

On Continuous Inkjet Systems: A Printer Driver for Expiry Date Labels on Cylindrical Surfaces

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Abstract

Continuous inkjet systems are commonly used to print expiry date labels for food products. These systems are designed to print on flat surfaces, however, a lot of food products package have a cylindrical shape (e.g. bottled and canned products) which causes an enlargement in characters at the ends of the label. In this work, we present an algorithm to correct this defect by calculating the extra-distance that an ink drop travels when the printing surface approaches an elliptic cylinder. Each charged ink drop is modelling as a solid particle which is affected by the air drag, Earth's gravitation and voltage due to the electrical field that causes the perturbation in the ink drop path. Enlargement and interaction between ink drops are so small that they can be omitted and then, equations of motion are simplified. Numerical results show the correction of the enlargement mentioned above by varying the electric field along the width of the label. In addition, the equation and the values of a second electric field to correct the printing's inclination caused by the method of the system's operation are presented.

References

1. G.D. MARTIN AND S.D. HOATH AND I.M. HUTCHINGS. Inkjet printing - the physics of manipulating liquid jets and drops. Engineering and Physics-Synergy for Success 105 (2008) 012001.