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**UNIVERSAL INFORMATION THREE-DIMENSIONAL INK PRINTING SYSTEM MODEL OF OFFSET PRESS «SPEEDMASTER-74»**

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***Research methodology.*** *In the study of processes occurring in ink printing systems we have used simplified models that give the information only about the average ink layers thickness value on the elements and imprints surfaces. In the process of developing a three-dimensional mathematical model that describes in detail the operation of all ink printing system elements we have used methods of operational calculus, discrete transformation theory, signal theory, graph theory and automatic control theory.*

***Results.*** *The publication presents the methodology for creating ink printing sys­tems three-dimensional mathematical models of any complexity. With the help of this methodology, the universal mathematical model that can reproduce the rollers and cylinders geometric dimensions and raster images on the printing plate surface with varying accuracy level has been developed. The model can take into account different working modes of ink feeding unit and oscillating cylinders. The developed mathematical model makes it possible to obtain the information about the ink micro flows dynamics at any point of ink printing system and on the imprints surface.*

***Novelty.*** *For the first time a universal three-dimensional mathematical model of complex ink printing system has been developed, which describes multi-zone ink feeding device and oscillating cylinders working modes and reproducing processes of ink distribution and transmission as ink micro flows sets circulating on all elements surfaces of the ink printing system. This model makes it possible to research ink transfer processes for raster images reproduction with different resolution.*

***Practical significance.*** *A three-dimensional mathematical model is universal be­cause it can consider ink printing system elements geometrical sizes with varying accuracy level and describe the functionality of ink feeding device, oscillating cylinders, ink rollers, form and offset cylinders of Heidelberg Speedmaster-74 offset printing press. Based on this model, the information technology for analysis and setting-up of these presses could be designed to print images of any complexity.*