



Laser Plastic Welding – Next Generation Technology

Evosys Laser GmbH, Erlangen / Germany



GLOBAL NETWORK

- Headquarter in **Erlangen / Germany**
- Subsidiary in **Suzhou / China**
- Subsidiary in **Auburn Hills / USA**
- **Global service and sales network** close to the customers



COMPANY PORTFOLIO

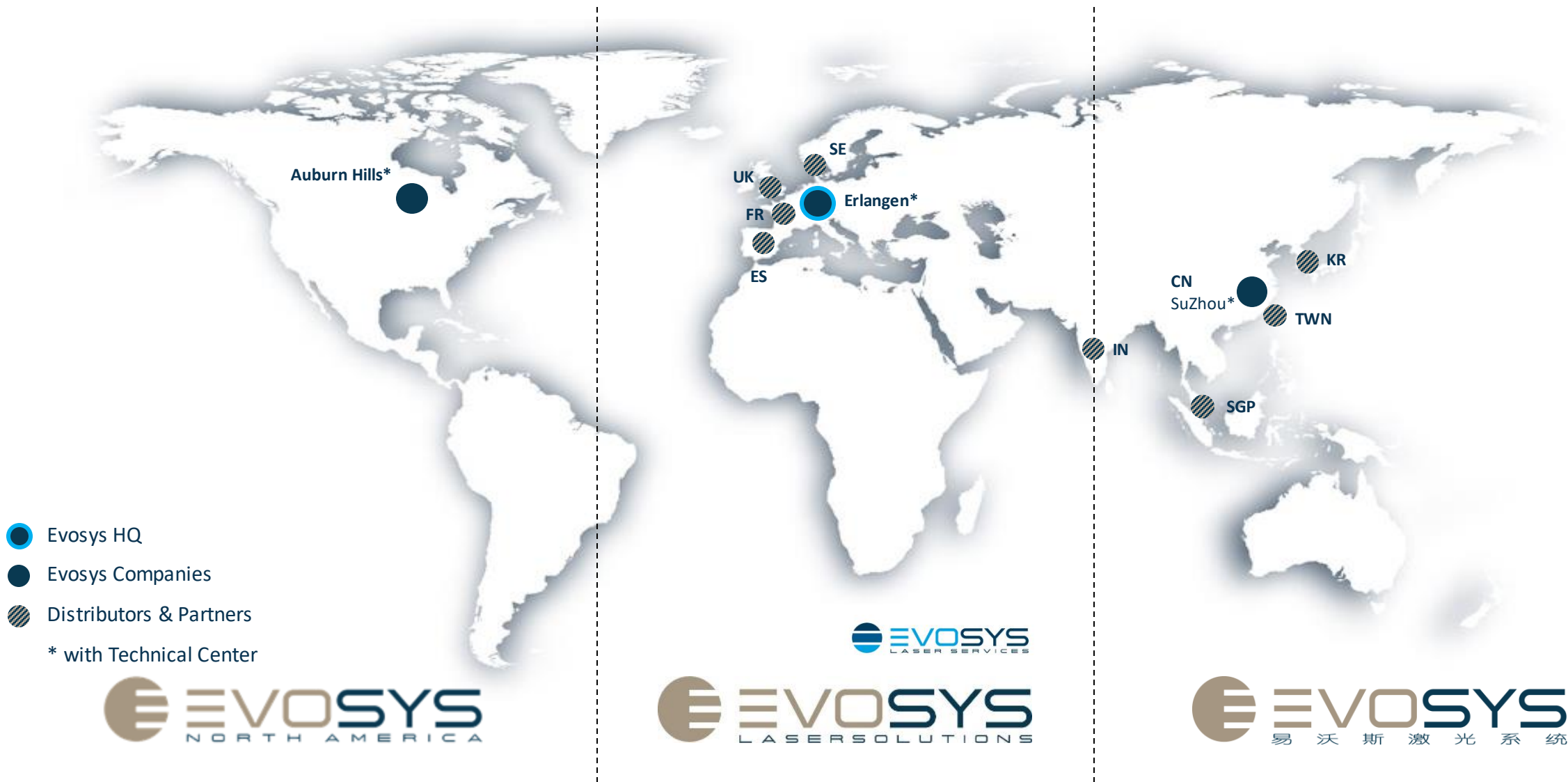
- High-tech manufacturer of laser plastic welding systems
- 20+ years of expertise
- Extensive sector and application know-how covering **Automotive, Medical and Consumer Products**



