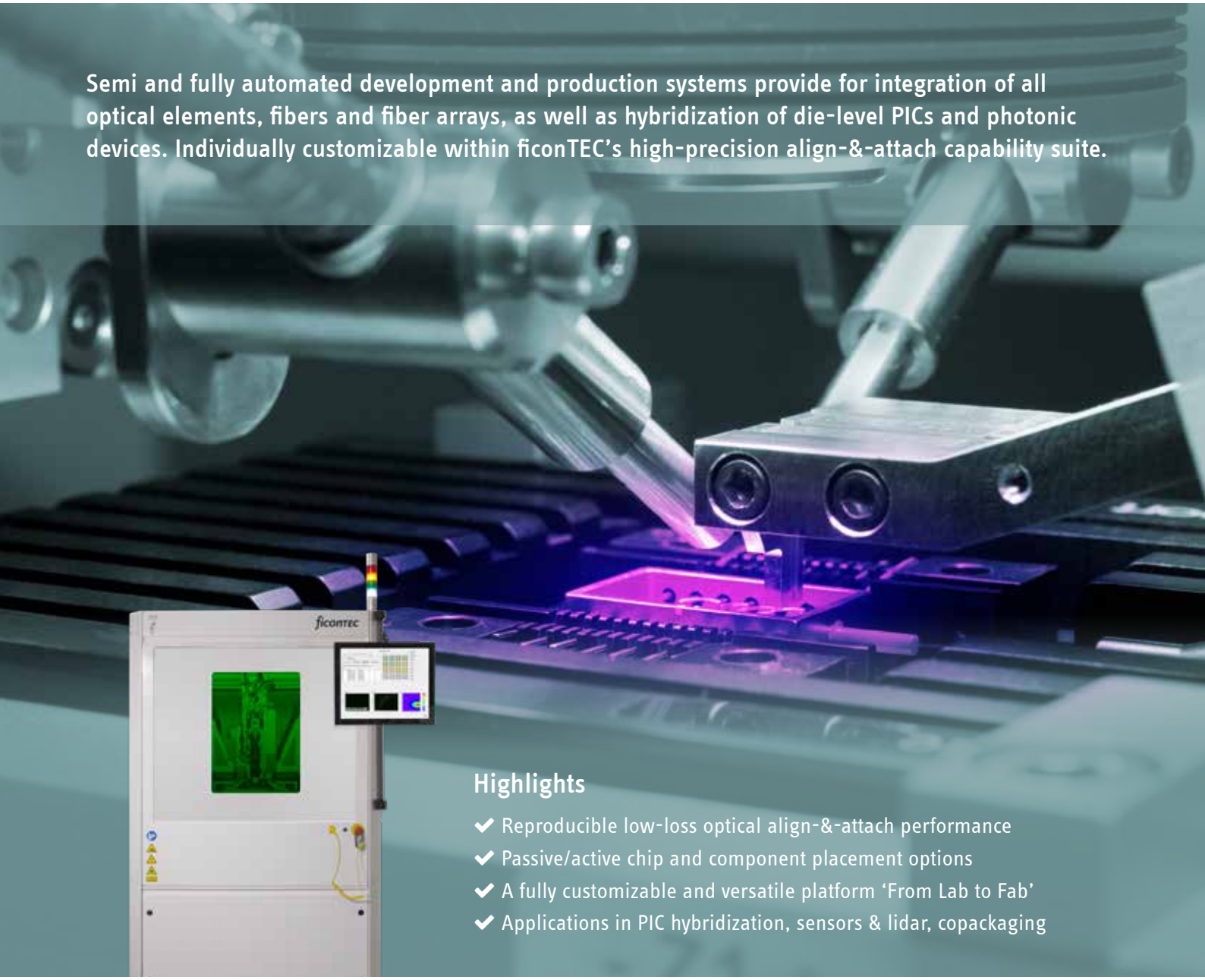
MANUFACTURING MADE LIGHT
Solutions for integrated photonics. Built to scale.

ASSEMBLYLINE
Die-level photonic device assembly

Semi and fully automated development and production systems provide for integration of all optical elements, fibers and fiber arrays, as well as hybridization of die-level PICs and photonic devices. Individually customizable within ficonTEC's high-precision align-&-attach capability suite.



