



EPIC

Webinar Advancements in bio-medical-imaging
28 September 2026

DEMCON life Science & health
Karel van Eijkeren

International Contract Engineering company



1993

2 ambitious students

Peter Rutgers

Dennis Schipper



2026

1100+ employees

Privately owned

6 sites in the Netherlands, USA, Germany, Japan

ISO 13485

We offer



CONTRACT ENGINEERING

- Life sciences & Health
- High-Tech mechatronic systems
- Data driven solutions
- Multiphysic simulations
- Optical systems (FOCAL)



CONTRACT MANUFACTURING

- Production
- Metal injection Molding
- 3D PEEK printing



INVESTMENT

- Investment in tech start-ups
- Public / Private partnerships
- Incubator facilities



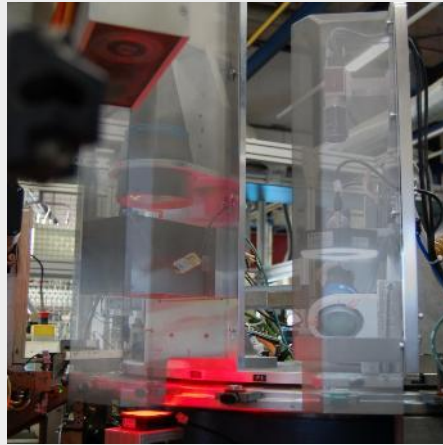
OWN PRODUCTS

- Photonics Assembly process
- Scinus cell expansion
- Sync Biosystems
- Macawi
- Finapres
- Hemics
- Kryoz
- TSST
- Convergence Filter technology
- ...

Optical Engineering



LASER LABS



**COMPLEX
ASSEMBLY**



**OPTICAL
ENGINEERING
&
SIMULATION**



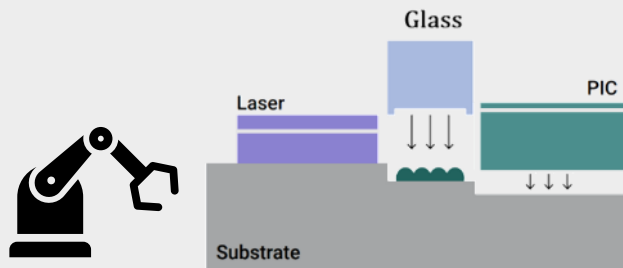
VISION LABS



PRODUCTION

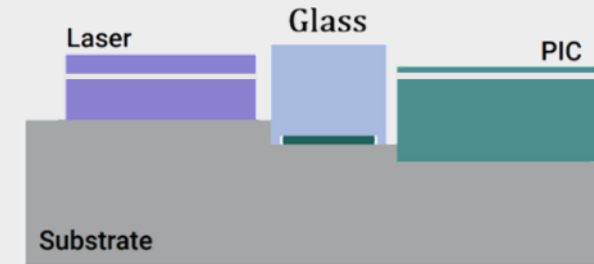
Photonics Assembly process development for High Volume Manufacturing