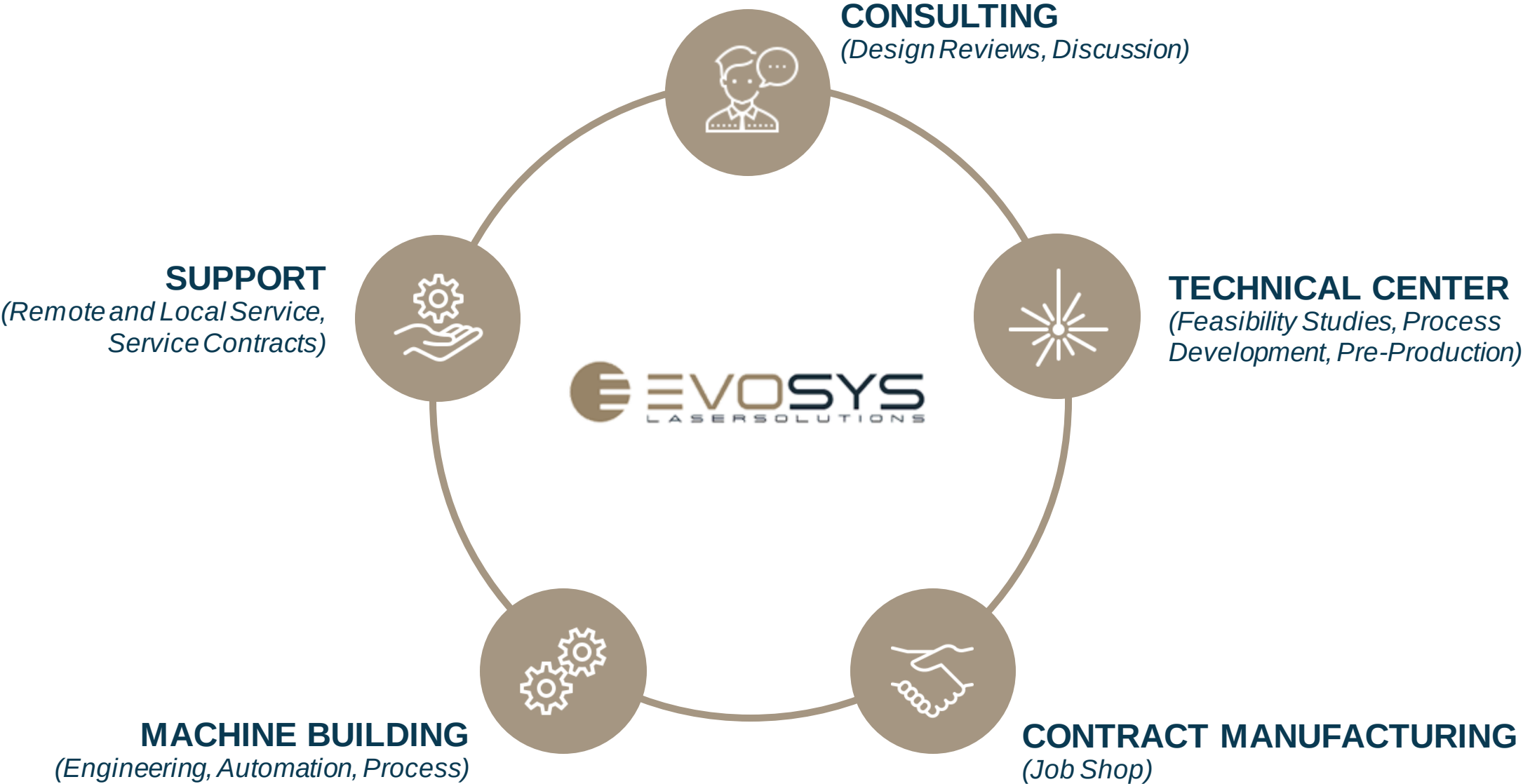
COMPREHENSIVE PORTFOLIO

- **Highly flexible** production systems for all kinds of laser welding operations
- **Holistic support** from product concept to mass production
- **Contract Manufacturing**
- Partnership with **INTEGO GmbH** (High-tech vision inspection systems)

