

Fico Sawing Line



The Art of Singulation

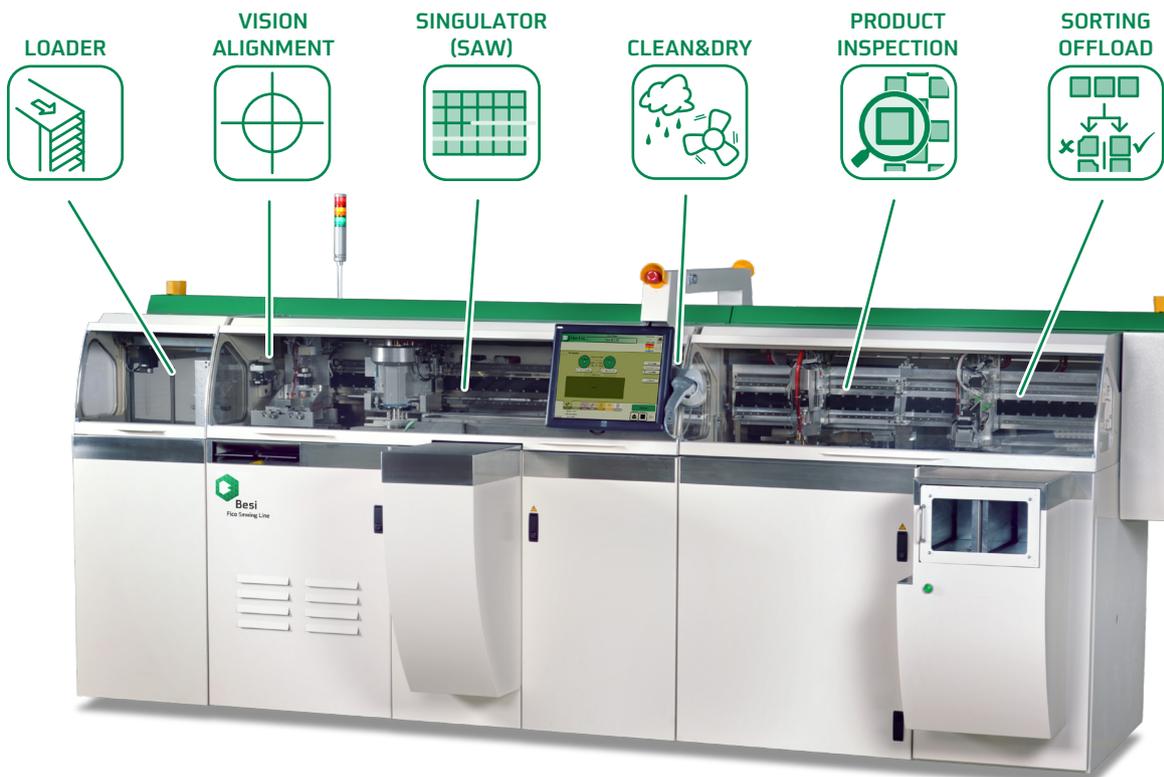
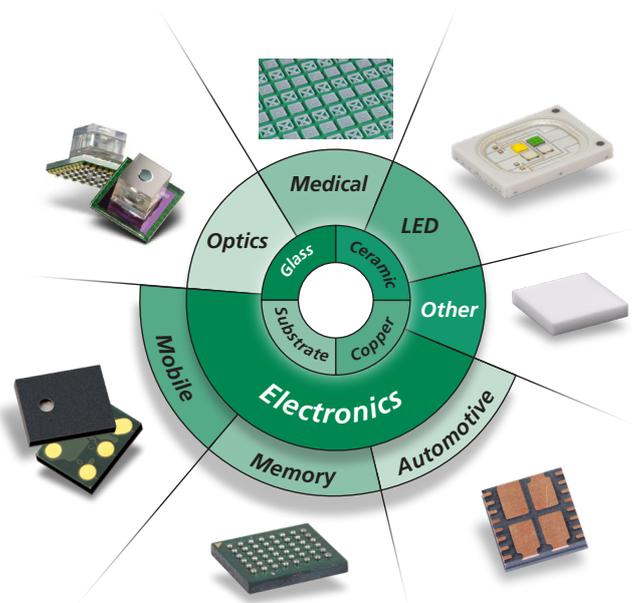
Singulation is a 4 step process where - from a large strip - individual products are sawn, cleaned, inspected and sorted. In the Fico Sawing Line (FSL), Besi has integrated all these process steps into one single machine. The FSL carries out all process steps simultaneously using reliable vacuum on each single product, instead of tape. The unique and patented sawing method of the FSL has an unsurpassed accuracy. 100% inspection ensures that only perfect products leave the machine.

