



AUGMENTED REALITY – AT THE TOUCH OF A BUTTON!

The age of fully automated independent production is here using SOLARIS® inline sputter tools. Senior Product Manager **Stephan Voser** explains how SOLARIS® can easily handle a whole range of optical thin film processes for existing and upcoming applications such as Augmented Reality in a fully automated way at just the touch of a button.



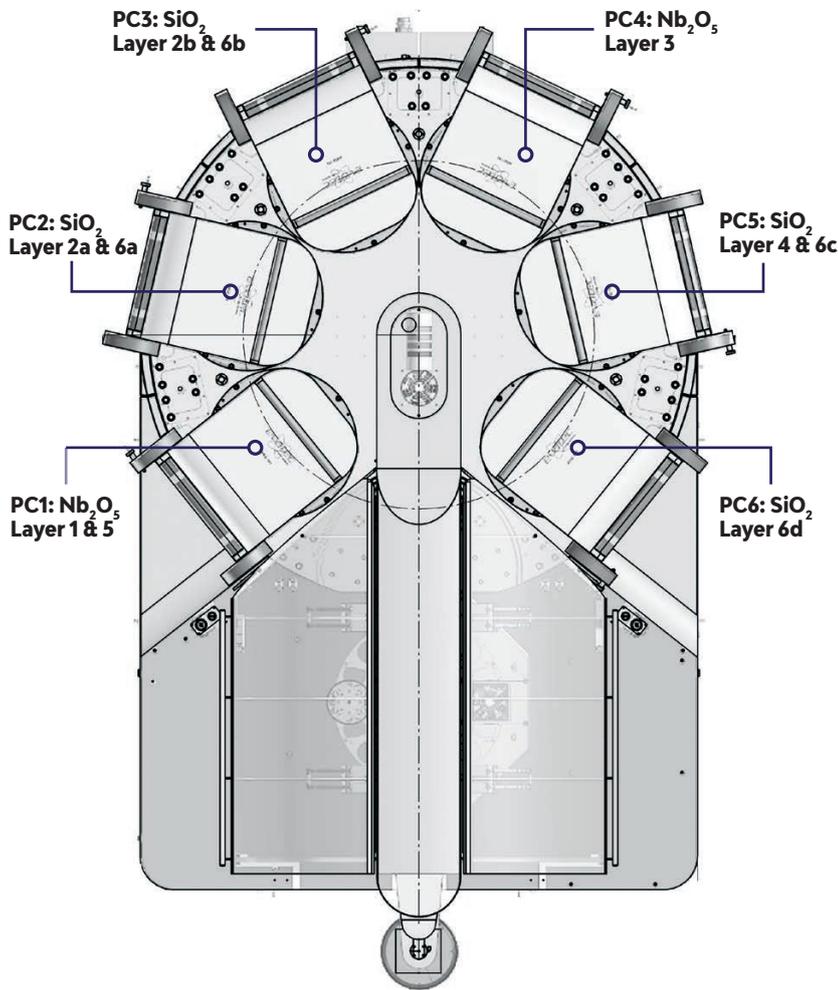




CASE STUDY Drift Control

SOLARIS® configuration

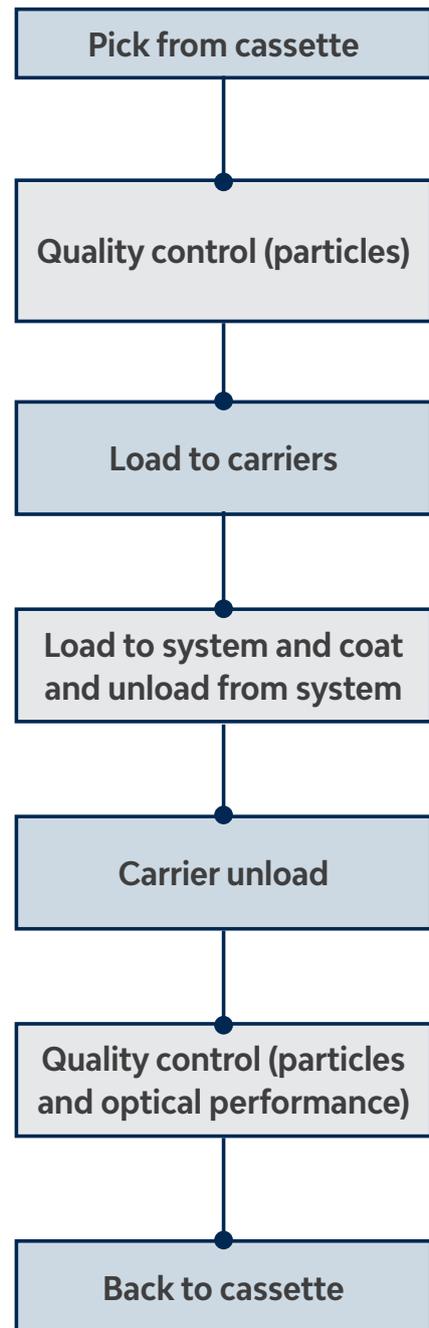
Cassettes holding 6 or 8 inch substrates are loaded by the operator at the front end and the recipe is selected. The operator presses “go” and the system does the rest - loading the carriers, loading to the system, unloading and finally loading all “good” coated substrates back to the original cassette.