Evosys Laser Group - Overview

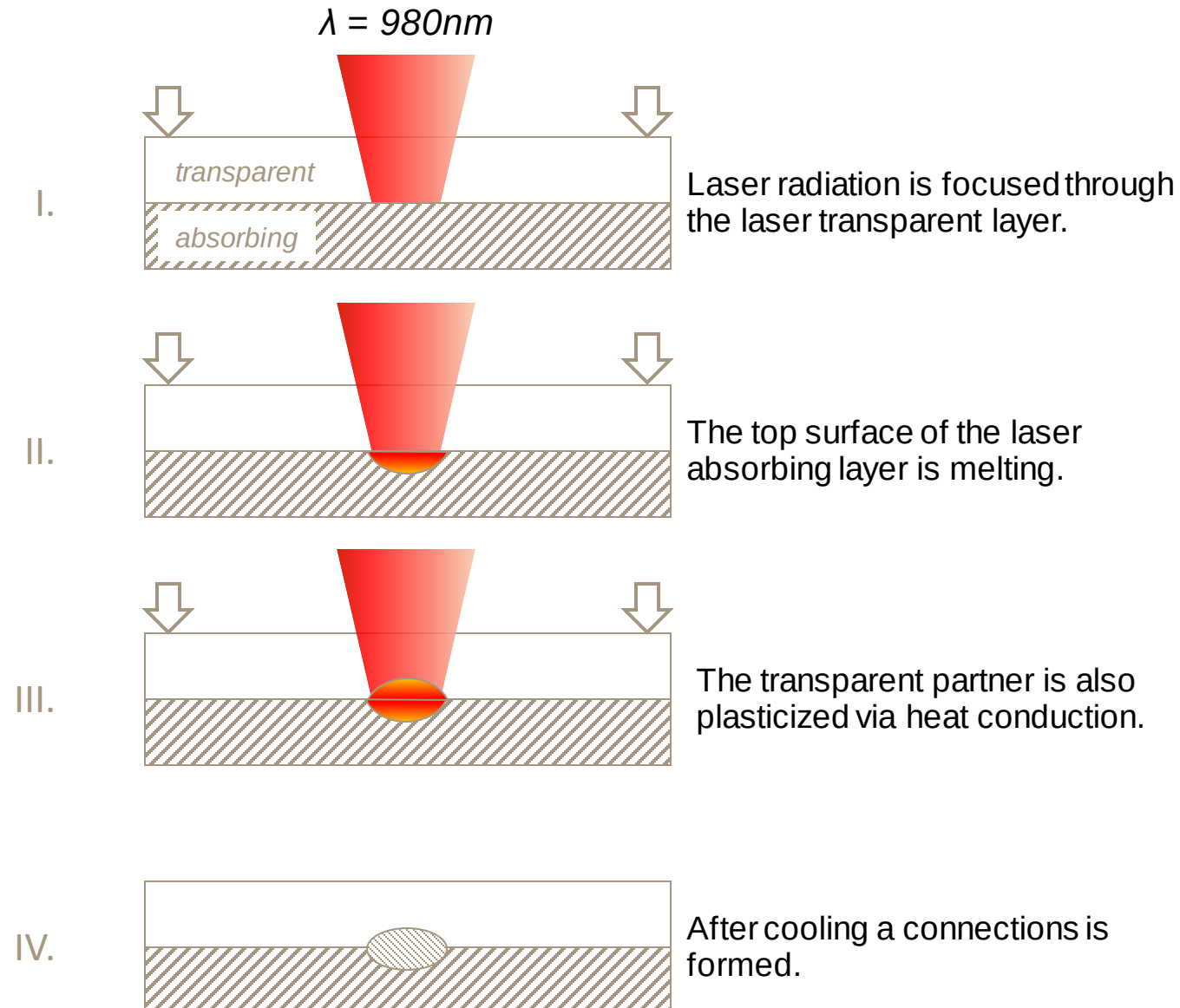


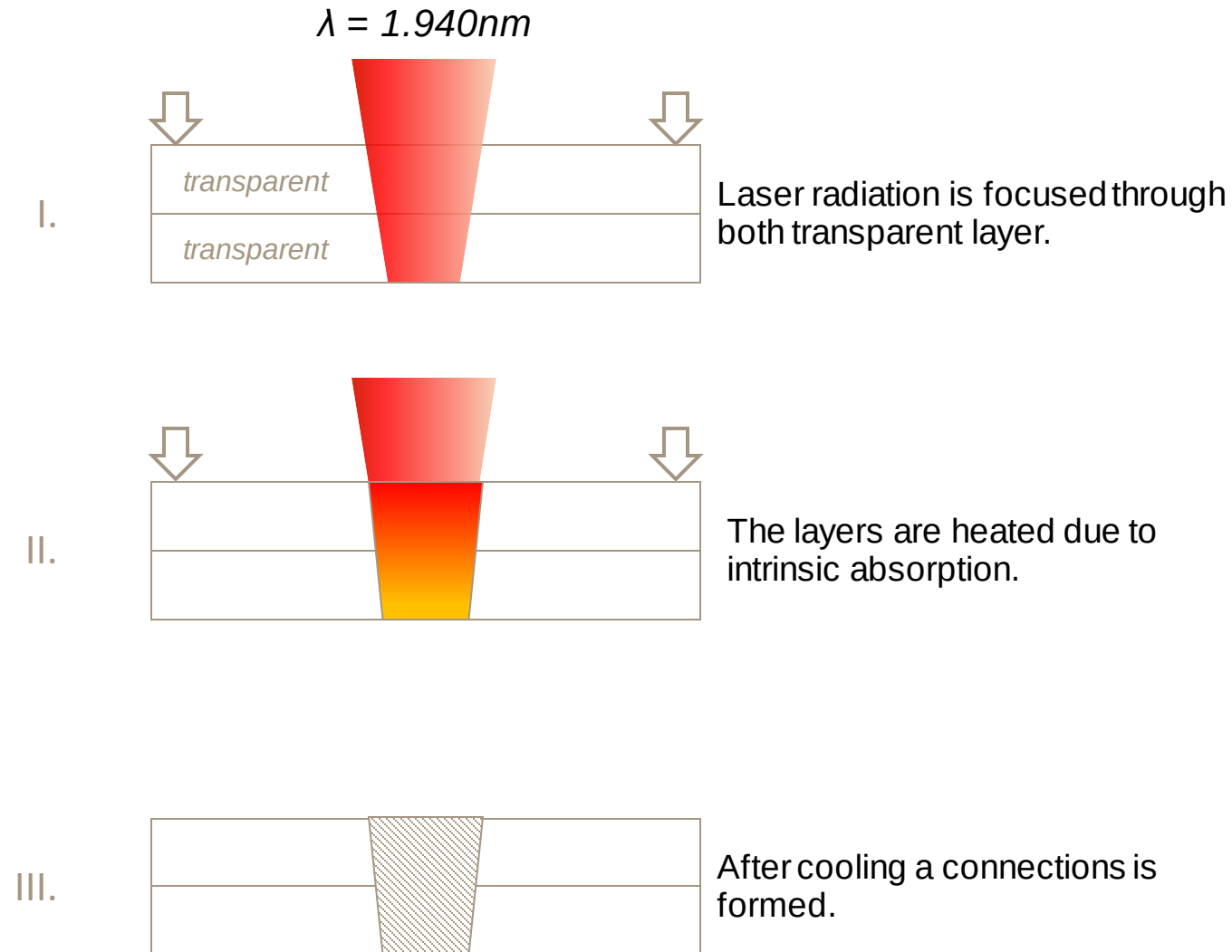
Confidential



LASER PLASTIC WELDING

- GENERAL -







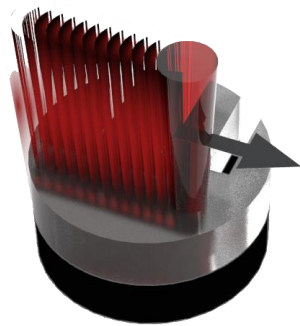
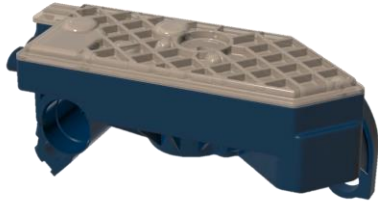
transparent material

