ficonTEC

Micro-Optics Assembly Solutions

Company

Founded 2001

58 employees + management team

Factory & engineering in Achim, Germany

2,400 m² facility – further capacity available

~ $ 15M annual revenue
healthy balance sheet & cash reserve

Production equipment - made in Germany

Production facility

Portfolio

Semi- and fully automated capital equipment

- ✓ Semiconductor-die and -bar bonding, T&M, vision inspection and sorting...

Assembly & test equipment

- ✓ **Optical Industry, optoelectronics**
- ✓ **LD & HPLD manufacturers**
- ✓ Telecommunication
- ✓ Medical technology
- ✓ Security & military engineering
- ✓ Consumer electronics

Production equipment

ficonTEC
assembly automation solutions

Satisfied Customers

Selected list only

ficonTEC
assembly automation solutions

Strong International Presence

Global Service & Support

Machines equipped with RSA (remote service access)

Local support in Asia, USA, India and Europe

Excellent support for customized machines

Only minimal maintenance necessary

ficonTEC Service

Global Service & Support

24 hrs & online support

2 – 4 hrs technical support response

24 – 72 hrs onsite support

< 1 week system re-commissioning
in case of total system failure

ficonTEC Service

TestLine

LDB test & measurement and characterization

- ✓ Full automatic device handling
- ✓ Full component tracking
- ✓ Automatic good/bad decision based on adjustable parameters
- ✓ Test of chip on submount
- ✓ Inspection of components possible

Multi Solutions | Single Source

Production equipment

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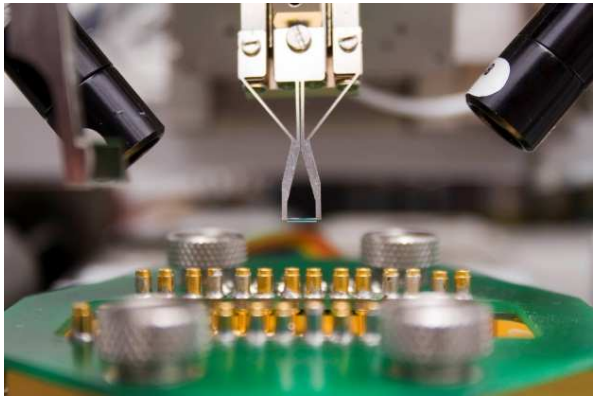
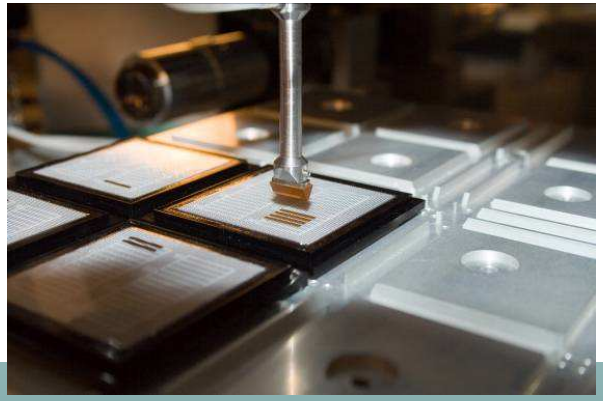
Mechanical & Vacuum Gripper

