



*Integrated
Surface
Technologies*

RPX-540 Vapor Deposition System



- **Vapor Deposition Technology**
- **Configurable Process Kit**
- **Reliable Design**
- **Engineered for Safety**
- **High Capacity**
- **Small Footprint**
- **Low Cost**

The RPX-540™ from Integrated Surface Technologies (IST) delivers the lowest cost surface modification treatment system in the industry. The system deposits customized nano-composite structures with a hybrid ALD (Atomic Layer Deposition) /CVD (Chemical Vapor Deposition) process. Up to 5 precursors can be sequentially applied to create a variety of specialty films for each specific application. Vapors from heated precursors are precisely controlled and uniquely metered by IST's Vaporrix injector. Control of the chemistry, temperature, injection timing, precursor stream, and chemical stream overlaps, allow for the creation of advanced nano-composite coatings.

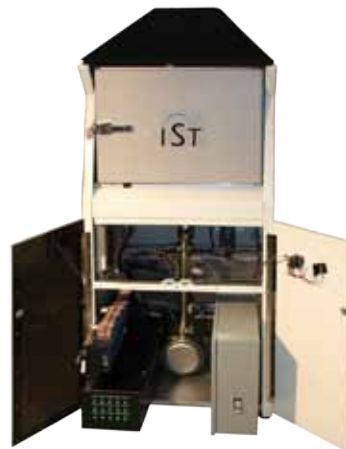
The RPX-540 provides highly repeatable and guaranteed manufacturable processes for production. Positive process control ensures safety and quality during operations. Environmental moisture is removed in the temperature controlled, sub-atmospheric chamber, to eliminate undesirable process effects. The entire process is closed loop and is monitored by a National Instruments Labview Controller. With IST's unique chemical cartridge design, no productivity is lost due to chemical replacement or conditioning. This allows the user to focus on manufacturing his products and not worry about chemical management or equipment maintenance.

System Architecture

No Side Access Required



To make all maintenance functions possible from the front or rear of the system, IST placed the major electronics modules on slide-out trays behind doors. The system indicator LED's can be viewed through the semi-transparent left door, making it simple to correlate software instructions with system functions.



Vaporrix™ Gas Delivery

Consistent vapor delivery requires accurate and consistent control over the thermal environment. IST accomplishes this in its Vaporrix system, by incorporating several key design features:

- Fire/smoke alarm for flammable precursors
- Adjustable flow channel
- Heated and insulated solid block gas lines
- Separate enclosure for flammable precursors
- On/off pneumatic valve
- Carrier gas

