Flexography

Unlike the indirect offset lithographic technique, flexography is a direct printing technique, rather similar to stamping. The image is transferred directly from the plate to the paperboard. Besides being used for colour printing, flexography is often used for varnishing with special inks or printing metal inks. In order to achieve high finish in metal inks, the whiteness and smoothness typical of graphic paperboard are particularly important. Even more important is the clean and debris-free paperboard surface. The fact that the fibres in graphic paperboard bind very well – or extremely well – together minimises the risk that debris should force the press to be stopped in order to clean the plates.

Printing plates
In flexo printing the plate itself is the compressible component in the printing unit. The soft printing plate has one major drawback in that it causes quite a high dot gain compared to offset printing. In general a hard polymer plate is required to minimise the dot gain, while a softer plate gives higher print density in full tone areas.

The impression between the anilox roll and the plate cylinder, and between the plate and substrate, should be as light as possible; this is called a kiss impression. If the pressure is too high, halo and squeeze-out will be produced. To fully match the capability of high definition jobs and the new hard polymer plates a paperboard with a very smooth surface and uniform thickness is needed.

One development for achieving minimum dot size is to use very thin plates, which are backed up from the reverse side with a compressible under-layer, when mounted on the plate cylinder. It is important that the thickness of the plate is uniform over the whole area. The thickness should not deviate more than ±0.02 to 0.03 mm. According to some printers, the issue of plate thickness can be controversial. Many flexo printers therefore experiment with different plate and ink combinations to achieve optimal print results.

Flexo inks
The flexo inks are low-viscosity inks, characterised as fluids. There are solvent-based, water-based, and UV-curable inks. The solvent-based inks have more or less been replaced by water-based inks when printing on paper and paperboard, mainly for environmental reasons. Since it is not possible to print wet-on-wet, the flexo press is equipped with intermediate dryers or UV lamps between every inking unit. Heated air is used for drying solvent- and water-based inks.