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 (SiNx)
- Silicon Oxide, Silane based (SiOx)
- Silicon Oxide, TEOS based (SiOx)
- In-situ multi-layer deposition (ex. SiNx / SiOx / 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

<table>
<thead>
<tr>
<th>SUBSTRATE SIZE</th>
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<tbody>
<tr>
<td>AKT-1600 PX: 300 mm x 300 mm - 370 x 470 mm</td>
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<tr>
<td>AKT-4300 PX: 550 mm x 550 mm - 620 x 750 mm</td>
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<tr>
<td>AKT-5500 PX: 680 mm x 680 mm - 730 x 920 mm</td>
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<tr>
<td>AKT-20K PX: 1300 mm x 1500 mm</td>
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</tbody>
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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

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)

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

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