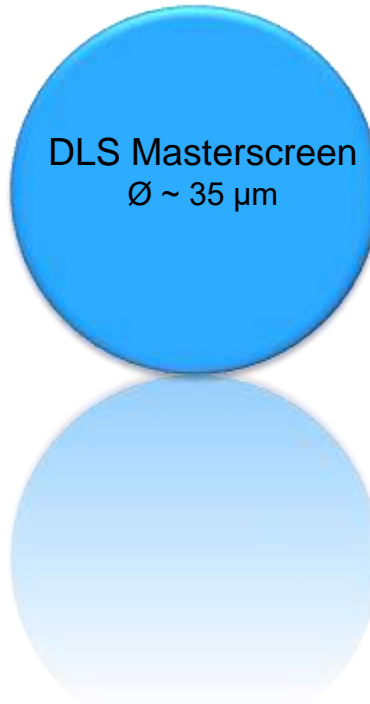
Exposition Laser
Think-Lab
Ø ~ 2 µm



Laser direct
Ø ~ 10 µm

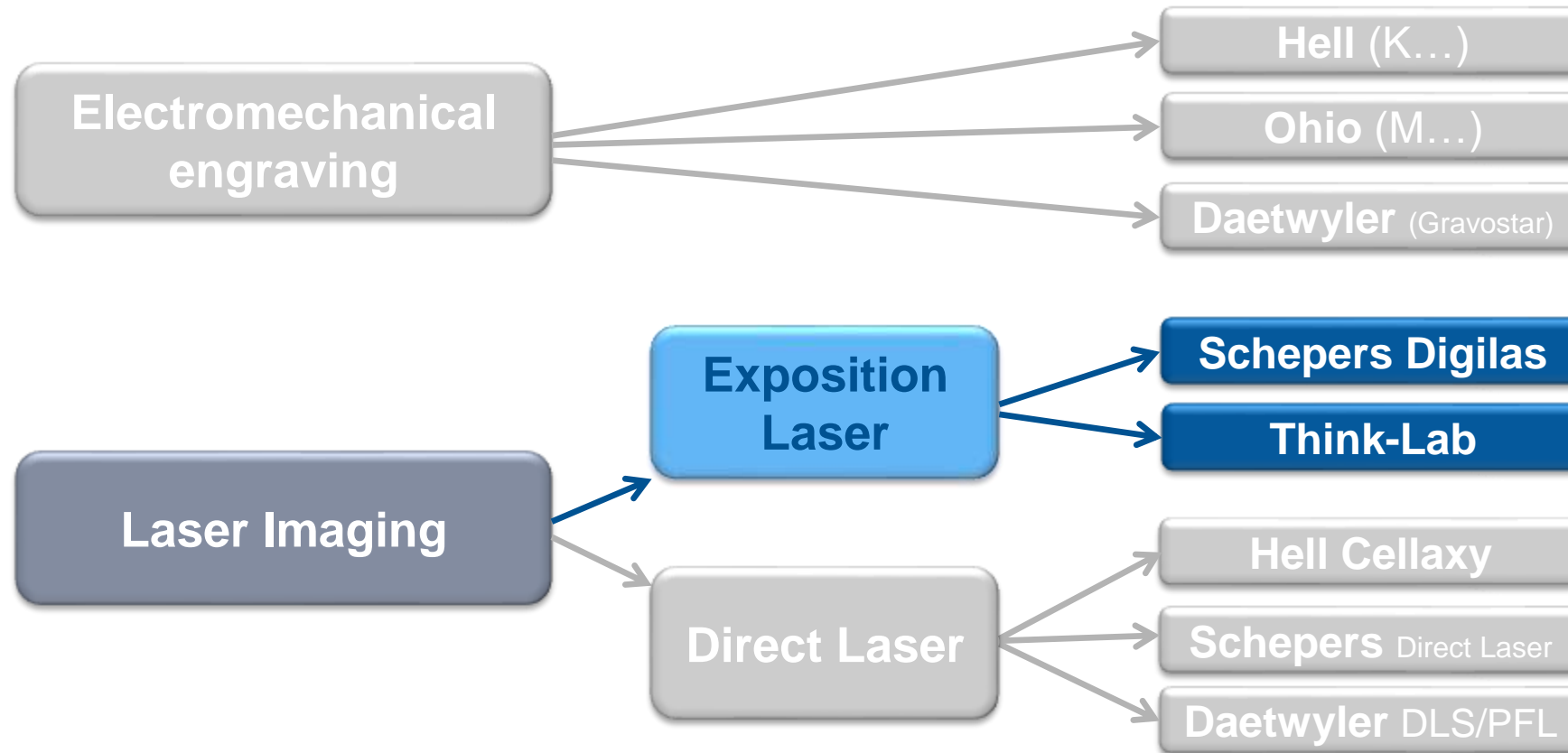


DLS Masterscreen
Ø ~ 35 µm



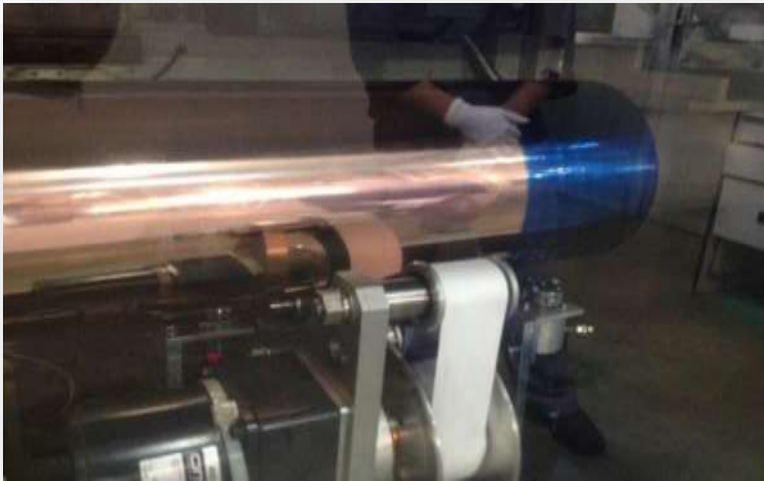