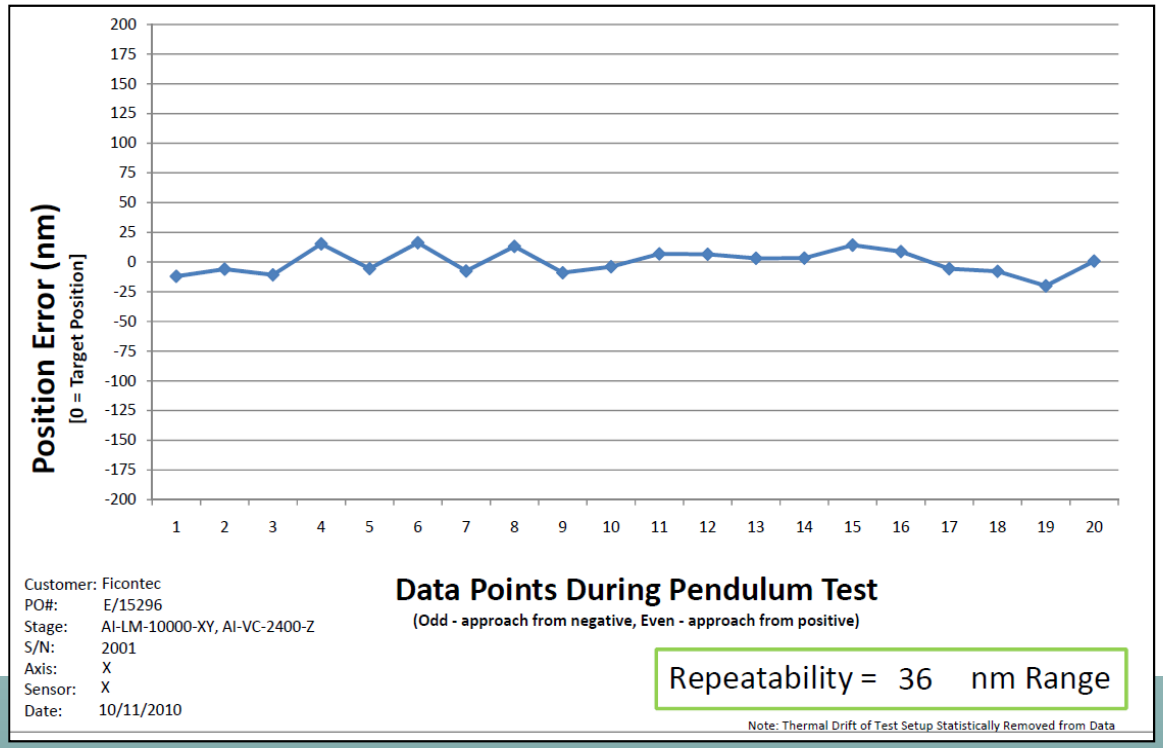




Alignment Engine

Fast, 3-axis integrated ultra-precision submicron BDR motion system

Axis	Repeatability (System 1)	Repeatability (System 2)
X	± 18 nm	± 15 nm
Y	± 14 nm	± 17 nm
Z	± 48 nm	± 47 nm



TEXT

AssemblyLine

High Precision Micro-Optics and Lens Assembly

Automated FAC/SAC to LDB Assembly

Submicron precision alignment

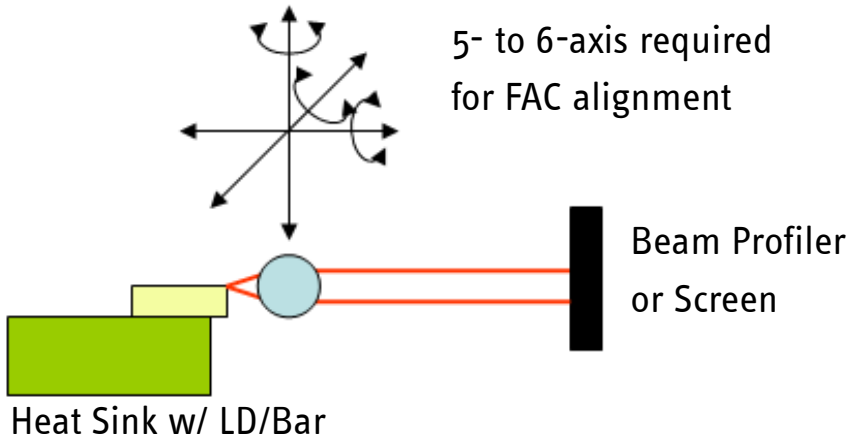
6 axis motion (X, Y, Z, θx, θy, θz)

≤ 10 arc-sec rotary alignment

Precision UV epoxy dispensing and curing

Signal detection, evaluation, and control-feedback (vision technology)