Highlights

- ✔ Reproducible low-loss optical align-&-attach performance
- ✔ Passive/active chip and component placement options
- ✔ A fully customizable and versatile platform 'From Lab to Fab'
- ✔ Applications in PIC hybridization, sensors & lidar, copackaging

PHOTONICS AUTOMATED ASSEMBLY AND TESTING
FROM LAB TO FAB

ficonTEC
photonics assembly & testing

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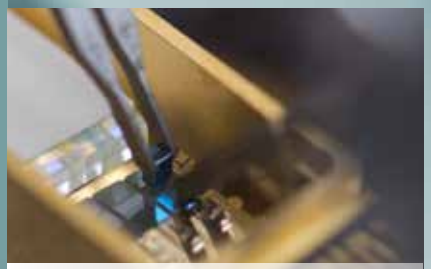
Automated die-level photonic device assembly

AssemblyLine systems are available as semi and fully automated align-&-attach assembly cells for the development and manufacture of optoelectronics and photonic-enabled devices. They uniquely combine high-precision optical alignment with full bonding capability for all optical elements, waveguides and fiber types as well as for chip and PIC hybridization – all regardless of the material system.

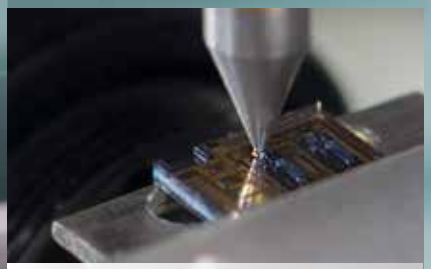
Customizable and versatile from the ground up, AssemblyLine systems can be configured either as highly capable stand-alone workstations, as highly specific in-line process cells, or used in combination with other functional systems (e.g. TestLine) a task-optimized production line configuration to provide volume manufacturing.

State-of-the-art handling and feed I/O options are available. Optional modules provide features such as automatic tool changing and OCR for component traceability. An add-on AI/ML-based software and hardware layer leverages production data to deliver robust self-adaptive optimization as well as process monitoring and alerting.



Optical element align-&-attach

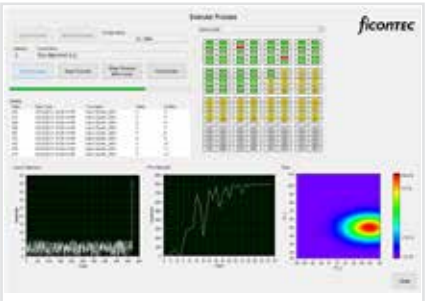
Active fiber (array) alignment



Chip-on-submount bonding

Software control

PCM is ficonTEC's unified process-oriented control interface that ships with all turn-key stand-alone systems and multiple machine configurations. PCM features an intuitive UI and an up-to-date feature set that includes all machine vision, high-resolution positioning, system management software and test routines required to reliably and repeatably drive passive/active alignment and bonding process hardware.



Freely configurable operator interface

ASSEMBLYLINE
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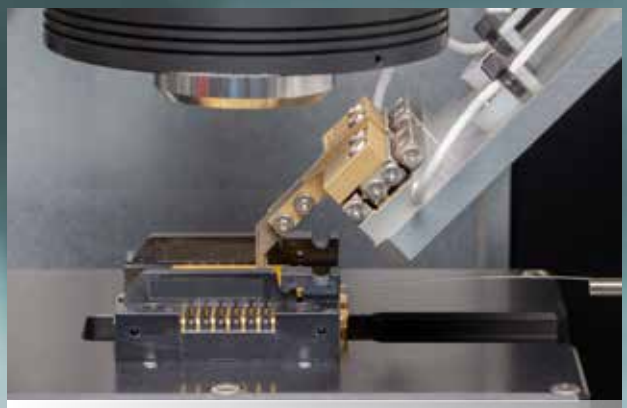
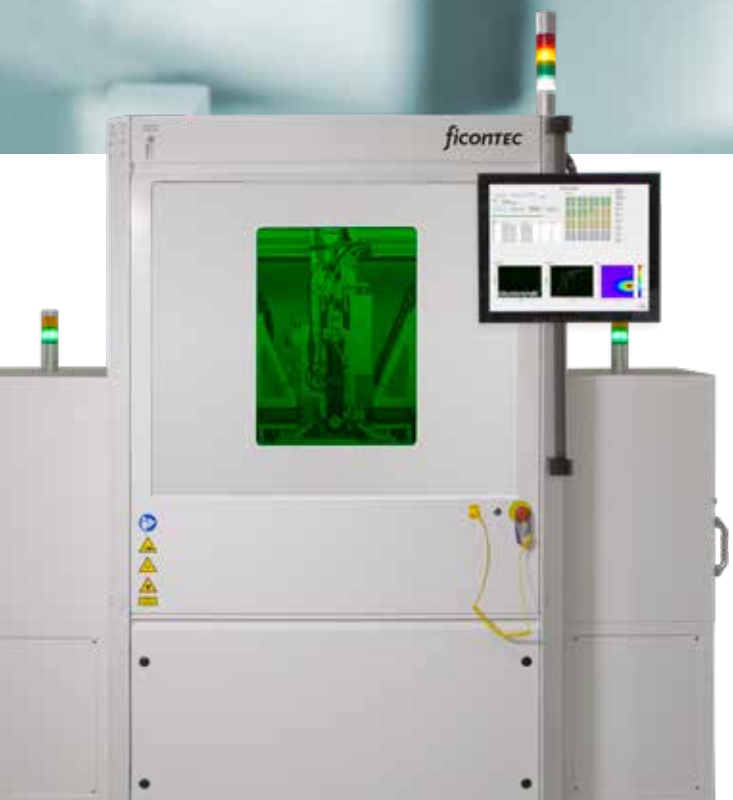