	ABS	ASA	COC	EVA	LCP	MABS	PA 11	PA 12	PA 6	PA 66	PBT	PBT/ASA	PC	PC/ABS	PEEK	PE-HD	PEI	PE-LD	PES	PET	PI	PMMA	POM	PP	PPS	PS	PSU	PUR	PVC	SAN	SB	TPE
ABS	++	++				++					++	+	++	++					+	++		++				+	+		++	++		++
ASA	++	++									++	++	++	++								++							++	++		
COC			++																													
EVA				++																												
LCP					++																											
MABS	++					++																										
PA 11							++																									
PA 12								++																								
PA 6									++	++																						
PA 66									++	++																						+
PBT	++	++									++	++	++						+	++		+				+			++			
PBT/ASA	+	++									++	++	++						+	++		+				+						
PC		++									++	++	++	++					++	++		++						++	++		+	
PC/ABS		++											++	++						++		+										
PEEK															++																	
PE-HD																++		++														
PEI																	++															
PE-LD																++		++														
PES	+										+	+	++						++								++					
PET	++										++		++							++										++		
PI																					++											
PMMA	++	++									+	+	++	+								++				+			++	++		
POM																							++									
PP																								++								++
PPS																									++							
PS	+												+									+				++				++		
PSU	+										+	+							++								++					
PUR																												++				
PVC	++	++											++									++						++	+			
SAN	++	++									+		+							++		++				++		+	++			
SB																															++	
TPE	++										+		+											++								++

++ good weldability // + weldable - tests necessary // 0 poor weldability

QUASI-SIMULTANEOUS

- Dimension:
2D
- Strength:
high
- Sealing:
yes
- Clamping Tool:
inner / outer



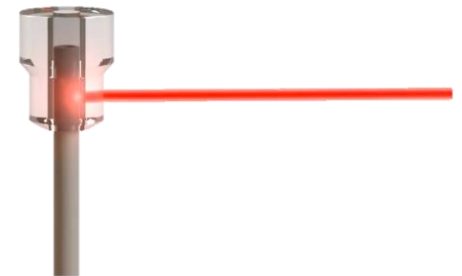
CONTOUR

- Dimension:
2D or 3D
- Strength:
low
- Sealing:
yes / no
- Clamping Tool:
inner / outer



RADIAL

- Dimension:
2D
- Strength:
very high
- Sealing:
yes
- Clamping Tool:
press fit



Applications



Tailgate (PC/ABS)



Taillight Mercedes EQC (PMMA/ABS)



Actuator camera (PA)

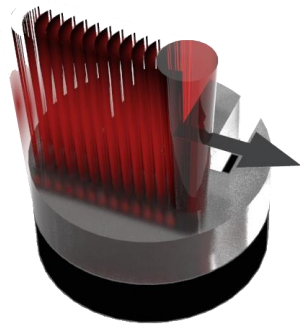


Siphon (PP)

QUASI-SIMULTANEOUS WELDING

- GENERAL -

PROCESS



- **Profile**

Laser welds in several cycles

- **Relative Movement**

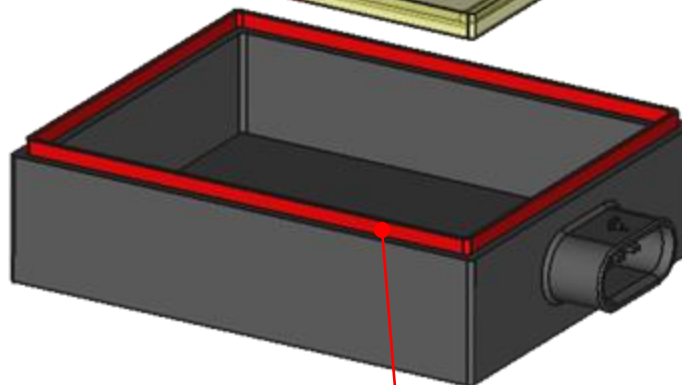
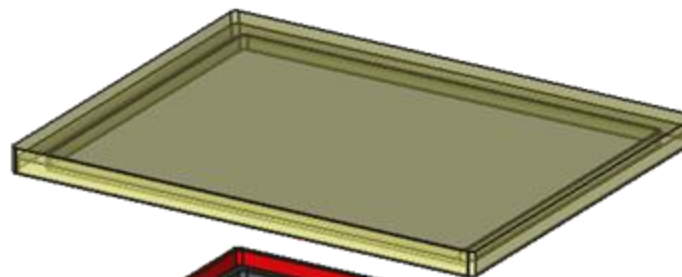
Laser beam is guided very fast via Galvanometer scanner