Process setup

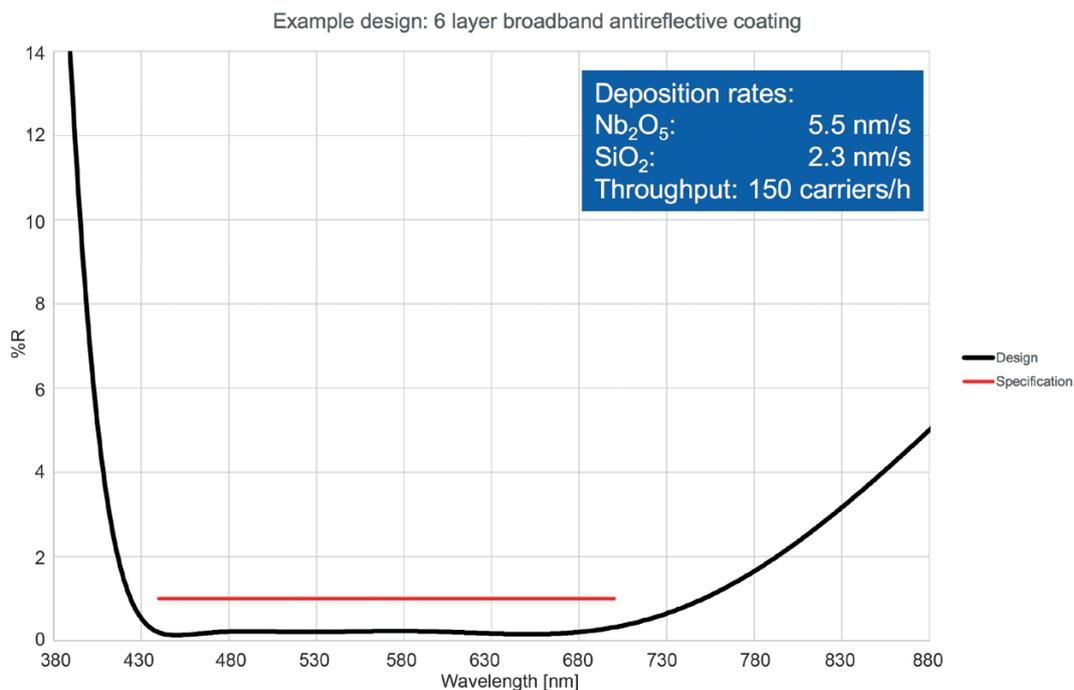
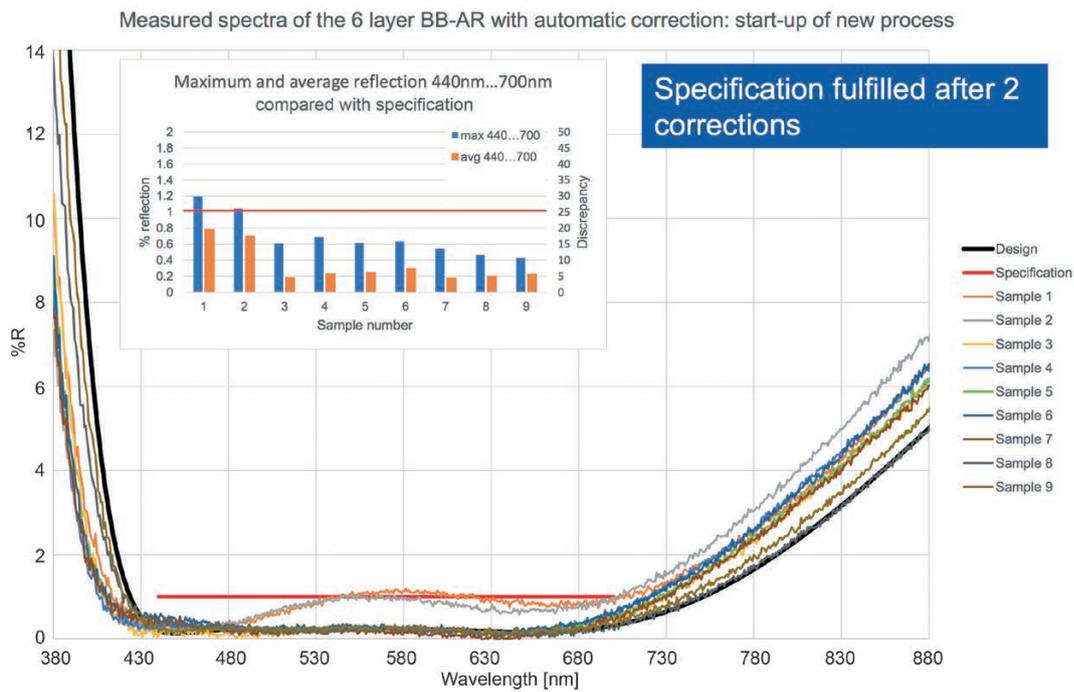
| Deposition rates: | Optimised setup, 2 passes around the system: |
|------------------------------------|---|
| Nb_2O_5 : 5.5 nm/s | Thicker SiO_2 layers split > cycle times: 11s + 11.5s |
| SiO_2 : 2.3 nm/s | Throughput: 150 carriers/hr |

