The SiTec Lab CVD Reactor [Laboratory Chemical Vapor Deposition Reactor] for quality assurance is a key equipment for analysis of chlorosilanes in a liquid and gaseous state used in the polysilicon production process and the deposition in a small scale as well. It is an essential tool for analysis of the polysilicon deposition process and is specifically used for quality assurance of TCS [Trichlorosilane] and other feeding materials e.g. STC [Tetrachlorosilane] or DCS [Dichlorosilane] used for polysilicon deposition. Furthermore, through modular installation increased sample throughput, cost reduction and continuous monitoring of the commercial production can be achieved.

The reactor is capable to operate between 0.3 – 6.0 barg and the same thermal conditions as SiTec CVD Reactor used in commercial polysilicon production. Therefore the results and perceptions of the Lab CVD Reactor can be assigned to the commercial CVD Reactor.

The Lab CVD Reactor is designed as a comprehensive system in a cabinet, with an integrated power supply, process gas distribution and control, integrated leakage gas sensors, etc. The power supply is located in a separate cabinet. To ensure that no additional metallic contamination influences the quality of the test deposition, the cylindrical inner bell jar is silver coated.
Process Equipment for Polysilicon Plants

Advanced TCS Lab CVD Reactor

Features and Benefits

- Easy to use and operation
- Training equipment for operators
- High degree of automation
- Analytical tool for quality control
- Complete Lab CVD Reactor system ready for operation
- Delivered with spare parts and consumable package for acceptance test
- Commissioning support
- Technology Made in Germany

Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Overall width</th>
<th>Overall height</th>
<th>Overall height with Socket</th>
<th>Total weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactor</td>
<td>800 mm</td>
<td>~2,260 mm</td>
<td>2,700 mm</td>
<td>650 kg</td>
</tr>
<tr>
<td>Power supply cabinet</td>
<td>1,600 mm</td>
<td>2,000 mm</td>
<td>2,200 mm</td>
<td>500 kg</td>
</tr>
</tbody>
</table>

Technical Data

- Operating pressure: 0.3 – 6.0 barg
- Deposition temperature: 1,000 – 1,150 °C
- Rod length: 2 x 200 mm
- Slim rod diameter: 6 x 6 mm – 8 x 8 mm
- Final rod diameter after deposition: 15 – 18 mm
- Deposition rate: ~ 0.5 mm/h
- Consumption H₂: ~ 1 - 30 Nl/min
- Consumption TCS or STC: ~ 500 – 1,000 g/h
- Deposition cycle time: ~ 14 – 20 h

SiTec GmbH is a leading company providing an Integrated Engineering and Technology Package for solar and microelectronic grade polysilicon. Our proven technology has been realized in numerous projects in China, South Korea, India, North America, Europe, CIS and Middle East.