- **Process Control**

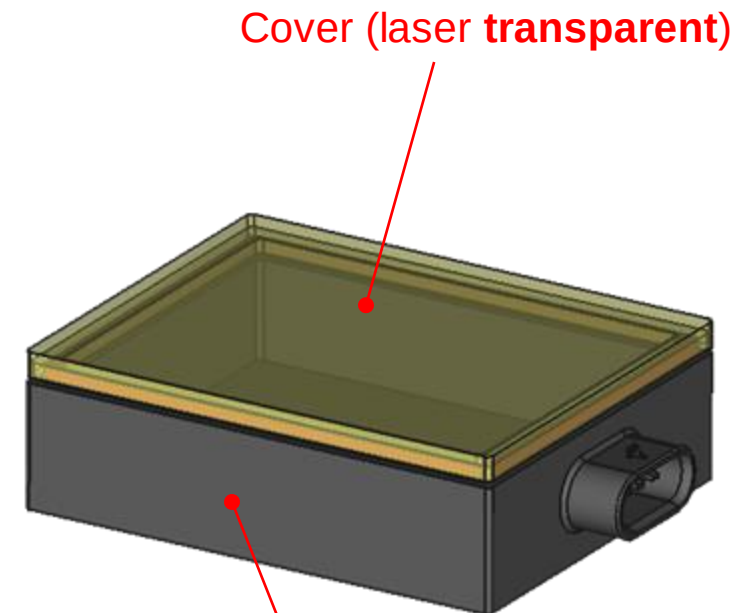
*Collapse
Laser Power
Clamping force*

- **Advantages**

Particle free, very save process, minimal space requirements for welding rib, sealed parts



Welding rib



Cover (laser transparent)

Housing (laser absorbing)

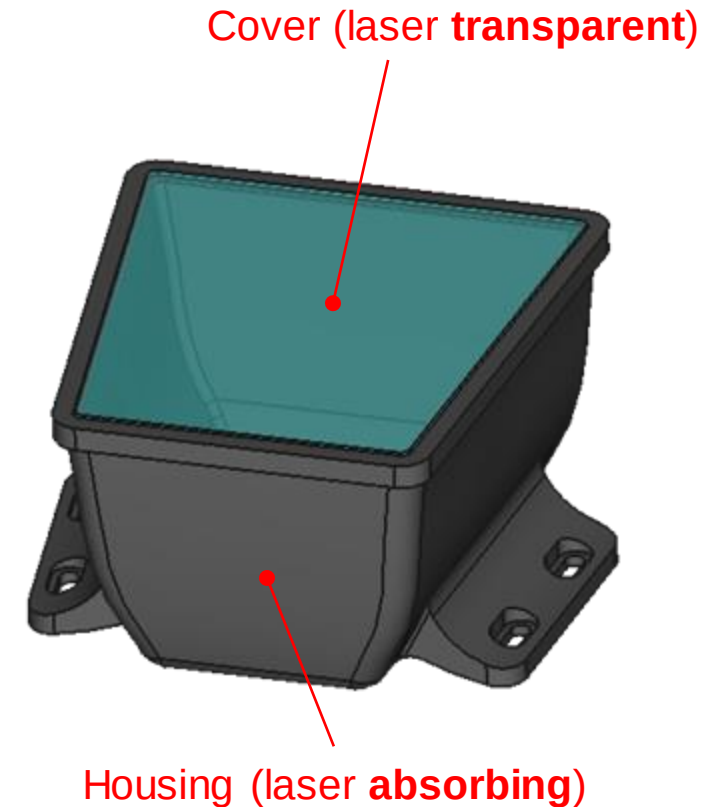
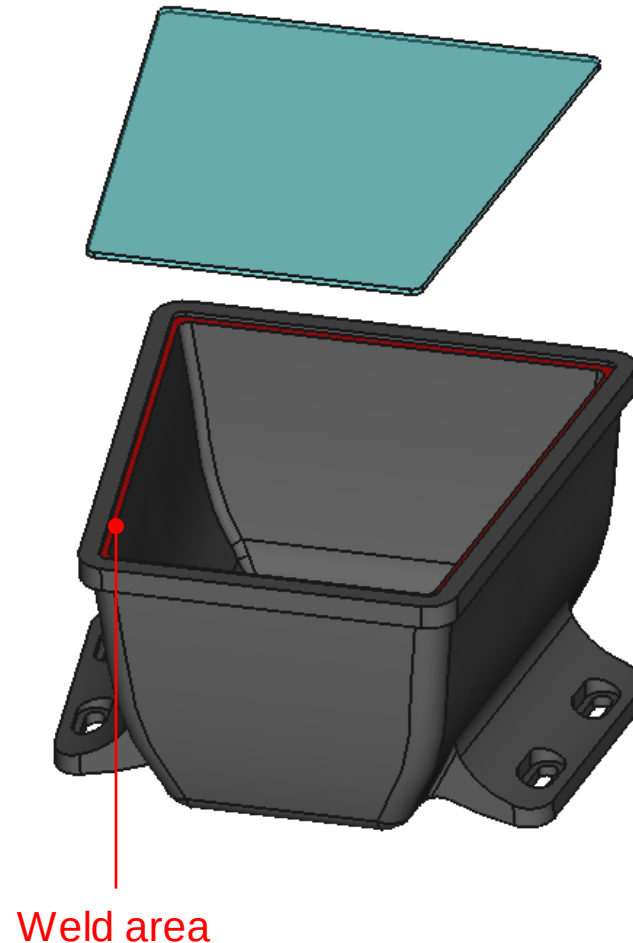
CONTOUR WELDING

- GENERAL -

PROCESS



- **Profile**
Laserwelds in 1-2 cycles
- **Relative Movement**
*Laser beam is guided relatively slow
No collapse*
- **Process Control**
*Laser Power
Clamping force
Visual inspection after welding*
- **Advantages**
Particle free, optical very aesthetic weld seams



