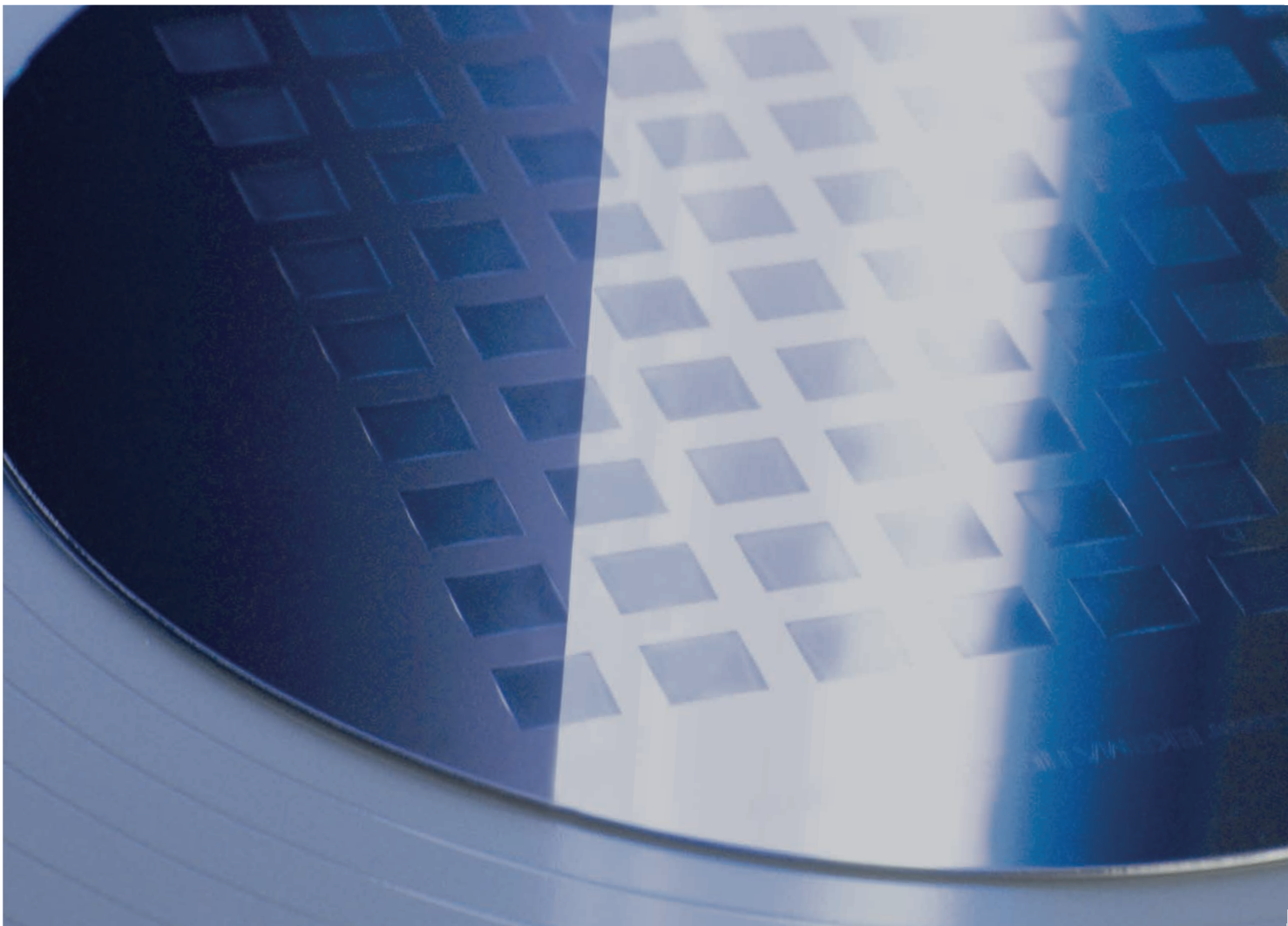
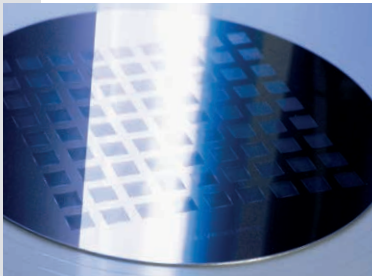




EV GROUP® | Products // Temporary Bonding and Debonding Systems

Solutions for Temporary Bonding and Debonding





Introduction

Temporary bonding is an essential process that offers mechanical support for thin or to-be-thinned wafers, which is important for 3D ICs, power devices and FoWLP wafers as well as for handling fragile substrates, like compound semiconductors. EVG's outstanding bonding know-how is also evident in its temporary bonding and debonding equipment, which it has provided since 2001.

