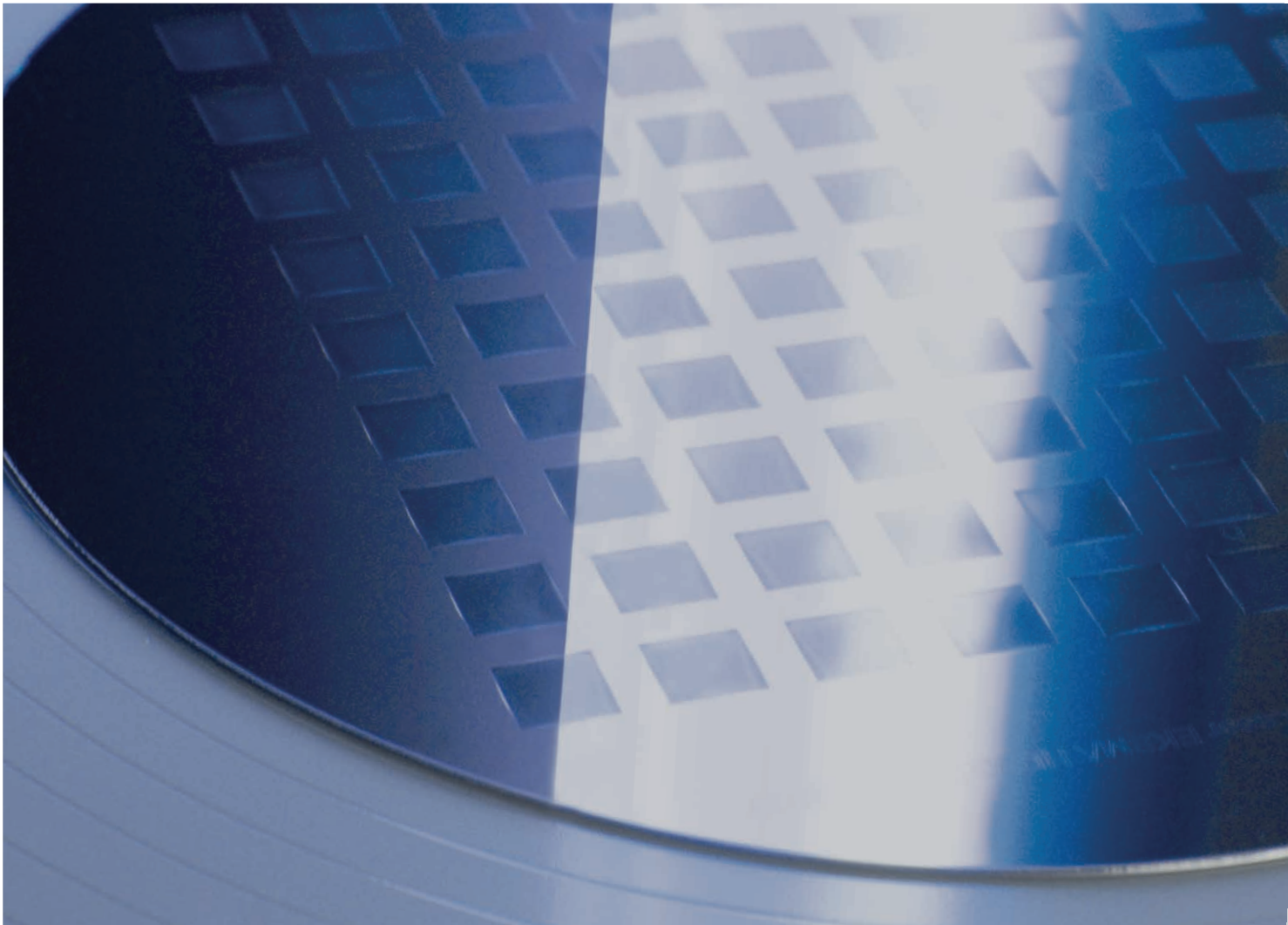
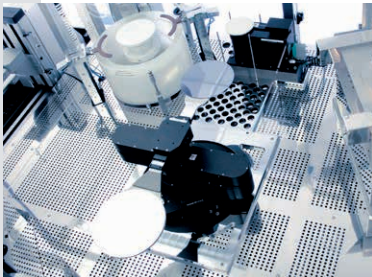
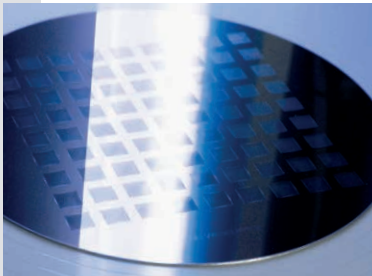