Human Hair
Ø ~ 100 µm





Laser Imaging – Scheepers Digilas or Think-Lab Technology

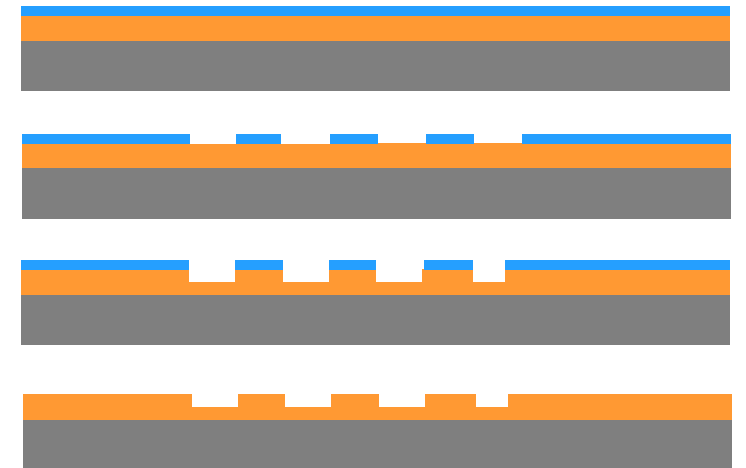
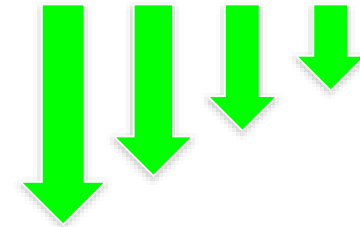
janoschka