Fire/smoke alarm

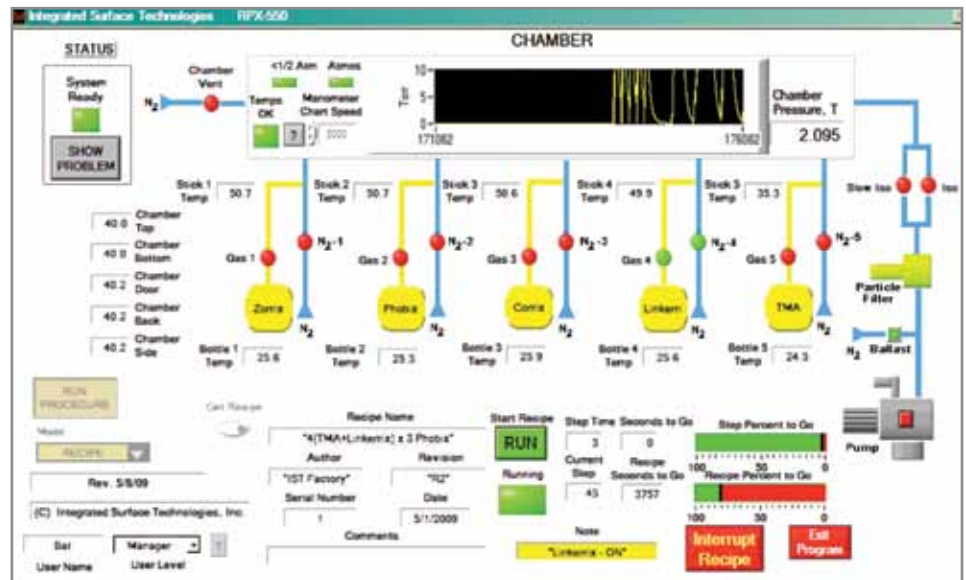


- Heated and insulated liquid cartridges

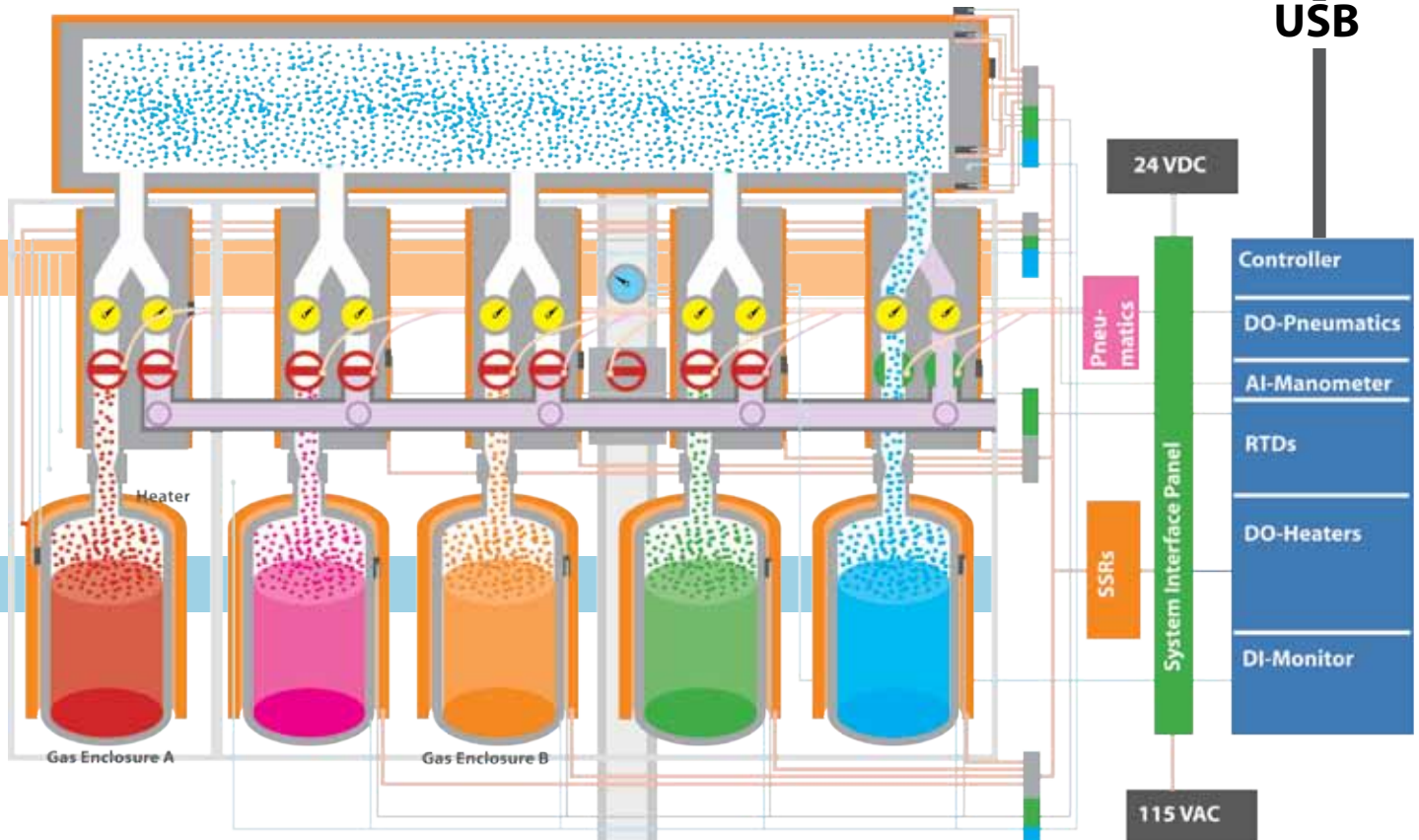


User Friendly Control

The RPX-540 Control Software is based on National Instruments Labview Controller, which puts the critical controls at the fingertips of the users and allows for extreme flexibility in recipe creation and management. The user can set and monitor the temperatures for each precursor in the Vaporrix vapor delivery system as well as for the chamber components. Operators can switch from the Process Mode or from Maintenance Procedures with simple pull-down menus. To help manage operator time, the system indicates the remaining time in each process step in the recipe. Safety alarms are also indicated, and the operator can stop operation from the screen or from the EMO button at the front of the system. Recipes can be managed and customized using a simple spreadsheet. Complete CRF-11 compliant data logs are generated by the controller.



The simplified schematic shows the system's architecture which is designed not only for centralized control but also for distributed maintenance and operations control. The major modules are: the Chamber, Gas Enclosure A (Cartridge and Line), Gas Enclosure B (Cartridges and Lines), and the Vacuum system. Each Vaporrix cartridge and line has independent temperature control, as do the top, bottom, and rear chamber walls and the door.

