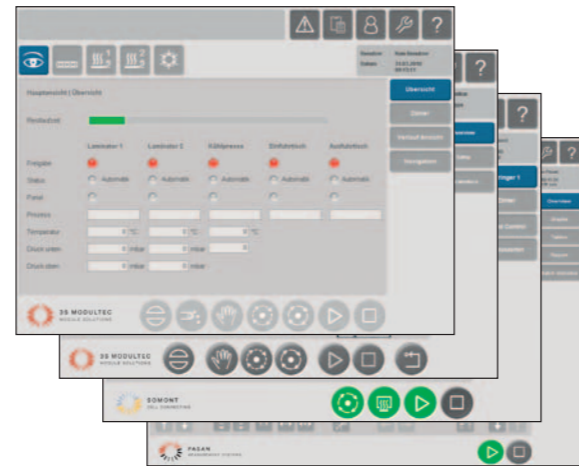


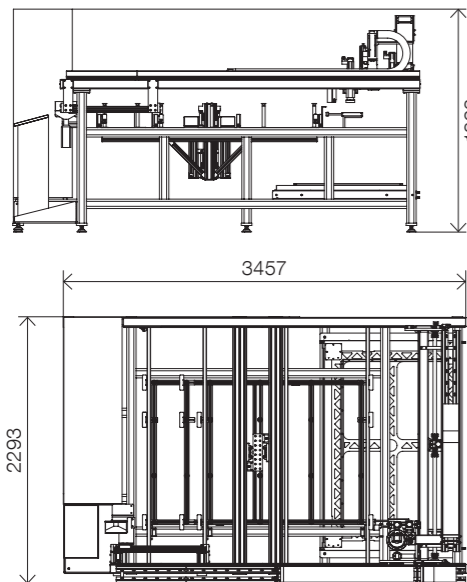
Human Machine Interface (HMI)

- Common touch and feel for all machines of Pasan, 3S and Somont
- Infinite recipes can be saved on the hard disk of the machine
- Plausibility check of edited recipes
- Evaluation of statistical data (SEMI E10)



Technical data

Marking Measuring



Dimensions:

2.29 x 3.46m / height 1.89m

Cycle times:

- print fiducials and ID: 6s
- measure geometry: 8s
- check glass edges: 8s
- change module: 8s

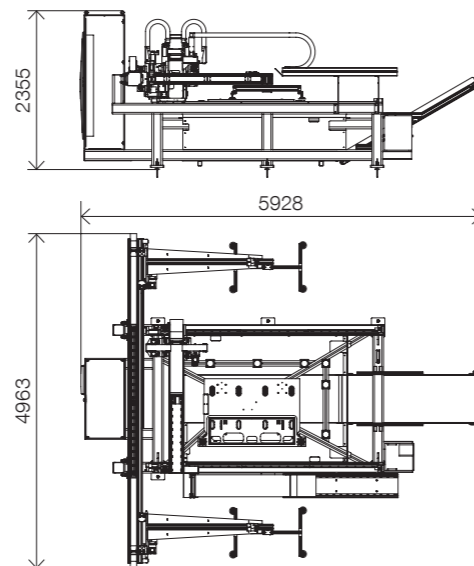
Power:

400VAC, 2kW

Compressed air:

1/2", 5 bar

Edge trimming



Dimensions:

4.96 x 5.93m / height 2.36m

Cycle times:

- fiducials / ID reading: 2s
- edge trimming: 8s
- change module: 6s

Power:

400VAC, 5kW

Compressed air:

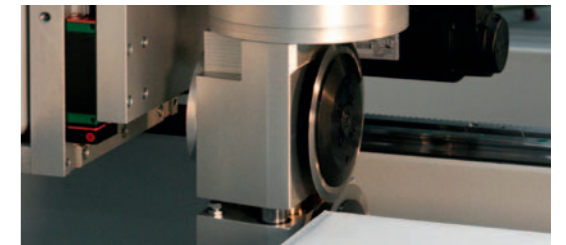
1/2", 5 bar

3S Modultec – Edge trimming

A new dimension in precision and availability

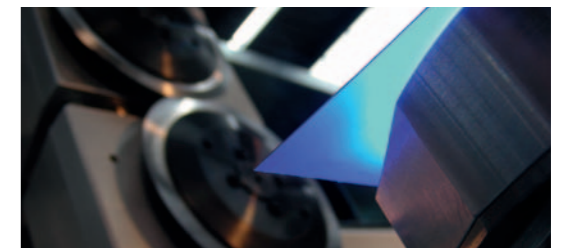
Lowest Cost of Ownership & Highest Yield

- **> 99.99 % Yield**
 - Constant minimal distance to glass edge
 - Tolerances of glass panes are taken in account due to individual taken glass measurements before lamination
- **> 99 % Uptime**
 - Highest durability of cutting head
 - Shortest changeover time between different module sizes (< 5 min).
- **100 % Traceability**
 - Marking of a matrix code on glass pane as ID for product tracking in production



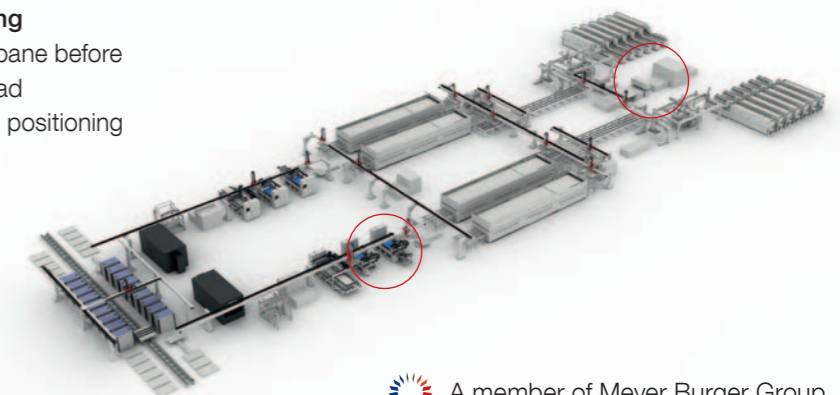
Wear proof and clean cutting technology

- **> 100'000 modules durability of cutting head**
 - Specific developed technology
 - Maintenance free cutting due to clean and cold cutting method

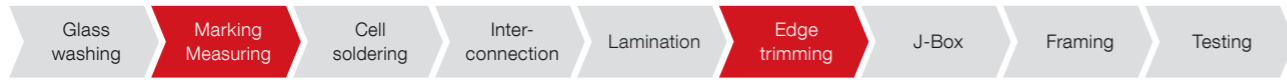


Automation friendly production concept

- **Foregoing measuring and marking**
 - Individual measuring of every glass pane before lamination as course for cutting head
 - Marking of a matrix code for precise positioning and material tracking



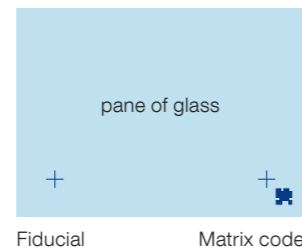
Technical data are subject to change / 11-2011



Higher process reliability through automation-friendly production concept

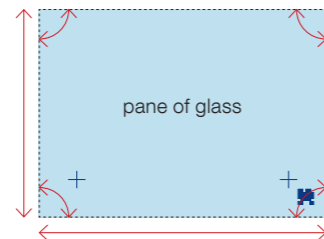
1st step: marking

- **InkJet Printer** – marking of a matrix code and two fiducials on the washed pane of glass
- **Matrix code** – ID for product tracking
- **Fiducials** – positioning of the modules in the following stations