Temporary Bonding and Debonding Benefits

Adaptiveness

- Open adhesive platform
- Modular tool layout – throughput optimized depending on specific process
- Product range from manual to fully automated tools

Handling

- Bridge capability for different substrate sizes
- Available with multiple load port options and combinations

Control

- Integrated metrology enables feedback loop for high-yield processes in automated tools
- Integrated software for real-time monitoring and recording of all relevant process parameters
- Fully integrated SECS/GEM interface in automated tools

Temporary Bonding Principle

Carrier wafer coated with release layer



Front side processed device wafer



Flip wafer



Alignment



Bond process



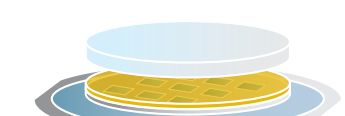
Debonding Principle



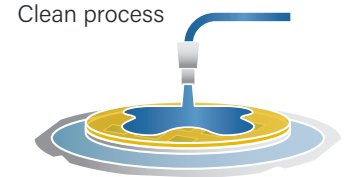
Mount wafer stack onto film frame



Debond process



Clean process



Thin wafer on film frame



Wafer thinning & Backside processing



EUV®850 TB Automated Temporary Bonding System

- Open adhesive platform
- Various carriers possible (silicon, glass, sapphire, etc.)
- Software monitoring of processes parameters
- Bridge tool capability for different substrate sizes
- Substrate ID reader and SECS/GEM integration
- Integrated inline metrology module for automated feedback loop
- Modular tool layout – throughput-optimized depending on specific process



EUV®850 DB Automated Debonding System

- Reliable handling of thinned, bowed and warped wafers with and without topography
- Automated cleaning of debonded wafer
- Available with multiple load port options and combinations
- Software monitoring of processes parameters
- Bridge tool capability for different substrate sizes
- Substrate ID reader and SECS/GEM integration
- Modular tool layout – throughput-optimized depending on specific process



EUV®880 LayerRelease™

- Fully automated, front end compatible HVM equipment
- Substrate size up to 300 mm (SEMI M1)
- Substrate ID reader and SECS/GEM integration
- OHT, AGV, PGV compatible
- Complete process control including laser metrology at point of use
- Integrated Separation Module for lift off of exposed substrates

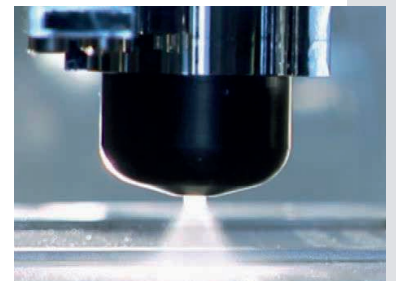


EUV®805 Debonding System

- Thermal slide off or thermal lift off debond configuration
- Recipe-controlled system
- Real time monitoring and recording of process parameters
- Automated thickness control
- Unique features for thin-wafer handling
- Various chuck designs to support thinned, bowed and warped wafers with and without sensitive topography

EVG Debonding Capabilities

Slide-Off and Lift-Off Debonding	UV Laser Debonding	IR Laser Debonding
<ul style="list-style-type: none"> Thermal debonding Temperature triggered softening or outgassing of adhesive Single-layer thermoplastic adhesive systems Invariant to device wafer topography and material Invariant to carrier wafer material Debonding temperature linked to thermal stability 	<ul style="list-style-type: none"> EVG LowTemp™ debonding UV laser release enabling force-free carrier lift-off Single- or dual-layer adhesive system (thermo-plast, thermoset, photoset and b-stage adhesives) Independent of device wafer type and surface UV transparent carrier 	<ul style="list-style-type: none"> EVG LowTemp™ debonding IR laser release enabling force-free carrier lift-off Inorganic release layer (nanometer scale thickness) Temperature stable for BEOL & FEOL Carrier has to be silicon Front-end-of-line compatible
↓	↓	↓
HEAT	UV LIGHT	IR LIGHT

