EXPLORE THE WORLD OF ABSOLUTE PRECISION. EXCELLENCE IN DEMANDING HIGH-END APPLICATIONS & CUSTOMIZED SOLUTIONS.

SET, Smart Equipment Technology, is a world leading supplier of high accuracy Die-to-Die and Die-to-Wafer Bonders. Founded in 1975, SET has pioneered in the development of flip chip bonders for infrared sensors and optoelectronics applications.

With several hundreds of machines installed worldwide, SET is globally renowned for the unsurpassed placement accuracy and the high flexibility of its bonders. With the submicron placement and bonding capability of the FC300, the process flexibility of the FC150, and the production capability of the FC250, SET offers a continuous process path from research to production and confirms its leadership position within the industry.

Thanks to several decades of high accuracy placement expertise, SET brings to the market cutting-edge nanoimprint solutions which offer proven sub-micron alignment capabilities also combined with superior flexibility.

SET’S OPTICAL ALIGNMENT TECHNIQUE: THE KEY TO ABSOLUTE PRECISION.

SET Device Bonders deliver the most precise post-bond accuracy available in today’s marketplace, down to 0.5 µm 3 sigma for certain applications.

SET optical alignment technique is the key to high post-bonding accuracy. The parallelism is achieved by a High Resolution Motorized Pitch & Roll system coupled with the Autocollimator or the Optional Laser Leveling system embedded in the optics.

The accurate passive alignment using features on parts is enabled by a superimposing microscope, mixing optically the images of the two components. The high numerical aperture of the objectives results in unparalleled resolution.
High Accuracy Placement & Bonding
The KADETT Device Bonder is a flexible and open platform for accurate placement and bonding of a wide variety of devices. Well suited for R&D labs, the automatic vision system makes it usable for pre-production environment.
- 3 µm Placement accuracy
- Force range: 35 ~ 75 N
- Options: heating chuck and bond-head, UV glue curing, ultrasonic bond-head

Large Device Press
The LDP150 is dedicated to bonding large radiation detectors using compression bonding. The device is pressurized at room temperature, preserving the initial alignment and parallelism accuracies.
- Self-leveling system
- Force up to 100 kN

Automated Device Bonder
The FC150 offers the latest evolution in assembly techniques. Automated system to level, align and bond components ranging from 200 µm up to 100 mm, the FC150 provides development and pre-production capabilities on a single upgradeable cost-effective platform.
- 1 µm @ 3σ Post-bond accuracy
- Bonding force: 0.3 ~ 2000 N
- Options: automatic alignment, laser leveling, process recording, chip solder flux or adhesive

High Force Device Bonder
The FC300 is a new generation of high accuracy and high force system for Chip-to-Wafer bonding well suited to 3D-Interconnect using the Through Silicon Vias (TSV) technology.
- 0.5 µm @ 3σ Post-bond accuracy
- Bonding force: up to 4000 N
- NIL configuration without losing the bonding capability
- Options: UV glue curing, advanced laser leveling, ultrasonic bonding head, face up station, fluid dispenser, collective reflow chamber, etc...

Die/Flip Chip bonding breaks down into three distinct processes:
Adhesives Joining, Reflow and Compression.
SET Bonders excel in high-end demanding applications. They accommodate a wide variety of processes and materials, including extremely fragile materials such as GaAs and HgCdTe.

The SET flexible bonding platforms adapt to all bonding techniques: fluxless reflow, adhesive joining and compression. They offer the unique ability to handle and bond both fragile and small components onto substrates up to 300 mm. The highly stable granite structure of the SET Bonders enable high force bonding — up to 4 kN with the FC300 - while maintaining a post-bond accuracy down to 0.5 µm (application dependent).
coating, UV glue curing, gas confining enclosure for mass reflow, confinement chamber for in-situ bonding, ultrasonic bonding, oxide reduction with formic acid vapor, etc...

**Production Device Bonder**

The FC250 supports an extensive range of bonding applications: optical packaging (e.g. laser diodes), LCD drivers, MCMs, MEMS, C2W, 3D-IC, etc.
- 1 µm @ 3σ post-bond accuracy
- Bonding force: 2 ~ 500 N (700 N optional)
- Options: chip solder flux or adhesive coating, UV glue curing, fluid dispenser, oxide reduction with formic acid vapor, etc...

