



# ROLL-TO-ROLL WEB COATING TECHNOLOGY

FOR FLEXIBLE ELECTRONICS AND OPTICAL MULTILAYERS

WEB Coating Products

# NEW ROLL-TO-ROLL PROCESSES

Meeting the diverse demands for a variety of applications, new roll-to-roll processes serve rapidly developing markets for flexible electronics and advanced optical industries.

Mobile devices and the “Internet of Things” are driving growth for flexible electronics, RFID, bio-medical devices and batteries.

Touch panels are shifting from glass-based to polymeric web-based substrates

Truly flexible, bendable, foldable and rollable displays are emerging

Advanced window films are being used for buildings and cars to effectively reduce energy consumption

## Addressed Markets/End Products



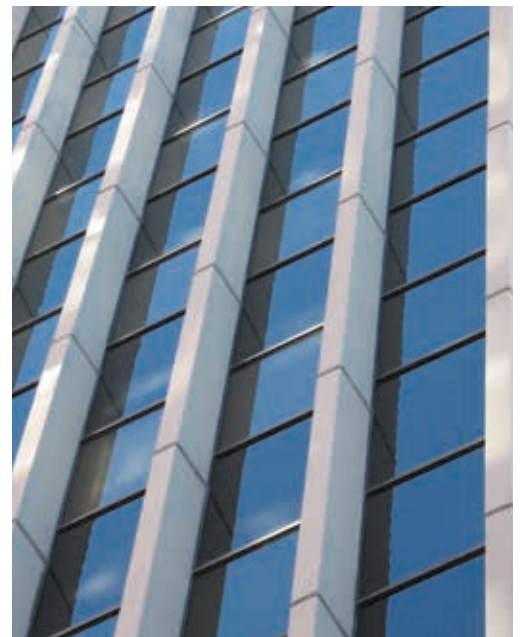
Multi-touch panels



Bendable mobile Phone



Flexible Display



Window Film

# SMARTWEB™ XL ROLL-TO-ROLL SPUTTER SYSTEM

The benchmark system for touch panel, optical multilayers and barrier coatings

- Modular platform architecture with one or two process modules supports broad range of applications
- 6 or 12 individually controlled compartments for AC and DC sputter cathodes permit deposition of film layer stacks within a single pass
- Low particle generation during coating
  - Use of rotatable cathodes : Highest productivity, lowest cost of ownership with minimum defects
  - Bipolar pulsed generators for excellent arc suppression
- Minimized winding defects
  - Configuration of interleaf feature protects films
  - Winding architecture features minimum number of guide rollers
- Proprietary In-situ process monitoring and control for consistent product quality



## APPLIED FLEX ELECTRONIC/OPTIC PRODUCTION SOLUTIONS

1980s

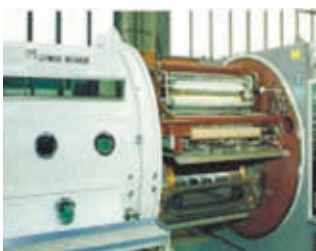
2004

2010

2014 / 2016

### “A” Type Sputter Tool

- Production R2R sputtering
- 2m substrate width
- 6 cathodes per drum
- ITO & window films



### SmartWeb™ 3-400

- 400mm width
- 3 cathodes per drum
- Modular platform
- Flex Electronics R&D



### SmartWeb™ XL

- 1000, 1400 mm width
- 6 or 12 cathodes, 1 or 2 drums
- High volume production
- Flexible Electronics, PV, Displays



### SmartWeb™ WF 63

- 1600 mm width
- 6 or 12 cathodes, 1 or 2 drums
- High volume production
- Flexible Electronics, PV, Displays, Window Films

### SmartWeb™ SL



For R&D and Pilot production

Modular roll-to-roll sputter system with 3 separated cathode compartments and a large variety of process tools:

- Pre-heating and glow discharge pre-treatment
- Planar or rotating targets
- DC, DC pulsed, AC, bipolar pulsed power supplies
- In-situ spectral photometer for transmission and reflection

### SmartWeb™ XL



For large volume production

Same modular architecture as SmartWeb SL, but with 6 cathodes per process module and 1400 mm usable web width. Offers same tools as SmartWeb SL plus:

- Scanning optical measurement system for full web width control
- Linear Ion Source for pre-treatment and other pre- and post-treatment tools

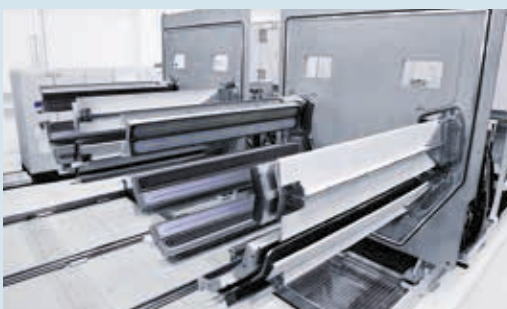
### SmartWeb™ WF63



For Window Films up to 63 inches width

Based on the successful SmartWeb design extended to 63 inch (1600 mm) usable web width. Optimized for deposition of optical multi-layer stacks, like Low-e for car windows.

### SmartWeb™ WF88



For Window Films up to 88 inches width

An advanced design of the chamber separation structure enables the scale up of the SmartWeb WF63 to 88 inches, a size required for architectural window films.

<http://www.appliedmaterials.com/roll-to-roll-web-coating> | email: [web\\_sales@amat.com](mailto:web_sales@amat.com)

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