RADIAL WELDING

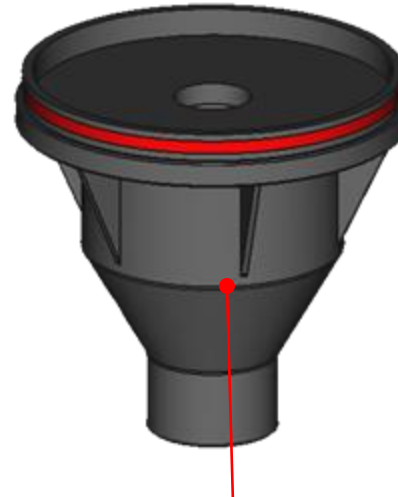
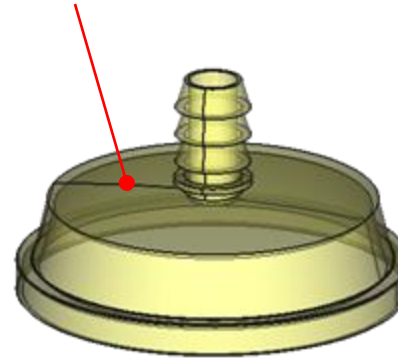
- GENERAL -

PROCESS



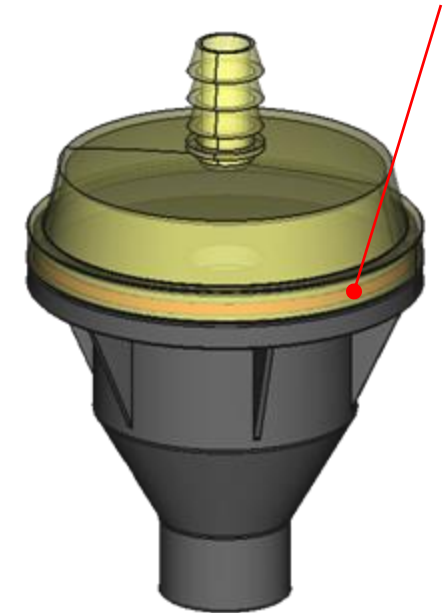
- **Profile**
Laser welds in 1-2 turn around
- **Relative Movement**
Laser beam or joining partners
- **Process Control**
Temperature control
Visual inspection after welding
- **Advantages**
Particle free, welding radial parts, very high strengths

