LONG MAGNETRON ATOMIZERS WITH ROTATING CATHODES

Description
Long magnetron atomizers with rotating cylindrical cathodes are used in high-production vacuum coaters for sputtering metals and compounds on large backings, including architectural glasses.
An atomizer is made as a tube of the atomized metal, 60 – 120 mm in diameter and up to 2.5 m long. The target (cathode) contains a system of constant Sm-Co magnets and water cooling channels. The cathode rotates round the magnets exposing different parts to atomizing.
Magnetrons are either one-way producing a single flow or two-way producing two opposite flows for plating two backings simultaneously.
The magnetic system provides high homogeneity of plating even with worn-out targets.

Magnetron atomizer with rotating cylindrical cathode. Cathode length is 600 mm.

Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Cathode length</td>
<td>up to 3 m</td>
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<tr>
<td>Continuous operation</td>
<td>up to 150 hours</td>
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<tr>
<td>Continuous operation between rotations</td>
<td>10 – 20 hours</td>
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</tbody>
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Technical appraisal and economic benefits
The cylindrical magnetrons are advantageous against their planar analogs as they allow up to 80% utilization of the target material. The magnetrons are equipped with either continuously or periodically rotating targets depending on the type and productivity of the vacuum coater. Continuously rotating targets provide sustainable operation in a reactive sputtering mode.

Application areas
Continuously rotating targets are mostly effective in conveying processing plants or in periodic operation plants with stationary sources.
Periodically rotating targets are applicable in periodic operation plants with mobile sources. The cathode rotation is triggered by regular opening of the vacuum chamber.

Development stage
Contracts-based production in small lots for vacuum coaters "Vnuk".

Patent situation
No patents.

Commercial offers
- contracts for production and supply of magnetron atomizers according to customer's requirements;
- upgrading processing plants.
Estimated cost
3,000 – 10,000 US$ depending on size and material of cathode.

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