Handling sequence



AR Coating – sample runs

It takes just a few minutes to complete the first sample runs until the system is in a steady state and coatings are well within specification. Continuous production can then begin.

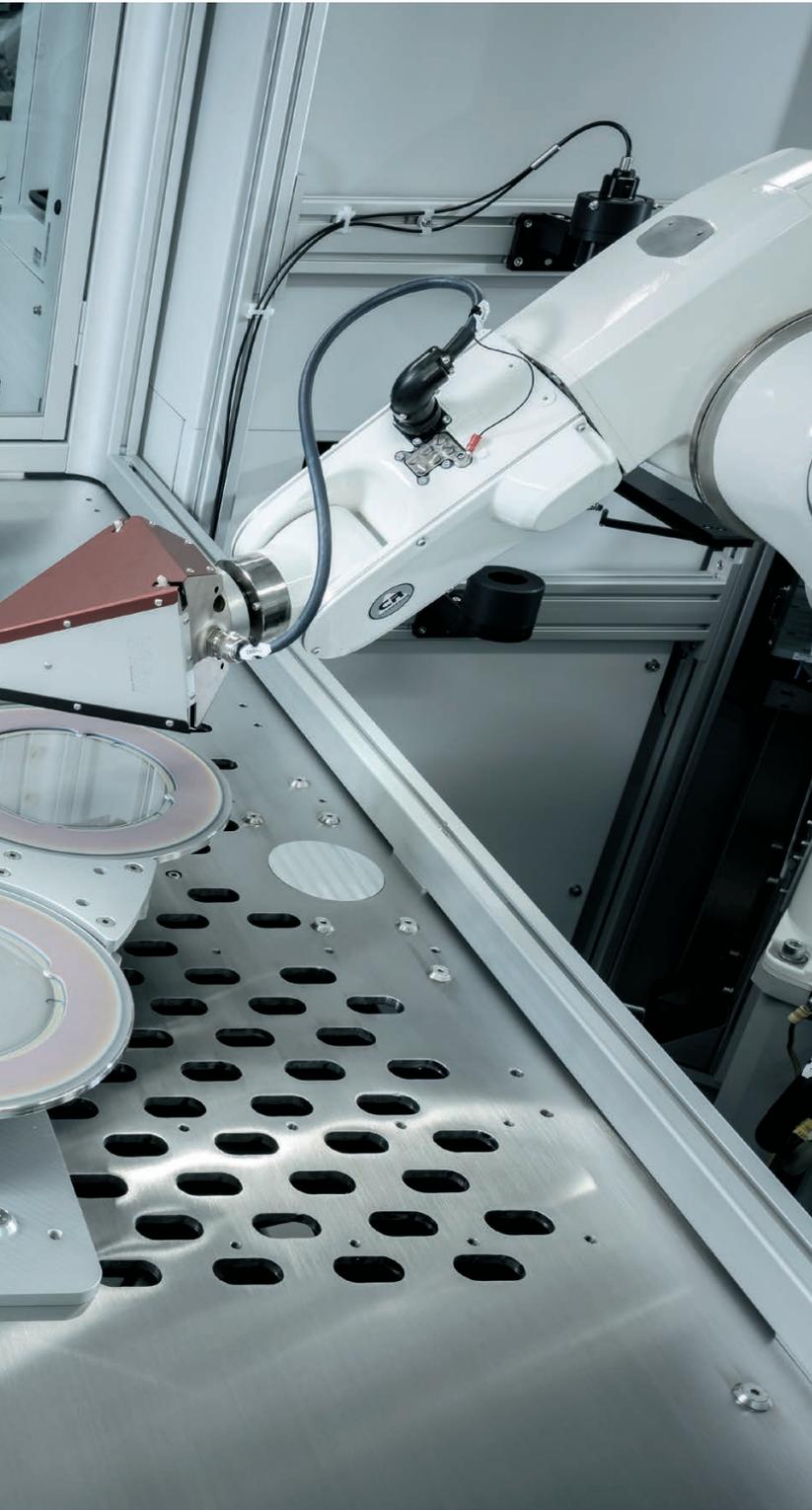




Keeping particles under control

SOLARIS® is designed to minimise particles at every step. Substrates are brought to the system in closed cassette environments, robot loading and unloading takes place in a closed environment under HEPA Filters and the system design itself is also optimised for particle reduction- Sputter deposition takes place in small process chambers with water cooled flanges to give the most stable

process conditions to reduce particle risk. Deposition control without the need for uniformity shapers using active cathode magnet control is another important risk reduction measure. For processes like the AR Coatings in this case study we can achieve less than 0.15 adders/cm² between 0.4 and 10 µm



Making production easy

Apart from process control capabilities like “Drift Control” and particle monitoring, SOLARIS® uses well proven automation technology to ensure that the line runs flexibly and independently and with full production tracking.

- The system can be converted quickly between different substrate sizes, e.g. 150 or 200mm or for different layer thicknesses as the need arises.
- The handling system is adapted from the semiconductor industry with proven handling speeds and reliability that easily satisfy the demands needed for optical substrate processing.
- The production history for each and every substrate is individually tracked and checked, and the data logged for QA purposes.
- Any “defective” substrates entering or leaving the system are automatically segregated in buffer stations according to QA needs.
- Cassette to cassette handling means operator interaction is limited to simple loading and unloading of cassettes to and from the system with no manual substrate handling at all.

Taking integration one step further

MES integration is available for fabs also wanting to integrate SOLARIS® with upstream and downstream processes.

The image below shows just how such a set up works in practice where 8 SOLARIS® are integrated into a customer’s fab for production of smart devices.