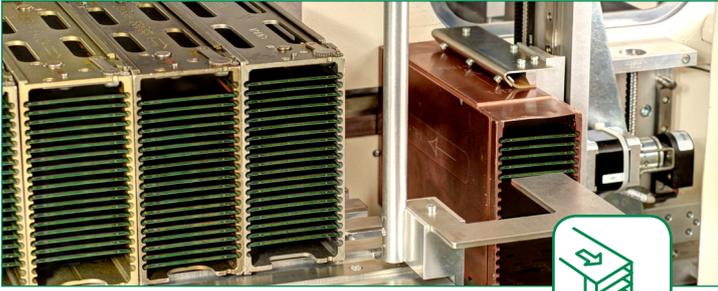
With the FSL, singulation is elevated to an art, the art of singulation.

The Fico Sawing Line

- Highest cutting accuracy due to smart pre-alignment algorithms
- Extreme warpage handling
- Efficient scrap removal
- Shortest conversion time.
- Low cost of ownership
- Highest UPH/footprint ratio
- Integrated sawing & sorting
- Single supplier solution
- Automatic calibration and adjustment
- Real time process monitoring
- Tapeless process
- Very small package handling

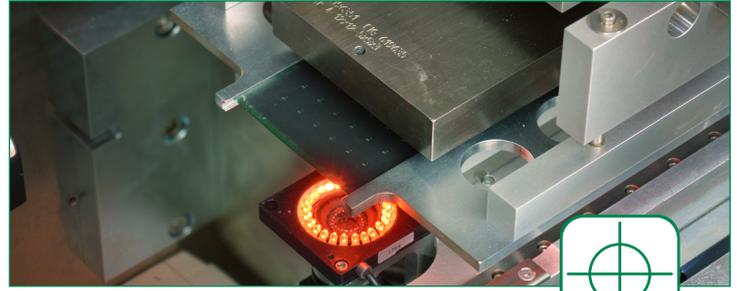
Future Proof Equipment





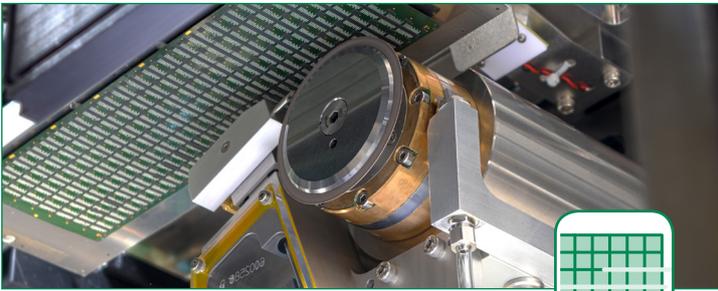
Loader

- High capacity
- Easy accessible
- Substrate orientation check



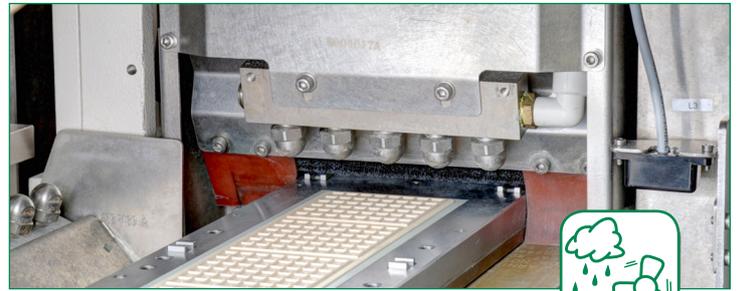
Vision Alignment

- Full strip alignment
- Full feature analysis on all sawing lines
- Automatic strip geometry compensation
- Handling of extremely warped products



Singulator (Saw)

- Extremely rigid construction
- Optimized scrap handling - upside down sawing (patented)
- In line saw blade diameter measurement
- Automatic saw blade coolant adjustment
- Saw blade break detection
- 3" or 2" spindle



Clean & Dry

- Perfect clean & dry result
- Top and bottom cleaning
- Brush cleaning (optional)
- Air atomizing nozzles



Product Inspection

- 100% top and bottom inspection
- Highest accuracy
- Laser marking inspection - OCV
- Detection of over 60 different defects
- Real time process monitoring



Sorting Offload

- Parallel handling of 9 products
- Automatic pitch adjustment (patented)
- Freely programmable product sorting
- High sorting capacity
- JEDEC tray compatible, optional Tape Ring/Tube/Bulk Offloading
- Reliable live bug handling

Machine Dimensions

- Width: 3657 mm
- Depth: 1487 mm
- Height: 1820 mm
- Weight: approx. 3500 kg

Substrate Dimensions

- Minimum: 28 x 60 mm
- Maximum: 100 x 300 mm
- Max. thickness: 6 mm
- Min. product size: 1.6x1.6 mm
- Max. product size: 50x50 mm

Magazine Dimensions

- Max. width: 120 mm
- Max. length: 320 mm
- Max. height: 240 mm
- Buffer capacity: 640 mm

Performance*

- Uptime: $\geq 99\%$
- MTBF: ≥ 200 h
- MTBA: ≥ 4 h
- Max. output: 34,000 UPH
- Size accuracy: $\pm 50 \mu\text{m}$
- Offset accuracy: $\pm 50 \mu\text{m}$
- Capability/ C_{pk} : > 2.00

*Final performance depends on user specific data.