

pst line[®]

In-line 3D Sputtering Coating System



In-line 3D Sputtering Coating System. Fully automated

 **TAPEMATIC**[®]
The right choice

pst line[®]

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Whenever high-end metallic surfaces on objects are required, the PST Line is the sustainable alternative to today's conventional production technologies. The PST Line process consists of three layers: a UV lacquer base coat, a thin metallic decorative sputtered film, and a protective UV lacquer top coat. The base coat serves to equalize any minor irregularities of the manufacturing process of the substrate. On top of the base coat, a thin metallic film is depos-

ited using high vacuum sputtering technology. On top of this thin metallic film, another lacquer coating is applied. The top coat serves as a protection of the sputtered metallic film which is also extremely durable and stable. The PST Line process is environmentally friendly due to its low energy consumption and the avoidance of special wastes. No environmentally harmful chrome derivatives are used in the process.

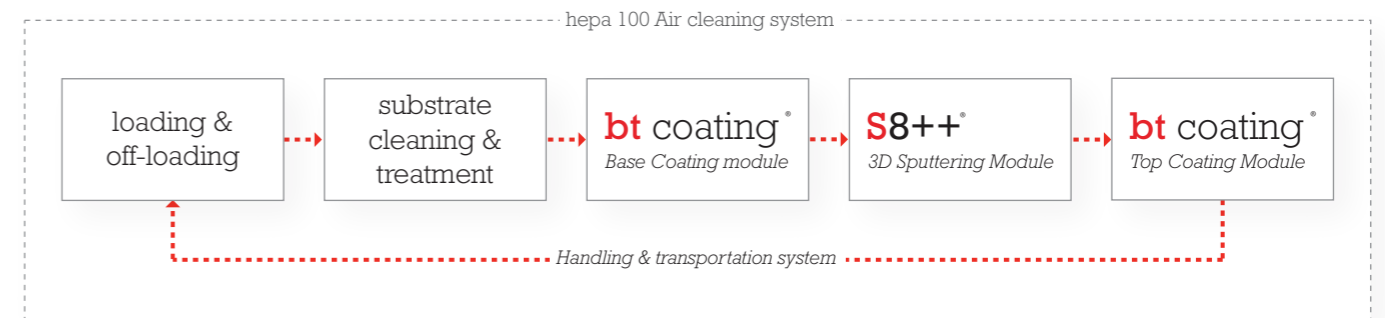




Built on the ability to draw on the best that the world has to offer, and to develop innovative products with anticipation of market needs, Tapematic has evolved over five decades into a truly global company that creates great value for its customers, and provides a secure future for its employees in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

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

PST Line Main workflow



PST Line Overview

Tapematic presents the PST Line. A revolutionary, fully automated system capable of applying a UV base-coat, 3D metallization and a UV top-coat together with final inspection utilizing a Hi-Dev optical camera quality control system.

The result is a turnkey line for the complete, self-contained and in-house production of finished items. The PST Line incorporates two Tapematic BT Coating stations, the most efficient UV varnishing system available anywhere today.

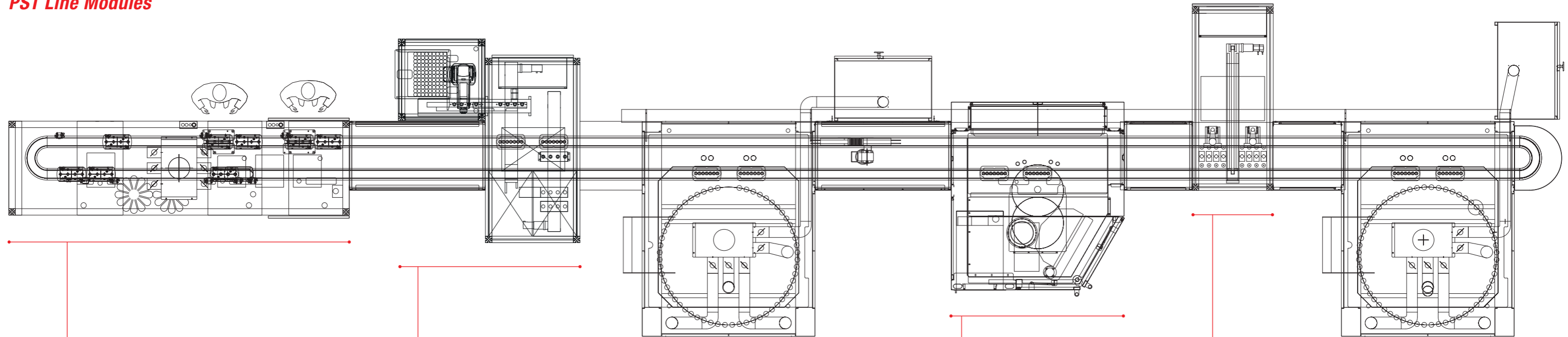
Each 3D Part can be varnished in as little as 150 milliseconds, using high solid UV curable lacquer. Combined with the Tapematic S8++ sputtering system, you are guaranteed the most environmentally friendly and cost effective solution available today for metallization and varnishing of 3D objects. The PST Line loading and offloading are linked by a fully automated handling system that is custom designed to customer specific product requirements. Built-in ionization and Class 100 HEPA filtration guarantees that no contamination enters the process area; therefore ensuring total environmental quality in the production process.

