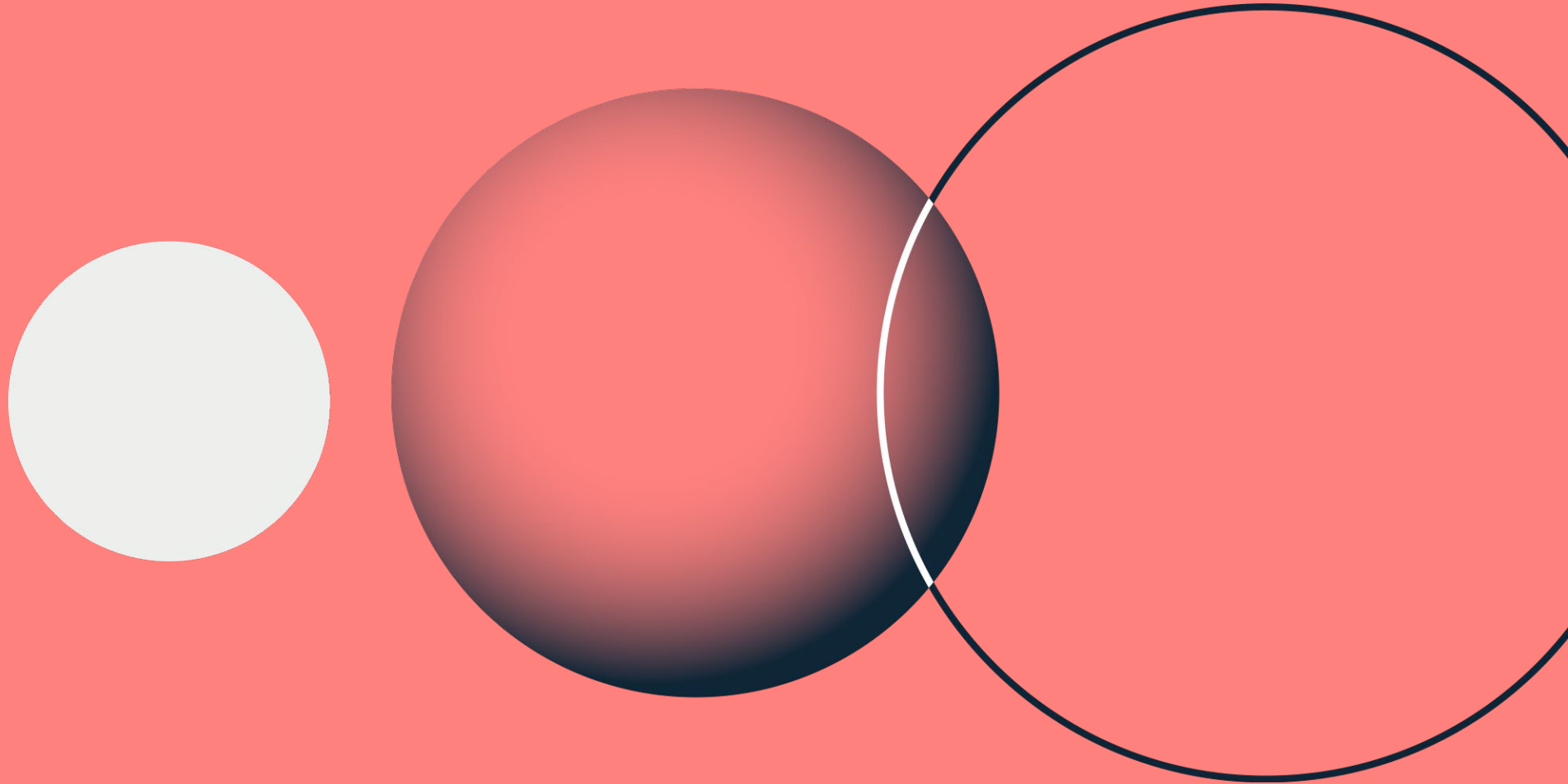


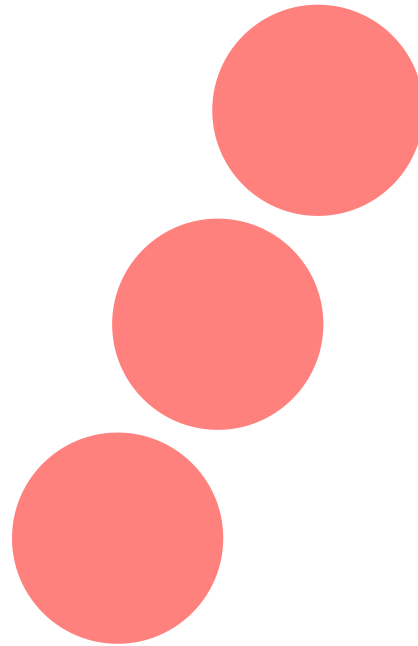
3D:AG



Micro & Nano Lab

Your Innovation and  
Development Partner in  
Micro and Nanotechnologies

# About Us

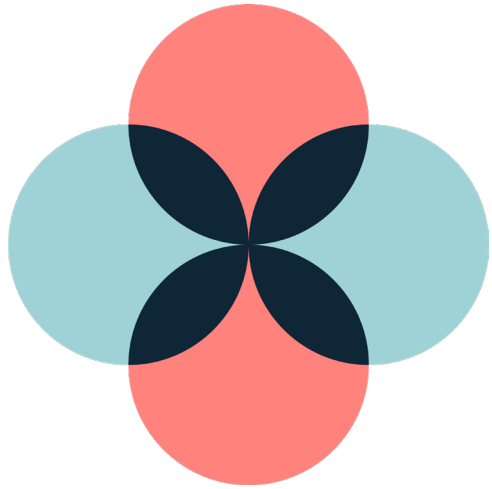


Founded 1989  
Based in Baar, Switzerland

2800 sqm building  
300 sqm clean room (ISO 5 - 7)  
+40 specialized machines  
Enabling net-zero manufacturing

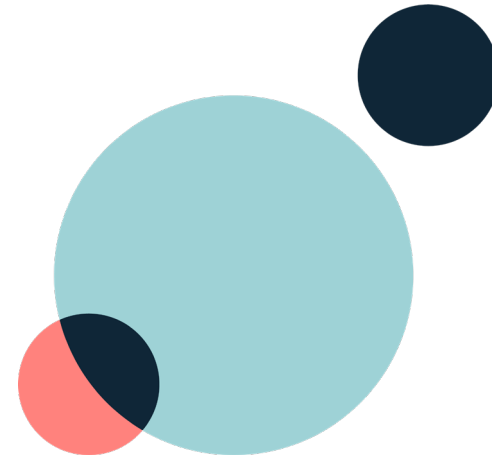
