DIE / HYBRID BONDER

Beyond standards

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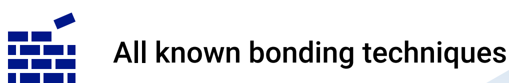
INFOTECH
automation

INFOTECH DIE / HYBRID BONDER

In contrast to classical die bonding, the universally configurable Infotech Die / Hybrid Bonder offers a professional solution for demanding processes with difficult components and materials and for a vast variety of assembly and joining techniques. Semiconductor chips such as ASICs, IGBTs, laser diodes, photonic devices, sensors, detectors, MEMS, image sensors, etc. are ejected directly from the wafer, picked, aligned and bonded on the substrate. The bonding techniques include classical die bonding with epoxy, conductive adhesive or anisotropic conductive film/adhesive, flip-chip bonding, eutectic bonding, thermo compression bonding, ultrasonic bonding and sinter bonding.

Combines die bonding and SMD assembling



All known bonding techniques

Flexible feeding

DIE / HYBRID BONDER – PROCESS STEPS

Die bond and die attach bonding

- Load and center work piece carrier, PCB, lead frame or substrate
- Substrate alignment using vision system
- Locate part on wafer or tape based on the information received by the MES-System
- Select die on wafer based on wafer map information and/or ink dot recognition
- Eject die from wafer
- Apply epoxy, bonding agent or conductive adhesives
- Inspect applied dispense result
- Pick and place component from waffle pack, bulk goods or any other installed feeder
- Optional flip component 90° or 180°
- Upload traceability data to MES-System

System features

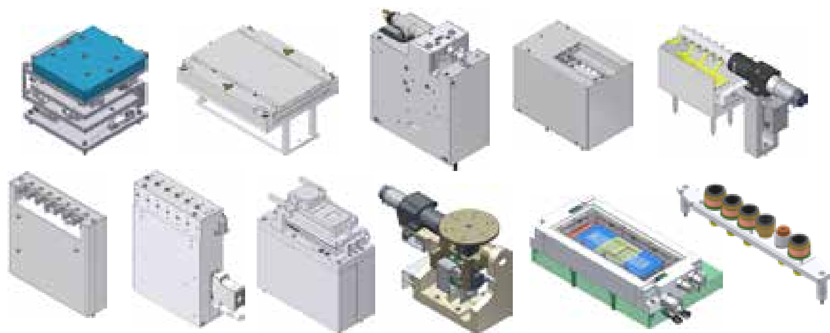
- The IC-1200 Cell provides a footprint of 1200 mm x 1200 mm
- Includes all automatic calibration features
- In-line capability using trays up to 330 mm in width
- Centering station with force table and optional pre-heater station
- Automatic changer for pick&place nozzles and pepperpots
- Automatic wafer stretching and alignment, if required
- Availability of peripherals out of the Infotech Component Matrix such as preform feeders, wetting station, stack tray feeders, flippers, dispensers, fluxer and many more

DIE / HYBRID BONDER – HEAD PERIPHERALS

- Single assembly head
- Multiple assembly head
- Heated bond head
- Ultrasonic bond head
- Dispensing axes
- Height measurement systems
- UV spot curing light

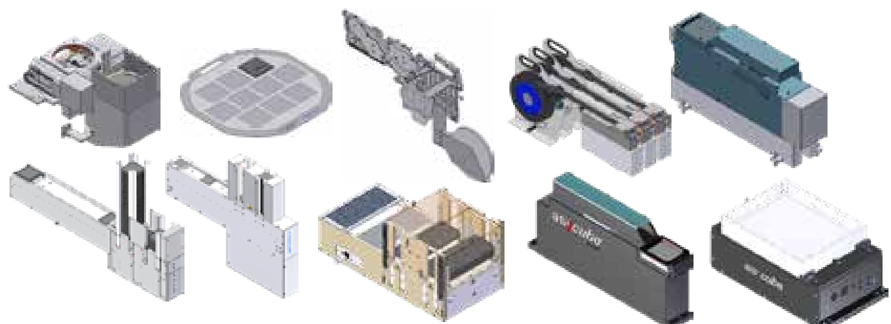
DIE / HYBRID BONDER – TABLE PERIPHERALS

- Force sensors
- Tilt station
- Substrate heater / cooler
- Single / multi flipper, 90° flipper
- Nozzle and pepperpot changer
- Wetting unit
- Fluxer / stamping station
- 3D assembly station
- Process / curing chamber



DIE / HYBRID BONDER – FEEDING

- Wafer handler 4" ... 12"
- Pepperpot rotation unit
- Wafer stretcher unit
- Infotech Wafer Carrier (IWC)
- Tape feeder
- Preform feeder / cutter
- Waffle tray / Gel-Pak® feeder
- Stack Tray Feeder for palettes
- Bulk goods feeder



DIE / HYBRID BONDER – APPLICATION EXAMPLES

Eutectic bonding of VCSEL diode

- Manual loading of components
- Transferring submount into Eutectic bond station
- Ejecting and picking laser diode from 4" wafer
- Flip laser diode without simultaneously touching its top and bottom surface
- Aligning and placing onto submount with defined overhang
- Bonding accuracy 3µm ± 3µm
- Eutectic bonding under nitrogen and with controlled thermal profile and bonding force
- Cooling
- Transferring the finished part into the output tray

Sinter Bonder

- Automatic feeding, pre-heating and centering of the DBCs in workpiece carrier
- Measuring and correcting the inclination of the assembly level
- Automatic feeding of the sinter foil (DTF)
- Automatic feeding, stretching and aligning of the 12" wafer from wafer magazine
- Ejecting and picking the IGBT or diode from 12" wafer
- Dipping into the sinter paste
- Bonding/tacking on the DBCs under controlled temperature (300 °C) and force (300 N)
- Cooling and unloading of the workpiece carrier

Die Sorter with electric test

- Automatic feeding, stretching and aligning of the 5" wafer from wafer magazine
- Ejecting and picking the tiny LEDs with 0.15 mm edge according to wafer map information
- Transferring the LEDs into the measuring chuck
- Electrical and optical tests
- Sorting the tested chips according to the test results
- Placement of the good chips on wafer film
- Logging and data transfer to the network

Hybrid Bonder

- Automatic feeding and centering the DBCs in multi-slot frames
- Automatic feeding, stretching and aligning of the 12" wafer from wafer magazine
- Ejecting and picking the IGBT or diode from 8" wafer in a 12" wafer frame with 6-fold assembly head
- Placing the chips into the pre-printed solder paste on the DBCs
- Pick and place of a passive component (NTC) from blister tape
- Pick and place directly in large oven carriers (600 mm x 330 mm)
- Spring force monitoring of the assembly nozzles
- SECS/GEM connection to the line computer

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