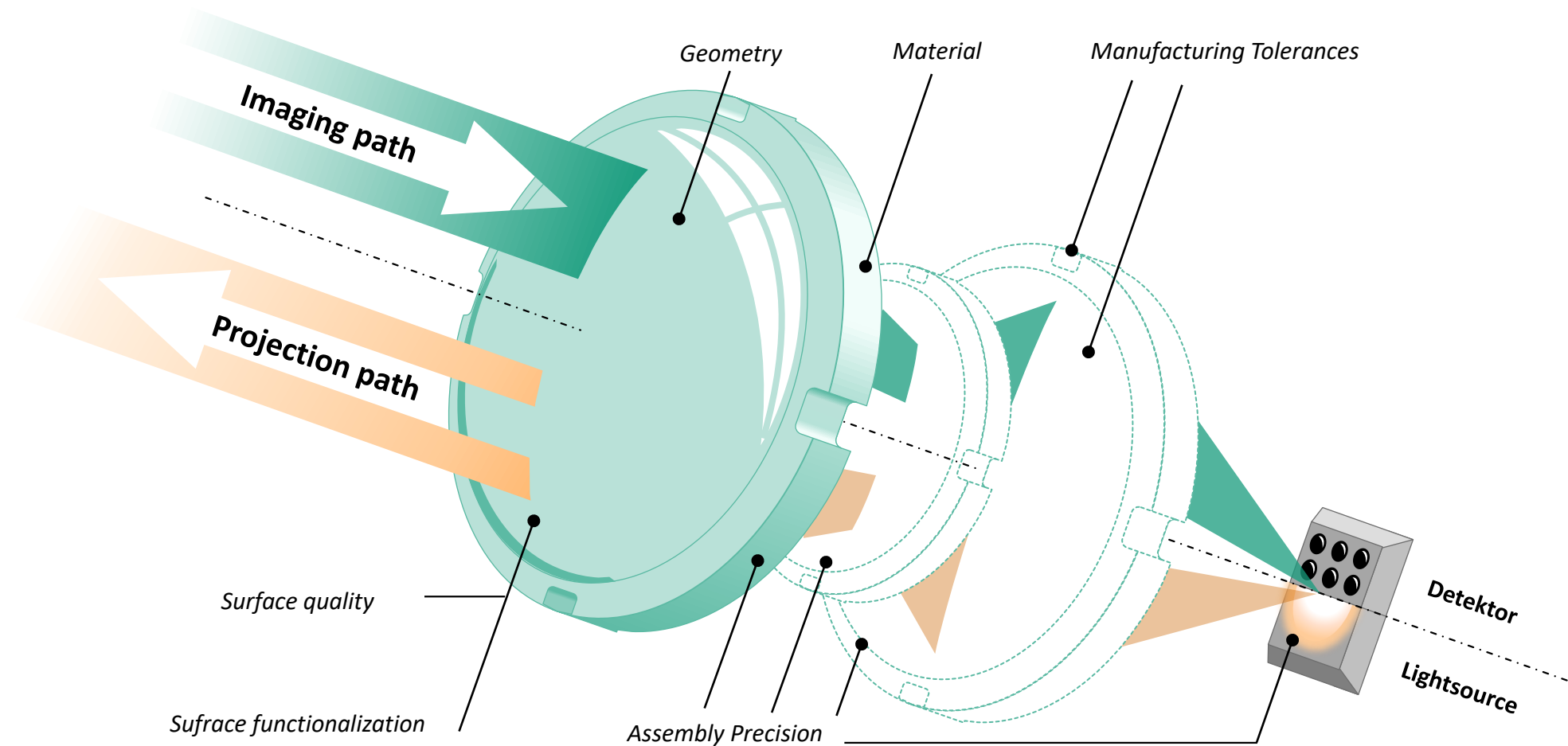


***Optics manufacturing and automated precision assembly
for LiDAR systems for prototyping and massproduction***



Challenges in production of LIDAR Systems





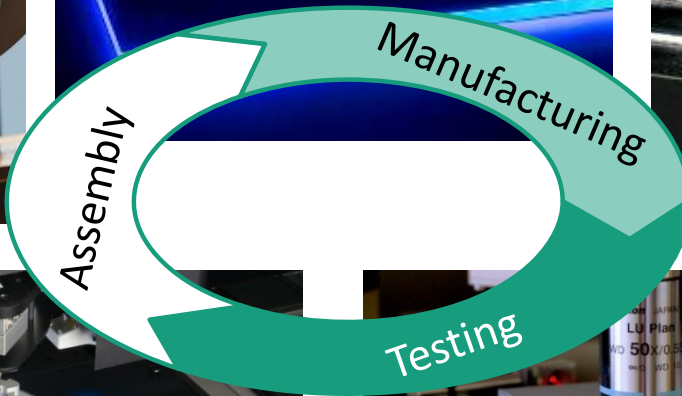