**We are:** Future focused, sustainable,  
transparent & human

# Our Two Worlds



## Brandbuilding & Security Partner

High-security, digitalization and consumer engagement solutions tailored for brands and governments.



## Micro & Nano Lab

Your innovation and development partner in micro and nano technologies.

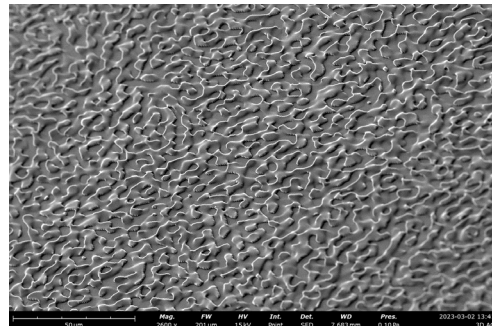
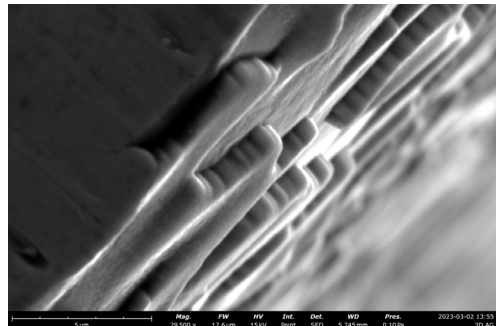
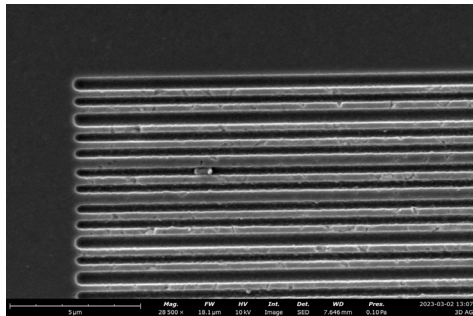
# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps



# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps

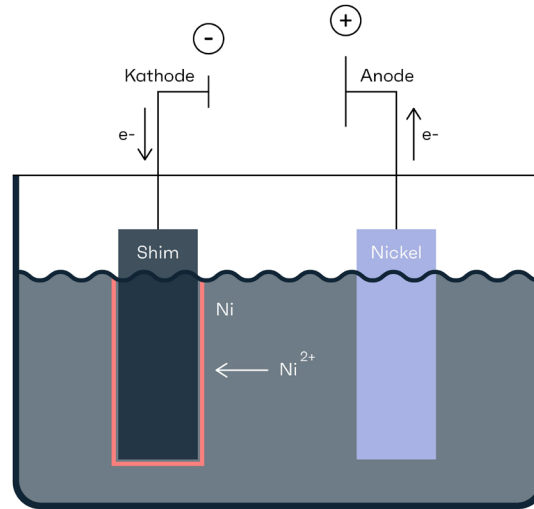


### Mastering:

- 300 nm resolution
- from nano – micro (success up to 50  $\mu\text{m}$ )
- size up to 220 mm x 220 mm
- freeform, no limitation on shape

# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps

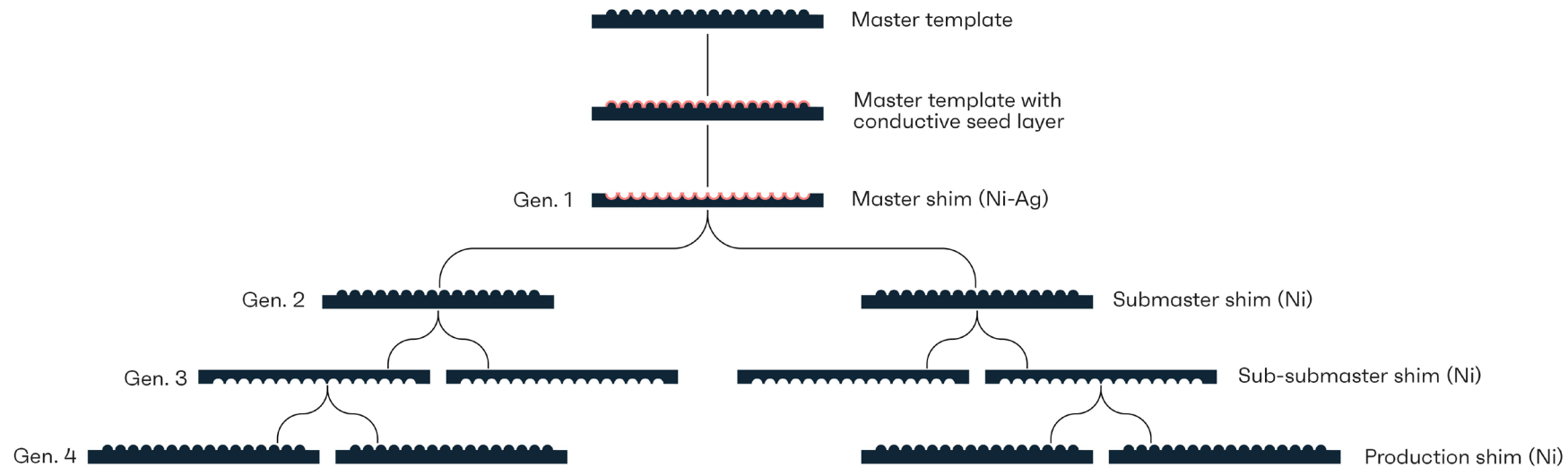


### Electroforming:

- 5 custom built galvanic baths
- size up to 1500 mm x 1700 mm
- thickness range from  $\mu\text{m}$  – cm
- Process with high structure fidelity

