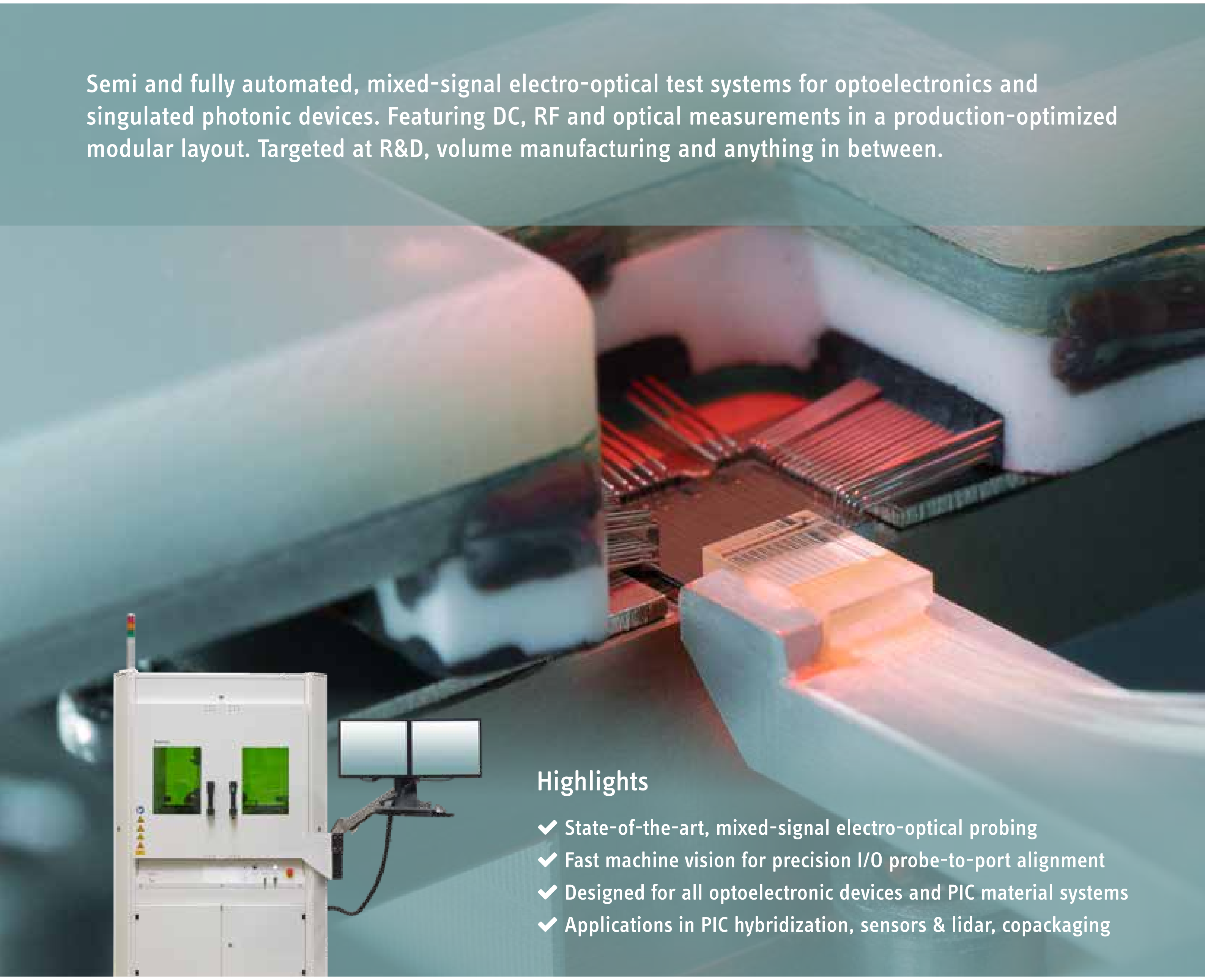
MANUFACTURING MADE LIGHT
Solutions for integrated photonics. Built to scale.

# TESTLINE
## Die-level photonic device test



Semi and fully automated, mixed-signal electro-optical test systems for optoelectronics and singulated photonic devices. Featuring DC, RF and optical measurements in a production-optimized modular layout. Targeted at R&D, volume manufacturing and anything in between.

### Highlights

- ✓ State-of-the-art, mixed-signal electro-optical probing
- ✓ Fast machine vision for precision I/O probe-to-port alignment
- ✓ Designed for all optoelectronic devices and PIC material systems
- ✓ Applications in PIC hybridization, sensors & lidar, copackaging

PHOTONICS AUTOMATED ASSEMBLY AND TESTING
FROM LAB TO FAB

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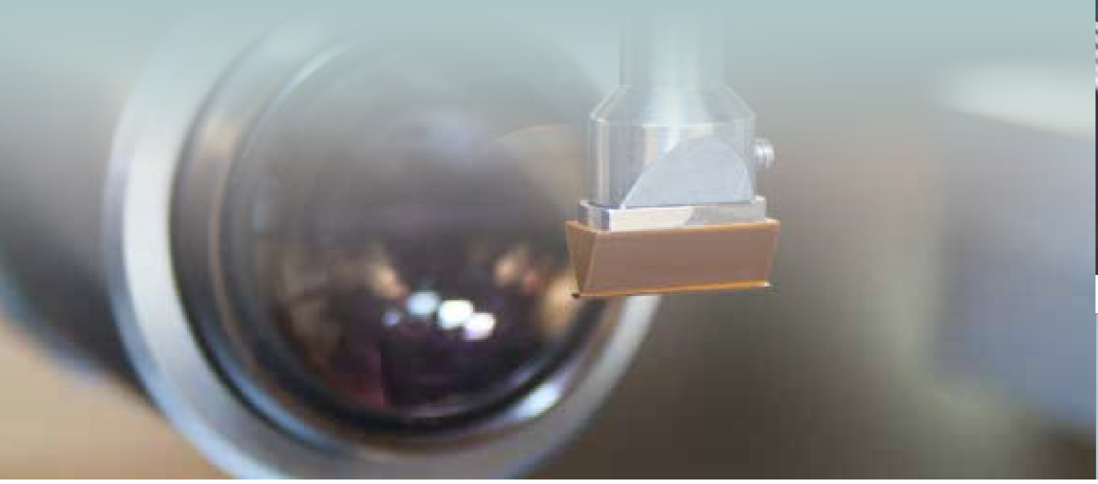
photonics assembly & testing