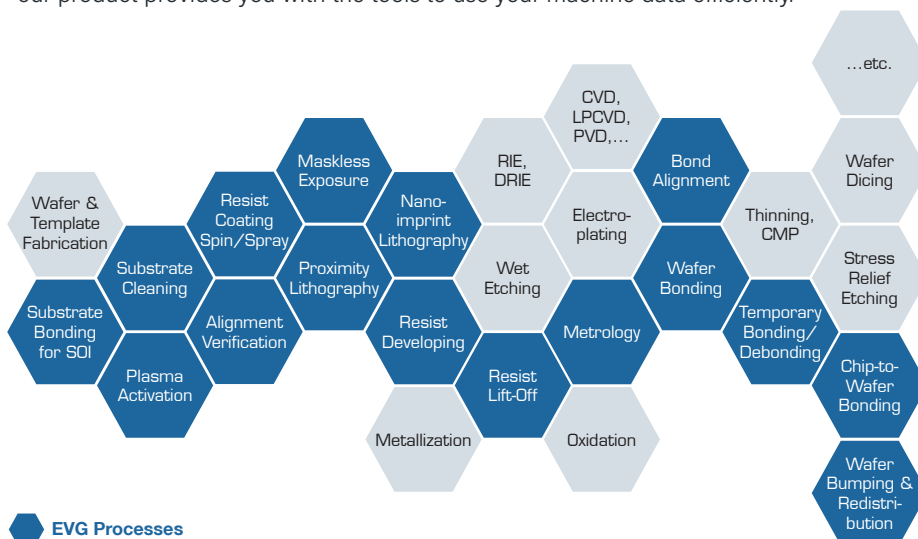


Software and Support

The customized machine software EVG CIMFramework offers a variety of features that optimize your production processes and increase efficiency. The user-friendly interface allows for quick familiarization. Specifically, the intuitive recipe functionality simplifies the configuration of machine operations and process steps. The software is Microsoft® Windows based and seamlessly communicates via SECS/GEM with the factory hosts. It enables smooth and secure data exchange and integration into the existing infrastructure.

Our experienced support team is here to assist you with any questions or issues including field-proven, real-time remote diagnostics via secured connection. Cleanroom space on three different continents (Europe – HQ, Asia – Japan, North America – USA) and a decentralized worldwide support structure underline this.

In addition, our new innovative data analysis platform EVG Analytics enables you to intelligently analyze your machine data and gain valuable insights. Whether you want to perform time series analyses, process quality assessments or application-specific analyses - our product provides you with the tools to use your machine data efficiently.



EVG Processes

Modules for temporary bonding

Spin Coat Module

- With up to two free configurable dispense arms per module.
- Automated nozzle wash, EBR and BSR.



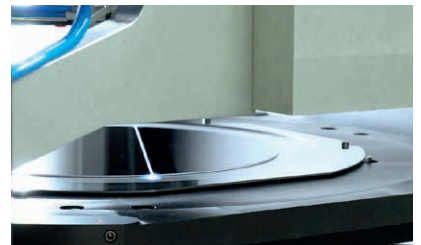
Stacked Bake Modules

- With fixed proximity pins, recipe controlled temperature and time.
- Optional solvent bakes with double-side heating and high temperature bakes up to 350 °C.



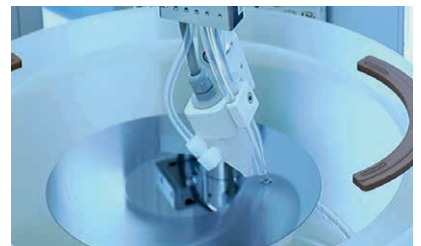
Bond Module

- With automatic, low-force wedge error compensation and integrated alignment within bond chamber.
- Dedicated bond module for UV initiated adhesive bond available.



Inline Metrology Module

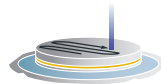
- Contactless and non-destructive 100% production inspection.
- Metrology Capabilities: Thickness and TTV of IR transparent layer and stacks, topography, bow and warp.



