



PECVD-LTPS "PX" systems including the new AKT-20K PX PECVD enable larger size and higher resolution smart phones and tablet PC's contributing to manufacturer's significant increase in production and manufacturing cost reduction. AKT PECVD-LTPS "PX" series high deposition temperature process chamber and Pre-heat / Post-anneal chamber leverage nearly two decades of leadership in large-area deposition technology.

PERFORMANCE REQUIREMENT LTPS

- a-Si Precursor : Good Uniformity : < +/- 3%
: Low H Content : < 1%
- Gate Insulator : Good Uniformity : < +/- 5%
: Close to Thermal Oxide performance
- Critical Size Particle: 1 μm or smaller
- Contamination Control: Very Critical

APPLICATIONS

- Amorphous Silicon pre-cursor (a-Si)
- Silicon Nitride (SiN_x)
- Silicon Oxide, Silane based (SiO_x)
- Silicon Oxide, TEOS based (SiO_x)
- In-situ multi-layer deposition (ex. SiN_x / SiO_x / a-Si pre-cursor single chamber process)

AKT-20K PX PECVD scales up the superior process performance and reduces manufacturing costs per panel for LTPS and OLED applications.

AKT "PX" SERIES PECVD TECHNOLOGY FOR LTPS

New Process Chamber:

- High deposition temperature
- Good process and temperature uniformity
- RPSC chamber cleaning for low particle and stable chamber

New Pre-heat / Post-anneal Chamber:

- High post-annealing temperature
- Good temperature uniformity
- Contamination free, thick film heater shelf technology

SUBSTRATE SIZE

- AKT-1600 PX : 300 mm x 300 mm - 370 x 470 mm
- AKT-4300 PX : 550 mm x 650 mm - 620 x 750 mm
- AKT-5500 PX : 680 mm x 880 mm - 730 x 920 mm
- AKT-20K PX : 1300 mm x 1500 mm

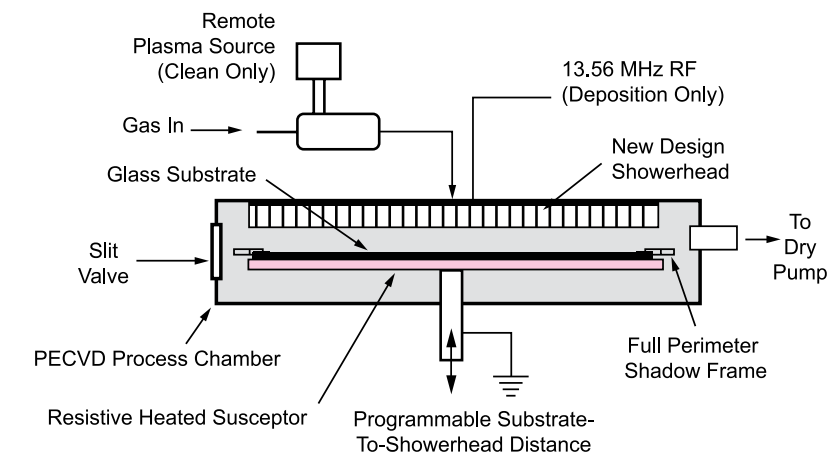
STANDARD MAINFRAME COMPONENTS

- Single-substrate PECVD process chambers with TEOS capabilities
 - Up to five process chambers for AKT-20K PX
 - Up to six process chambers for AKT-5500 PX system
 - Up to four process chambers for AKT-4300 PX and AKT-1600 PX system
- Two multi-substrate Loadlock capable of interface with customer supplied Automated Cassette Load Station (ACLS)
 - One Triple Single-Slot Loadlock for AKT-20K PX system.
- Vacuum transfer chamber including 2-axis robotic substrate handler
- Computer workstation for operational control
- Mainframe Electrical Distribution Cabinet and Gas Panel

PRE-HEAT / POST ANNEAL CHAMBER

- Pre-heat and post-anneal in one chamber
- High operation temperature for post-annealing with good temperature uniformity
- Good contamination control
- Individual temperature controlled heater shelves

AKT PECVD PROCESS CHAMBER



PROCESS CHAMBER

- Single-substrate processing capability
- Patented, new design diffuser for efficient ionization and high deposition rate
- High deposition temperature with good temperature and process uniformity
- Repeatable deposition over one month without maintenance
- Low defect density
- In-situ Chamber Clean using Remote Plasma Source
- Patented TEOS Vaporizing System (TVS) for TEOS deposition (Option)

REMOTE COMPONENTS

- Loadlock, Transfer and Heat Chamber dry pumps (customer supplied)
- Process chamber dry pumps (customer supplied)
- RF generators
- AC power distribution Module
- Cold Loop Heat Exchanger
- Customer special hardware and software options for factory automation
- Service platforms are optional (AKT-20K PX)

FRONT END INTERFACE-SUBSTRATE LOADING

- Customer to supply substrate loading / unloading mechanism
- Compatible with customer supplied ACLS
- Compatible with integration to substrate cleaners
- Compatible with customer provided single substrate transfer link concepts

GAS DELIVERY SYSTEM

- Up to six (6) gas lines per process chamber standard, two additional gas lines per chamber optional
- Independent set of MFC's for each process chamber
- N₂ cycle purge and pump out behind each MFC

CONTROL SYSTEM

- MasterFab Central Controller (MCC)
- Mouse driven, graphic user interface
- Software interfaced through Ethernet LAN communication
- Interlocks for safety
- Password access control for maintenance, operator, software and manager levels

CUSTOMER ENGINEERING SPECIAL / OPTION

Available upon request

Applied Materials

AKT Display Group
3101 Scott Boulevard
P.O. Box 58039
Santa Clara, CA 95054
AKT_Marketing@amat.com

www.appliedmaterials.com