

APAC Die Attach Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The APAC Die Attach Equipment Market is expected to register a CAGR of 15.3% during the forecast period.

Key Highlights

- A significant focus for the next investment round by market vendors is developing die bonding and packaging solutions for smaller and highly complex 5G compatible smartphones. 5G is a unifying connectivity platform for future innovation, enabling continuous secure cloud access at significantly higher data and video transmission speeds.
- User adoption of 5G capabilities expands mobile broadband activities and accelerates artificial intelligence usage for the Internet of Everything. Likewise, the substrate and wafer-level packaging processes for mobile internet, computing, 5G, and automotive end-user applications drove the semiconductor industry to see a recovery in capital investment for memories and logic.
- The company has shared plans for a medium-to-long-term increase in capital investment towards expanded semiconductor and FPD applications. Whereas, as per Shibaura, active development of high-speed, high-precision bonding equipment for FOWLP / PLP and ?LED is being looked out for in semiconductor assembly equipment.
- BESI has shared plans to invest in new assembly technologies such as FOWLP, TCB, TSV, ultra-thin dies, hybrid bonding, large area, wafer level molding, solar, and 3D-lithium-ion battery plating for the new digital society. Its lineup under Die attach equipment includes a single chip, multi-chip, multi-module, flip chip, TCB, FOWLP, hybrid die bonding systems, and die sorting systems.
- However, one source of concern is the continuing uncertain outlook due to the impact of the global spread of COVID-19. Lockdowns and production halts across Asia-Pacific due to the COVID-19 outbreak had significantly impacted the production and consumption of semiconductors. With the majority of the IDS and foundries located in the region, the impact of shutdowns has led to reduced spending on capital investments. This is likely to impact the market studied, with a slowed recovery expected across 2021.

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APAC Die Attach Equipment Market Trends

CIS is expected to witness significant growth

- CMOS image sensors have been offering camera functions in smartphones and other products, and as the scaling demand grows, the related manufacturing issues in the fab arise.
- The higher-bandwidth data performance progressed from 3G to 4G, and currently, to 5G, the demand for higher quality cameras has grown. This trend has propelled the CMOS image sensor stacking techniques based on the need for higher pixel counts and better resolution. Beyond these trends, the areas of biometric ID, 3D sensing, and enhanced human vision applications have augmented segment growth.
- Customer demand for bigger and better cameras results in more sensors with bigger die sizes. Besides pixel scaling, CMOS image sensors are undergoing other innovations like die stacking. Vendors in the market studied are also using different interconnect technologies, such as through-silicon vias (TSVs), hybrid bonding, and pixel-to-pixel for the same.
- In hybrid bonding, for instance, the dies are connected using copper-to-copper interconnects. For this, two wafers are processed in a fab. One is the logic wafer, while the other is the pixel array wafer. The two wafers are joined using a dielectric-to-dielectric bond, followed by a metal-to-metal connection.
- Hybrid bonding DBI technologies, Xperi's proprietary technology, are being significantly used by Samsung towards CMOS image sensor fabrication for its phones. This technology for CMOS Image Sensors facilitates room temperature Cu-Cu permanent bonding, low-temperature annealing (around 300C) & no external pressure bonding process (dielectric/metal).
- Prior to this, direct bond technology has thus played an enabling role in the realization of pixel scaling (backside illumination) BSI and stacked BSI with multiple generational variations led by Xperi for over 15 years.

LED to dominate market share

- Die attach material represents a key role in the performance and reliability of mid, high, and super-high power LEDs. The demand for die-attach equipment is increasing with an increasing LED penetration rate. The selection of suitable die-attach material for a particular chip structure and application depends on various considerations, which include the packaging process (throughput and yield), performance (thermal dissipation output and light output), reliability (lumen maintenance), and cost. Eutectic gold-tin, silver-filled epoxies, solder, silicones, and sintered materials have all been used for LED die attach.
- SFE provides an Epoxy Adhesive bonding method where its LED Epoxy Die Bonder machine features an index time of 0.2 Sec /Cycle (90 Percent Rate of Operation) with a chip size of 250 * 250 standards, providing lead frame recognition through 2 Cameras. Its software function provides auto mount level & pick up level teaching functions.
- Further, conductive adhesives (mostly silver-filled epoxies) constitute the largest class of thermal die-attach materials (by unit number) for LEDs. They are compatible with existing back-end packaging equipment and provide an attractive cost/performance balance (typically up to 50 W/mK thermals with secondary reflow compatibility). As they stick to bare silicon, they are the most preferred material for dies without back-end metallization like GaN on silicon.
- Further, in the LED market, there are a lot of rival competitors, and ASM is one of the prominent players in this market; its LED Epoxy High speed die bonder AD830 dominates in the LED market. It is fast, reliable, and accurate with die placement accuracy of +/-1 mil and +/-3 degree, cycle time for a small chip like 10mil x 10mil is 180 ms, which is an equivalent UPH of 18,000. It is equipped with a Post bond inspection system that monitors the bonded unit at the pre-set placement range.

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The APAC Die attach equipment market is moderately competitive, with a large number of players having a small market share. The companies keep innovating and entering into strategic partnerships to maintain their market share.

- April 2022 - Driving the Electric Revolution Industrialization Centre (DER-IC) North East has received equipment from Inseto, a top technical distributor of tools and materials, to improve its power electronics, machines, and drives (PEMD) capabilities. The first micro-punch machine to be installed in the UK is an AMX P100 sinter press, which is part of the equipment provided and will allow the production of high-reliability, high-power modules.
- June 2022 - The new 7KF Bonder Series has been developed by West Bond. This well-known company designs and manufactures a line of wire bonding and die-to-attach machines, wire pull and shear test equipment, ultrasonic components, and accessories for the microelectronics packaging industry. This excellent tool is made to handle the difficult bonding applications found in the RF, microwave, semiconductor, hybrid, and medical device fields.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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