**DEP\textsubscript{x} 2000**

**PECVD coating equipment**

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Integrated automation solutions

- Modular design
- Scalable to 70 MWp
- SiNx and SiOx capability
- High process uniformity
- Single and multi-layer capable
- Inline metrology (optional)

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**DEP\textsubscript{x} 2000 series** — The low cost cell manufacturing solution

- Lowest cost of ownership
- High uptime
- Easy to operate and maintain
- Highest deposition rate
- Small footprint
- Automation included
- Integrated electrical cabinet

- Inline and batch operation
- Contact and contact-less grippers
- Link to wet chemistry (variable number of lanes)
- Cassette loading and unloading
- Coin unloading
- All major cassette and coin types available
- Transfer, buffer, and flip modules enable multi-layer applications

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**DEP\textsubscript{x} 2000**

The world’s highest speed PECVD system
DEPX 2000
PECVD coating equipment

OTB Solar – Roth & Rau has developed a new generation of PECVD equipment for the deposition of antireflective coatings and passivating layers on crystalline solar cells. The DEPX 2000 is a further evolution of the DEPX 1000 series, which has a proven track record in high efficiency solar cell production. The DEPX 2000 series provides an improved throughput, higher uptime, and a lower cost of ownership.

The equipment has a modular design which allows for easy configurability. The DEPX 2000 series combines an innovative linear motion system (LMS) and the proprietary Expanding Thermal Plasma (ETP) technologies to provide the highest process speed and superior reliability.

Expanding Thermal Plasma

The PECVD process is based on the proprietary ETP source technology, which is a dc Ar plasma discharge. The low voltage high pressure Ar plasma expands at supersonic speed through a narrow channel into the deposition chamber. At the exit nozzle a second gas is injected into the plasma stream. A third gas is injected just above the substrates. By choosing the right combination of precursor gases the system can deposit amorphous hydrogenated silicon nitride (SiNx) as well as silicon oxide (SiOx). Other layers are currently under development.

The ETP source is a remote plasma, which means that plasma production, transport, and deposition are geometrically separated. The substrate does not play a role in plasma production and ion bombardment of high-energy particles on the substrate is virtually absent.

LMS technology

The system works with a Linear Motor System (LMS), a patented technology. The carriers are transported on a rail-system in vacuum without any feed-through to the outside. The motion of the carriers is achieved by a magnetic system placed outside the vacuum. Therefore the transport system is almost maintenance free and reduces the risk of a vacuum leak to a minimum.

Specifications

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<tr>
<th>Configurations &amp; Options</th>
<th>1600 - 2400 wafer/h</th>
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<tbody>
<tr>
<td>Process capability</td>
<td>3 – 5 ETP sources</td>
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<tr>
<td>Process</td>
<td>SiNx, SiOx</td>
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<td>Software</td>
<td>MES Lite, SECS-GEM, RFID, wafer tracking</td>
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*Process equipment including automation

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<td>Process temperature</td>
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Overview of DEPX 2000 system modules from the front side