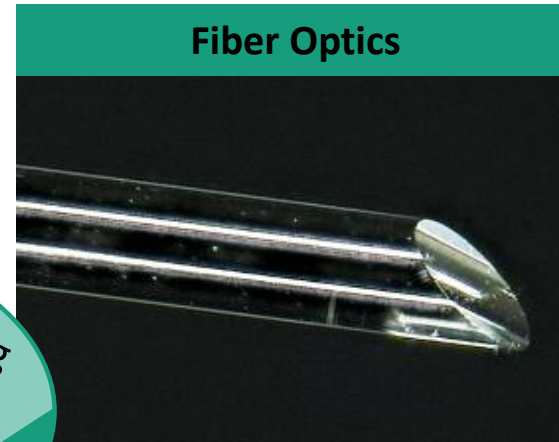
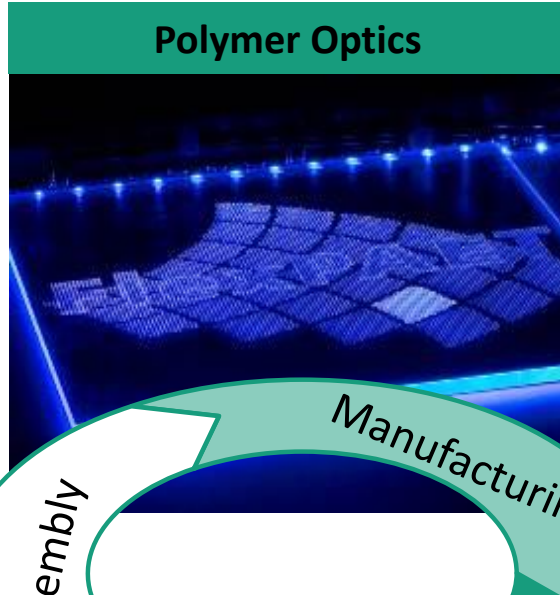
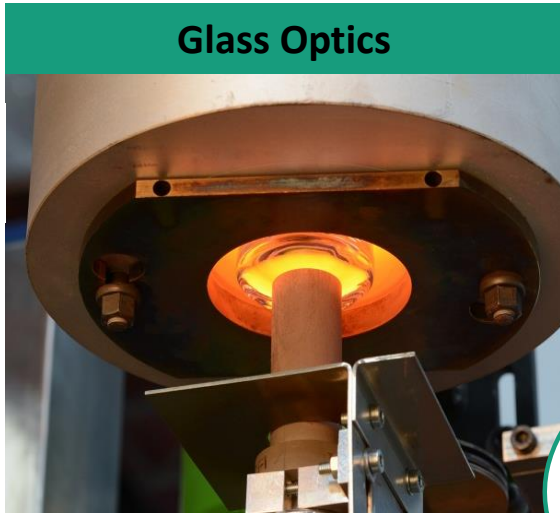
Market Acceptance



Performance of LIDAR Systems

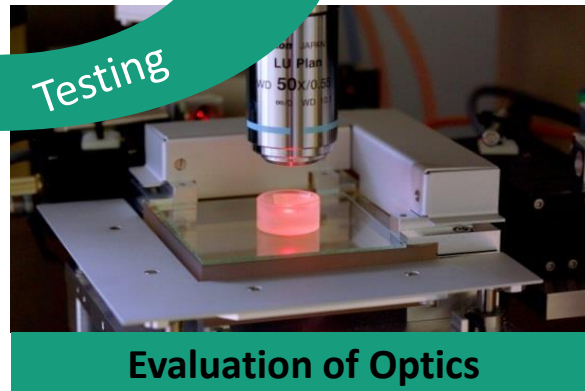
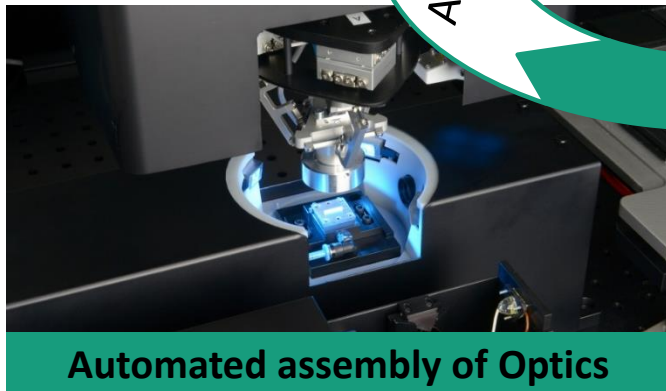
Optics in Aachen