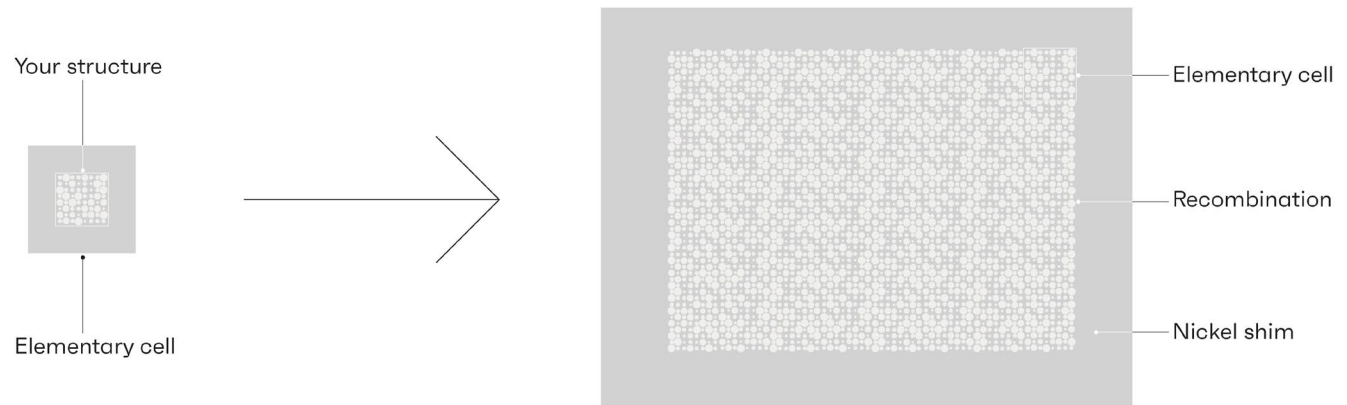
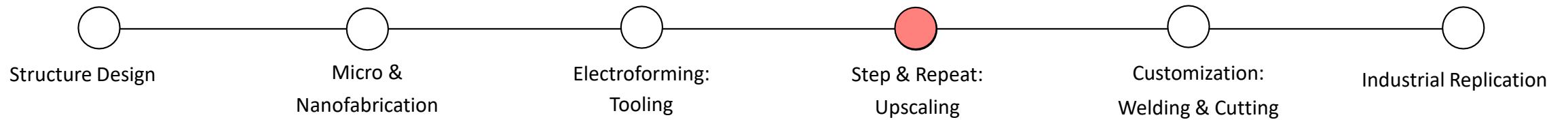
# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps



# From Lab to Industry

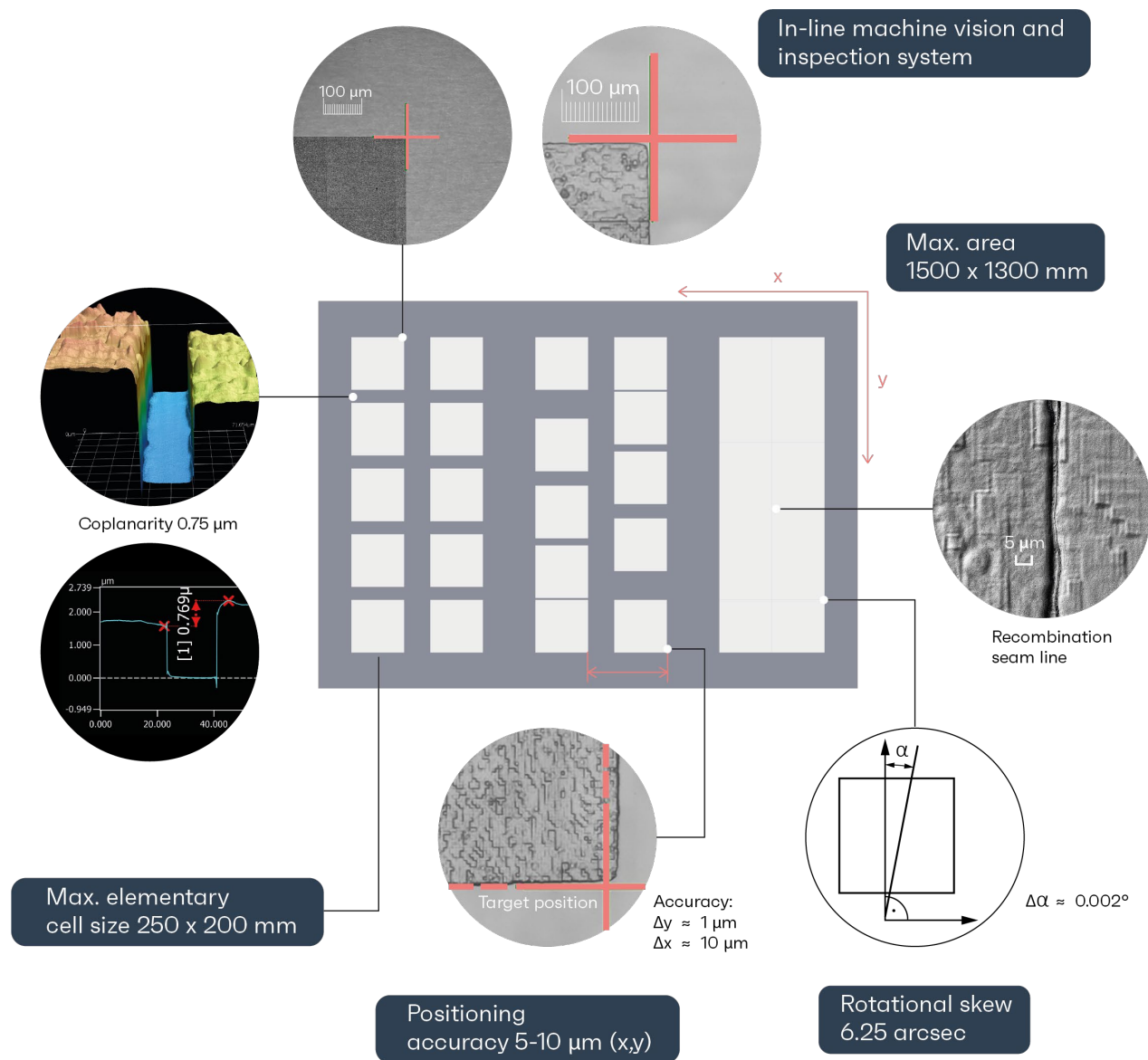
## Upscaling Partner: Process & Manufacturing Steps





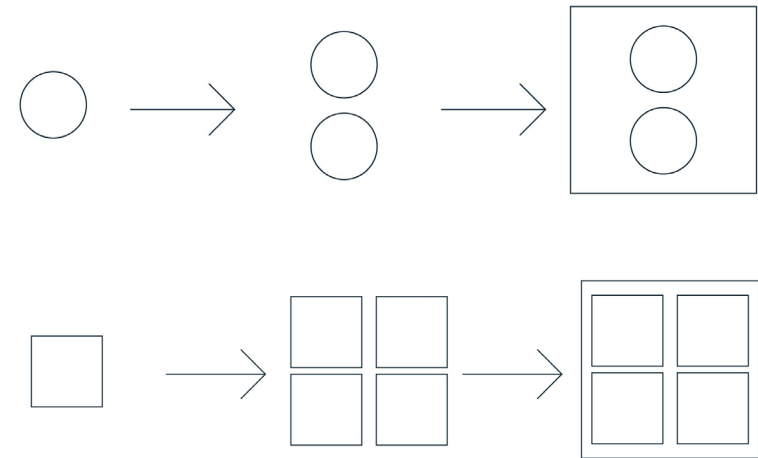
# H.U.G.O.