1. Pick & place



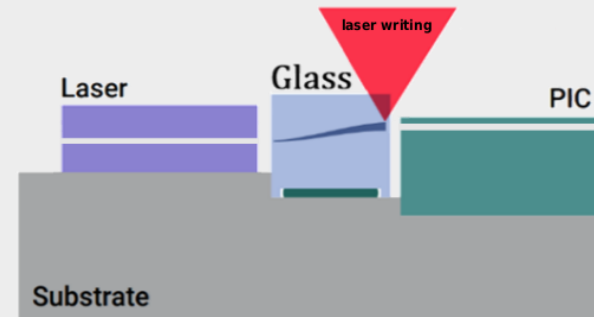
2. Pre-inspection

Metrology



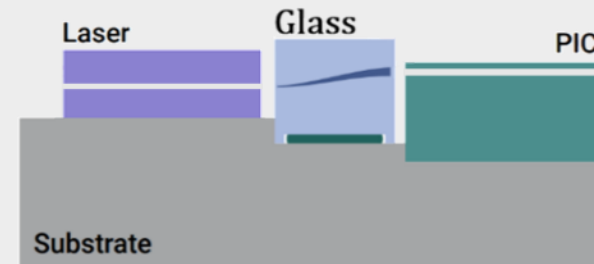
3. Writing waveguides

Process control

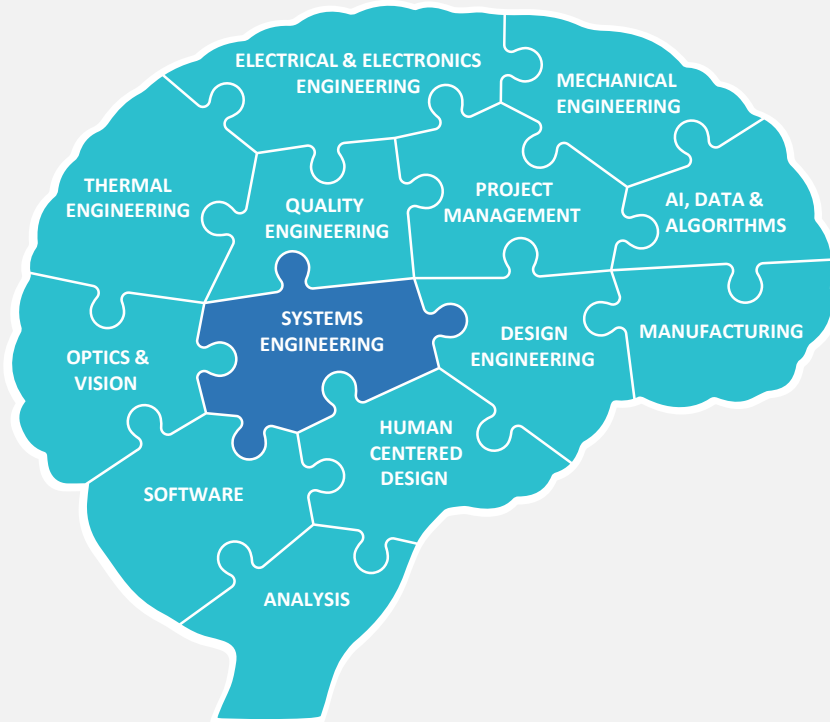


4. Post-inspection

Key performance indicators



Life science & health engineering



HIGHLY SKILLED & EDUCATED

- 20% PhD
- 50% MSc
- 30% BSc

OPTIMIZING THE COMBINATION PER PROJECT OF

- Technical expertise
- User understanding
- Domain knowledge

HOME-USE COAGULATION MEASUREMENT

Personalized Healthcare

- Technology based on custom photon counter sensor
- Reader design and development
- Disposable design and development:
 - Housing
 - Electrical and mechanical interfaces
 - Sample and reagent fluidic interfaces
- Temperature controlled reaction chambers
- 2nd iteration with different sample device
- Towards mass production and IVDR
- Close cooperation with multiple technology partners (microfluidics, sensor technology, sensor packaging, electronics)
- Tooling for assay development and general support regarding device development

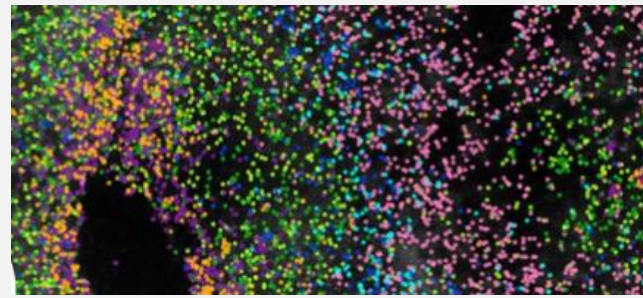


IN-TISSUE RESEARCH SYSTEM

Spatial genomics

- Optics: 6 channel fluorescence
 - Illumination,
 - integrated Autofocusing,
 - Imaging optimization.
- Vibration damped precision stages
- Fluidics control (40+ reagents)
- Custom user-friendly Flow Cell design
- Usability
- Regulatory for US and European markets
- Design for manufacturing
- Software for test and verification purposes

<https://vimeo.com/nymus3d/vsa-1>



COVID POINT OF NEED PCR TEST

Ultra fast PCR

- System consisting of a reader and disposable
- Optics: development of fluorescent camera-based detection.
- Tailored fast temperature control
- Design of reader including electronics, optics and housing
- Interface to a disposable cartridge
- Time to market driven
- PCR results within 12 minutes
- Flexible Proof of Concept as assay development tooling

[miDiagnostics website](#)



