

Digital UV printing of 3 dimensional objects at high speeds

Volker Till, Till GmbH (Germany)

Abstract

The packaging of mass products is mostly packaging of consumer goods in various kind of packaging materials depending on the product.

The expectations in this highly visible market mostly dominated by multinational brands. They are sensible about their market share and their expectations for image quality and correctness is extremely high, as packaging is supply a very competitive market.

Purchase decisions at the point of sale are spontaneous and consumers and their attitude are changing more and more rapidly. The paper will talk about the changes of consumers and their growing influence to market leading brands.

It will as well show how this influences the task and solutions to decorate finished packaging which can be given only by digital printing with appropriate machinery concepts allowing to print 3 Mio m² per year.

The printing of objects is in contrary to standard printers not continuously, but requires the change of the individual e dimensional packaging up to 15 times/second.

The paper furthermore addresses the need and the execution to clean the printer without interruption of the production, as a lot of production is continuous and cannot be stopped. This cleaning and its relation to image and print quality check by camera system incorporated into a system is part of the paper as well.

The paper describes the development of such a machine and its concept for a production environment for a variety of packaging materials. This speed can only be reached with appropriate print heads and the paper will as well compare the available today's technology with the requirements of the packaging printing in future.

Computer / software concepts are needed to enable RIP-ing of multiple images per second to enable a unique decoration per packaging. The paper highlights these aspects as a part of the conceptual work for a practical application.

An additional influence for machine concepts is given by the type of inks. The handling of finished packaging at a speed of 15 packs / second requires rapidly drying inks, which are provided by UV curing inks. The expected inks properties for food safety and performance criteria are furthermore different to the normal application in the printing industry. Ecological aspects of packaging and inks are playing a major role in this. Analytical science and environmental activ groups check more and more aspects of protecting consumers as well as our environment . Consumers are more and more influenced by these publications and discuss the results in the social networks. Mistakes have nowadays a bigger impact than in the past. The paper includes the safety in development and production of inks with examples from an ink maker providing inks for a food packaging application.