PRECISION CLEANING AND MENISCUS COATING SYSTEM

The Zero Defect Coating Process
for Flat Panels

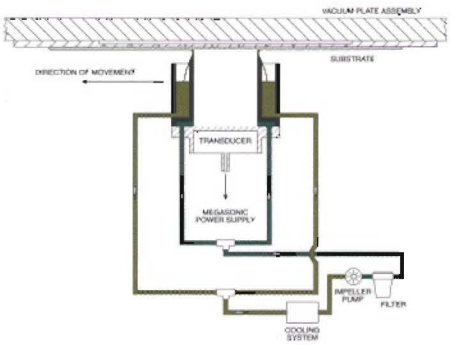
Precise, Contamination-Free, and Uniform Coating Technology

Meniscus coating equipment from Specialty Coating Systems offers the most uniform and precise coating capability of any equipment available for application of organic and aqueous solutions to planar substrates. The SCS CAVEX system uses a laminar flow of liquid coating to coat inverted substrate surfaces in a contaminant free process.

- Suitable for substrates such as glass, metalized glass, ceramic, metal, silicon, and germanium wafers.
- Efficiently applies photoresists, polyimides, dopants, metallo-organics, silica films, and similar materials.
- Proprietary pre-coat cleaning step results in virtually zero defect coating quality.
- Handles surfaces up to 16 X 16 X 0.375 inches.
- 100% transfer efficiency
- Coating thickness can be controlled from less than 500 Angstroms to 10 microns, with a uniformity of better than ± 5%.

Substrates to be cleaned and coated are inverted and held in place by a vacuum chuck. The CAVEX system cleaning and coating stations feature stepper motor driven elevators that control substrate position, compensating for material thickness and adjusting for precise meniscus film control. Once process parameters are selected, the system automatically cleans and/or coats the substrate. A drying station completes the evaporation of cleaning fluids and initiates drying of the coating to facilitate substrate removal.

CAVEX Cleaning Station

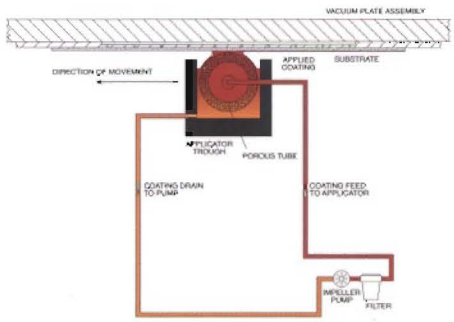


The substrate cleaning station uses acoustic energy in conjunction with a rapidly evaporating cleaning fluid to effectively clean surfaces in preparation for coating. This process penetrates the substrate boundary layer and removes particles down to sub-micron size. Cleaning fluid is filtered and recirculated.

The CAVEX meniscus coating system design consists of a permeable coating applicator tube through which the liquid coating material is pumped. Substrates to be coated are inverted and passed over this applicator tube at a precise and controlled rate.

The material flowing from the porous tube creates a downward laminar liquid flow on the outside of the sloping applicator surface with coating material menisci formed at the leading and trailing edges of the intersection of liquid and substrate. As a result, there is uniform engagement and disengagement of liquid and substrate across the entire substrate surface.

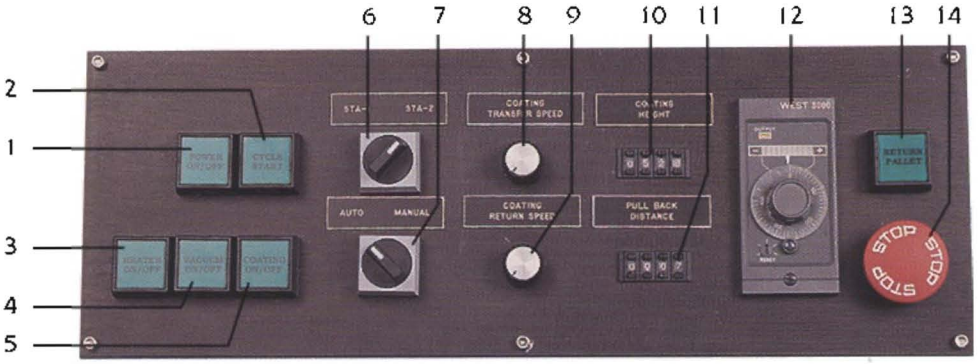
CAVEX Coating Station



The CAVEX system uses a uniform, permeable tube to create a laminar flow of coating material. Intersection of the inverted planar surface with this flow creates the necessary meniscus for uniform coating.

CAVEX System Specifications

Electrical Power - 220 Volts, single phase, 20 amperes
Exhaust Air - 15 CFM @ 0.5" H_2O
Footprint - 38.5 in wide X 108 in long X 36 in high
Optional System Components
- Vacuum pump
- Coating material filtration system
- Cleaning fluid filtration system
- Viscosity or density control system
- Custom built vacuum chuck
- HEPA air filtration