## High-Precision UV Generation ONE



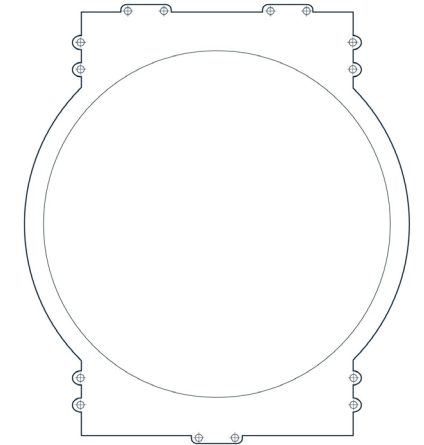
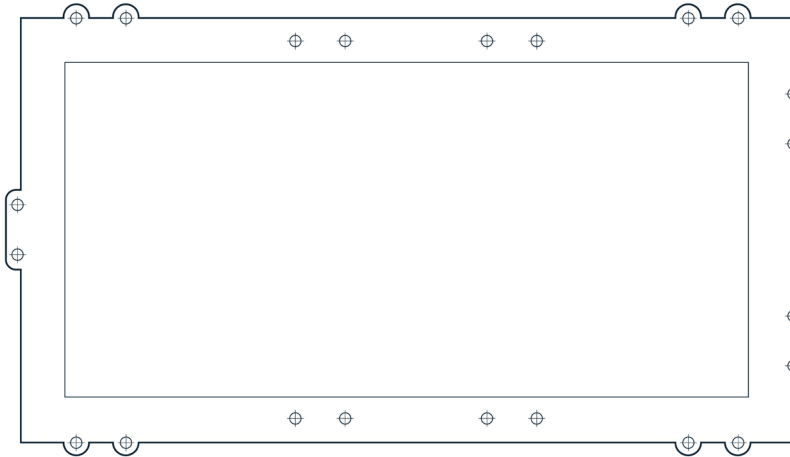
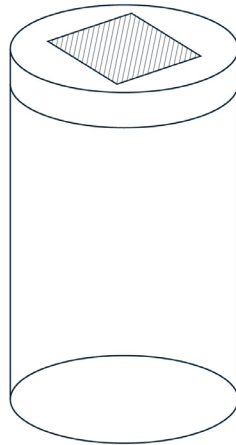
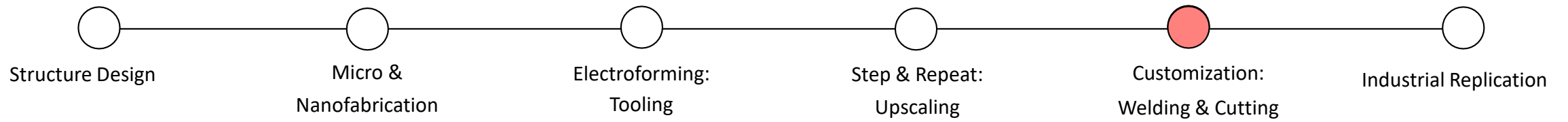
# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps



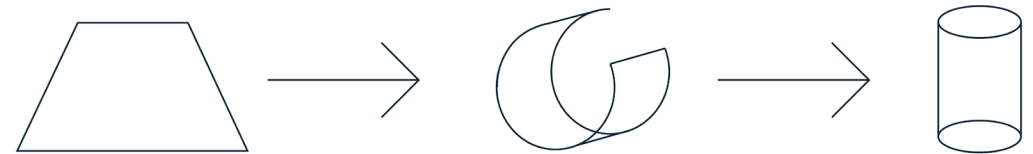
# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps



# From Lab to Industry

## Upscaling Partner: Process & Manufacturing Steps



# Nickel Sleeves & Inserts

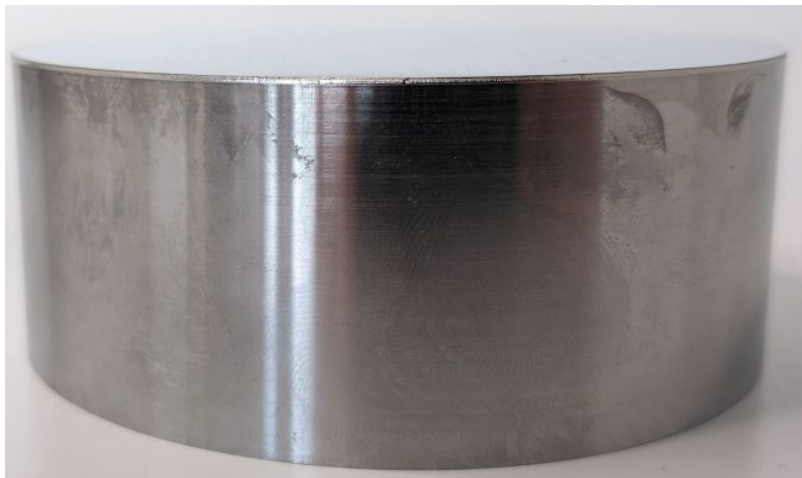
Tooling for R2R or R2P replication of structures.

Welding seam: approx. 150  $\mu\text{m}$

Nickel shims are the ideal base for replication tools

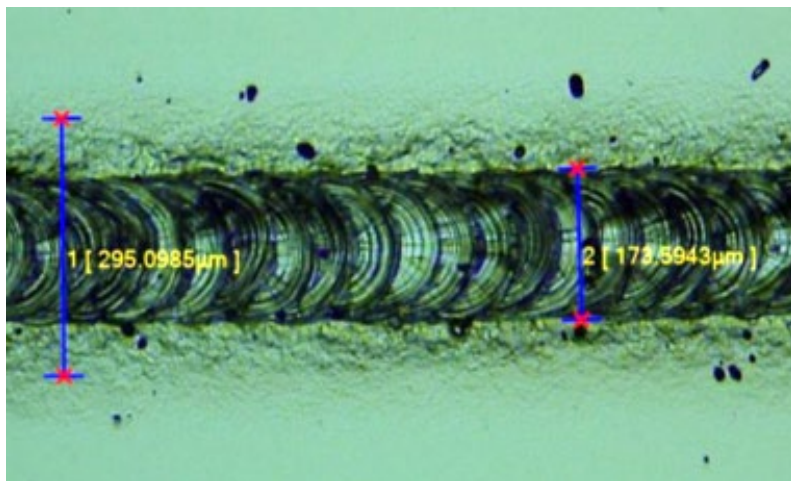
Often they are not tools yet and need processing to:

- Sleeves
- Inserts
- Enlargements of active area
- ...



