



(Japan)

## **EV Group Achieves 100% Die Transfer Yield for Multi-Die 3D System-on-Chip, Milestone for Die-to-Wafer and Hybrid Bonding Technology - July 26, 2022**

AsiaNet 97186

### **EV Group Achieves 100% Die Transfer Yield in Multi-Die 3D System-on-Chip, Milestone for Die-to-Wafer and Hybrid Bonding Technologies**

at the EVG Heterogeneous Integration Competence Center (TM)

Successful full system die-to-wafer transfer

A new step to mark the maturity of the process

SANKT FLOURIAN, Austria, July 27, 2022 /PRNewswire-AsiaNet/ -- EV Group (EVG), a leading supplier of wafer bonding and lithography equipment for MEMS, nanotechnology devices, semiconductor manufacturing, today announced the launch of a 3D system. • From on-chip (SoC), multiple dies of different sizes can be bonded in a single transfer process to achieve a complete void-free bonding yield of 100%. • We announced that we have achieved a dramatic breakthrough in two-wafer (D2W) fusion/hybrid bonding technology. Yield improvement, which has been an important issue for D2W junctions, has been a major hurdle in reducing the implementation cost of heterogeneous integration technology, but this achievement has overcome them. With this demonstration of a significant industry milestone, the EVG Heterogeneous Integration Competence Center(TM) (HICC) leverages EVG's process solutions and expertise to leverage advances in system integration and packaging to It is intended to help customers accelerate the development of new, differentiated products and applications.

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Cutting-edge applications such as artificial intelligence (AI), autonomous driving, augmented/virtual reality (AR/VR), and 5G require high-performance, low-power, high-bandwidth devices without increasing production costs. required to be developed. For this reason, the semiconductor industry is paying attention to "device manufacturing through heterogeneous integration," which aims to improve the performance of next-generation devices by integrating multiple components and dies of various sizes and materials within a single device or package. are gathering. D2W hybrid junctions are a key manufacturing technology that enables heterogeneous integration. And as the need for higher bandwidth devices grows, new packaging techniques are also needed, requiring D2W hybrid junctions as well as new developments in metrology.

Dr. Thomas Woman, Director of Business Development at EVG said: "Hybrid bonding is very similar to the previous manufacturing method, especially in terms of cleanliness, particle control, alignment, and measurement accuracy, and requires manufacturing technology that is significantly different from conventional packaging processes. "As a market leader in W2W hybrid bonding, we are expanding our D2W hybrid bonding solutions, such as developing technologies such as plasma activation and cleaning, to accelerate the spread and maturity of D2W hybrid bonding technology." And we continue to optimize our equipment to support critical upstream and downstream processes. For several years now, we have developed a combination of proven GEMINI FBs and D2W joints that meet the needs of D2W joining and are configured for one-stop D2W integrated flows. EVG(R)320 D2W Hybrid Bonding Activation and Cleaner for direct placement D2W bonding as a direct interface and EVG(R)40 NT2 Overlay to further enhance hybrid bonding yields using AI, feedforward and feedback loops With inspection equipment, EVG offers a complete end-to-end hybrid bonding solution that facilitates the adoption of 3D/hetero-integration."

The bond interface in a hybrid bond is solid-state with embedded metal pads that allow face-to-face electrical connection of the wafer and die, and D2W hybrid bonds require the high Cleanliness levels and

tight dimensional tolerances are required. In this industry trend, high-precision metrology has taken on a more central role in pursuit of alignment and process yield in hybrid bonding. There is a tendency to consolidate so that it can be done in the process line.

Also, several different D2W hybrid joining process flows are currently being evaluated, each with its own advantages and requirements. Since its founding two years ago, EVG's HICC has been helping customers and partners develop specific device designs and He has played a key role in developing and optimizing the D2W hybrid joining process for the unique needs of the application. HICC also has cleanrooms on par with many state-of-the-art semiconductor factories, making it uniquely capable of supporting the stringent requirements of D2W and W2W hybrid bonding process development. Markus Wimplinger, Director of Corporate Intellectual Property and Technology Development at EV Group, said: "HICC is firmly positioned as the preeminent central open access incubator for new process solutions such as D2W hybrid/fusion bonding." Ensuring high-yield hybrid joint development in state-of-the-art cleanrooms, while a world-class development facility, HICC has a broad portfolio of fully automated process solutions to ensure the fastest possible In this way, our expertise in various bonding technologies, process integration and metrology allows easy transfer to the production facilities of our customers and partners. It is now possible to develop differentiated total solutions that can

Find out more about EVG's Heterogeneous Integration Competence Center at our Austrian headquarters here:

<https://www.evgroup.com/en/products/process-services/heterogeneous-integration-competence-center/>

#### About EV GROUP (EVG)

EV Group (EVG) is a leading supplier of manufacturing equipment and process solutions for semiconductors, MEMS, compound semiconductors, power devices and nanotechnology devices. Key products include wafer bonding, thin-wafer processing, lithography/nanoimprint lithography (NIL) and metrology equipment, as well as photoresist coaters, cleaners and inspection equipment. Founded in 1980, EVG provides service and support to a dense network of global customers and partners around the world. For more information about EVG , please visit <https://www.evgroup.com/en/> .

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