

# PST line<sup>®</sup> I

*In-line 3D Sputtering Coating System*



*In-line 3D Sputtering Coating System*  
*Fully automated*



**TAPEMATIC<sup>®</sup>**  
*The right choice*

# PST line<sup>®</sup> I

## In-line 3D Sputtering Coating System

At long last there is a modern, fully-automated alternative to traditional varnishing and metallisation processes. Efficient and eco-friendly, the Tapematic PST Line I is a revolution in the world of manufacturing.

PST Line I is a completely self-contained system for applying a stable, high-quality varnish and metal coating to packaging items in-house with only one operator. Its robotic spray works accurately on-demand, using less varnish and producing far fewer rejects, making it extremely economical and eco-friendly.

Up to 4800 pieces can be processed per hour. Parts travel on trays on a conveyor between the different modules.

**2400**  
pieces/hour  
**4 parts per tray**  
••••

**4800**  
pieces/hour  
**8 parts per tray**  
••••••••





*A pioneering spirit that puts innovation at the heart of everything we do.*

*Built on the ability to draw on the best that the world has to offer, and to develop innovative products with anticipation of market needs, Tapematic has evolved over five decades into a truly global company that creates great value for its customers, and provides a secure future for its employees in every corner of the world where its machinery is installed.*



***The economical and environmental benefits of an automated line***

***Fewer materials***

High solid UV curable lacquer is the new industry standard, but it is very expensive. Traditional always-on spraying techniques use up to 80% more varnish. With the PST Line I, each 3D item can be varnished individually in as little as 150 milliseconds with minimum wastage.

***Less rejects***

Consistent controlled processes ensure consistent results with less errors and consistent quality control. Built-in ionization and Class 100 HEPA filtration ensures that no contamination enters the process area; therefore ensuring guaranteed quality in the production process.

***One operator***

The PST Line I loading and offloading are linked by a fully automated handling system, with precision servomotors controlling all functions. The process control is monitored and adjusted using a user-friendly, touch screen interface. Even quality control is carried out automatically via a HD camera and identification software.

***Eco-friendly***

PST Line 1 is extremely efficient, with much lower energy consumption than traditional lines and much less varnish. There is no toxic wastewater to process after spraying or other unnecessary waste products. No toxic chrome derivatives are used in the metallisation process.

Customers who have already installed the PST Line I are now being recognised with Eco Awards around the world. With the use of high solid UV varnish, emissions are minimised. It eliminates the toxic emissions associated with the galvanic process used in chrome.

Furthermore thanks to the innovative spraying technology the VOC emission are drastically reduced compared to traditional spray varnishing systems.



## LOADING & UNLOADING < 01

Loading can either be performed manually or automatically. Automatic loading system equipped with a vision device to recognize object geometry that ensures correct placement in to the machine. The off-loading system can be either a stand-alone or integrated within the loading module. Every object is tracked in the machine so it can be automatically rejected if found to be defective.

## PRIMER COATING < 03

The BT Coating I module is a state-of-the-art turnkey system for automated spraying of all types of primer varnish. Extremely efficient, it sprays accurately, on-demand to use only the minimum amount of varnish necessary. The primer module will be helpful where the substrate requires additional care. This module can be enable or disabled according to the needs.

## SPUTTERING DEPOSITION < 05

The Tapematic S8+<sup>2</sup> sputtering module will enable you to sputter three dimensional objects in a streamlined, efficient, automated and completely reliable process. Thanks to its unique load-lock design, it is capable of sputtering 3D items while simultaneously loading and offloading, thereby always maintaining the sputtering chamber in high vacuum.