Package assembly & fiber pigtailing

Camera module assembly



Key features

- High-precision motion referencing and alignment
- Pick-&-place from/to standard/custom carrier formats
- Automated passive and fast-active align-&-attach
- Epoxy and eutectic bonding, laser-assisted soldering
- Fully customizable, flexibly scalable ‘From Lab to Fab’

General tasks & applications

- All optical element alignment and device hybridization tasks
- Fiber & waveguide assembly/pigtailing/connectorization
- Optoelectronic, HPLD, MOEMS and sensor assemblies
- Camera modules, 3D scanning & lidar, PICs & silicon photonics
- Configurable for high-complexity copackaged applications

Modular & (re-)configurable

- State-of-the-art die and carrier handling options
- Optional modules expand operational functionality
- Operate, monitor and sync parallel lines remotely
- Add and/or swap modules to re-configure & re-purpose

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ficonTEC is the global market leader for automated assembly and test solutions for modern optoelectronics and integrated photonic devices. In serving development and manufacturing needs for telecom/datacom interconnects, sensors & lidar, camera modules, high-power diode lasers and many other integrated applications for over 20 years, ficonTEC's suite of process capabilities is unmatched.

Additionally, a unique and modular approach to production equipment design means that each solution is the automated and optimized embodiment of a customer-defined process.

Contact us

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Core system specifications	 A800	 A1200	 A1600	 A2000
Motion system	minimum 6-axis high-precision alignment*			
Device handling	pick-&-place from/to Gel-Pak, Waffle Pack, custom		pick-&-place from/to Gel-Pak, Waffle Pack, blue tape, custom	
Temperature control	temperature-controlled chuck, +15 to +80 (+/- 0.1) °C			
Load options	manual loading and/or single conveyor	automated loading with single or dual conveyor		
Feed options	suitable for Jedec or Auer boats, or for customer trays			
Machine vision	system referencing and observation camera options | device and I/O port referencing			
Software features	flexible and powerful process programming | extended operator-less control | Windows 10 PC			
Minimum connections	120 VAC (or country specific) | air/vacuum | 100 Mbit/s network			
Cleanroom compliance	ISO 6**			
Physical features	rugged steel base production cell			
Dimensions (w x b x h, mm)	800 x 1200 x 1600/2000	1200 x 1200 x 2000	1600 x 1200 x 2000	1800 x 1200 x 2000
Weight (typ., kg)	1300	1800	2300	2500

* alternative multi-axis configurations optional ** others available on request

- All ficonTEC systems are compatible with PXI-based electro-optical instrumentation modules and leveraging of NI's LabVIEW™. Non-LabVIEW and alternative instrumentation environments are also compatible.
- In addition to all driving align-&-attach processes, PCM software also includes AI-based Deep Learning defect recognition capability, optional ML-oriented production data monitoring, and can direct call functions in Python files.
- Special purpose cells, robotic systems as well as some TESTLINE functionality can be flexibly incorporated to suit customer needs.

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