

## Laminator CSL 4000

with wet lamination unit!

For the processing of dry resist films for inner layer and outer layer circuits.



**NEW: with inline plasma pretreatment**

### ... and here's how it works:

After entering the basic parameters of the panel into the touch panel control, the position of the incoming board is automatically detected by light sensors. Then the panel is aligned and moved to the tacking position. To increase the adhesive properties of the dry resist film, the machine features a resist preheating function on the vacuum drum as standard and an inductive panel preheating as additional equipment. An inline plasma pretreatment can be integrated in the entry zone to activate the panel surface. The plasma modifies the surface topography by physical components and creates

a microfine surface structure ensuring an optimum film adhesion. The patented flow control allows for a precise and smooth transfer from the tacking position to the synchronized laminator rollers. The transport system is ideal for very thin dry resist films because the sensitive resists are only pulled and not pushed. The lamination pressure is individually adjustable. An integrated mechanical transmission generates pressures of up to 8 bar. When detecting the panel end, the vacuum drum engages synchronously with the feed and enables cutting the resist without interrupting the process flow.



## Special guiding system for flexible material

In the pre-heating zone, the special guiding system is carried out with special guiding bands. The guiding in the preceding stations is done by use of special guiding plates. The specific equipment for the pre-heating zone enhances process safety. This equipment is also able to process thicker substrates. The maximum panel thickness is about 4 mm.

# ADVANTAGES

- **Consistent Design – Suitable for thinnest flex material**  
Flex material with a thickness of only 25  $\mu\text{m}$  (base plus copper) can be laminated due to a special mechanical guiding system.
- **High Process Reliability – High Yield**  
Minimized process tolerances and an increased operating flexibility guarantee reproducible results with highest yields.
- **Optimized Processes – Higher Productivity**  
A cutting control with servo motor drive ensures a 30 % higher cutting speed.
- **Flexible Use – Wide Range**  
The patented flow control offers the possibility to reliably produce material from 25  $\mu\text{m}$  incl. copper up to 6 mm (with optional lifting device).
- **Easy Resist Exchange – Low Down Time**  
The entry with the preheating zone can simply be pushed aside and the resist cassettes exchanged as a whole.
- **Integrated Plasma Pretreatment – Better Film Adhesion**  
The plasma activates the panel surface, removes organic polluting particles and creates a micro-fine surface structure.

