HELiA<sub>PVD</sub>
HJT COATING SYSTEM

- Large area inline sputtering system
- Best relation between performance and costs
- High reliability, low cost of ownership
- Stable and uniform process
- High efficiency solar cells with >24%
High Efficiency Low impurity Apparatus

Heterojunction cells are bonded on both sides by means of transparent conductive oxide (TCO) layers, deposited using the PVD (physical vapor deposition) process.

In HELiA PVD sputtering system, differing contact layers (including multiple layers and metal layers) can be deposited successively on the front and rear of the wafers.

The Meyer Burger PVD system provides for front and back side deposition and edge isolation without flipping the wafer. By using cylindrical sputtering magnetrons, a high target utilization rate is achieved, thus ensuring a cost-effective coating process.

PVD Process for heterojunction cells

The silicon Heterojunction Technology (HJT) is an appealing concept that combines thin amorphous silicon layers with monocrystalline silicon wafers to realize cell efficiencies above 24% (GT intrinsic) in production average. The simple structure of the HJT cells needs less processing steps compared to conventional cell designs. The excellent surface passivation of the a-Si:H layer results enables a high cell efficiency potential. The excellent temperature coefficient of TC = -0.25%/K results in a higher energy yield at operating conditions. Low temperature processing (< 250°C) is compatible with the use of thin wafers.
Modular design based on industrial proven MAiA® system

Superior transparency and conductivity

Individual TCO conditions for each side

Rotary targets for high target utilization

Tray return system below chambers

Cell front and rear side deposition

Modular design based on industrial proven MAiA® system
System design
The HELiA_PVD has a modular design, based on the industrial proven MAIA® platform. That ensures a high reliability with low cost of ownership. The closed coating process takes place without breaking vacuum or to turn the wafer between front and back side processing. This increases the coating quality with a high throughput at the same time.

Transmission/Reflectance of TCO
TCO layers, created by HELiA_PVD sputtering process have a very low light absorption. The Meyer Burger PVD process achieves same cell eta as competing RPD process but 30% less CAPEX/TpT and OPEX.

Various sputtering opportunities
HELiA_PVD allows sputtering of high quality layers.

HJT dedicated:
• TO 97/3
• Ag
• NiV
• IO
• ZnO:Al
• Al
• Cu

Other functional layers:
• Oxides
• Non-magnetic metals

Unique equipment package
The Meyer Burger HELiA PECVD and PVD systems form the only combined key equipment package for all HJT cell deposition processes. Together with comprehensive technology transfer it guarantees shortest time-to-market and highest cell efficiencies.

Appropriate automation
Adapted and aligned automation solutions for HELiA_PECVD and HELiA_PVD ensure fast and gentle handling of the thin and sensitive heterojunction cells.
Tool configuration

Carrier Flow
HELiAPVD uses the same fast and space-saving carrier/tray return system which is already successfully in use in hundreds of MAiA® systems worldwide.

Specifications

<table>
<thead>
<tr>
<th>Equipment Features</th>
<th>Inline system for production lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wafer Compatibility</td>
<td>6&quot; (M2, M4)</td>
</tr>
<tr>
<td>Cycle Time per tray</td>
<td>36 s</td>
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<tr>
<td>Wafers on tray (6&quot;)</td>
<td>6 x 5 = 30 pcs.</td>
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<tr>
<td>Gross Throughput (6&quot;)</td>
<td>3,000 w/h</td>
</tr>
<tr>
<td>Mechanical Yield</td>
<td>&gt; 99.9%</td>
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<tr>
<td>Uptime</td>
<td>&gt; 94%</td>
</tr>
<tr>
<td>Yearly Capacity</td>
<td>&gt; 140 MWp</td>
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<tr>
<td>Layer Thickness Uniformity</td>
<td>+/- 5%</td>
</tr>
<tr>
<td>Length</td>
<td>17.5 m (11.5 m w/o automation)</td>
</tr>
<tr>
<td>Width</td>
<td>6.7 m</td>
</tr>
<tr>
<td>Height</td>
<td>3.2 m</td>
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Worldwide presence

Service

Meyer Burger, with its service centers near you, offers first-class service that only the original manufacturer can deliver. We take responsibility for the availability and productivity of your equipment today and tomorrow.

With a complete range of services, we support you from commissioning through production support and maintenance to life-prolonging system upgrades. All works are carried out by qualified technicians and with original service parts only – at your site or in our local service center.

Wherever you need it, our service is available in time, and of top quality.

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We reserve the right to make changes reflecting technical progress.