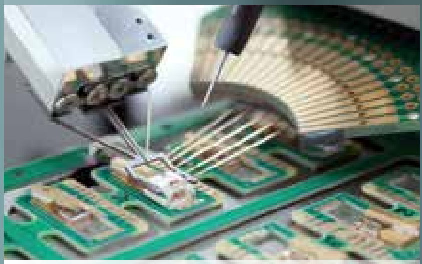
## Automated die-level electro-optical test

ficonTEC’s Testline production systems are fully automated solutions for electro-optical testing of optoelectronic devices and of singulated PICs (passive/active). Other complex tasks include LIV, spectral and near/far-field beam characterization of single laser chips (incl. VCSELs), unmounted laser diode bars and chip-on-submount (CoS) sources. Lastly, Testline systems can be routinely equipped to also perform detailed optical facet inspection using Deep Learning for defect recognition.

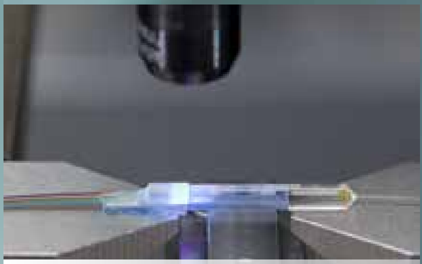
Stand-alone systems are designed to provide as much multi-functional test-&-qualify capability as possible and are best suited to complex testing requirements requiring multiple capabilities within a single machine. This makes the stand-alone systems ideal for test development and for batch processing requirements.

ficonTEC’s next-generation in-line system architecture is designed to be production-line-capable from the ground up. By utilizing state-of-the-art component handling and feed in/out options, Testline, Assemblyline and other systems can be combined in a task-optimized production line configuration to provide volume manufacturing.

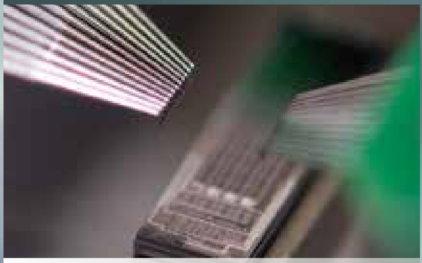




Active device e/o testing



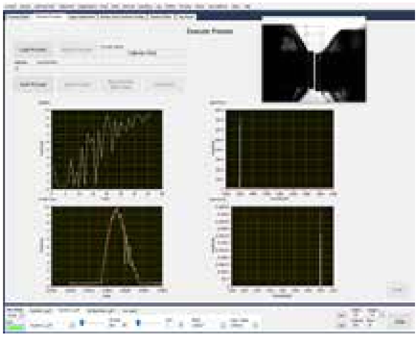
Dual fiber array alignment (active test)



Multi-channel device testing

## 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.



Spectral and beam characterization functions displayed in real time

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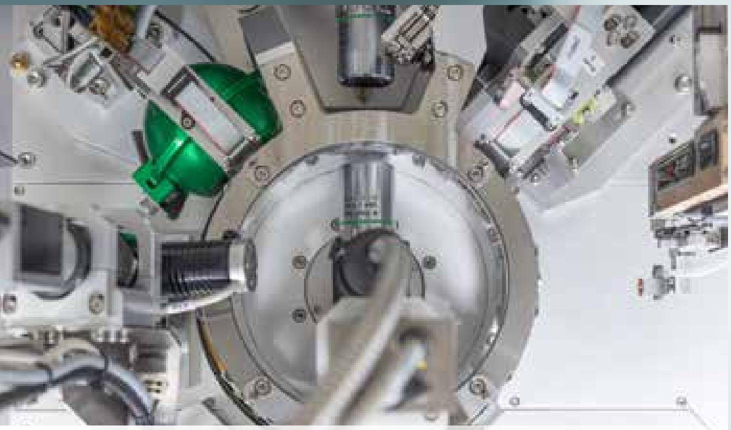

Simultaneous high-speed testing

High-resolution facet inspection

## Key features

- High-precision motion referencing and alignment
- Pick-&-place from/to standard/custom carrier formats
- Die-level handling, testing and sorting as required
- Fiber alignment to I/O ports (arrays) in max. 4s
- Low-loss I/O port coupling with < 0.4 dB repeatability

## General tasks & applications

- Rapid R&D, in-line & end-of-line device testing
- Optical facet inspection with AI defect recognition
- 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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Solutions for integrated photonics. Built to scale.

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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For ficonTEC subsidiaries in the US and Far East as well as for distributors around the globe:

www.ficontec.com/locations

| Core system specifications | T800 | T1200 | T1600 | T2000 |
|---|---|---|---|---|
| Motion system | single optical probing with 6-axis high-precision alignment*<br>electrical probing with 3-axis alignment | multiple optical probing with 6-axis high-precision alignment*<br>electrical probing with 3-axis 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 | | | |
| Handling options | manual loading and/or single conveyor | automated loading with single or dual conveyor | | |
| 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.
- Custom systems and special purpose cells can be flexibly incorporated to suit customer requirements.