UDC 655.027

**MODEL OF AUTOTYPE TONE REPRODUCTION OF SHORT INK PRINTING SYSTEM** *–* **SQUARE SHAPE SCREEN ELEMENTS**

**М. М. Lutskiv, P. Z. Kurka**

*Ukrainian Academy of Printing,*

*19, Pid Holoskom St., Lviv, 79020, Ukraine*

*petiaman@gmail.com*

***Research Methodology.*** *The methodological base of the research makes an autotype reproduction of screen images by printing means. To solve this problem we have used the theory of signal modulation to analyze the modulation of ink flow by a screen printing plate and ink image transferring onto the printing material; the theory of simulation to design a model of ink printing systems, the graph theory to describe the modulated ink flows, object-oriented programming in the package Matlab Simulink to work out the simulator of an autotype tone reproduction to compute and visualize the characteristic features of inking the screen elements.*

***Results.*** *The study has elaborated a model of autotype tone reproduction for a short ink printing system of the sixth dimension consistent structure, the printing plate of which is covered with square printing elements, it presents the results of simulation of the impact of screen lineature on the tone reproduction characteristics that are not linear. It has been established that the maximum deviation from the linearity is in the middle range of tone reproduction and it is* — *19.42%. So a short ink printing system of the sixth dimension significantly lightens the image in medium tones.*

***Novelty****. Scientific novelty of the received results is that we have elaborated the mathematical model of autotype tone reproduction for a short ink printing system of the sixth dimension consistent structure when playing reproducing the image by square screen elements, which are the basis for the analysis.*

***Practical Significance.*** *The processed model and the simulator can serve to design tone reproduction characteristics of a given lineature that can be applied in the organization of tone reproduction particularly the combination of intervals and densities of the original and a screen print.*