EV GROUP® | Products // Temporary Bonding and Debonding Systems

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 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

Front side processed device wafer



Temporary Bonding on carrier wafer with intermediate layer



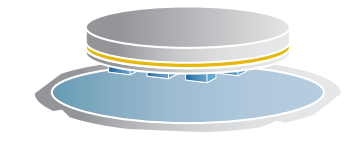
Back thinning



Device wafer back side processing



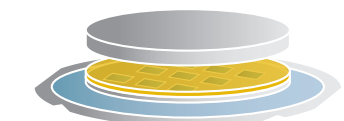
Debonding Principle



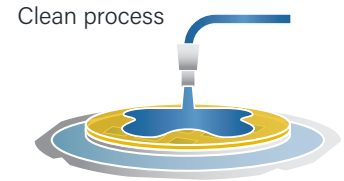
Mount wafer stack onto film frame



Debond process



Clean process



Thin wafer on film frame



EVG®850 TB Automated Temporary Bonding System

- Open adhesive platform
- Various carriers (silicon, glass, sapphire, etc.)
- Bridge tool capability for different substrate sizes
- Fully integrated SECS/GEM interface
- Software monitoring of the processes
- Available with multiple load port options and combinations
- Optional integrated inline metrology module for automated feedback loop



EVG®850 DB Automated Debonding System

- Bridge tool capability
- Reliable handling of thinned, bowed and warped wafers with and without topography
- Automated cleaning of debonded wafer and carrier
- Software monitoring of the whole process
- Fully integrated SECS/GEM interface in automated tools
- Modular tool layout – throughput-optimized depending on specific process

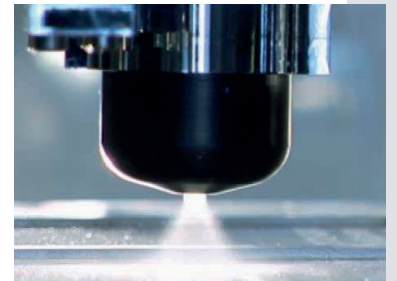


EVG®805 Debonding System

- Configurations:
 - Thermal slide off, thermal lift off debonding
 - Mechanical debonding
- Open adhesive platform
- Recipe-controlled system
- Unique features for thin-wafer handling
- Various chuck designs to support wafer/substrates and carriers up to 300 mm

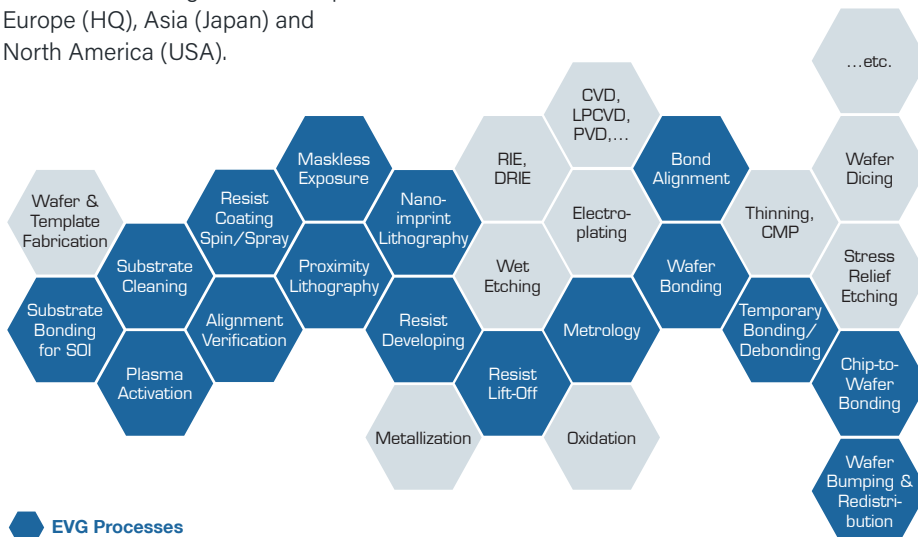
EVG Debonding Capabilities

| Laser Debonding | Mechanical and ZoneBOND® Debonding | Slide-Off and Lift-Off Debonding |
|--|---|--|
| <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 Mechanical debonding of single- or multilayer adhesive systems Predetermined debond start by chemical / mechanical or purely mechanical trigger Debond process latitude and thermal stability are linked Debond is often function of carrier material or device wafer surface topography | <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 |
| ↓ | ↓ | ↓ |
| LIGHT | FORCE | HEAT |