Exposition Laser
Think-Lab
 $\varnothing \sim 2 \mu\text{m}$



Laser Exposure



The Principles – Cell Geometry

Laser Exposure

**Stylus
(electromechanical)**



Variable in size
and variable in depth

**Laser
Exposure**



Variable in size
not in depth

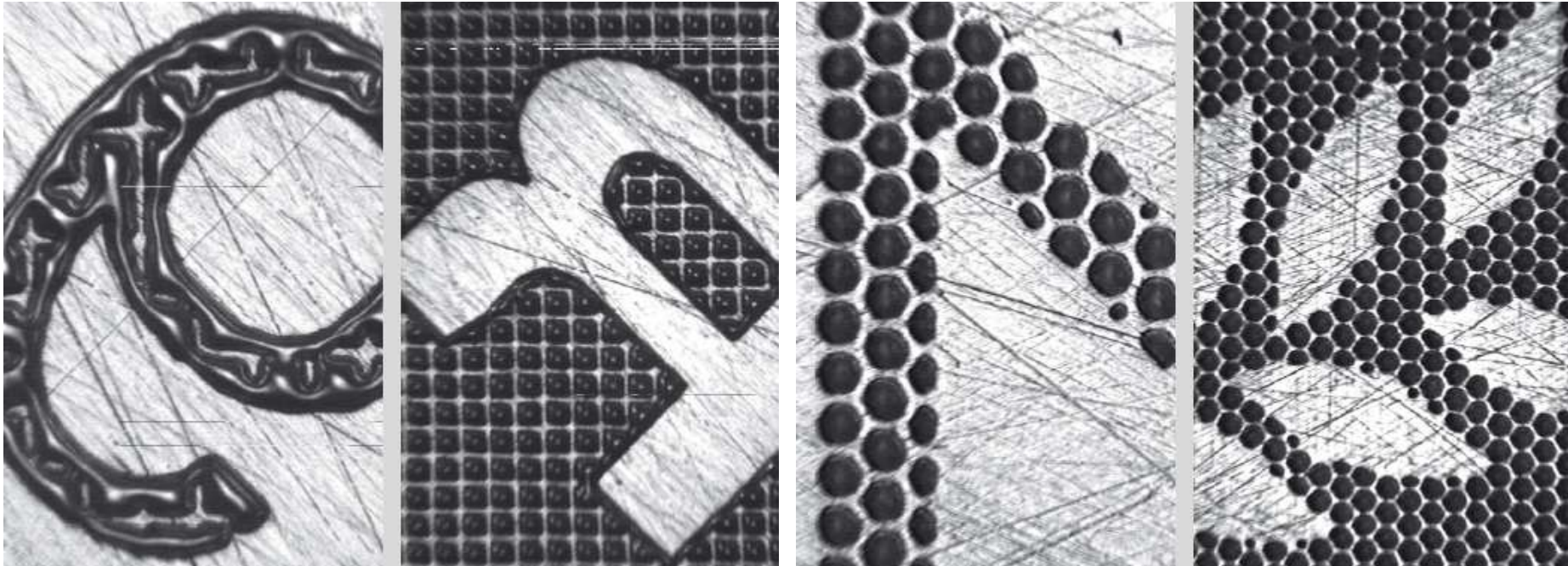


Laser Exposure – Fields of Application

Excellent for fine type

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- Positive / negative text elements
- Strong background-colors



Laser Exposure – Fields of Application

Janoschka



Laser Exposure – Fields of Application

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- Intense colors, fine lines, text and logos