**TRIAD 05 AP**

High Accuracy Assembly Cell

The TRIAD 05 AP is able to perform active alignment as well as passive alignment on a single platform. It is compatible with all Low Force Bonding Techniques and it is particularly well suited for optoelectronics applications.
- 0.5 µm @ 3σ Post-bond accuracy
- Bonding force: 0.01 ~ 5 N
- Options: UV glue curing system, face-up station, dedicated active alignment.

**Cutting-Edge Device Bonding Applications**

SET’s Device Bonders offer precise and flexible assembly capabilities. They support a wide range of applications: optoelectronics and optical components assembly using high speed passive alignment (e.g. laser diodes), infrared imagers, chip-to-wafer (C2W) or chip-to-chip (C2C) for 3D Interconnection and more.

**Leadership in IR-FPA Sensors & X-Ray Detectors**

Flip Chip stacking of Heterogeneous Materials is commonly used for Infrared Focal Plane arrays for military and aerospace imagers, as well as for X-Ray detection and particle counting applications.

**3D-IC (Chip-to-Wafer / Chip-to-Chip Bonding)**

High density packaging including flip chip technology, chip stacking and package-on-package assembly.

**Optoelectronics & Photonics Packaging**

Optoelectronics requires very high accuracy placement of components to enhance the light transmission, especially for long haul communication.

**MEMS Packaging**

MEMS are more and more present in our environment (air bags, pressure sensors, etc.). Our unique optical system accurately aligns on all six degrees of motion.

**RF Applications**

Through the high thermo-compression and leveling capabilities, SET has made high-end RF connections possible and at accuracy levels that establish new standards in the field of RF applications.
NANOIMPRINT LITHOGRAPHY SOLUTIONS

NIL using the Step & Repeat approach is a cost effective alternative for printing sub-20 nm geometries on large substrate.

Low cost solutions for nanostructures replication are in development today that may be the driving forces of semiconductor, MOEMS and optoelectronic technologies tomorrow. In particular, Nanoimprint Lithography (NIL) and its variations have been developed as a cost effective alternative to high-resolution beam lithography to print nanometer scale geometries.

**NPS300**

The NPS300 Production Nanoimprinting Stepper can be tailored to either UV-NIL, Hot Embossing or Micro Contact Printing.

In research laboratory, a simple reconfiguration enables addressing all techniques.

- Sub-20 nm imprinting capability
- Stamp-to-wafer alignment: 250 nm
- Template/Stamp size: 50/65 mm (option 100 mm)
- Substrate ≤ Sq. 200 mm (Ø 300 mm)
- Pre-leveling accuracy 20 μradian
- Self-leveling while applying imprinting force
- Automatic stamp pick-up

**FC150**

The versatile SET FC150 High Accuracy Device Bonder is available with a NIL configuration primary for R&D environment.

- Sub-20 nm imprinting capability
- Stamp-to-wafer alignment: 1 μm
- Template/Stamp size up to 50 mm
- Substrate ≤ Sq. 150 mm (option 200 mm)
- Pre-leveling accuracy 20 μradian
- Automatic stamp pick-up

In January 2008, SET joined Replisaurus Technologies. SET is the ECPRA equipment source for Replisaurus Technologies.

SET and Replisaurus operate a synergy in 3D integration TSV: redistribution, via filling, chip to wafer assembly.

**PARTNERSHIP FOR SUCCESS**

SET equipment has raised process development and flexibility to the highest level. Our commitment to developing specialized accessories, streamlined bonding processes and providing on-site technical support ensures superior results for our customers. Drawing on our comprehensive engineering resources, we deliver Device Bonders or NIL equipment designed to meet the most exacting requirements. Our application support personnel have the expertise required to guide our customers throughout every phase of implementing their process development systems.

- Product Performance
- Reliability/Repeatability of Results
- Customized Solutions
- Process Support
- After Sales Service/Uptime.

We understand the critical importance of providing technical support to our customers before, during and after installation of our systems.

By working closely with our customers, our team provides a continuous stream of communication from the field to our factory. This ongoing communication is one of the many reasons our solutions have such a high degree of flexibility and precision engineered application-specific features.