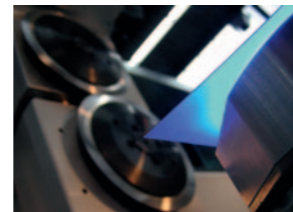
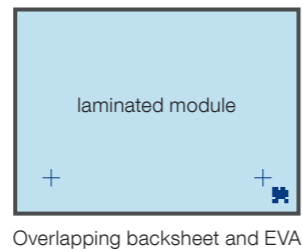
2nd step: measuring before lamination

- Individual geometry measuring of each pane of glass by a camera system
- Geometry relative to fiducials is recorded in the database



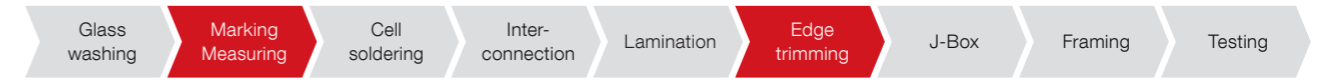
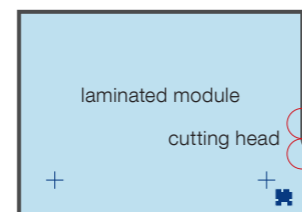
3rd step: cutting geometry

- After lamination, the overlapping EVA and backsheet have to be cut back
- Module identification by matrix code and positioning by fiducials
- Reading of individual glass data from the database as course for the cutting head



4th step: cutting

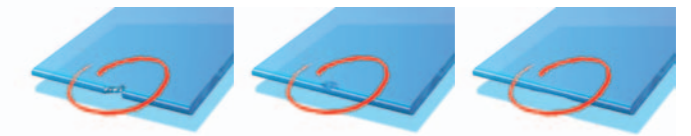
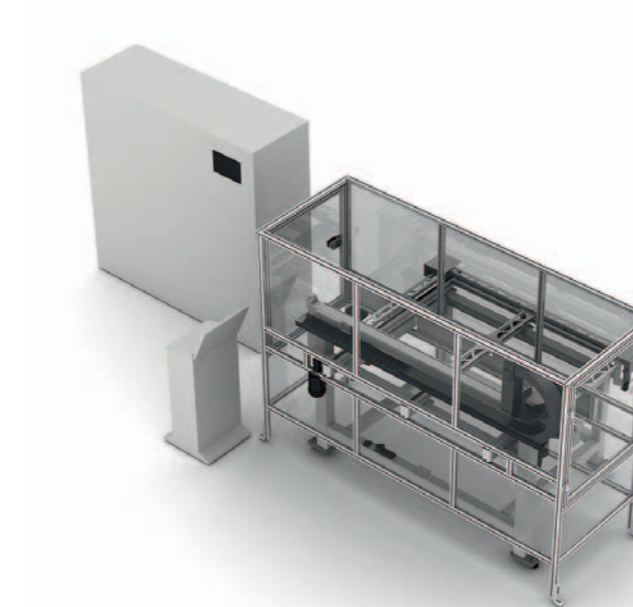
- Cutting based on individual glass geometry
- Constant, minimal distance from the edge of the glass
- Clean and cold cutting process
- Automatic disposal of offcuts
- Cutting speed up to 90 m/min



Option Edge Inspection

Yield and Uptime optimisation

- Edge inspection is integrated in the marking and measuring station
- Automated glass quality check (grinding defects, chips, edge chunking, fissures, scratches)
- The results of the inspection are visualized graphically
- Significant reduction of glass breakage in the production line



© ISRA VISION AG, Darmstadt

Flexibility

Different PV-module sizes

6 x 9 cells 6"	1.000 x 1.500mm
6 x 10 cells 6"	1.000 x 1.650mm
6 x 12 cells 6"	1.000 x 2.000mm
8 x 10 cells 6"	1.310 x 1.650mm
8 x 12 cells 6"	1.310 x 2.000mm

All sizes +/- 20mm

Changeover time between two module sizes < 5 Min.

Integration in different automation concepts

- Integration in conveyor systems
- Integration in gantry systems