From Manufacturing over Assembly to System integration



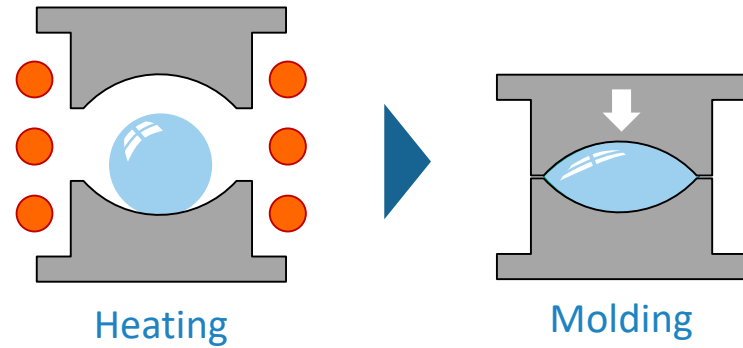
aix tooling

INGENERIC

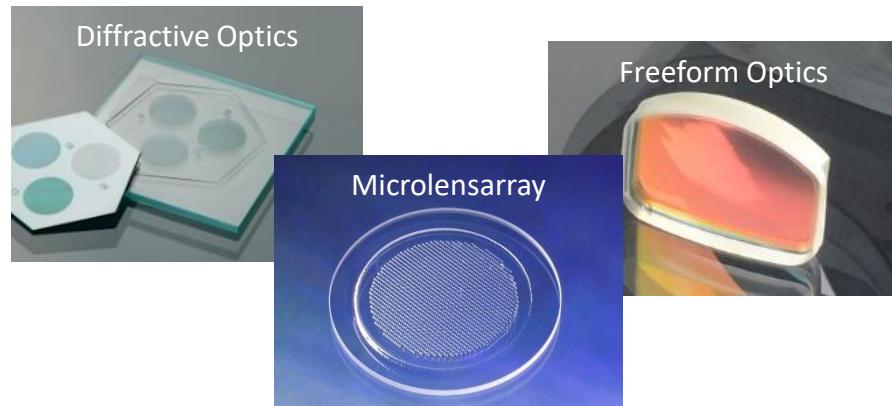


High Potential of Replicative Optics Manufacturing

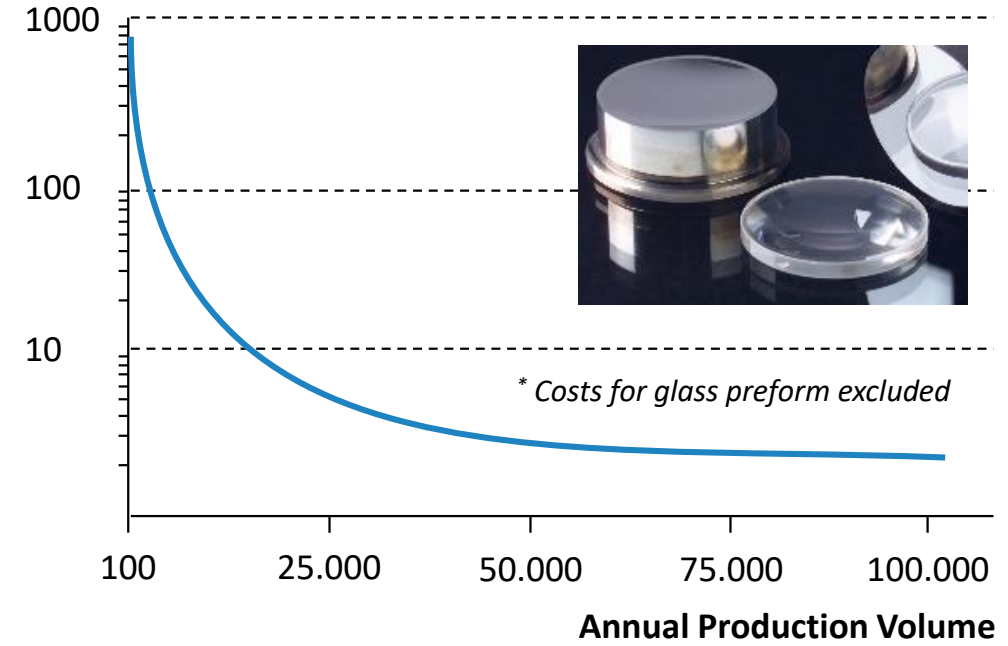
Precision Glass Molding Principle



Complex Lens with high accuracy



Manufacturing Costs* per Unit [US-\$]



Precision Glass Molding can potentially meet the requirements of complex geometries, high accuracy at low costs

Precision Glass Molding

Product Spectrum & Scope of Application

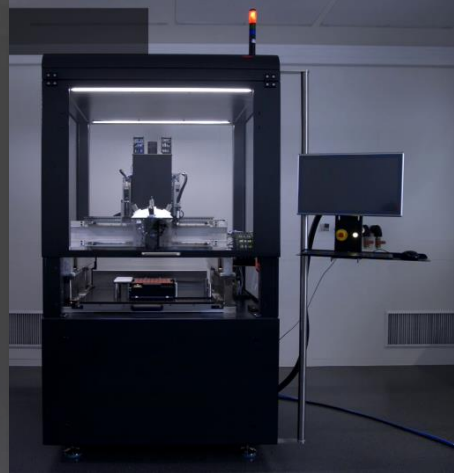


- Wide range of possible geometries
- Accuracies can be adjusted according to the field of application:
 - Imaging
 - Lighting
 - Laser Optics
- High reproducibility/ repeatability as a consequence of the molding process
- Scalable production through Spinoff companies and technology transfer

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Precision Assembly and Automation in Aachen