### The PST Line I modules

## 02 > CLEANING & PRE-TREATMENT

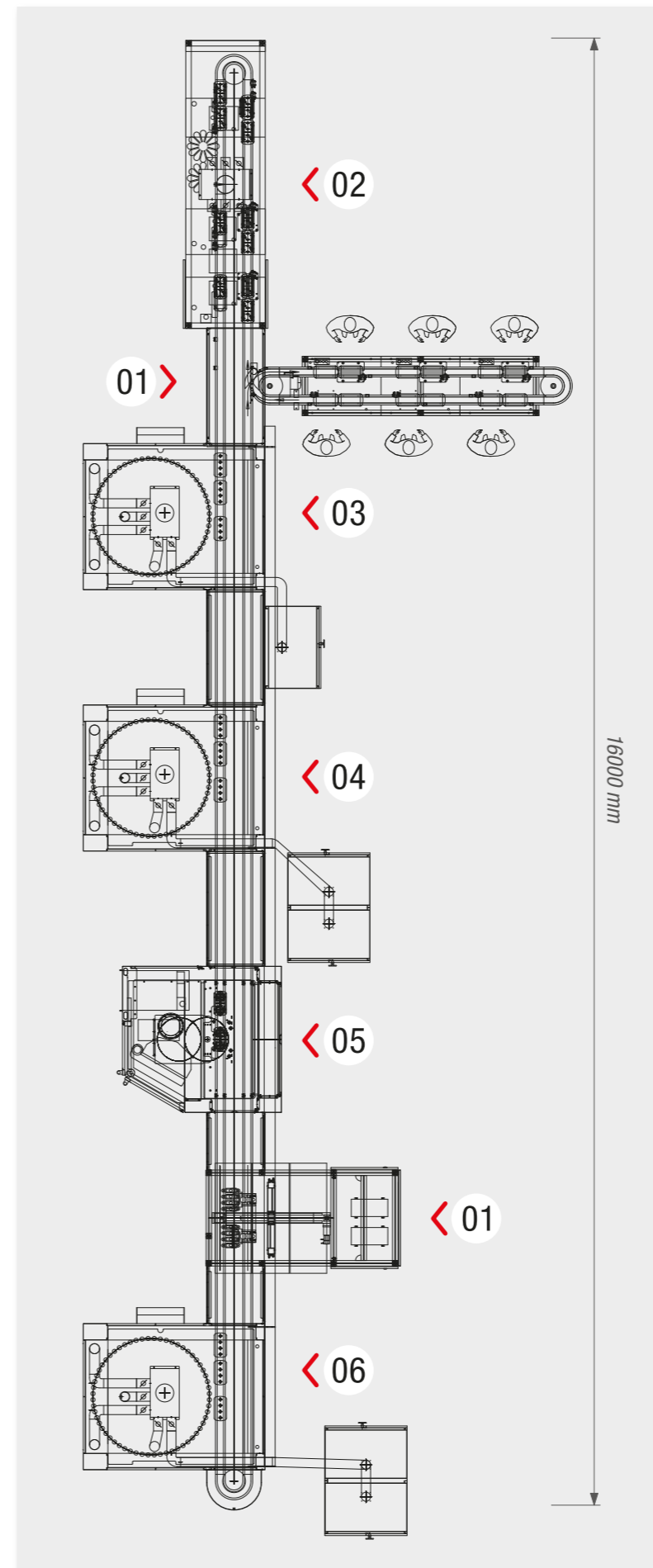
This module is designed for multiple cleaning processes and allows for customized surface treatments to be installed. Antistatic air blows and different brushes are used to remove possible foreign particles present on the object surface. Plasma torches and/or flame burners promote the surface activation in order to proceed to the next processes of the PST Line.

## 04 > UV BASE COATING

The BT Coating I module is a state-of-the-art turnkey system for automated spraying of all types of UV base varnish. Extremely efficient, it sprays accurately, on-demand to use only the minimum amount of varnish necessary.

## 06 > UV TOP COATING

The BT Coating I module is a state-of-the-art turnkey system for automated spraying of all types of UV top varnish. Extremely efficient, it sprays accurately, on-demand to use only the minimum amount of varnish necessary. Camera based optical inspection is integrated using High-resolution sampling technology. This allows the machine can inspect each and every piece for manufacturing flaws in shape, coating or imperfections without any operator presence or intervention.



### PST Line I key features

- In-line fully automated 3D sputtering and coating system
- 3D sputtering and coating of a tray in 6 seconds
- Lowest overall investment, and cost per piece
- High-performance spray coating system
- In-line quality inspection camera system
- Built-in class 100 clean room environment
- Stunning uniformity and reflectivity
- Lowest varnish consumption
- Lowest power consumption
- Intuitive touch screen user interface
- Reduced operator involvement
- Negligible start-up time
- No waste generated
- Minimal reject





*Tapematic is pro-active at manufacturing equipment that is both environmentally friendly in its operation as well as environmentally efficient with what it produces. This, in turn, avoids or minimizes the impact on the environment.*

*The key modules of PST Line I*

**BT Coating I**  
*In-line UV coating module*

The Tapematic BT Coating I module is a state-of-the-art turnkey system for automated spraying of all types of UV varnish. Extremely efficient, it sprays accurately, on-demand to use only the minimum amount of varnish necessary. With the use of high-solid UV varnish, VOC emissions are minimised.

Thanks to the innovative spraying technology and the unique process the varnish consumption and the overspray are drastically reduced compared to traditional varnishing systems. Thanks to these features the BT Coating I is the most efficient and eco-friendly coating system today available on the market.

