

Wet Wafer Separation: Efficiently automated

With the solar industry seeking incremental improvements to move towards grid parity. Improving the manufacturing process is a key area of focus for the industry but improvements can be made at any aspect of the manufacturing process. AMB discuss how companies can improve their costs and output by improving the automated processes through their fabrication facilities.

AMB Apparate + Maschinenbau GmbH is specialized in developing and manufacturing automated systems to handle and transport wafers through several process steps of wafer- and cell manufacturing. The new Wet Wafer Separator WWS 3000+ addresses the critical handling and sorting of thinnest wafers between the process steps pre-cleaning and final cleaning. Wafer damage and breakage is reduced to a minimum. High efficiency separating units combined with wafer control and buffer systems guarantee high production and yield.

- Main Benefits
- High throughput
- Reduced breakage rate
- Quality control
- Seamless wafer handling
- Wafer traceability

A lean and automated process
In the first work stage the carriers are lowered into the water bath. A feeder system transports the stack of wafers automatically to the pickup point. The newly developed pickup system separates the foremost wafer from the stack without any mechanical stress. After separation, the wafers are moved out of the water bath to the transfer station along a special conveyor belt with a non-slip surface. This belt creates a large surface contact with the wafers, guaranteeing a gentle transport. The transfer station is followed by the automatic fracture identification and double wafer screening system with its integrated ejection mechanism. In a first step broken wafers are sorted out just by using gravity. An inspection camera ensures the detection of damaged wafers. The following double wafer control is done by a contact-free infrared system. The wafers are transferred either to a 1 – 8 line Inline system or to cassettes, depending on the manufacturing process. A buffer system coordinates the production flow and

optimizes productivity. In the last work stage, the wafers are transferred to the final cleaning station. During the entire sequence, humidifiers prevent dry spots on the wafers. The water bath is continuously refreshed by a circulation device with integrated filter. The Wet Wafer Separator delivers high quality wafers to the subsequent process steps.

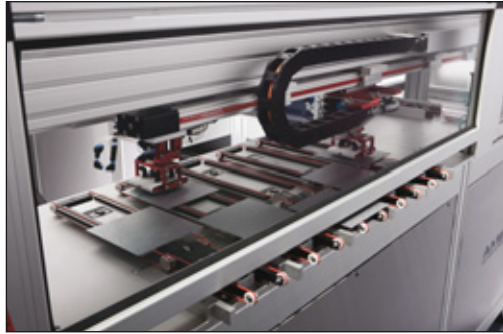
Main functionalities at a glance

- Separation of pre-cleaned wafer stacks
- Transfer into cassettes or inline cleaning system
- Automatic fracture identification
- Double wafer screening
- Wafer traceability
- Dual loading system

Applications

- Wafer type: Multi- and Mono-crystalline silicon
- Wafer geometry: Square and pseudo-square
- Wafer thickness: 150 - 300 micro meters
- Throughput: > 3000 Wafers per hour





Wide process know how

AMB is Member of the Meyer Burger Technology Group, a leading and globally active technology group for innovative systems and processes in wafer and cell manufacturing. The group commits itself to competitiveness of solar energy and a sustainable development of the solar industry. With core competences in wafering, wafer handling, wafer measurement as well as the development of automation and robotic systems for the pv industry, the group has a wide process know how at disposal. The comprehensive range of products is complemented by a worldwide service network with wear and tear parts, consumables, re-grooving service, process know-how, servicing,

after-sales service and training. The group is represented in Europe, Asia and North America in the respective key markets.

Introducing AMB

AMB develops and manufactures fully automated wafer handling systems and components for the photovoltaic-industry. The systems are used worldwide in the wafer and cell production and excel with outstanding productivity and minimum breakage rates. AMB's customers include major manufacturers of crystalline solar cells in local and foreign markets. With their excellence in complete modular solutions, both customized and standardized, AMB covers the multifaceted needs of the wafer and cell sector. The product portfolio ranges from small support handling systems to fully automated solutions for loading and unloading process machines for the wafer and cell production.

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Focus on cost of ownership

Streamlined processes and automated systems strongly affect material and labour cost. With our excellence in technology and customized, automated solutions we drive your success and expand your position beyond wafering.

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