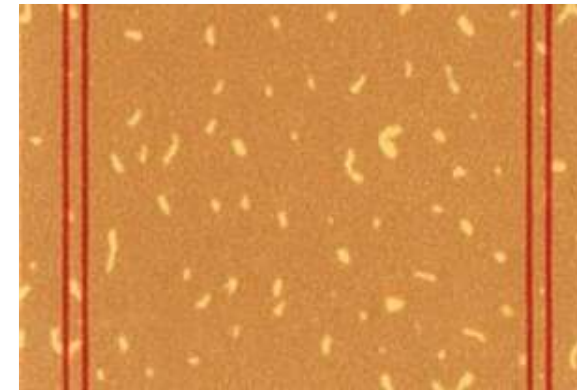
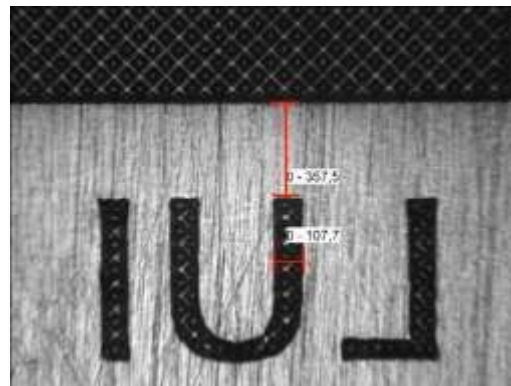
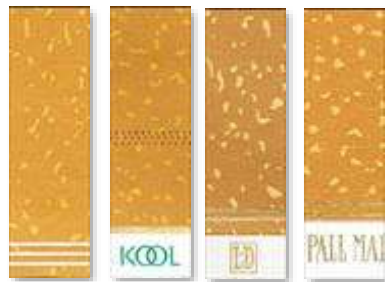
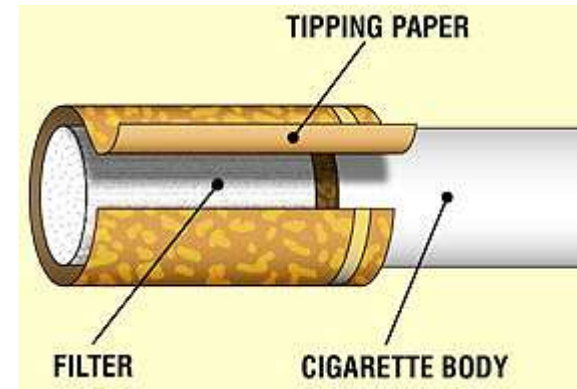


Laser Exposure – Fields of Application

Tipping Papers, Cigarette Filters

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- 1 or 2 colors “cork design” (line-work)
- Fine lines and logos
- Laser technology recommended !



Laser Exposure – Fields of Application

Micro-Text

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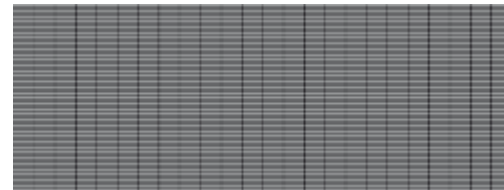
Laser Exposure – Fields of Application

Micro-Text, Nano-Text

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Mikro text with 0,15 mm font size