Timeline



AIXEMTEC



2008

First Micromanipulator
„Commander 6“

2010

First active alignment of
Fast Axis Collimators

2015

First Assembly Machine in industrial
environment

2016

Spinoff Aixemtec founded

2018

Multiple applications launched
(Lidar, Fiber-Array, Microoptic, ...)

2019

10+ Machines in the field
Automotive, Laser Industry, Consumer
Electronics, Datacom, Sensing, Quantum
Photonics

Assembly Technology from Aachen - Aixemtec GmbH



Key facts

Core Business Precision Assembly Machines and Services

Technological Excellence Highly Flexible Precision Assembly Machine Platform

Founded 2016

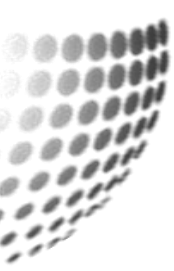
Ownership 100% Privately Owned

Staff 20 employees

Facilities Cleanroom, Labs and Offices, R&D Machines

Mother Institute



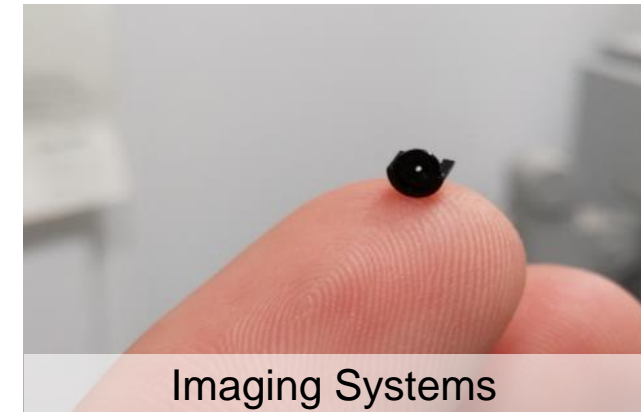
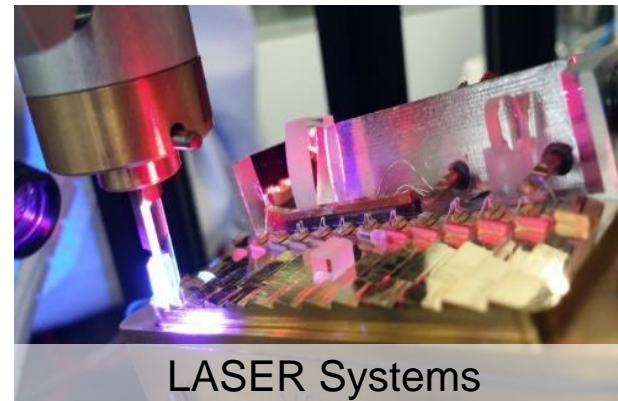
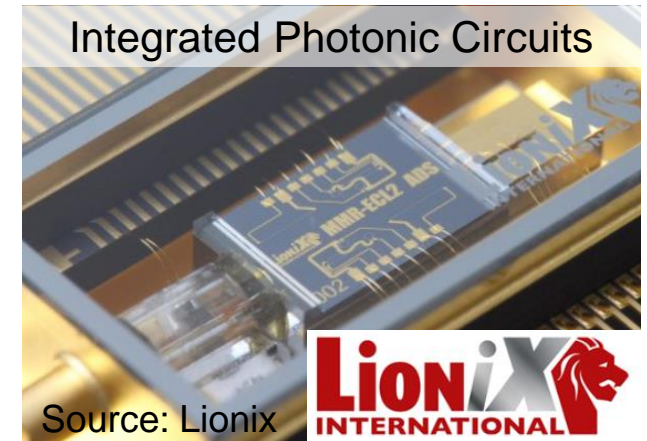