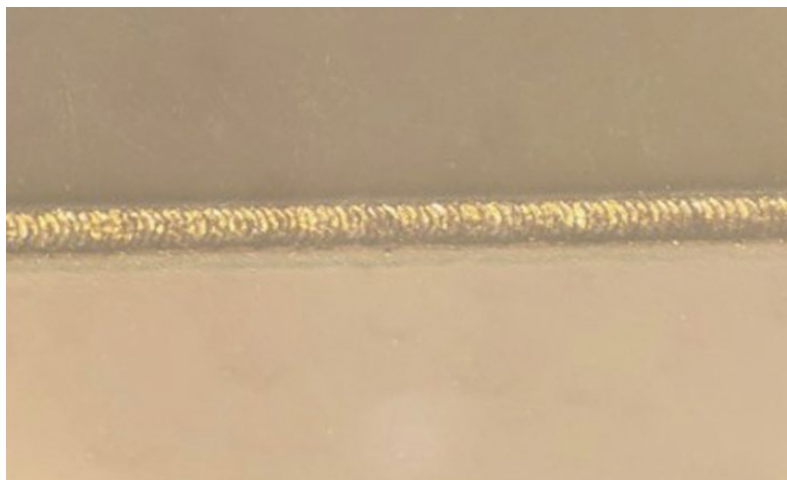
# Laser-Welding

Welding seam inspection



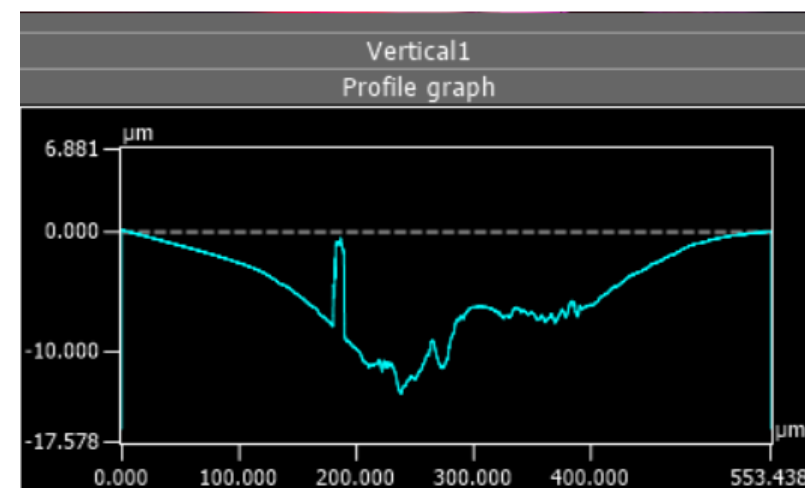
Continuous welding seam overlapping without any perforations

Welding seam inspection



Standard welding seam of 200 µm measured on a 300 µm thick shim

Welding seam inspection

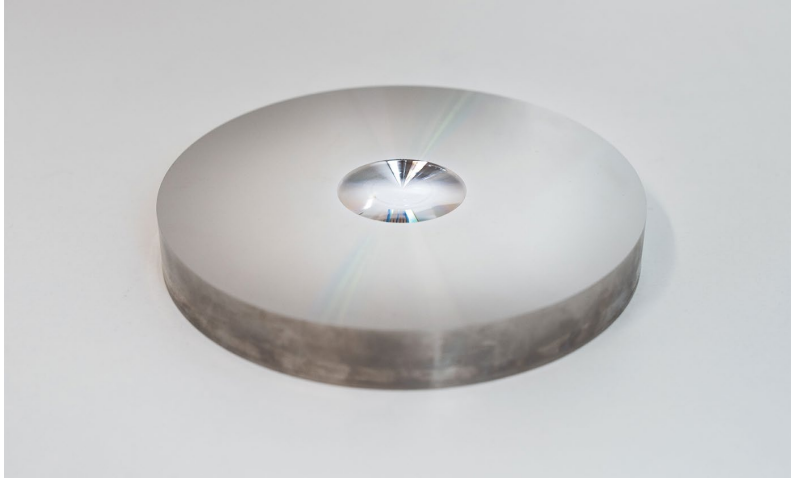


Coplanarity between 5 µm - 10 µm depending on shim thickness and requirements needed

# Upscaling Summary

# Upscaling Summary

Master Structure



Nickel Shims



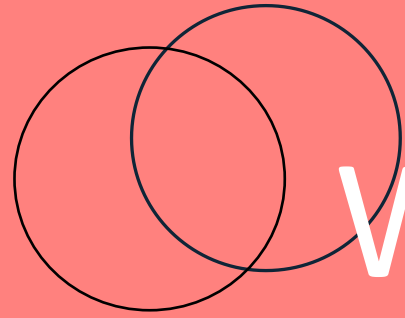
Sleeve for Mass Replication



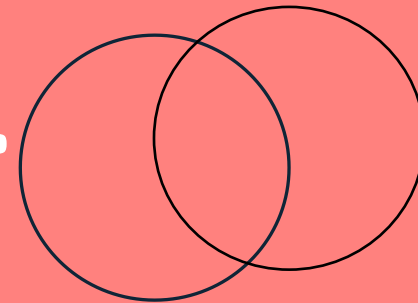
R2R - UV Embossed Film







We believe  
true innovation  
thrives through  
collaboration.



# Do you have any questions?

# Get in touch!

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# Thank You!



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