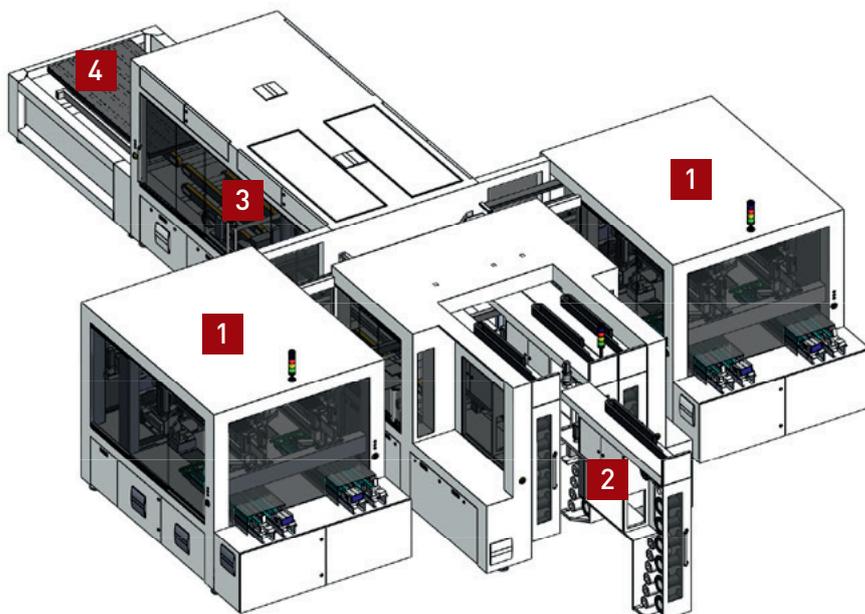
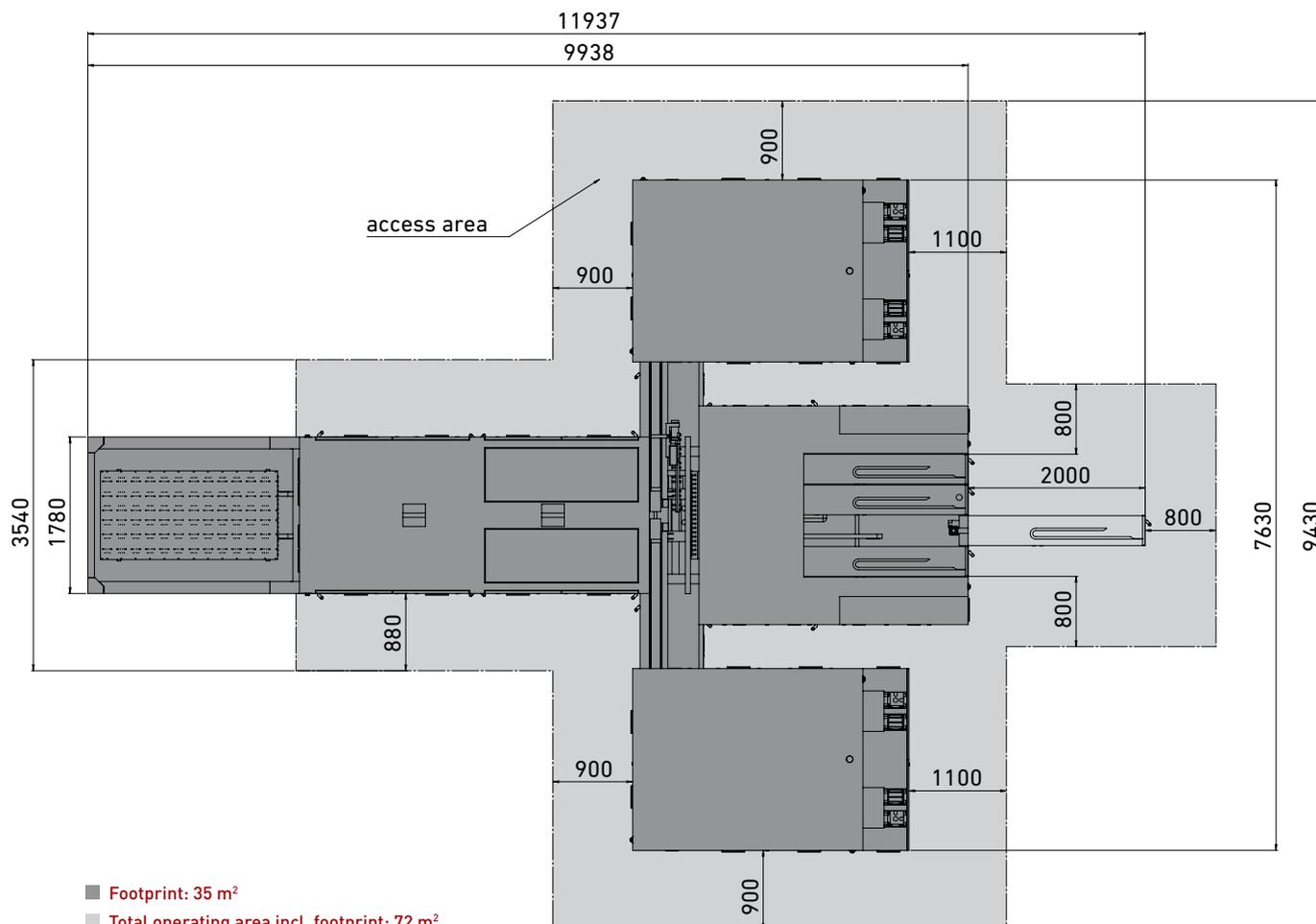
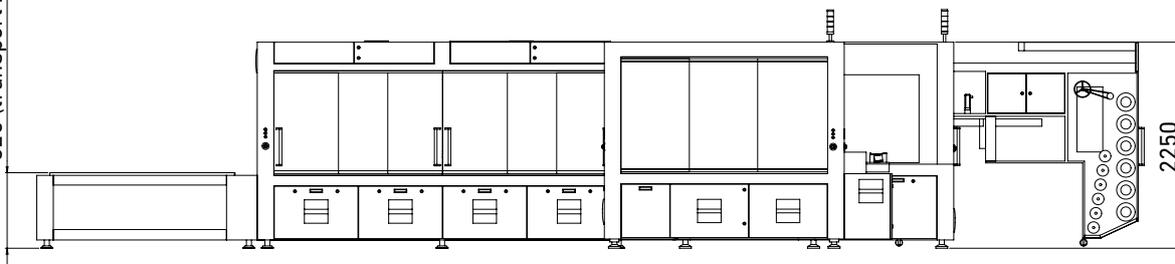


