UDC 681.6.004.9

**Information technology for analysis of INK PRINTING SYSTEM WITH four FORM ROLLERS based   
on Its three-dimensional model**

**M. I. Verkhola**

*Ukrainian Academy of Printing,   
19, Pid Holoskom St., Lviv, 79020, Ukraine*

*m.i.werh@gmail.com*

***Research methodology.*** *Mostly for ink printing systems research, models that give information only on ink layers average thickness on the rollers and cylinders surfaces and imprints are used. In carrying out this research article in developing information technology systems for ink printing system analysis based on its mathematical model we have used methods of operational calculus, discrete transformation, graph theory, automatic control theory and methods of simulation.*

***Results.*** *A methodology of creating information technology for ink printing system research and analysis based on its mathematical models has been proposed. The mathematical model of ink printing system with four form rollers has been developed. It reflects the ink transferring in the form of ink micro flows array which is transmitted on rollers and cylinders surfaces. This model describes in detail the processes occurring in ink printing systems of the offset machines and makes it possible to reproduce imprints in three-dimensional form. Based on the mathematical model an ink printing system simulator for research and analysis of ink transmission in complex offset machines ink printing systems has been constructed.*

***Novelty.*** *For the first time an ink printing system with four form rollers mathematical model has been developed, which in detail describes the work of all its elements and reproduces imprints in three-dimensional form at its output. This model is the basis for the applications development using object-oriented programming languages or building simulators for the research and analysis of offset machines ink printing systems.*

***The practical significance.*** *The developed information technology for ink printing system with four form rollers analysis makes it possible to take into account the processes of ink transmission and distribution that occur during printing on a Heidelberg company GTO-52 offset machine, to conduct researches of ink transfer, to define accuracy of imprints reproduction and perform a previous adjustment of these printing presses.*