We supply our customers with technologically sophisticated vacuum coating systems, extensive expertise and global service. The key components are developed and manufactured by VON ARDENNE itself.

Systems and components made by VON ARDENNE make a valuable contribution to protecting the environment. They are also for manufacturing products which help to use less energy or to generate energy from renewable resources.

Our customers use these materials to make high-quality products such as architectural glass, absorbers and absorber tubes for solar-thermal power plants, reflectors for lighting systems, displays for smartphones and touchscreens, solar modules and heat protection window film for automotive glass.
We have developed a high-utilization planar magnetron (HU-WSM) based on the experience that especially the planar magnetrons with silver targets are often the bottleneck limiting the campaign times.

The new magnetron is characterized by a service life of 6000 kWh* at a target utilization of up to 38% under ideal conditions. The increased service life can be achieved while keeping the target utilization at an equal level.

**WHAT IS NEW ABOUT THE VON ARDENNE HIGH-UTILIZATION PLANAR MAGNETRONS?**

We have redesigned the magnetic field and modified the target design.

- **Longer target lifetime: 6000 kWh**
- **Longer campaign times**
- **Improved target utilization of up to 40% due to wider racetrack**
- **Stable high performance over target lifetime: ≤ ±1.2% uniformity at 6000 kWh**
- **Improved layer uniformity: ≤ ±1.2%**
- **Target thickness: 25 mm to 35 mm**

We have developed a high-utilization planar magnetron (HU-WSM) based on the experience that especially the planar magnetrons with silver targets are often the bottleneck limiting the campaign times.

The new magnetron is characterized by a service life of 6000 kWh* at a target utilization of up to 38% under ideal conditions. The increased service life can be achieved while keeping the target utilization at an equal level.

**LAYER UNIFORMITY**

≤ ±1.2%

**TARGET LIFETIME**

6000 kWh*

**PROCESS DATA DURING TARGET LIFE**

- **Sample ID #4971 **
- **Power setting [kW] 18 18**
- **Voltage [V] 497 497**
- **Current [A] 36 36**
- **Layer uniformity: Ar uniform ≤ ±0.8% ≤ ±0.8%**
- **Layer uniformity: Ar trim ≤ ±1.1% ≤ ±1.1%**
- **Shield opening/TSO [mm] 300/125 300/125**

*30 mm Ag target, 3.75 m cathode

**COMPARISON OF CURRENT STANDARD WSM & HIGH-UTILIZATION WSM**

<table>
<thead>
<tr>
<th>WSM</th>
<th>HU WSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target lifetime [kWh]</td>
<td>4550</td>
</tr>
<tr>
<td>Target utilization</td>
<td>up to 30%</td>
</tr>
<tr>
<td>Uniformity</td>
<td>≤ ±3.5%</td>
</tr>
<tr>
<td>Uniformity</td>
<td>≤ ±1.0%</td>
</tr>
<tr>
<td>Uniformity</td>
<td>≤ ±1.5%</td>
</tr>
<tr>
<td>Uniformity</td>
<td>≤ ±2.5%</td>
</tr>
<tr>
<td>Uniformity</td>
<td>≤ ±1.0%</td>
</tr>
</tbody>
</table>

**TARGET EROSION**

- **Wider erosion profile than standard WSM**
- **Plasma homogeneity stable over campaign up to 6000 kWh***

**FULLY INTEGRATED SOLUTION**

- **Functional anode included**
- **Gas channel included**

* Continuous optimization of Ar trimming throughout target lifetime required

**Legend:**

1. Functional anode
2. Connections for utilities
3. Target with erosion groove (example showing a 25 mm target)