Operator-free assembly



Assembled module

Automated FAC/SAC to SE-LD Assembly

Mirror & lens alignment and assembly

Submicron precision alignment

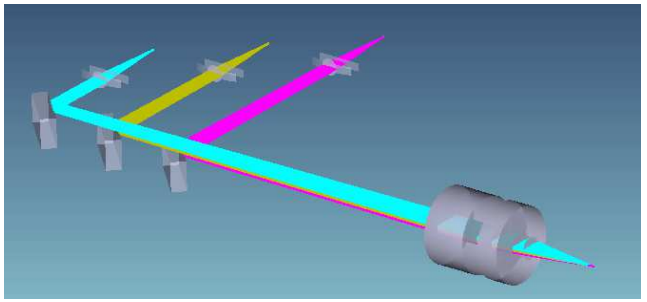
6 axis motion (X, Y, Z, θx, θy, θz)

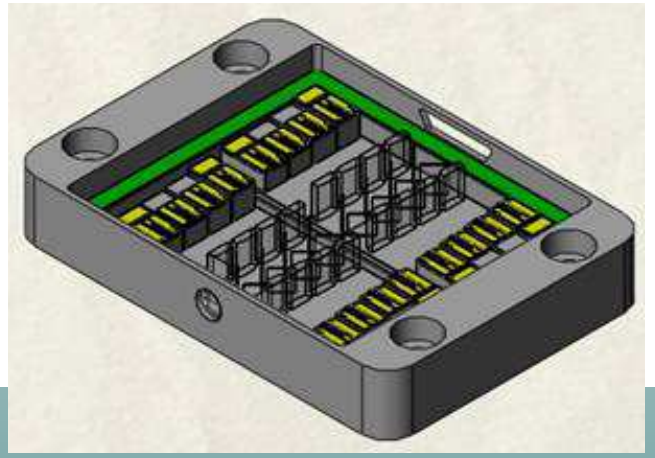
≤ 10 arc-sec rotary alignment

Precision UV epoxy dispensing
and curing

Signal detection, evaluation, and
control-feedback (vision technology)