Nano text with 0,015 mm font size

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Ratio x100

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Ratio x100

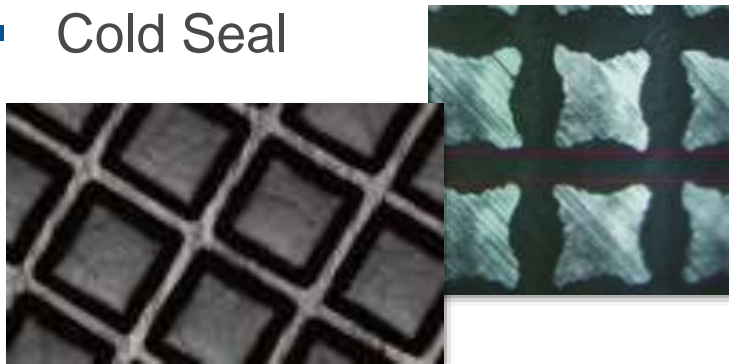


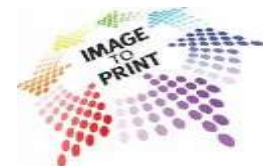
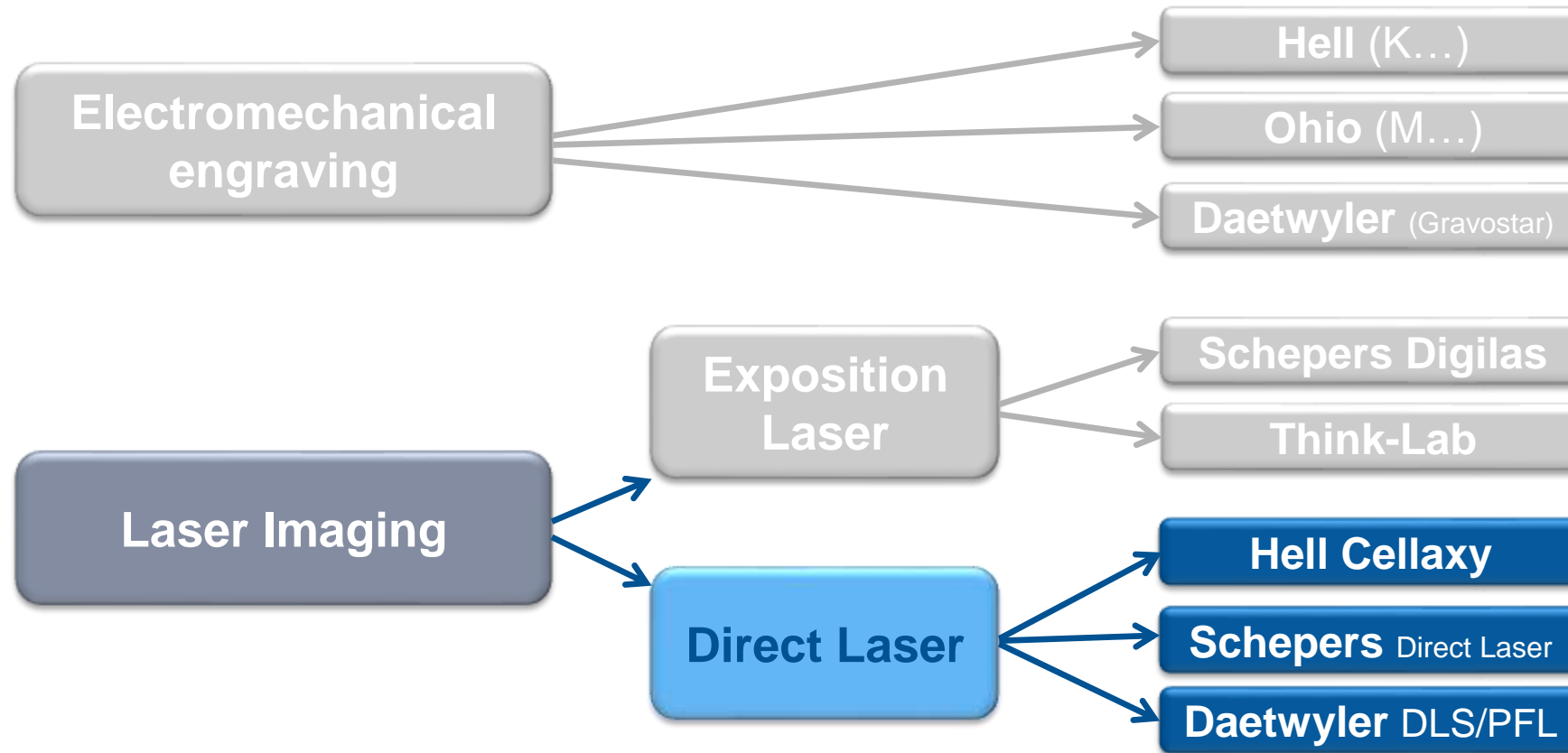
Laser Exposure – Fields of Application

Heavy Volume - Special Applications

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- Lacquers and Varnishes
- Metallic Inks
- Primer
example: medical packaging
- Hotmelt / Wax
- Cold Seal





Stylus (electromechanical)