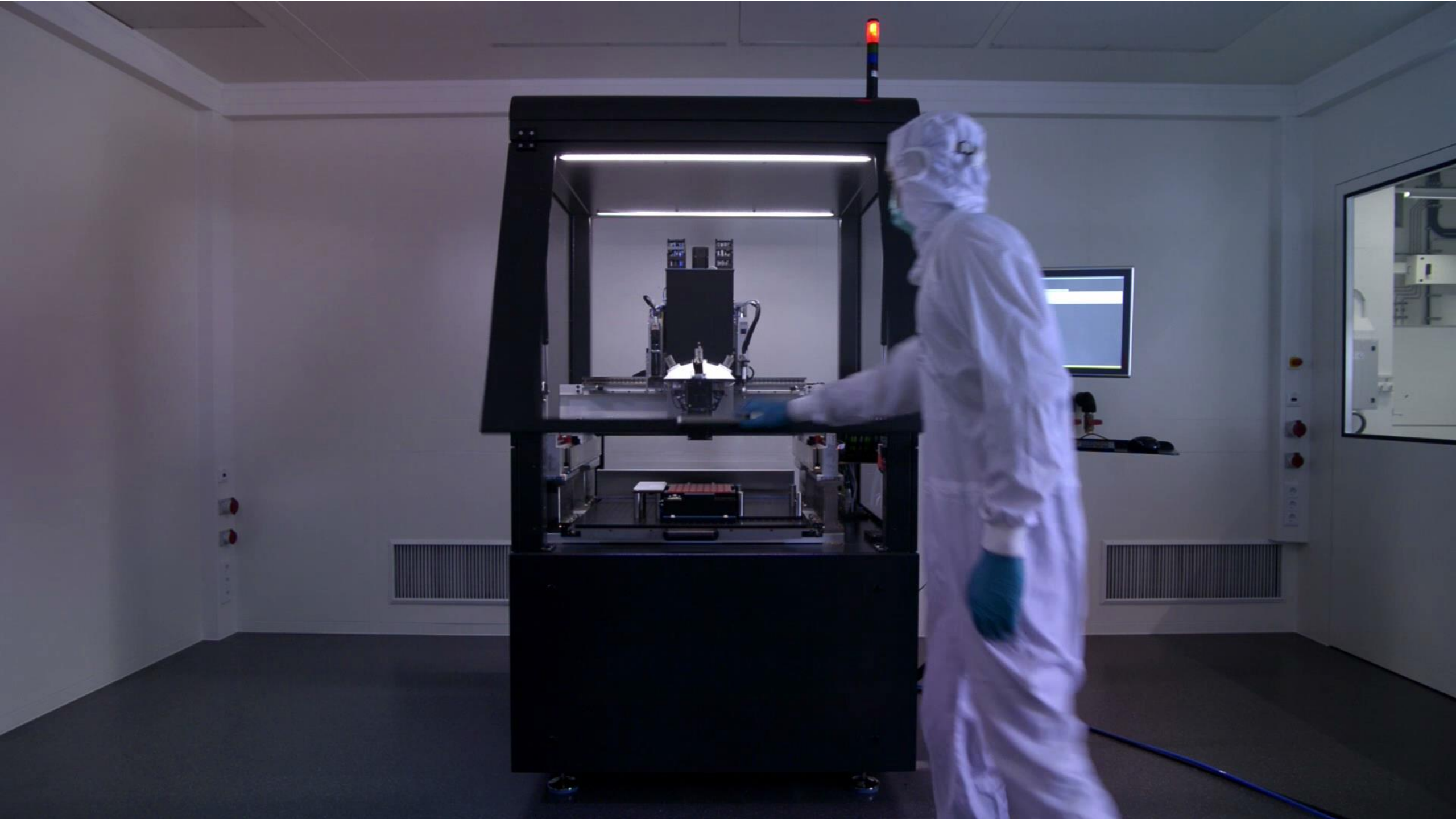
Automated Precision Assembly Markets and Applications