EUROPEAN LIBRA PROJECT

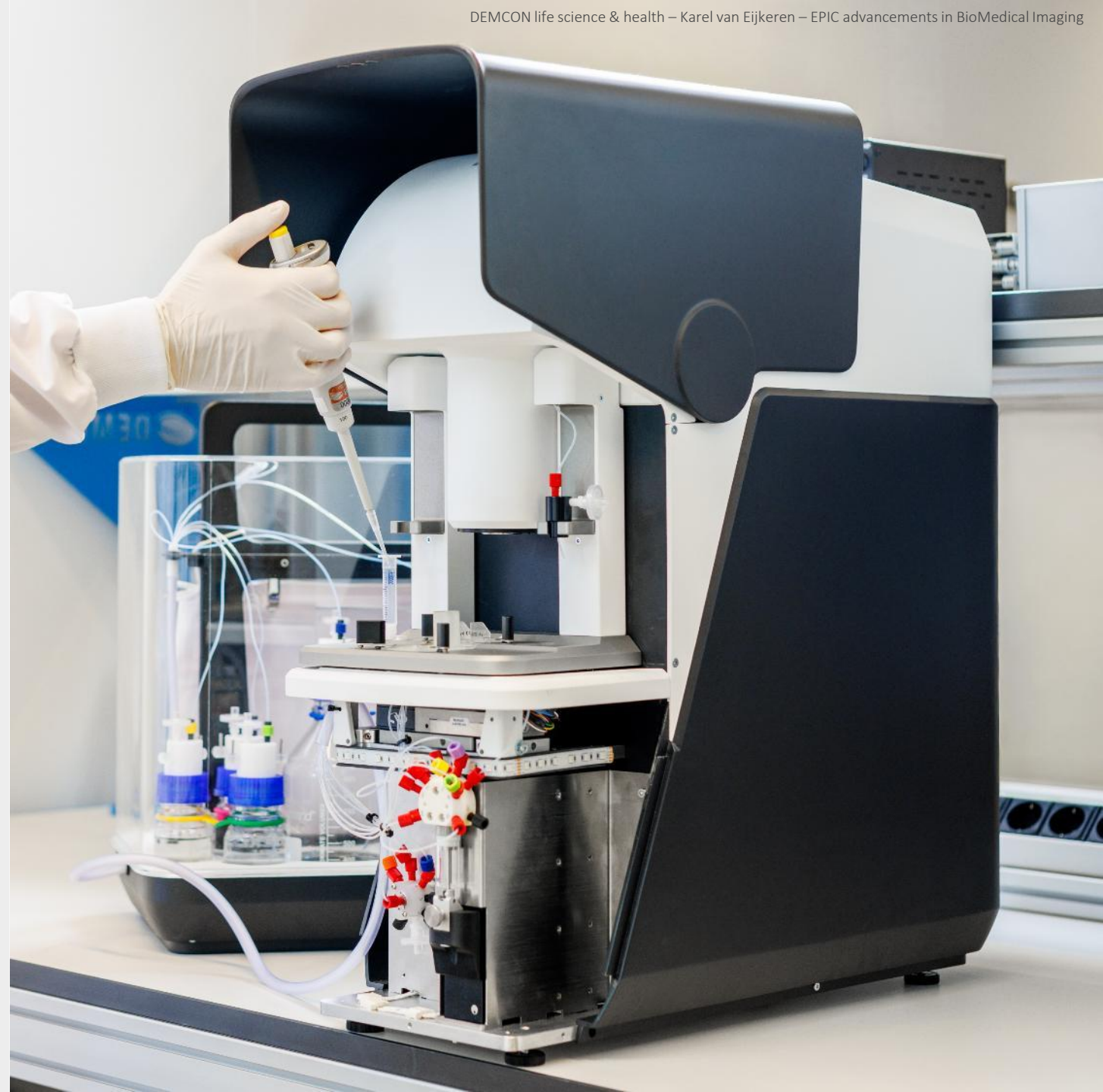
benchtop smart multi-sensing system.

challenge.

This system used for inline automatable screening of various cultivation processes in bioreactors. It combines two photonic technologies: Raman and aMZI in one sensing system. We were asked to integrate the system and take care of the alignment between the passive and active photonic chips.

contribution.