## Options:

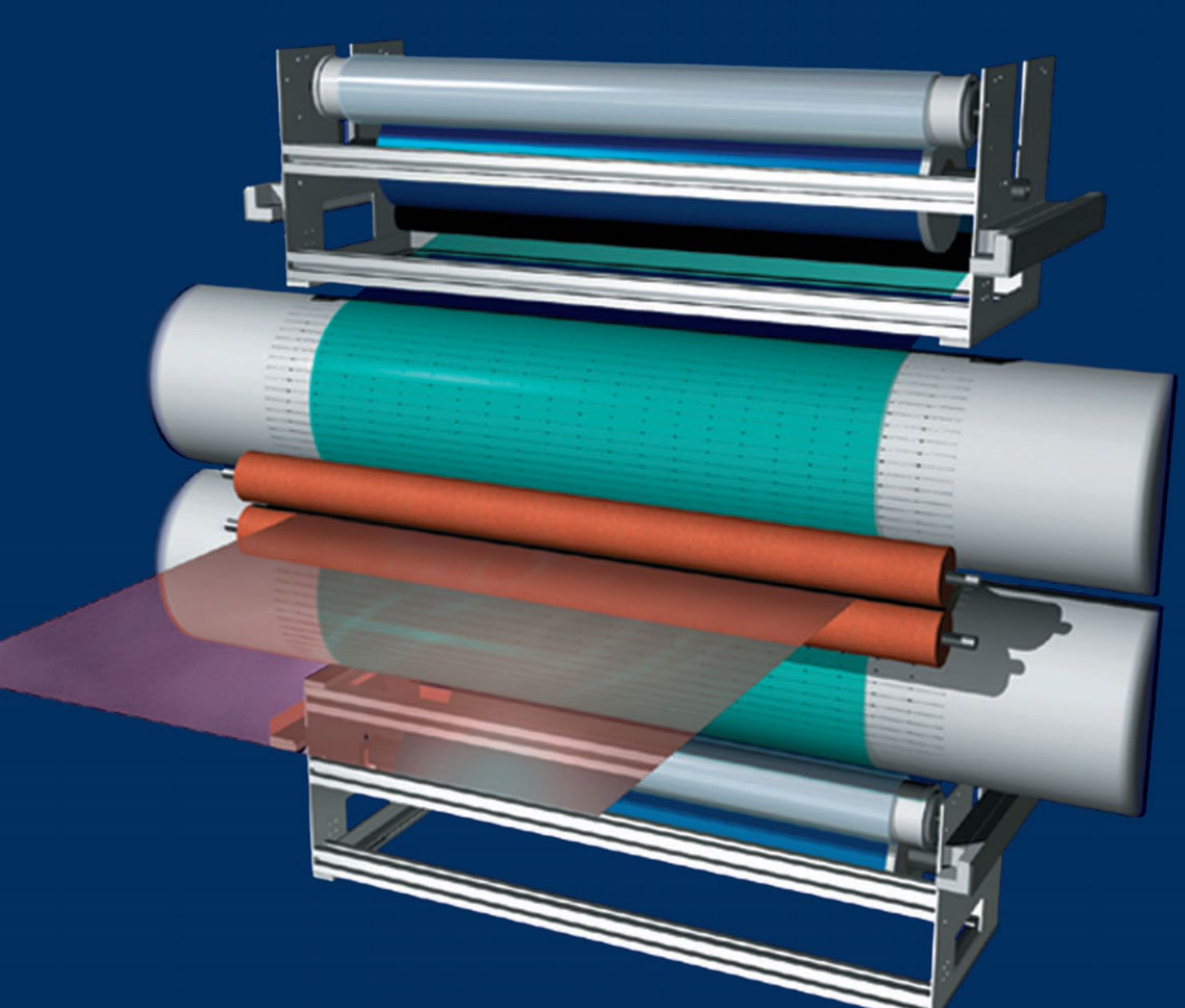
- Lateral fine adjustment of the centering station
- Temperature display of the exiting board
- Early warning for resist roll exchange
- Guiding unit for flexible, thin materials
- Lifting device for the transport of boards with a thickness of up to 6 mm
- Transport cart for easy resist cassette exchange
- Plasma Pretreatment

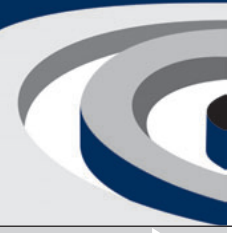
## Characteristics:

- Current transmission without brushes
- Particle-reduced toothed belt drive
- Cutting control with servo motor drive
- Machine control with Siemens components

