“VNUK” VACUUM SPRAYING FACILITIES

Description
The spraying facilities of the “VNUK” series are designed for vacuum ion-plasma deposition of coatings of various functional purposes (heat reflecting, sun shielding, ornamental, mirror) onto flat architectural glasses. The coating is applied by magnetron spraying systems onto four glasses simultaneously. The facilities are equipped by systems of ion-plasma purification and cylindrical magnetron spraying systems with rotating cathodes. The elements of the facility are listed in the table below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Element</th>
<th>Number, pcs</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vacuum chamber with a manipulator</td>
<td>1</td>
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<tr>
<td>2.</td>
<td>Magnetron spraying systems</td>
<td>4</td>
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<td>3.</td>
<td>System of ion-plasma purification</td>
<td>1</td>
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<td>4.</td>
<td>Power sources</td>
<td>3</td>
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<td>5.</td>
<td>Vacuum evacuation system</td>
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<td>6.</td>
<td>Automated control system</td>
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<td>7.</td>
<td>Optical control system</td>
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Technical specifications
Dimensions:
- length 7.0 m
- height 2.5 m
- width 1.7 m
Total area for the facility 200 m²
Consumption of water during the operation cycle 1.5 m³
Mean power consumption 40 kW
Maximum power consumption 90 kW
Number of articles treated during one cycle 4 pcs. 280x160 cm²
Mean duration of the operation cycle 90 min
Volume of monthly production (with three shifts):
- tinted architectural glasses and mirrors 8 000 m²
- glass with a spectral-selective (heat reflecting) coating 4 000 m²

Technical appraisal and economic benefits
The facilities developed allow application of various coatings, including multilayer spectral-selective coatings, onto architectural glasses.
The use of prior ion-plasma purification ensures high-quality adhesion of the coating to the substrate.
The use of cylindrical magnetron spraying systems with rotating cathodes in combination with an automated control system provides high efficiency of “VNUK” facilities.

Application areas
Facilities of the “VNUK” series can be employed in civil engineering organizations, companies that produce windows and double-glazing units, and on glass factories.

After minor technological modifications, the facilities can also be used for applications of coatings onto other flat metal or dielectric substrates (including polymers).
Development stage
Facilities of the “VNUK” series are used in Krasnoyarsk, Tomsk, Kazan’, and Surgut.

Patent situation
There is no patent.

Commercial offers
Production and procurement contract. Investment agreement on production of facilities of the next generation.

Estimated cost
6100 thousand rubles

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