- Design that integrates all components developed by participating European partners
- Hardware & software solution for the alignment of the passive and active photonic chips
- Realized: Prototype device containing both fluidic actuation and alignment of photonic chips.
- In progress: final component integration from European partners



EXPERTISE & TRENDS

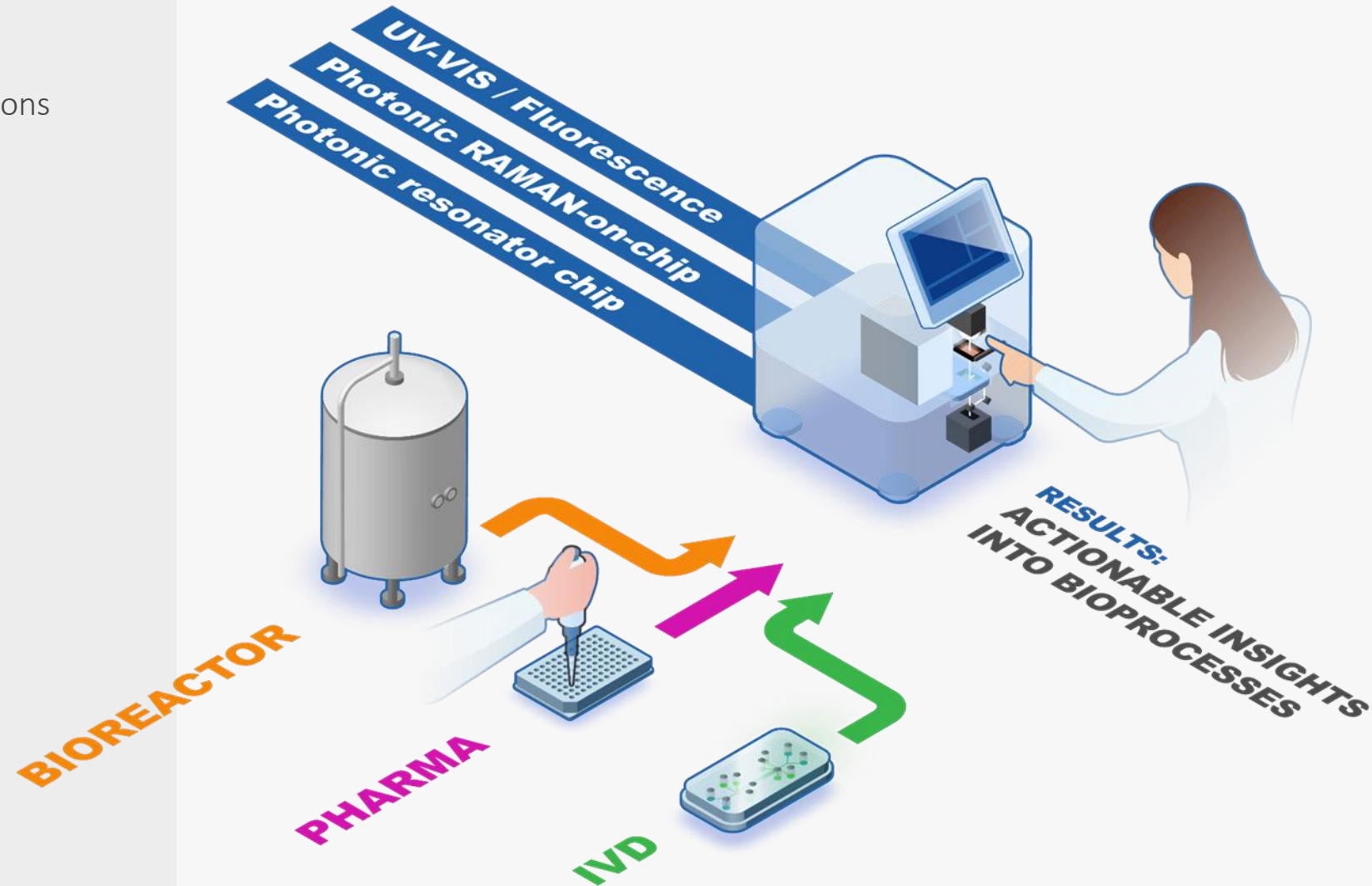
Market insight

Within DEMCON we see a variety of applications and techniques used.

Due to NDA we cannot go into detail.

Optical techniques and concepts seen:

- Fluorescence detection
 - Camera based
 - Spectrometer based
- Lens free imaging
- Photon counting
- Raman
 - Resonance
 - Surface enhanced
- Photonics
 - Coupling: Grating & channel from the side
 - AMZI, Raman, Ring resonator



Questions?

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