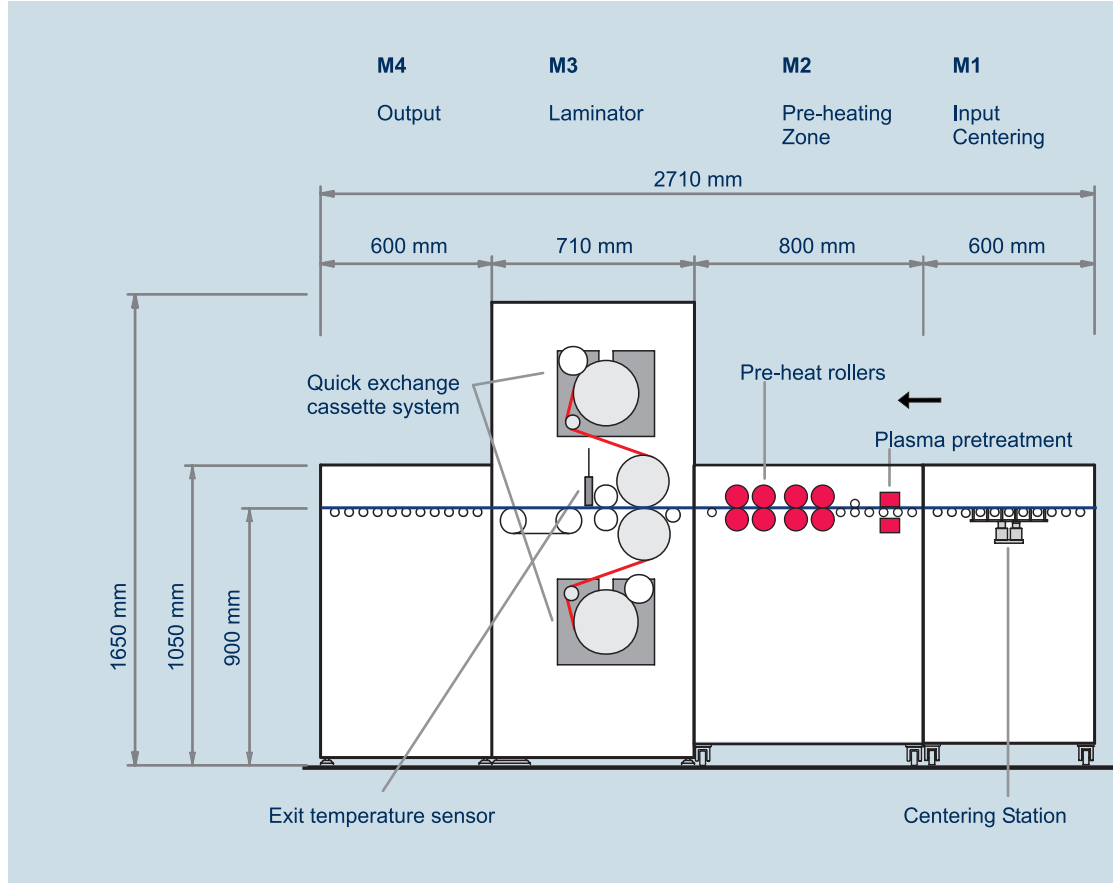


Inline Plasma Pretreatment





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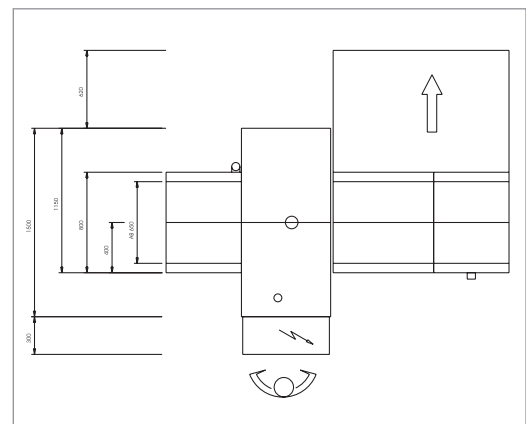
## Technical Specifications:

Capacity: 340 boards/h  
 (stop time 3.7 sec)  
 with a board length of: 300 mm  
 and a feeding gap of: 50 mm  
 Conveyor speed: 3 m/min

Lamination speed: max. 4 m/min  
 Lamination pressure  
 at the rollers: 292 N/cm<sup>2</sup> max.

Board thickness, standard: 0.1 mm min.  
 (incl. copper) 4.0 mm max.  
 Board thickness, option: 0.033 mm min.  
 (incl. copper) 6.0 mm max.  
 Working width: 650 mm max.  
 Working height: 900 mm  
 (-15 / +25)

Heating pre-heating zone: 8 x 1.5 KW  
 Heating laminator rollers: 2 x 1.5 KW  
 Heating vacuum drums: 2 x 1.6 KW



Resist width: 630 mm max.  
 Resist length: 170 mm min.  
 Resist thickness: 13 µm min.  
 Parallelism: 1,5 / 600 mm  
 (Resist edge/board edge)

Front edge width: 0 - 20 mm  
 Back edge width: 0 - 10 mm  
 Tacking position tolerance: +/- 0.5 mm