ANALYSIS OF WORK AND INCREASING OF EFFICIENCY OF THE ILUR-03 INSTALLATION MAGNETRON SYSTEM FOR TUBULAR SPECIMENS OUTER SURFACE MODIFICATION

NIKOLAY VOLKOV[1], *ALEXANDER YASHIN*[1], *BORIS KALIN*[1], *ROMAN VALIKOV*[1], *VALERIY KRIVOBOKOV*[2], *SERGEY YANIN*[2] *AND YURIY YURIEV*[2]

[1]*National Research University Moscow Power Engineering Institute*
[2]*National Research Tomsk Polytechnic University*
nvvolkov@mail.ru

The method of material near-surface layers doping by mixing of alloying elements films with ion beam widely used in science and technology. Three magnetrons with independent power systems, integrated in installation for ion-beam treatment of long-range products

ILUR-03, were used as deposition systems. Targets for magnetrons were in the form of disks 60 mm diameter and 5 mm thickness and consists of the following elements: Al, Fe, Mo, Zr, Cr of purity better than 99.99 at.%. Deposition was performed in argon atmosphere at 1–5 Pa pressure and room temperature in stable current mode at 30–100 mA. Analysis of the obtained films on the surface of cylindrical specimens from zirconium alloys outer diameter of 9.15 mm showed high uniformity of coating on length of 300 mm, good adhesion and absence of discontinuities in the films body.

Keywords: *Ion beam, Magnetron, Sputtering, Thin films, Modification.*