- Automotive applications
 - LiDAR systems
 - Driving assistance cameras
 - Headlight systems
- Imaging systems
 - Mobilephone Camera lens (Lens-Barrel)
 - Endoscopes
- Photonic Integrated Circuit
 - Chip Testing
 - Fiber assembly
 - Chip coupling
- Lasersystems
 - FAC-lens assembly
- Consumer electronics
 - Face ID & Gesture recognition



[Link to press release!](#)



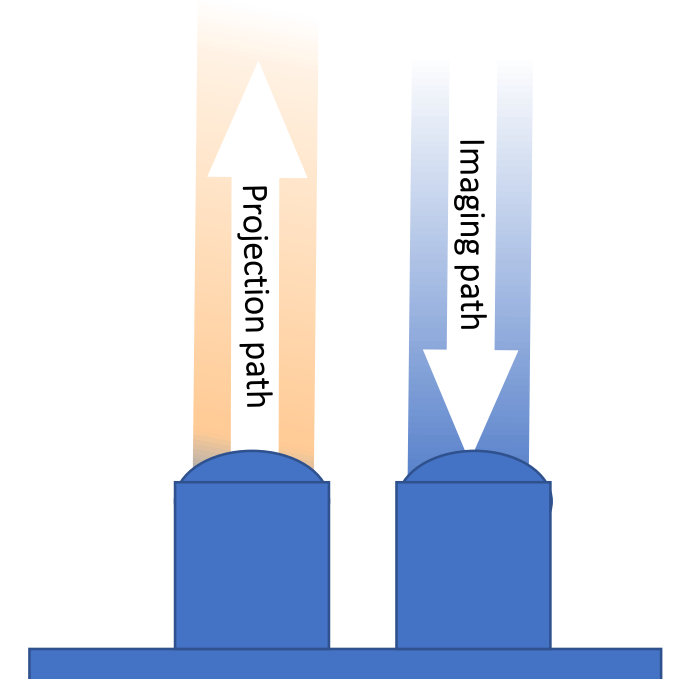


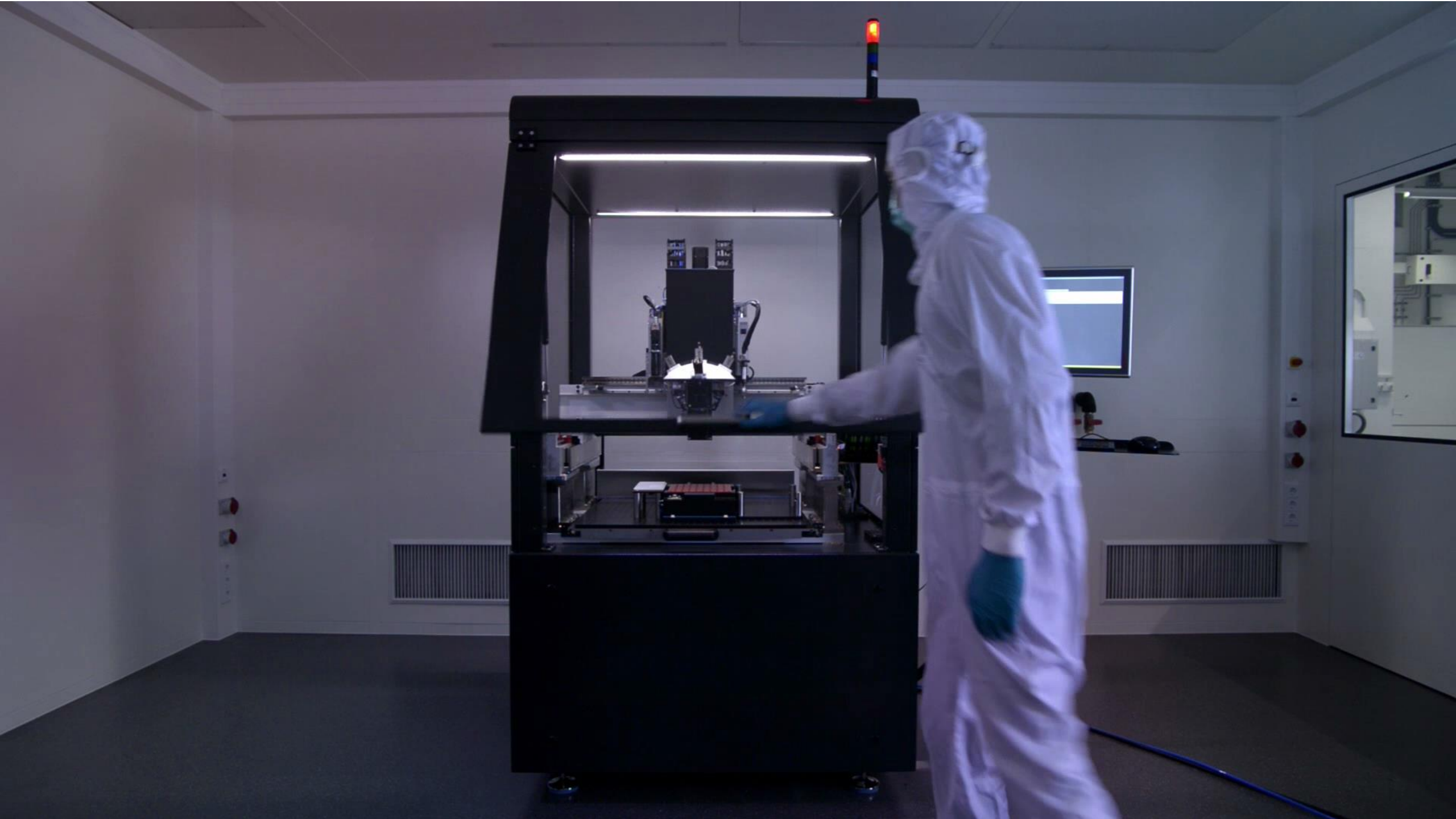


Automated Assembly of Solid State LIDAR Systems

Key facts on Aixemtec's Solid State Lidar Assembly Machine

- Installed January 2019
- Ultimate alignment precision in micron range for sender/receiver side
- Integrated UV-curing for high bonding repeatability
- Reconfigurability for different FOVs
- Open Source for process tuning through end-customer
- 6 Months projection time due to concurrent engineering
- Commercial Service and Support through Aixemtec







Development

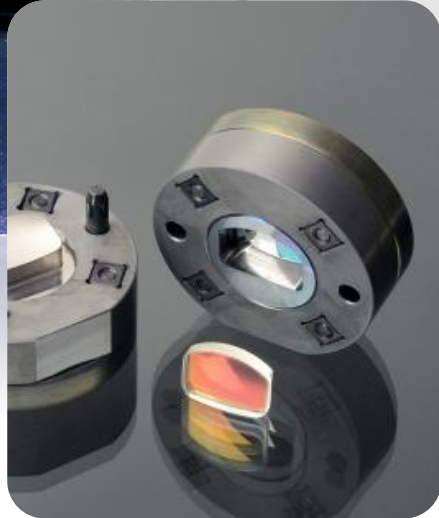
Product development consulting
Prototyping and feasibility studies
Optics manufacturing and assembly

Market launch

Contract manufacturing for low- to mid-volume
Manufacturing of high-end optics
Prove of automated assembly

Industrial production

Turnkey solutions for industrial production
Commercial service and support
Commercialization through partner companies



What can we provide?

Shortest development cycles for optics and optical system manufacturing
Knowhow in product design for automation
Powerful R&D team and network for industrial dissemination
Shortest time-to-market and efficient scaling of production

What are we looking for?

LIDAR or optical Systems manufacturers looking to develop or commercialize their products
Ambitious companies looking for strong development partners
R&D Projects and industrialization projects
Ultimately:
Making Europe the Innovation Hub for LIDAR Technology

This presentation was presented at EPIC Meeting on LIDAR Technologies for Automotive 2019

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