Variable in size
and variable in depth

Laser Exposure



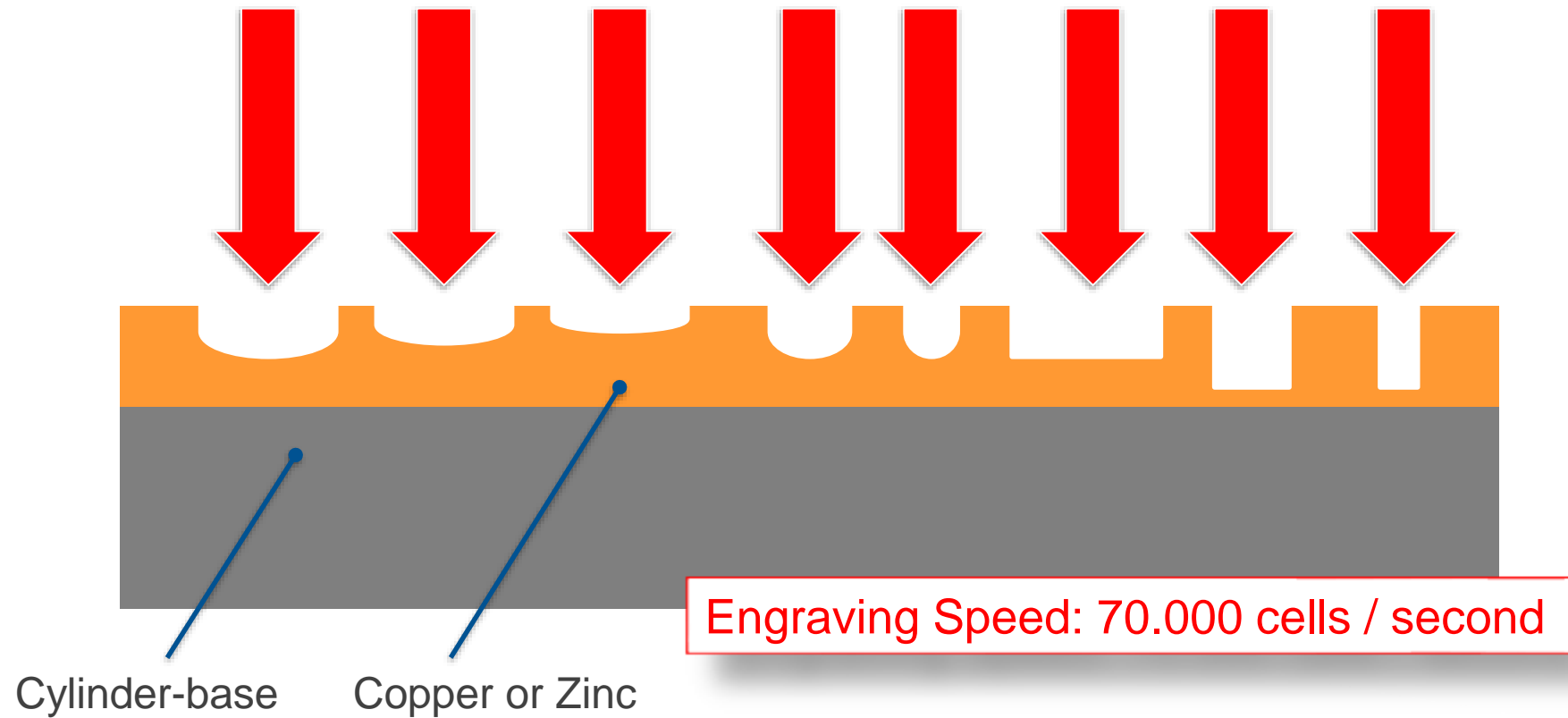
Variable in size
not in depth

Direct Laser



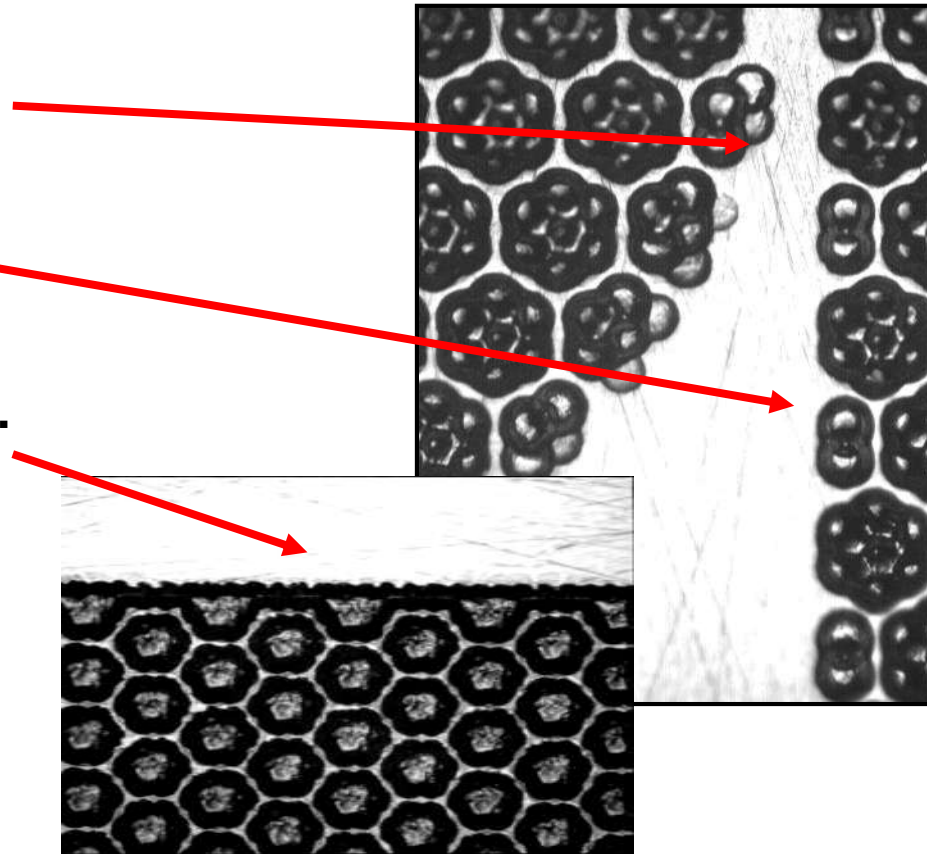
Variable in shape,
in size and in depth





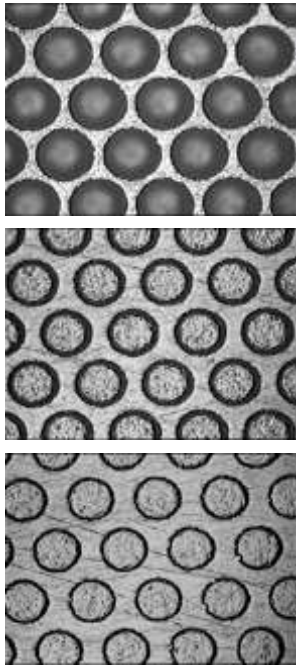
Advantages of Cell Shapes

- Text, forms and designs can be reproduced without limits and will print in excellent quality.
- „Outlines“ can be produced as well, although they are not really needed...
- Offset-Quality with **Gravure Density**...

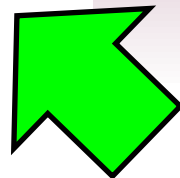


Different Cell-Geometries with DLS

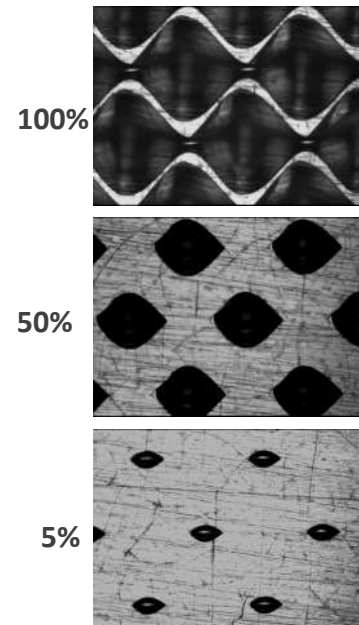
Direct Laser System | the benefits



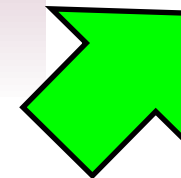
Laser Conv.