Operator-free assembly





Automated FAC/SAC to LDB Assembly Process

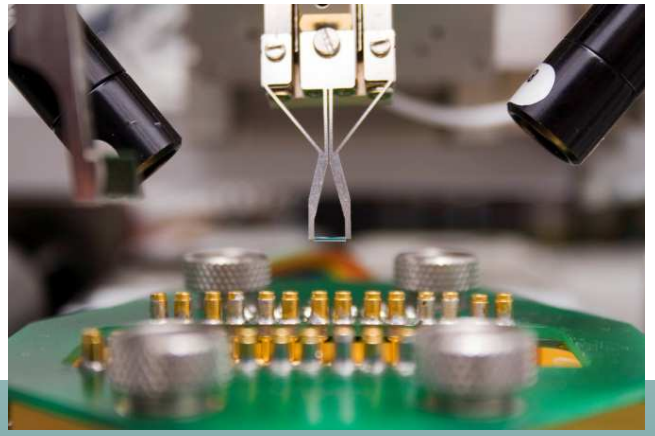
Pick up FAC lens from tray

Reliable fixation by vacuum or gripping

Careful handling – damage prevention

Space for optical path

Setup for common pivot point in lens center



Assembled module

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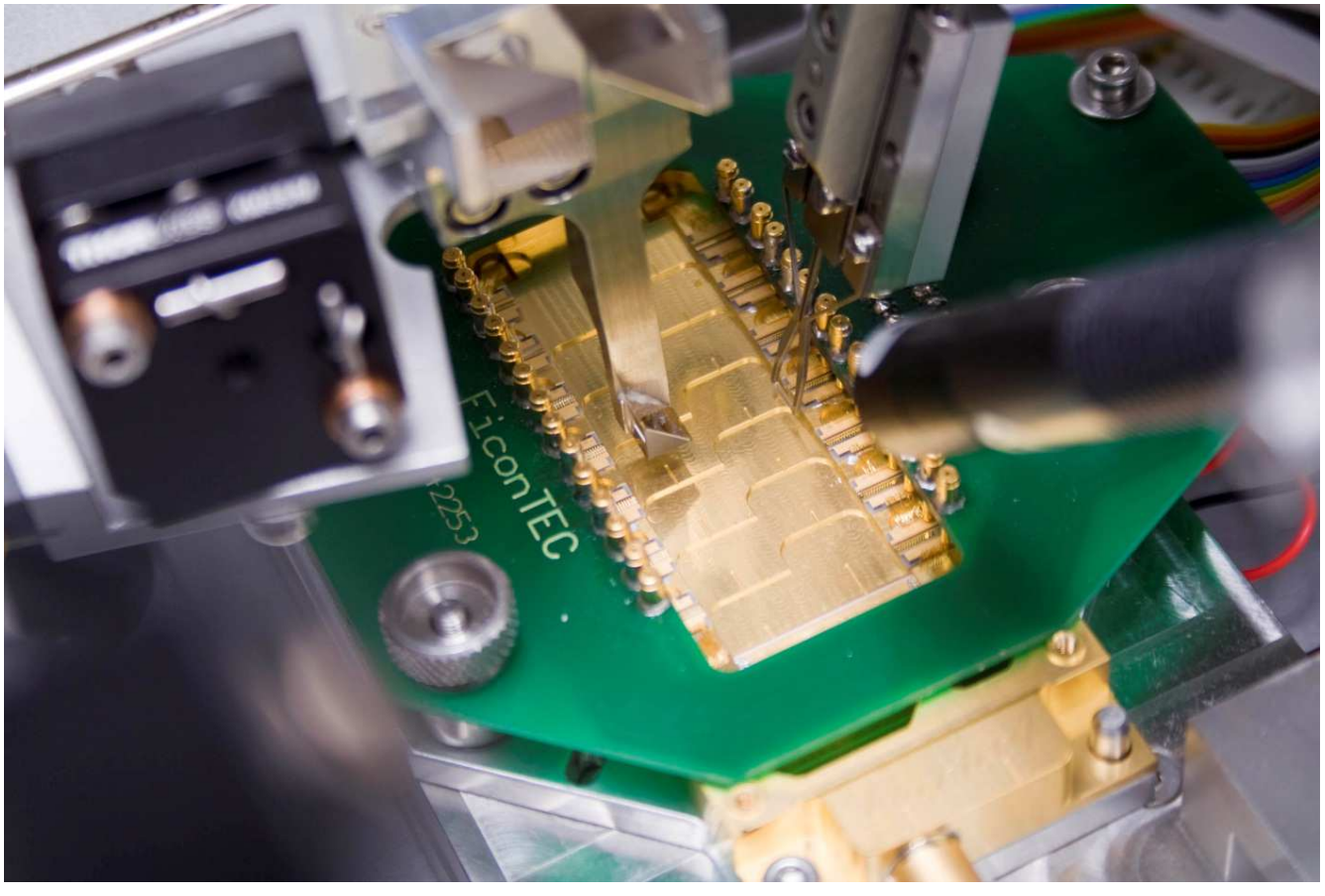
Automated FAC/SAC to SE-LD Assembly



Automated FAC/SAC to LDB Assembly Process

Position of LDB (vision system)

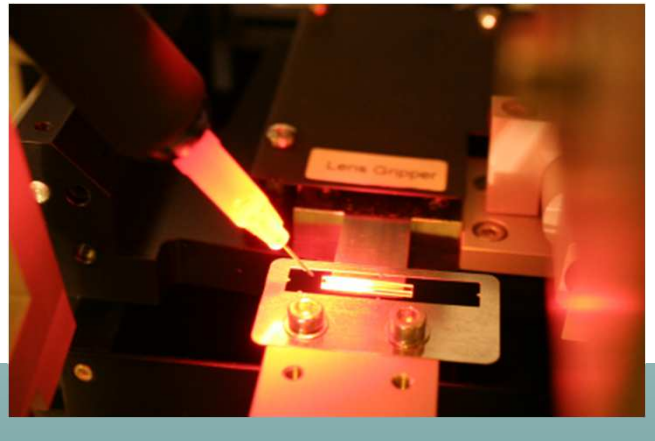
Position lens in front of LDB

Pulse-operation of LDB

Dispense UV-epoxy to heatsink or lens

Alignment of lens in 6-degree of motion

Curing of adhesive by UV light



Dispensing process

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Automated Lens Assembly System