Modules for debonding

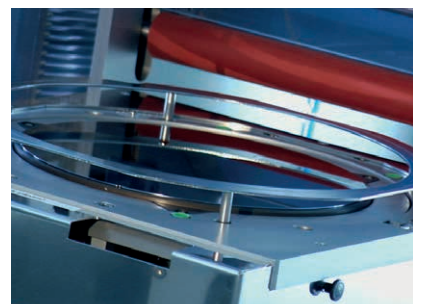
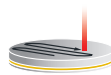
UV Laser Debond Module

- High-throughput, room-temperature debonding through glass carrier.
- Complete process monitoring and control.



IR Laser Release Module

- High-throughput, room temperature exposure through silicon carrier.
- Front-end-of-line compatible.
- Complete process monitoring and control.



Separation Module

- Force controlled lift off of carrier wafer after IR Laser release.



Slide off Debond Module

- Fully supported thin wafer during thermal initiated horizontal slide off process.
- Complete process monitoring and control.



Clean Module

- Capable of handling film frame mounted, thin or high-topography wafers.



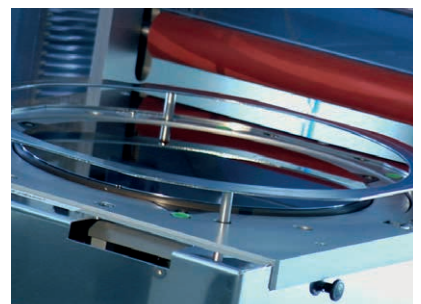
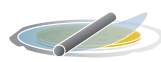
Detape Module

- Removing temporary bonding adhesives by peeling it with an adhesive tape.



Film Frame Mount Module

- Lamination of thin wafers or wafer stacks on film frames using pre-cutted tapes.





Headquarters

EV Group Europe & Asia/Pacific GmbH
DI Erich Thallner Strasse 1
4782 St. Florian am Inn
Austria
+43 7712 5311 0
Sales@EVGroup.com
TechSupportEurope@EVGroup.com



EVG Subsidiaries

North America

EV Group Inc.
+1 480 305 2400
SalesNorthAmerica@EVGroup.com
TechSupportNorthAmerica@EVGroup.com

China

EV Group China Ltd.
+86 21 3899 4888
Sales@EVGroup.cn
TechSupportChina@EVGroup.com

Japan

EV Group Japan KK
+81 45 348 0665
Sales@EVGroup.jp
TechSupportJapan@EVGroup.com

Taiwan

EVG-JOINTECH CORP.
+886 3 516 3389
Sales@EVG-Jointech.com.tw
TechSupportTaiwan@EVGroup.com

Korea

EV Group Korea Ltd.
+82 2 3218 4400
Sales@EVGroup.co.kr
TechSupportKorea@EVGroup.com

Get in touch:

Contact@EVGroup.com



www.EVGroup.com/products/bonding/temporary-bonding-and-debonding-systems

The information contained in this document is provided "as is" and without warranty of any kind, express or implied. Any express or implied warranties including, but not limited to, any implied warranty of merchantability, fitness for a particular purpose, and patent infringement or other violation of any intellectual property rights are hereby expressly disclaimed. EVG makes no representation that the use or implementation of the information contained in this document will not infringe or violate any copyright, patent, trademark, trade secret or other right. In no event shall EVG be liable for any claim, damages or other liability, including any general, special, indirect, incidental, or consequential damages, whether in an action of contract, tort infringement, misappropriation or otherwise, arising from, out of or relating to the use or inability to use the information. Acceptance and/or any use of the information contained in this document shall be deemed consent to, and acceptance of, this disclaimer.

Data, design and specifications may not simultaneously apply; or may depend on individual equipment configuration, process conditions and materials and vary accordingly. EVG reserves the right to change data, design and specifications without prior notice.

All logos, company names and acronyms or any combinations thereof, including, but not limited to, EV Group®, EVG® and the Triple i logo, equipment and technology names and acronyms such as GEMINI®, HERCULES®, BONDSSCALE®, SmartView®, SmartNIL® and many others, as well as website addresses, are registered trademarks and/or the property of EV Group. For a complete list of EVG trademarks visit www.EVGroup.com/Imprint. Other product and company names may be trademarks of their respective owners.

Printed on paper from sustainable sources

© EV Group (EVG). All rights reserved. V24/01



www.EVGroup.com