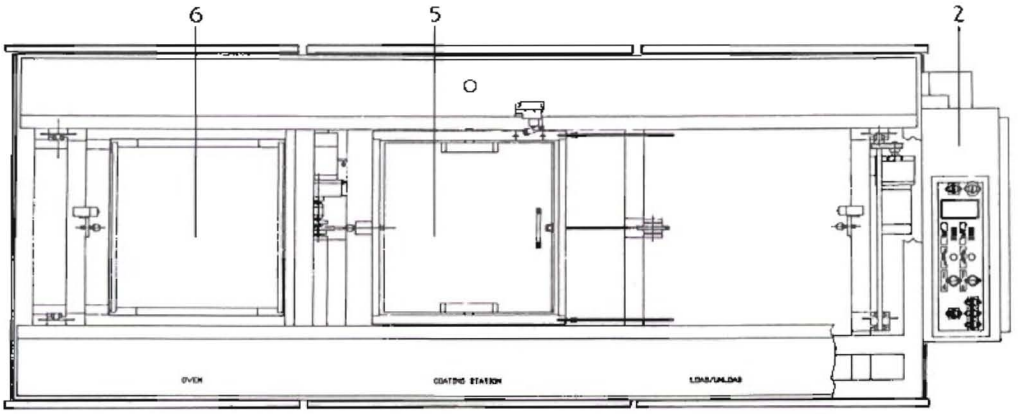


1. Power On-Off
2. Cycle Start
3. Heater On-Off
4. Vacuum On-Off
5. Coating Pump On-Off
6. Station Selector
7. Automatic or Manual Selector
8. Coating Transfer Speed
9. Coating Return Speed
10. Coating Height
11. Pull Back Distance
12. Temperature Setting
13. Return Pallet (Manual Mode)
14. Emergency Stop

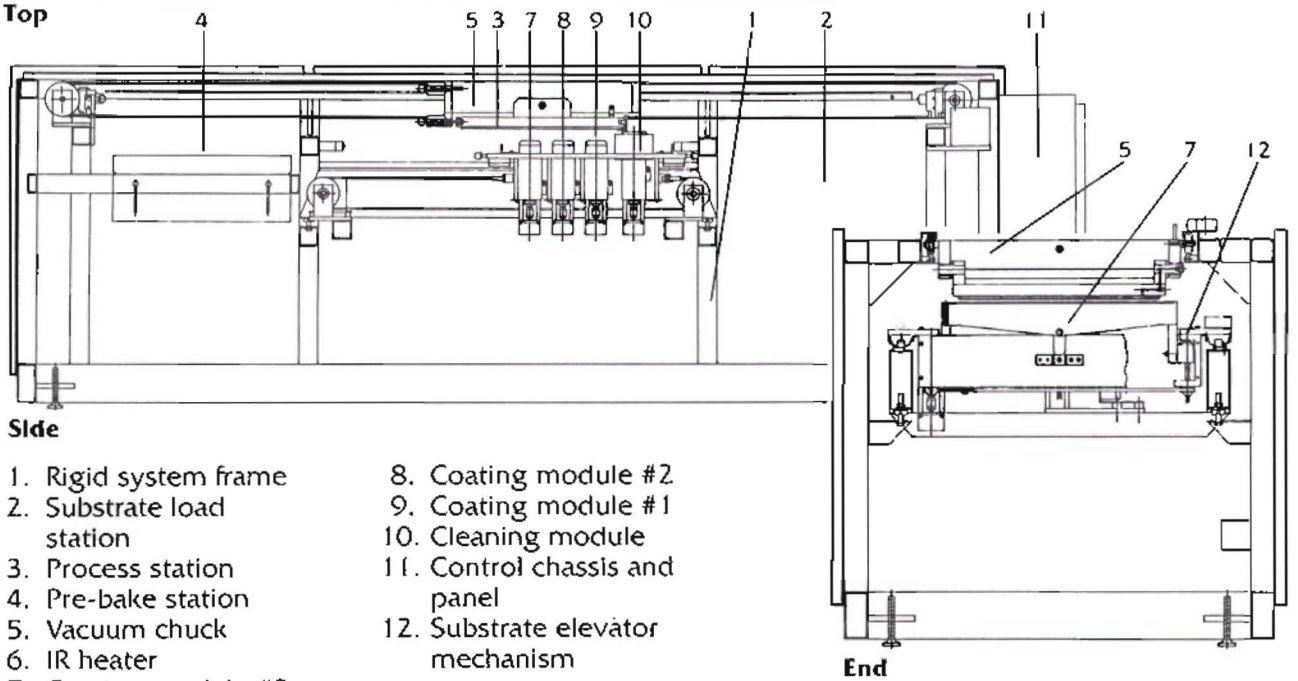
System Control Panel

Operating controls for the CAVEX system are located on a central panel at the end of the system. The operator sets process speeds individually for cleaning, coating, and drying steps. based on the nature of the substrate and the type of coating to be applied. Typical cycle time for cleaning, coating, and drying is two minutes at an application speed of up to14 inches per minute.

System Construction



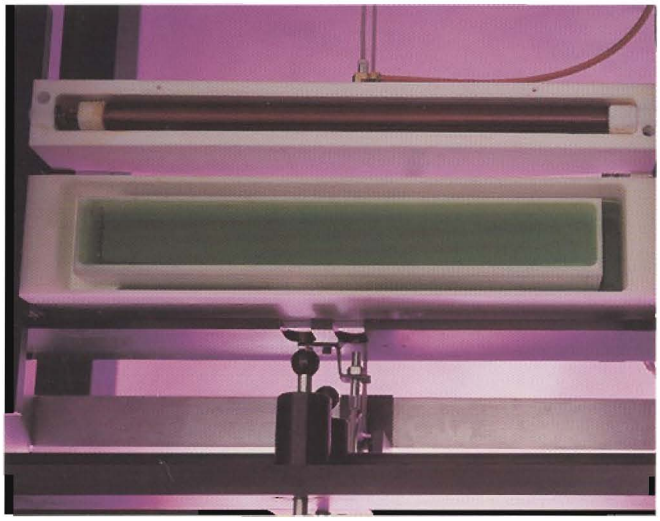
Top



Side

End

1. Rigid system frame
2. Substrate load station
3. Process station
4. Pre-bake station
5. Vacuum chuck
6. IR heater
7. Coating module #3
8. Coating module #2
9. Coating module #1
10. Cleaning module
11. Control chassis and panel
12. Substrate elevator mechanism



Product Safety

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SCS, the Conformal Coating Leader

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