Alignment engine – Submicron precision

9-axis alignment system

✓ 6-axis for lens alignment

✓ 3-axis parts handling

Precision UV-epoxy delivery

Dual-head LED-UV curing

High-power laser safety enclosure

Production equipment

Software

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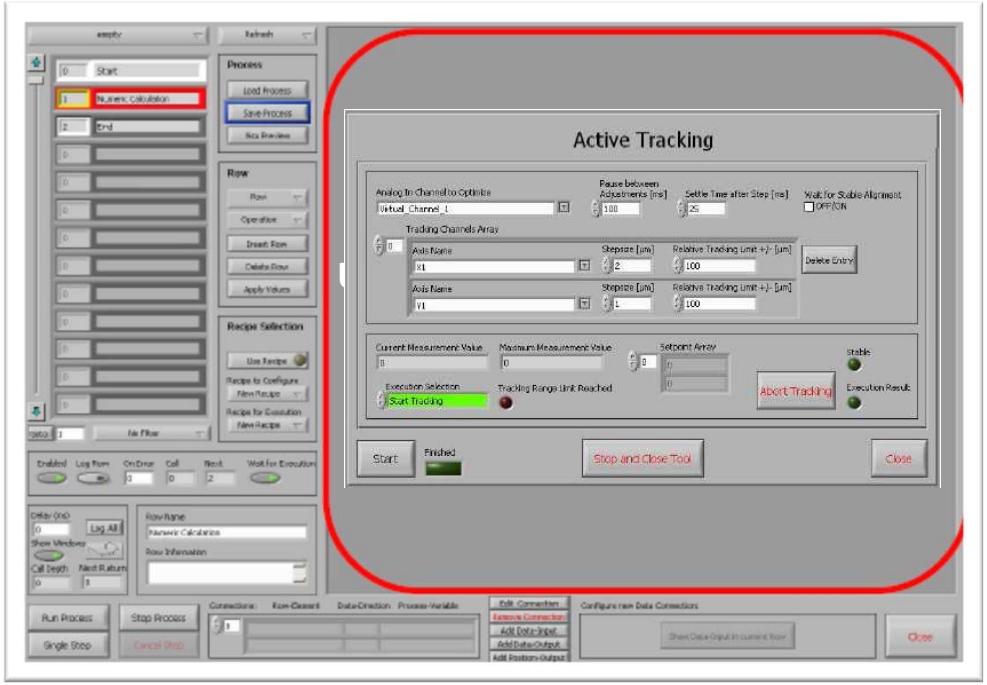
Some general features:

+ Easy to use process editor
+ Compehensive documentation of software
+ User can develop own Applications
+ User can write own source code and integrate 3rd party instuments
+ All sorts of active and passive aligment routines (e.g. spiral search, hill climb, active tracking, and much more)
+ Software can compansate for post cure shifts using auto tracking function
+ Different user level for programmers and operators



Process editor

Software screen shot

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Assembly Line – Diverse Applications

Sensor assembly for computer tomographs
(Philips Healthcare)

Assembly of CCD cameras for automotive
(IEE Optosence)

Full automatic assembly of lenses to housings
(Zeiss)

Production equipment

ficonTEC Advantages

Breadth & depth of automation tools

- ✓ Chip > CoC > Packaging > Final test
- ✓ Applications, processes, devices
- ✓ Single supplier for sales / service

Multi Solutions | Single Source

Production equipment

ficonTEC Advantages

Strong applications engineering expertise

- ✓ Package design consultation
- ✓ Assembly & test process development
- ✓ Tooling / fixturing
- ✓ Application software

