CALiPSO
Flexible Heat Treatment Furnace

Lowest cost per watt

- High throughput up to 6,000 w/h
- Minimum running and maintenance costs
- 30% cost savings to market standard
- 50% less power consumption
- Lowest breakage rates for standard and thin wafers
- Bio-degradable insulation material (CE-certified, no additional safety measures required)

Innovative tool concept

- Ceramic roller transport system for metal free and smooth cell transport
- Inline furnace with up to 8 lanes for multiple applications like diffusion, annealing and curing
- No yield loss in case of power shut down

Superior process results

- No metal contamination
- Precise temperature control and excellent temperature uniformity
- Gas flow engineering via adjustable gas inlets and exhausts
- Steady state time between some minutes and hours (ill. 1)
- Low and high temperature applications (200°C – 1,000°C) (ill. 2)
- Individually closed loop controlled heating zones per module
- Up to 8-lane processing of 6 cells (other substrates of 4” to 40” possible)
- Heating length from 4.5 to 50 m
- Simple and safe process chamber access
- Innovative solution for easy maintainability
- Versatile gasflow engineering options
- Combination with various inline doper possible
Temperature \[°C\]

Time \[min\]

Heating time \[min\]

Throughput \[wafer/h\]

Throughput as function of heating time and throughput

Heating length as function of heating time and throughput

Curing

Cell Tester & Sorter

Screen Printing

PECVD 1

Back Side i/n

PECVD 2

Front Side i/p

PVD

TCO Front/ Back Side

Back Contact

Texturing

PECVD 1

Back Side i/n

PECVD 2

Front Side i/p

PVD

TCO Front/ Back Side

Back Contact

Heterojunction Technology process

Module D

Unloading zone

3,900 mm

CALiPSO: Modular design
Technical data at a glance

<table>
<thead>
<tr>
<th></th>
<th>Width</th>
<th>Height</th>
<th>Length</th>
<th>Transport speed</th>
<th>Process temperature</th>
<th>Typical power consumption (@850 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>~ 2,360 mm</td>
<td>~ 1,765 mm</td>
<td>Depending on application</td>
<td>0.1 – 10 m/min*</td>
<td>up to 1,000 °C</td>
<td>35 kW</td>
</tr>
</tbody>
</table>

* Depending on tool configuration