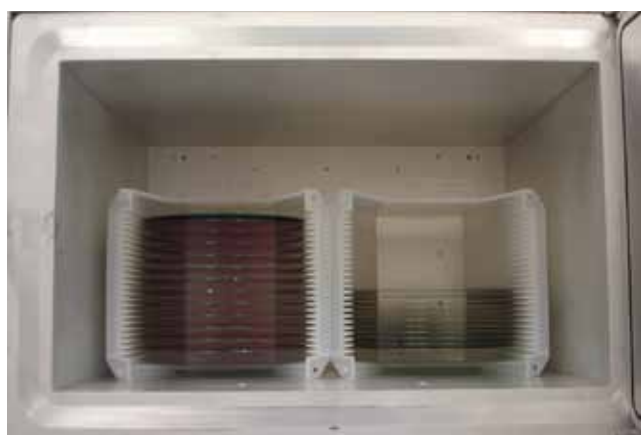
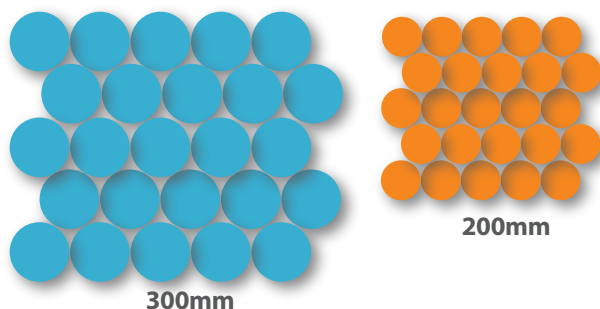


Large Capacity Chamber

The RPX-540 has the capacity to process large substrates, multiple 12"x16" printed circuit boards, 200mm wafer cassettes, or one 300mm wafer cassette. The surface modification chemistries can treat both sides of the product in the same process run.



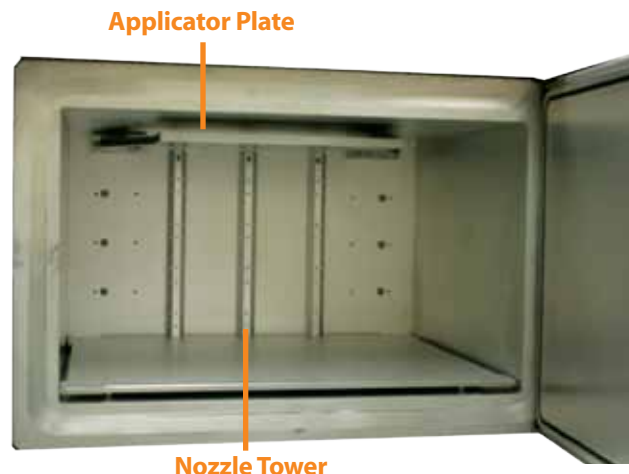
300mm versus 200mm Batch Area(one side)



Two 200mm Cassettes

Configurable Process Kit

Vapors can be introduced in a variety of ways to optimize the coating process for a specific device geometry.



The standard configuration uses an applicator plate to distribute vapors into the chamber in a directional flow. Bifunctional precursors, which generate self-limiting surface reactions are introduced by nozzles for isotropic diffusion. The RPX-540 can fit up to 4 applicator plates, for either single or double sided flow, depending on the custom application.

Low Cost, High Productivity Design

Capacity per Batch:	cm2	in2
Printed Circuit Boards	6,500	1,000
300mm Wafers (25 ea)	17,672	2,739
200mm Wafers (50 ea)	15,708	2,435

Dimensions	cm2	in2
Tray area (36 x 46 cm) (14" x 18")	1,646	252
Chamber Internal Width	51	20
Chamber Internal Depth	41	16
Chamber Internal Height	30	12

Technical Specs

Weight	360 kg/ 800 lbs
System Frontal Width	66 cm/ 26"
System Depth	92 cm/ 36"
System Height	168 cm/ 66"

Facilities:	
CDA	80 PSI
N2	80 PSI / 10 PSI
Exhaust	6" line, 1/4" drop
Power	115 VAC
Running Current Draw	7 Amps
Peak Current Draw	23 Amps
All chemistries are self contained in the RPX-540's gas cabinet.	



Integrated Surface Technologies, Inc
1455 Adams Drive, Suite 1125
Menlo Park, California 94025

www.insurftech.com
650.324.1824
information@insurftech.com

May 2009