Joining partner laser **transparent**

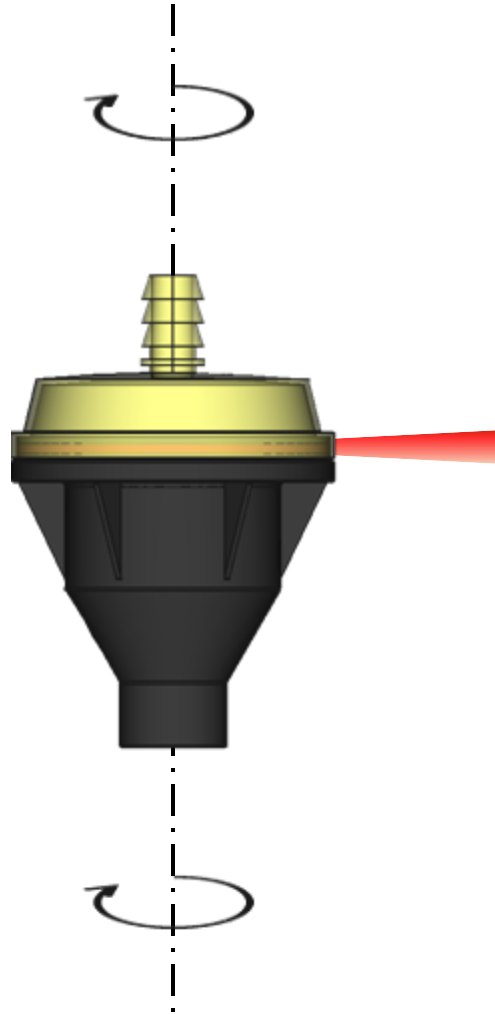


Joining partner laser **absorbing**

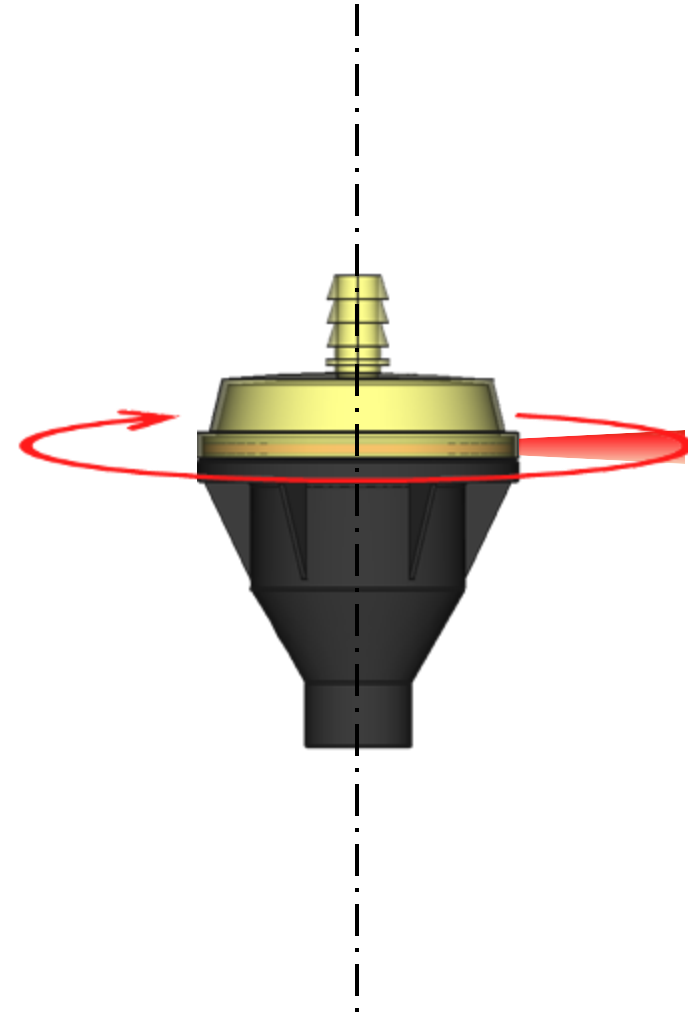
Weld area



Laser in fixed position – Part is turning



Part in fixed position – Laser is turning



PROCESS CONTROL

- VISUAL INSPECTION -

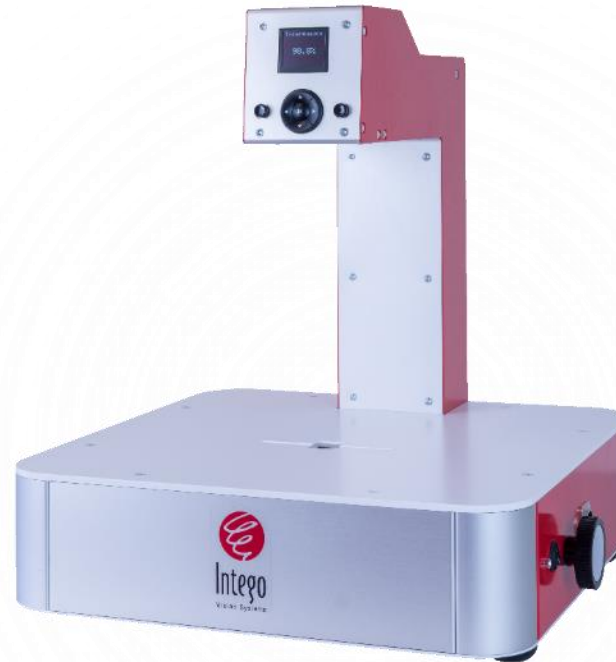


RadialTMS



Transmission
of radial geometries

PlanarTMS



Transmission
of planar geometries

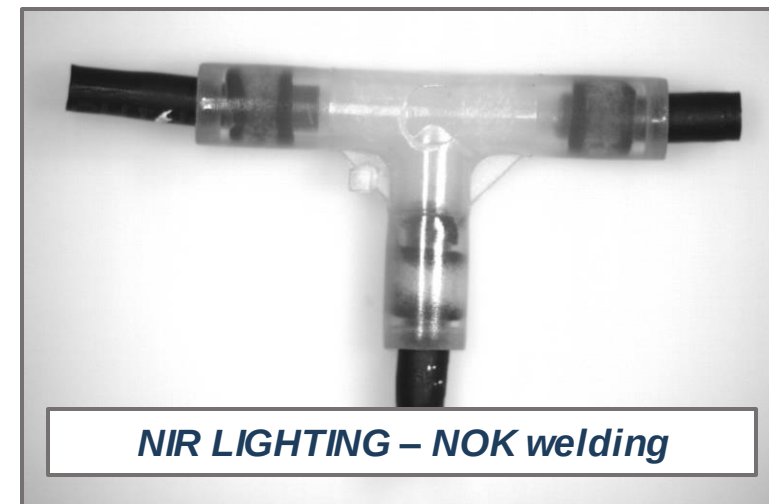
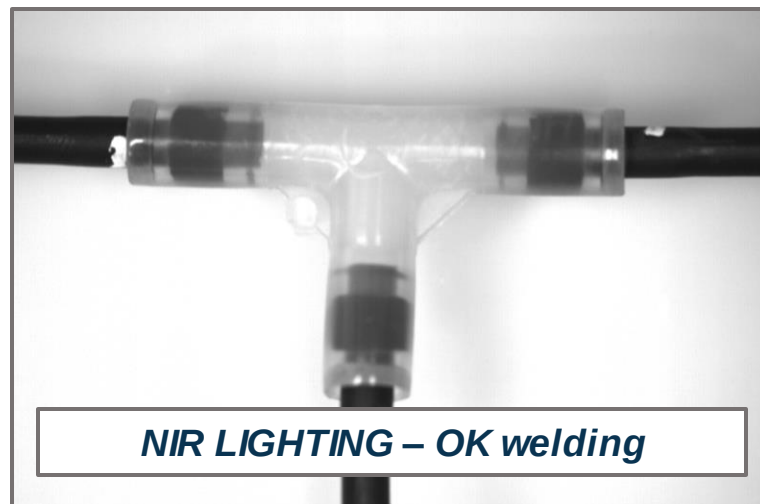
VisionTMS

