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Future Disruptions

Disruptive and Sustainable Bonding Technology Covering Various Material Combinations for Emerging Applications



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Abstract

This presentation introduces a disruptive bonding technology which was derived from traditional anodic bonding but offers significant advances in terms of material versatility, surface preparation and sustainability. These advances include a significant reduction in the actual bonding process time, not only for traditional material combinations but more importantly for bonding a variety of materials which are used in emerging applications like 5G / 6G and power devices that help to improve the efficiency of electric vehicles. This results in significant direct and indirect energy savings on the one hand but on the other hand also offers significant total cost of ownership benefits for the actual bonding process itself.

Some latest process results for traditional MEMS use cases but also for emerging applications in the RF MEMS and power devices application spaces will be explained in order to illustrate the disruptive nature of the new process.

The new bonding technology was developed with a strategic partner and is now exclusively available on SUSS MicroTec's bonding equipment.

Biography

- Diploma in Microsystems Engineering from University of Applied Sciences in Regensburg, Germany and Master of Business and Engineering from Steinbeis University Berlin, Germany
- Held various positions in process- development and R&D for MEMS, working in Switzerland and Germany, before joining SUSS MicroTec in 2008
- Held positions in Product Management for Coater- and Bonder Business Units
- Business Unit Manager Bonder since 2013
- Business Unit Manager Coater from 2017-2019
- Managing Director of SUSS MicroTec Lithography GmbH and SUSS MicroTec Photomask Equipment GmbH & Co. KG from 2018 - 2022
- Managing Director of SUSS MicroTec Solutions GmbH & Co. KG since 2022

Chiplets - Accelerating System Innovation in the Era Heterogeneous Integration



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Abstract

The semiconductor industry is undergoing a structural transformation driven by technology innovation, as well as supply-chain disruption, like the move from SoCs to “Chiplets” and the vertical integration of OEMs and CSPs in various industry domains.

These trends are also coupled with increased R&D costs for advanced node technologies, required to cope with rising performance requirements in several applications.

All the above is expected to propel a significant growth in the semiconductor market for leading-edge nodes in data processing industry segments, like Mobile, Compute, Telco and Automotive.

Learn about how IFS is uniquely positioned to address this transformation by creating an “open system foundry” that enables our customers to differentiate and lead in their markets by creating full-stack solutions from their choice of the best of Intel and the foundry industry ecosystem, delivered from a secure and sustainable source of supply.

Biography

Luca De Ambroggi, Director, Marketing and Platform Solutions, at Intel Corporation.

Luca is a veteran in the semiconductor and automotive industry with more than two decades of experience in various domains spanning along the entire supply chain.

He joined the company with 25+ years of semiconductor industry experience, including product and design management and technical marketing.

He began his career as a design engineer with STMicroelectronics and has held various technical and marketing positions within both STMicroelectronics and Infineon.

Before joining Intel, Luca contributed to develop the automotive electronics and semiconductor research at IHS Markit, providing advisory services on advanced Infotainment and ADAS/AV systems, as well as AI technologies.

Luca has more than 20 patents issued while working in the semiconductor industry.

He graduated full marks from the University of Catania in Electro-Technic Engineering. He is fluent in Italian, English, and German.

Zero defects matter | The Power of Xray in Advanced Packaging



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Abstract

The semiconductor industry faces numerous challenges in the development and manufacturing of advanced packages. From a technical standpoint, these challenges include miniaturization, thermal management, and interconnect technologies. From a market perspective, challenges arise from higher production mixes due to application-specific integrated circuits (ASICs) and customers' intolerance for failures, particularly in critical automotive applications. These challenges have resulted in constantly increasing costs for designing and manufacturing ICs.

Consequently, the industry is adopting two key approaches. Firstly, it is embracing lights-out manufacturing, which involves fully automated factory operations that offer increased productivity, improved repeatability, and consequently, enhanced quality. Secondly, new testing strategies are being implemented to provide data for advanced process analytics, enabling a shift from reactive to predictive actions. These strategies aim to improve traceability, yield, and overall operational efficiency.

In the monitoring of interconnect characteristics such as diameter, height, co-planarity, and bump quality, inspection tools play a crucial role. Advanced X-ray technology, in particular, holds significant potential in driving the development of defect-free advanced packaging solutions through identifying root causes of failures.

Biography

Since 2020, Christian Driller has held the position of Vice President of Research and Development at Comet Yxlon, where his team spearheaded the development of cutting-edge x-ray and CT inspection solutions. Under his leadership, he has successfully established an agile R&D organization with a strong customer-centric focus, fostering a passionate and results-oriented team.

Prior to his current role, Christian Driller assumed the position of Vice President of Business Excellence at Comet Yxlon in 2017. In this capacity, he played a pivotal role in driving the professionalization efforts across all functional areas of the company.

Christian's professional journey commenced in 2012 within the automotive industry, where he served as a Business Consultant at Porsche Consulting. His primary focus was on optimizing and restructuring R&D departments within both automotive manufacturers and suppliers, delivering impactful results.

Christian Driller holds a Master's degree in Finance from ESB Reutlingen University and a Bachelor of Engineering from Baden-Wuerttemberg Cooperative State University. Notably, during his undergraduate studies, he collaborated closely with Dr. Ing. h.c.F. Porsche AG, serving as his cooperating company.