An industrial grade PLC and precision servomotors control all functions and handling. The process control is monitored and adjusted using a user-friendly, touch screen interface.

The PST Line is the ultimate solution for any company that wishes to have control of in-house metal coating of parts, thereby guaranteeing their customers, in turn, a stable, high-quality coating and finish for their products.



PST Line Modules



cln
Cleaning & Pre-treatment module

- Ionized air treatment
- Mechanical cleaning
- Multiple robotized plasma torches
- Multiple controlled flame burners
- Antistatic bars

This module is designed for multiple cleaning processes and allows for customized surface treatments to be installed. The first cleaning step is a micro filtered air system to remove possible foreign particles present on the object surface. During this operation an antistatic air blow device blows air onto the objects to remove any static charge that maybe present. Mechanical cleaning is used to remove any residual dust from the surface prior to the surface treatment that will take place. Multiple possibilities of surface treatments are available as required by the customer to achieve the desired result.

loa
Loading & Off-loading module

- Pick and place operation
- Optical recognition of object
- Off-loading module
- Multiple good bins
- Single object reject feature

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. Minimal maintenance and quick format change-over allows for maximum uptime.

bt coating
3D Base Coating System

- Multiple spray system available
- Controlled quartz IR oven
- Off-loading module
- Cold cure UV technology
- High solid UV curable lacquer

The Base Coating station provides the application of the base UV coating while the parts are rotating in front of the spray gun. Spray types can consist of 'Electrostatic', High Volume Low Pressure (HVLP), or Airless. Once spraying has completed the parts transfer via the rotary dial to the IR flash-off oven then the parts are cured using UV Lamps. Our UV Lamp systems are both air and water-cooled which employs the use of a quartz cooling tube positioned directly in front of the UV lamp. Any heat generated is disbursed via the cooling tube thereby reducing any heat transfer to the object being cured.

S8++
3D Sputtering System

- Load-lock concept
- High vacuum chamber
- Magnetron sputtering cathode
- Wide range of sputtering materials
- Lowest power consumption

The PST Line takes full advantage of the Tapematic S8++ 3D Sputtering system. The S8++ is a fully automated sputtering chamber that employs load-lock technology. Load-lock technology allows the main chamber to remain at the high vacuum that is required for high quality sputtering. Parts are transferred into the load-lock and once the load-lock is sealed it is then immediately pumped down to high vacuum at which stage the parts are transferred into the main sputtering chamber. The S8++ offers the lowest cost per item, even when compared with traditional PVD systems or batch sputtering systems.

idm
In-line Decoration Module

- Revolutionary decoration
- Zero consumables
- Zero cost per piece
- Easy setup and operation
- Serialization features

The In-line Decorating Module (IDM) is a new revolutionary system to create an image on the object surface with or without the embossing effect. The unit can be placed on the line at two different positions according to the desired effects. No consumable material is required to decorate the object.

bt coating
3D Top Coating System

- Multiple spray system available
- Controlled quartz IR oven
- Quality inspection system
- Cold Cure UV Technology
- High solid UV curable lacquer

The Top Coating station provides the application of the top UV coating while the parts are rotating in front of the spray gun. Spray types can consist of 'Electrostatic', High Volume Low Pressure (HVLP), or Airless. Once spraying has completed the parts transfer via the rotary dial to the IR flash off oven then the parts are cured using UV Lamps. Camera based optical inspection can be 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.





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.