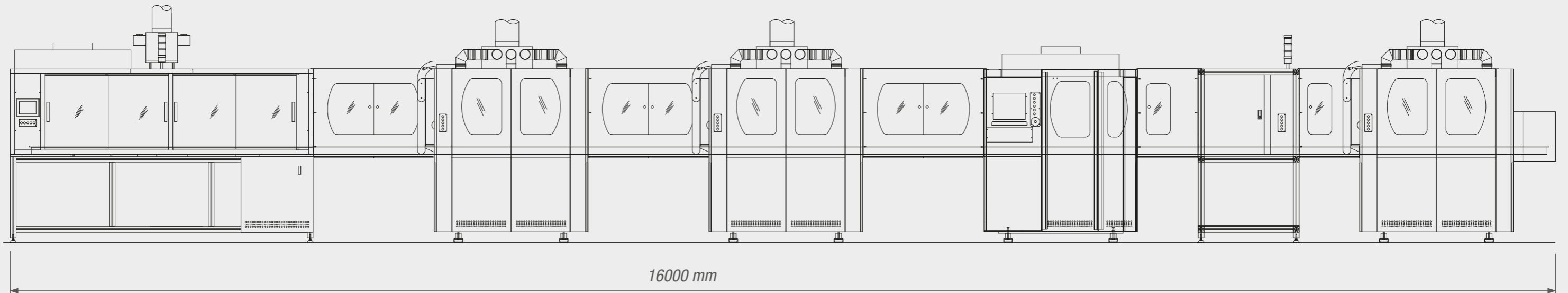


**S8+<sup>2</sup>**  
*In-line 3D sputtering module*

The Tapematic S8+<sup>2</sup> sputtering module will enable you to sputter three dimensional objects in a streamlined, efficient, automated and completely reliable process. Thanks to its unique load-lock design, it is capable of sputtering 3D items while simultaneously loading and offloading, thereby always maintaining the sputtering chamber in high vacuum.

Compared to the traditional evaporation process, the S8+<sup>2</sup> is revolutionary. It produces no waste materials and uses only the very minimum amount of metal to achieve the same results with only an ultra-thin coating. When used together with the BT Coating I in PST Line I, it is an unbeatable combination.





**PST Line I technical data**

<b>Substrate</b>	
Substrate material	ABS, PE, HDPE, PC, PS, PA, PET, PVC, SAN, PPA, PP, PMMA, POM, Glass, Metal
Substrate dimension	Ø 56 x 90 h mm (Custom dimension upon request)
<b>Handling process</b>	
Loading	Automated robot sorting system
Transport	Modular plastic chain conveyor system
Reject	Reject identification via RFID technology
Quality check	3D vision system
Offloading	Automated discharge, multiple boxes
Clean room environment	Built in class 100 Hepa filter
<b>Surface preparation</b>	
Surface cleaning	Air deioniser and dust removal station
Brush cleaning	Multiple controlled brush stations
Flame treatment	Multiple controlled burners
Plasma treatment	Multiple robotized torches
<b>Coating process</b>	
Lacquer	High solid UV curable lacquer
Spray	High performance spray coating system
Flash off	Controlled quartz infrared oven
Curing	Water cooled 3D UV lamps
<b>Sputtering process</b>	
Target material	Aluminum, Silver, Gold, Stainless Steel, Chrome, Copper, Titanium
Vacuum chamber	Load lock system to maintain consistent high vacuum
<b>Production</b>	
Cycle time	Up to 4800 pcs/hr
Yield	95%
Up-time	85%

<b>Physical</b>	
Dimensions	16000 w x 3000 l x 2100 h mm
Weight	4000 kg
<b>Utilities</b>	
Power	400V 3 phase 50/60 Hz 45 k VA
Air	6 bar 600 N l/min
Vacuum	- 0.8 bar 10 m3/hr
Water	5 bar 34 lt./min, 16-18°C, pH 6-8, dH 4-8
Water	3 bar 40 lt./min, 16-18°C, deionized, <10 µS
Argon	2 bar, 50 sccm, purity 99.999%
<b>Environment</b>	
Working area	20 m x 5 m ceiling height minimum 3 m
Temperature	18 - 24 °C
Relative Humidity	35 - 55% non condensing
<b>Safety</b>	
CE	Complies with all current regulations
<b>Patents</b>	
European patent granted	EP2500448B1, EP3015176B1, EP2692450B1
United States patent granted	US9487857

We reserve the right to make modifications without prior notice



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