# KUBUS MULTI-TRAY STRINGER | MTS 5500



- 1 Cell-Loader
- 2 Ribbon-Supply
- 3 Soldering-Unit
- 4 Tray-Transport

825 (transport height)



## Definitions

### Uptime ≥ 98%

Part of active time during which the equipment is either fully operational, is ready to perform its intended function or scheduled maintenance and cleaning operations take place. Opposite of downtime.

### Yield ≥ 98.4%

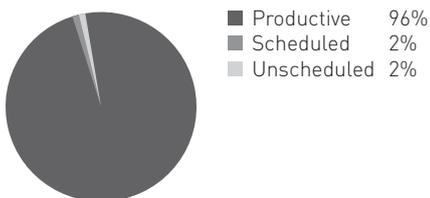
$$Y = (I)(\%G) + (I)(1-\%G)(\%R)$$

- I Planned number of product units started in the production process
- %G Percentage of good units produced
- %R Percentage of units that are successfully reworked

### Uptime ≥ 98%

$$A = E \text{ Uptime} / E \text{ Uptime} + E \text{ Downtime}$$

### Total time



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## Technical Details

### General Information

- Only 1 operator per shift needed, only to refill goods
- No downtime for refill goods
- Size ratio/Low footprint/Minimal space requirements
- Non-stop production, even during ribbon exchanges or maintenance work and servicing
- High redundancy for maximum productivity during maintenance
- Soldered cell matrix on a "Tray" for easy interconnections
- Non-Contact soldering process
- Every format available as half-cell kit
- All components are ideally accessible, without interrupting the production
- Extremely maintenance-friendly
- Highest material conversion yield
- Production of 3, 4 or 5 busbars; 6 busbar as an option; half-cells, PERC
- CE Conformity
- Designed & produced in Germany

### Cell Info

|                           |   |
|---------------------------|---|
| Cell technology, types    | Mono & polycrystalline, all available types     |
| Cell alignment            | Optical alignment via camera                    |
| Cell inspection           | Vision system: cracks, scratches, broken edges  |
| Cell sizes                | 125 sq. (5")–156 sq. (6") & half cut            |
| Cell spacing              | 2 mm–4 mm                                       |
| Cell positioning accuracy | ± 0.2 mm/0.2°                                   |
| Cell thickness            | 160–250 µm                                      |
| Cell buffer               | 5,600 cells (14 x 200 cells x 2 cell handlings) |

### Ribbon Info

|                                   |  |
|-----------------------------------|--|
| Ribbon sizes                      | Width ≥ 0.6 mm                                       |
| Ribbon thickness                  | 0.1–0.28 mm  |
| Ribbon positioning accuracy       | ± 0.1 mm; given delta between busbar & ribbon 0.2 mm |
| Lead-free ribbons (Pb)            | Yes  |
| Number of interconnection ribbons | 2–5; 6 as an option                                  |
| Busbar spacing                    | 30–78 mm; 26 mm as an option                         |

### Machine Info

|                                 |  |
|---------------------------------|--|
| Throughput                      | 5,500 cells/h for a 12 cell-string with cell fluxing   |
| Time per cell                   | 0.65 sec   |
| Availability                    | ≥ 98.00%; including 2% scheduled maintenance           |
| Yield                           | ≥ 98.40%   |
| Cycle time per module           | 47 sec   |
| Soldering technology            | IR light   |
| Flux application                | Adjustable, metered micro spray/both sides as standard |
| Changeover time from 2–6 busbar | Approx. 5–6 man-hours                                  |
| Breakage rate                   | 0.0–0.3% (according to cell quality)                   |
| String size                     | Max. 2,000 mm, accuracy in length ± 1 mm               |
| Required operators              | 1 (runs continuously as one-man operation)             |
| Air consumption                 | 6 Bar/700l/m   |
| Electrical supply               | 400V/125A/78 KW  |
| HMI                             | Fixed colortouch panel and portable tablet             |

Kindly note: All shown figures have been verified and certified by M10 Industries AG with common in market available materials. However the characteristics are strongly related to incoming materials and may vary.