- Excellent printing results for half-tones and vignettes
- Especially for substrates which are difficult to print



Gravure



Different Cell-Geometries with DLS



Direct Laser System | The Benefits
line-work and half-tones combined

Ingredients:

Flavor, Butter, Eggs, Yeast, Fruit Extracts,
Vitamin A, Vitamin B, Vitamin C.

Produced by Janoschka
for our customers.

Fine negative text
in the vignette

Vignette

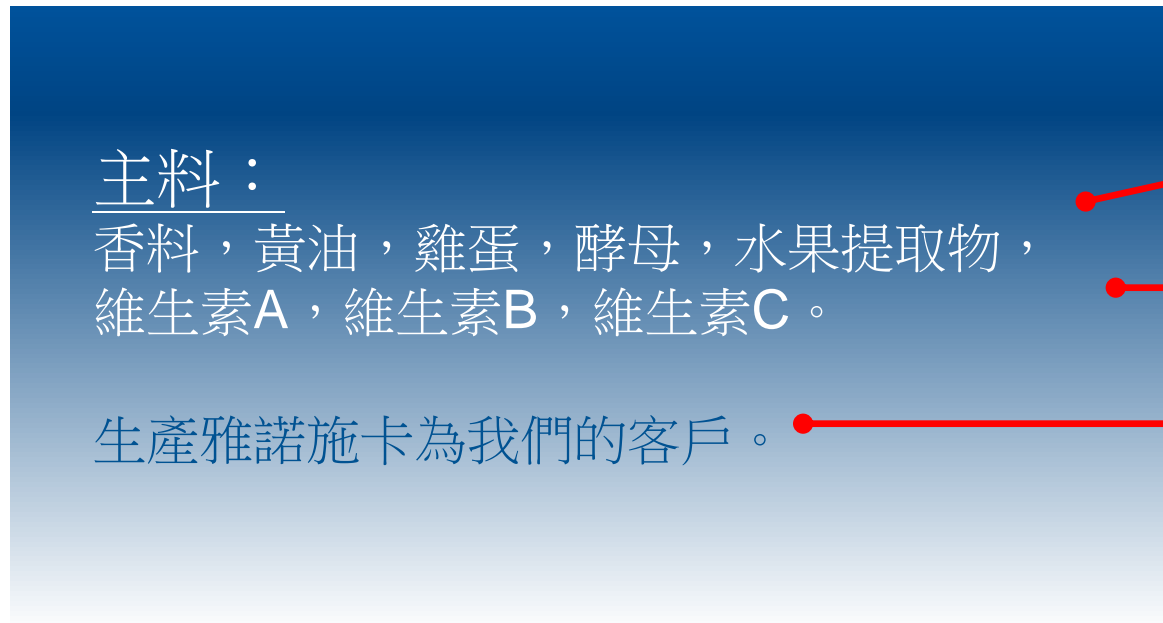
Positive text



Different Cell-Geometries with DLS



Direct Laser System | The Benefits and imagine with Chinese characters



Fine negative text
in the vignette

Vignette

Positive text



Direct Laser System - The Benefits combination of line-work and half-tones...



Desire to touch...

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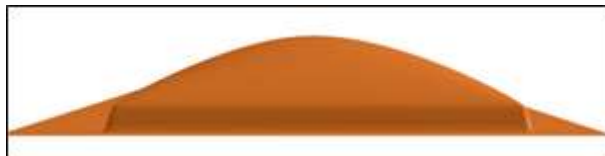
Desire to touch...

3D Embossing

CNC technology



Laser technology



Registered 3D Structures with Laser Technology

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Embossing with Laser Technology

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Micro-Embossing with Laser Technology

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FOR YOUR ATTENTION



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