PST Line Samples selection

<p>Flip-top cosmetic cap Material: PP Al Sputtering Clear glossy top coat</p>	<p>Whisky closure Material: HD ABS Al Sputtering Pigmented glossy top coat</p>	<p>Square cosmetic cap Material: PP Brass Sputtering Clear glossy top coat</p>	<p>Cosmetic cap Material: PP Al Sputtering Clear glossy top coat</p>	<p>Cosmetic cap Material: PP Ag sputtering Clear glossy top coat</p>
<p>Vodka closure Material: ABS Al Sputtering Clear matt top coat</p>	<p>Vodka closure Material: Aluminium Al Sputtering Clear matt top coat</p>	<p>Elliptical cosmetic cap Material: PP NiCr Sputtering Clear glossy top coat</p>	<p>Cosmetic cap Material: HDPE Al Sputtering Pigmented top coat</p>	

PST Line Performance & features

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

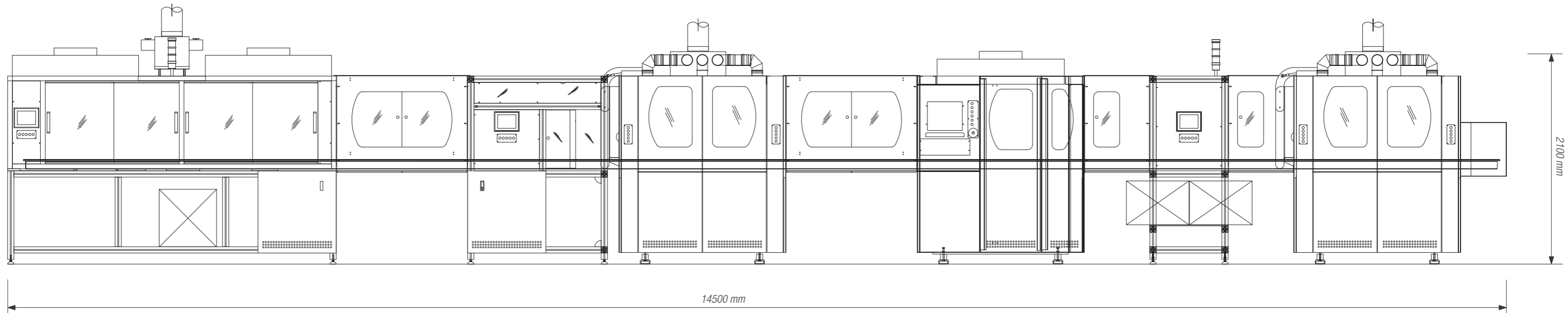
20 years of experience

The sputtering technology is well established and widely implemented in optical disc manufacturing; an area that Tapematic specializes in, having manufactured stand-alone sputtering and

complete production lines for more than 20 years. CDs, DVDs and Blu Ray discs are typically sputtered in less than 2 seconds including handling to and from the sputtering chamber.



PST Line Front view



PST Line Technical data

Substrate	
Substrate material	PE, HDPE, PC, PET, PS, PP, PA, ABS, SAN, Nylon, Glass, Metal
Substrate dimension	Ø 104 x 100 h mm (Custom dimension upon request)
Handling process	
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
Surface preparation	
Surface cleaning	Air deioniser and dust removal station
Flame treatment	Multiple controlled burners
Plasma treatment	Multiple robotized torches
Coating process	
Lacquer	High solid UV curable lacquer
Spray	High-performance spray coating system
Flash off	Controlled quartz infrared oven
Curing	Water cooled UV lamps
Sputtering process	
Target material	Aluminum, Silver, Gold, Stainless Steel, Chrome, Copper, Titanium
Vacuum chamber	Load lock system to maintain consistent high vacuum
Production	
Cycle time	Up to 7200 pcs/hr
Yield	95%
Up-time	95%

Physical	
Dimensions	14500 w x 3000 l x 2100 h mm
Weight	2400 kg
Utilities	
Power	400V 3 phase 50/60 Hz 45 k VA
Air	6 bar 500 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%
Environment	
Working area	16 m x 5 m ceiling height minimum 3 m
Temperature	18 - 24 °C
Relative Humidity	35 - 55% non condensing
Safety	
CE	Complies with all current regulations

We reserve the right to make modifications without prior notice



www.tapematic.com



Tapematic Head Office

Via Vimercate 42
20876 Ornago MB Italy
Tel +39 039 6010145
Fax +39 039 6010558
italy@tapematic.it

Tapematic USA

6881 Kingspointe Parkway, Suite A-9
Orlando Florida 32819 USA
Tel: +1 407 852 1901
Fax: +1 407 852 1902
america@tapematic.com

Tapematic UK

Hangar 3 Lodge Farm
Nightingale Hall Road
Earls Colne Airfield
Colchester Essex CO6 2NR
Tel.: +44 1787 220266
Fax: +44 1787 224843
uk@tapematic.com

Tapematic Asia

Flat F, 2F. block A
Tung Chun ind. bldg.
9-11 Cheung Wing road, Kwai Chung
New Territories Hong Kong
Tel: +852 2785 8631
Fax: +852 2785 9909
holger@nextek.com.hk