

Numerical Simulation of Charging Characteristics under the Influence of Photoreceptor Defects

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Abstract

Two-dimensional numerical study was carried out on the problem in charging known as the pin-hole leak phenomenon caused by photoreceptor defects in the roller charging system under constant current control with the DC voltage superposed on the AC voltage applied using the finite difference method in the generalized coordinate system. In this simulation, the pin-hole leak phenomenon was numerically reproduced by constructing a roller charging system model with photoreceptor defects and its mechanism was clarified. Further, the effects of the BCR (Biased Charging Roller) parameters to reduce the size of the image defect were quantitatively investigated. Consequently, it was suggested that larger BCR resistivity and higher AC frequency were both effective.

Biography

Satoshi Hasebe received his B.S. degree in Mechanical Engineering from Hokkaido University in 1991 and a Doctor Degree in 1997. He primarily studied on the computational fluid dynamics. Since 1997 he has joined at Fuji Xerox Co., Ltd., and now works in the Document Products Company Research and Development Center of Fuji Xerox. His work is primarily focused on modeling and numerical simulation of the sub processes in the electrophotography, especially the charging process, and also focused on a development of numerical techniques for them.

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