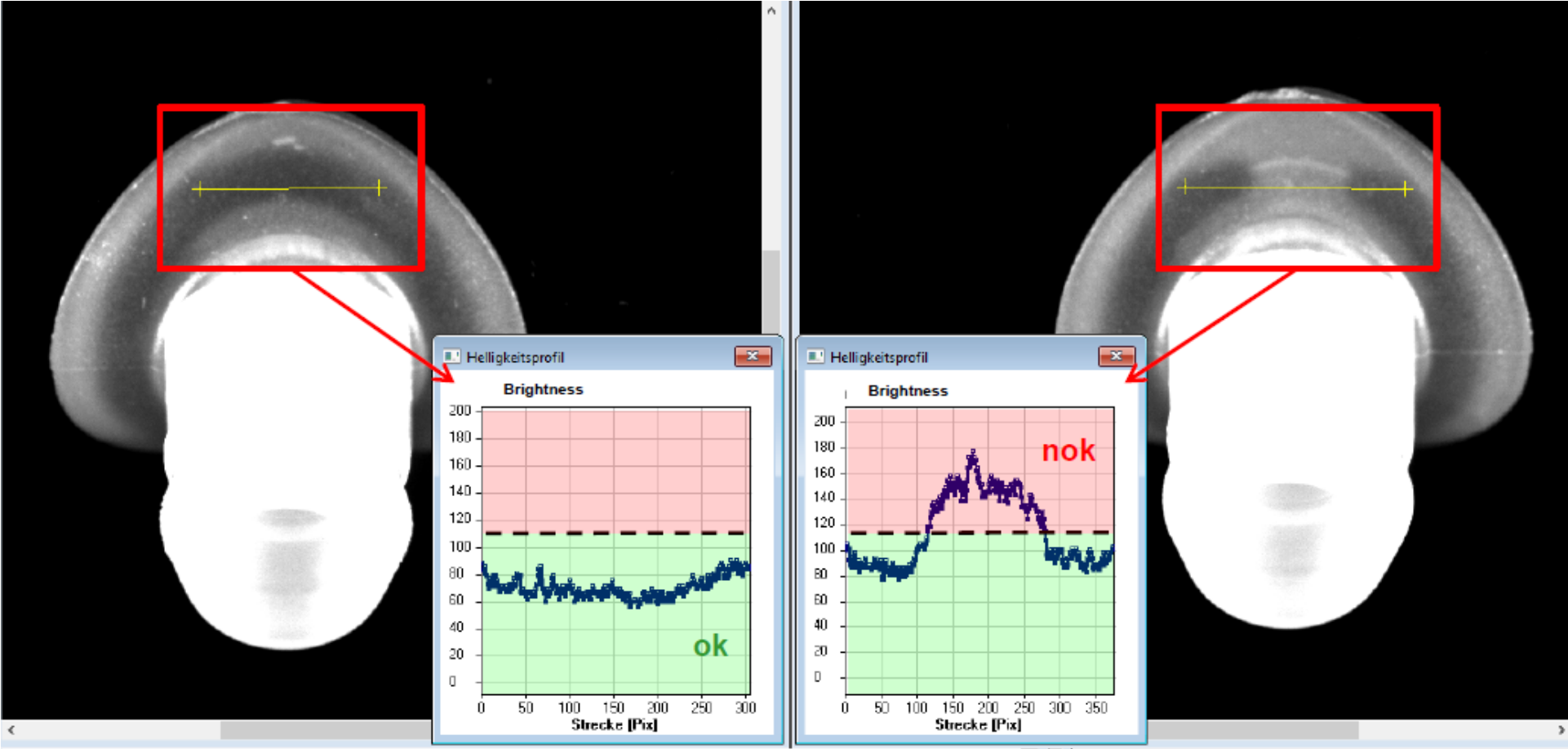


Inspection
of contamination or weld seam

...for further information please out our EVOSYS YOUTUBE Channel:







EVOSYS PORTFOLIO



RADIAL



PLANAR

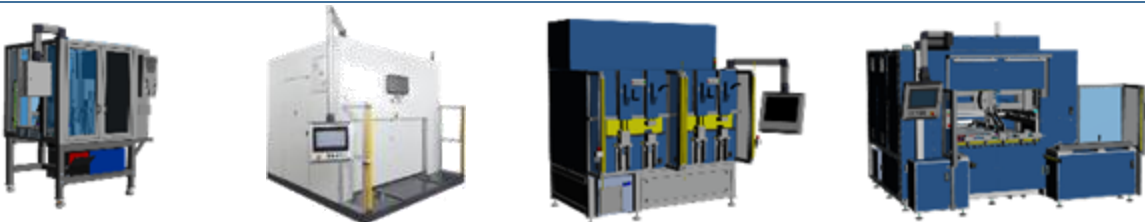


VISION



MT-Micro

Inspection
PICTOR, MT-Micro



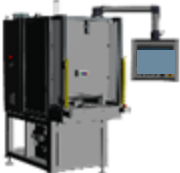
Laser Plastic Welding
Turnkey Customized Machine



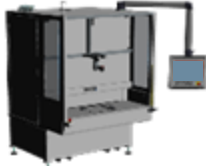
EvoWeld Mini



EVO 1800



EVO 2800



EVO 2800



EVO 3800



EvoWeld 2800

Laser Plastic Welding
Turnkey Machine



EVO 0700



EVO 0800



EVO 0800-TD



EVO 0800 TD-2

Laser Plastic Welding
Process Module



EVO 0550



EVO 0750

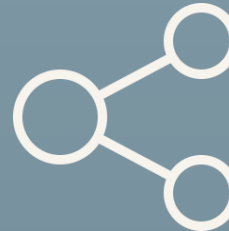
Laser Plastic Welding
Laser Module



**Customer
focus**



**Fast & easy
configuration**



**Modular
setup**



**World
wide service**



“...we understand our clients goals, by
viewing the world through their eyes.”

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