Software and Support

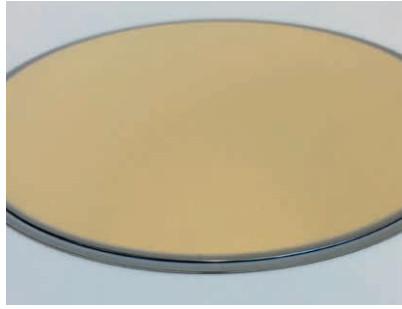
The Windows-based, graphical user interface is designed with a strong focus on user-friendliness, and easily navigates the operator through each process step. Multi-language support, individual user account settings and integrated error logging / reporting and recovery can simplify the user's daily operation. All EVG systems can also communicate remotely. Thus, our service includes field-proven, real-time remote diagnostics and troubleshooting via secured connection, phone or email. EVG's experienced process engineers are ready to support you anytime thanks to our de-centralized worldwide support structure, including cleanroom space on three different continents: Europe (HQ), Asia (Japan) and North America (USA).



Modules for temporary bonding



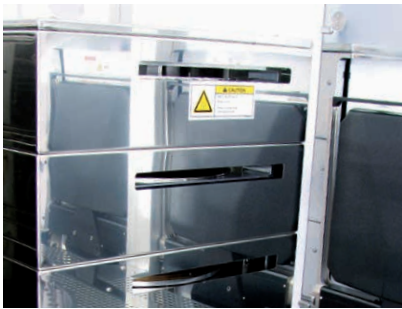
Spin coat module also with alignment unit for highly accurate edge coat process



Mechanical alignment module for fast center-to-center alignment



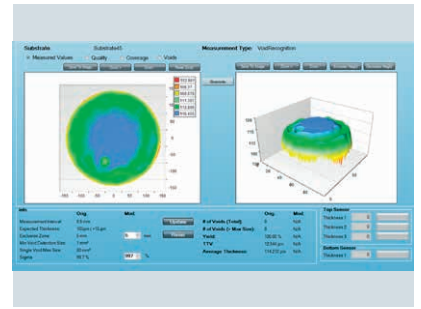
Optical edge alignment module for high-accuracy center-to-center alignment



Stacked bake modules with recipe-controlled proximity pins, temperature and time



Bond module with automatic, low-force wedge error compensation, optional with alignment within bond chamber

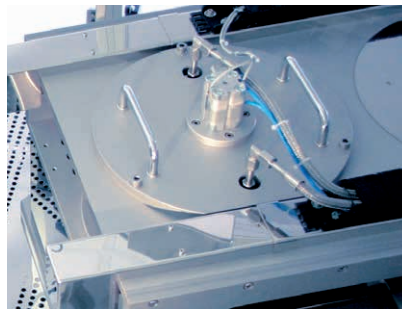


Inline metrology module for contactless, non-destructive inspection for 100% production inspection

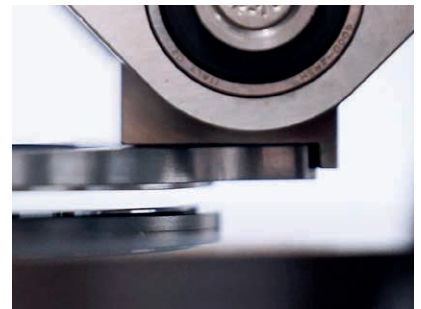
Modules for debonding



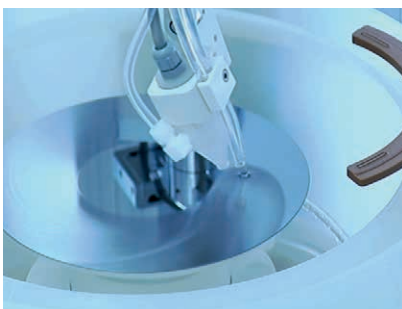
Laser debond module for high-throughput, room-temperature debonding – footprint efficient and low maintenance



Slide off debond module for thermal, horizontal debonding where the thin wafer is supported during the whole process



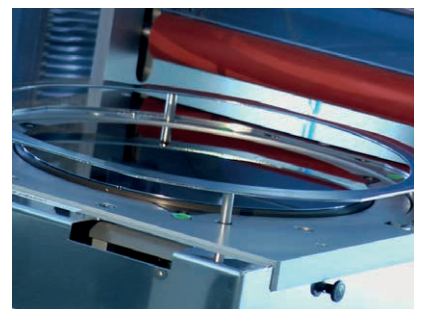
Mechanical debond module with self-aligned debond mechanism for high process repeatability



Clean module capable of handling film frame mounted wafers and high-topography wafers



Detape module for removing temporary bonding adhesives by peeling it off with an adhesive tape



Film frame mount module for lamination of thin wafers or wafer stacks with 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. V23/01



www.EVGroup.com