Multi Solutions | Single Source

Production equipment

ficonTEC Advantages

Expert automation technology

✓ Motion, vision, instrumentation…

Automation integration

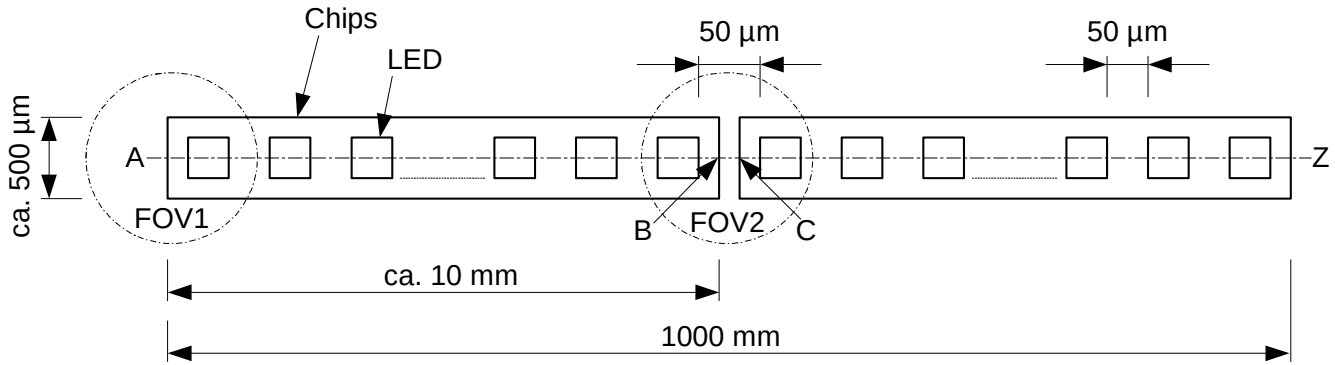
✓ Feasibility testing

Worldwide reach & support

✓ Installation, service, technical support

Production equipment

Anwendung ähnlich DESY Teilchendetektor

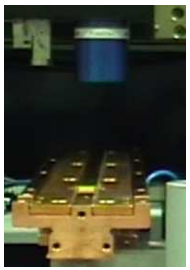


- Die Aufgabenstellung hier war es, Chips mit LEDs hochpräzise auf ein gemeinsames, großes Substrat zu bonden
- Chips von 10 mm Länge und 500 µm Breite (mit montierten LEDs) mussten gesetzt werden
- Die zulässige Abweichung von A nach B, B nach C usw. zur Mittelachse betrug 1 µm
- Die zulässige Abweichung von A nach Z (über die Gesamtlänge) zur Mittelachse betrug 2 µm
- Die LEDs selbst dienten als Referenz
- Der Abstand von LED zu LED (auch zweier benachbarter Chips) betrug zuletzt 50 µm mit einer Toleranz von +/- 1 µm
- FOV1 und FOV2 sind die Field-Of-View (Sichtbereiche) der Kameras, die zur Justage eingesetzt wurden
- **Diese Anwendung ist ein Beispiel und kann in jeder Hinsicht an Ihre speziellen Anforderungen angepasst werden**

Bilder zur Anwendung ähnlich DESY Teilchendetektor

Substrat

1m lang



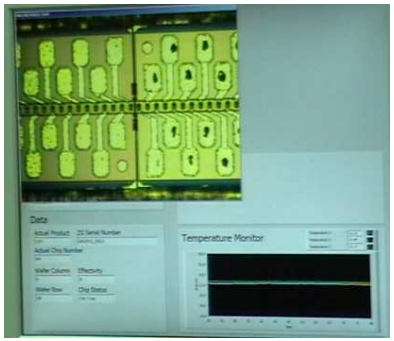
Kamera

nimmt

Pos. auf.

Chips werden vom Blue-Tape abgepickt

Chips werden auf dem Substrat gebondet



Am Bildschirm zu sehen:

Ausrichtung der Chips zueinander

Eingesetztes System: BL (BondLine)

Genauigkeit siehe Schema auf vorangegangener Folie