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Computer assisted mounting systems

Scope

The purpose of this TIP is to provide basic information to corrugated printers on the available systems or technology in use for pin register / computer assisted mounting systems for printing plates. Computer assisted mounting in this report means any system that replaces the hand-held, visual placement method of mounting flexo printing plates.

New systems now allow the use of computer assisted target images, and the use of fixed video cameras, to pinpoint the exact print plate placement and press requirements for perfect color-to-color registration.

Computer assisted mounting seems to offer a particular advantage to preprinters of corrugated linerboard because this work often requires mounting multiple plates (e.g., step and repeat) across the plate cylinder due to the wide substrates being printed. Thus, any error between the plates on a given plate cylinder cannot be corrected on the production press by making longitudinal or cross direction adjustments of the plate cylinder. The press operator can only seek to find the optimum position for each plate cylinder to produce saleable product in all rows of printing (rows refers to multiple images across the web made up of individual plates). This operation of having to seek an optimum position can often degrade the quality of several rows of printing in order to make one row acceptable, but this is a necessary evil because a printer of preprint liner cannot produce three rows of perfect boxes and one row of scrap, due to that one row being too far out of register to be saleable.

This condition does not prevail in other forms of package printing because the narrower presses usually need only one plate per cylinder. Under these conditions, the plate mounter only needs to mount the plate square on the cylinder and within the side adjustment range of the production press. The press operator can then adjust the production press plate cylinder locations for acceptable register. Register quality of the end result will be limited by the accuracy of the plate register to the carrier sheet and the ability of the press to hold that register throughout the production run.

Pin register, or computer assisted mounting, held little attraction for printers of corrugated liner when maximum plate size was limited to 762 mm x 1016 mm (30 in. x 40 in.) or even 1016 mm x 1524 mm (40 in. x 60 in.) because each box had to be printed from multiple pieces of plate material. Now that plates are being made up to 1321 mm x 2032 mm (52 in. x 80 in.) and larger, computer assisted mounting takes on new possibilities. However, some printers remain concerned about the economics of using "full size" plates rather than patch plates and so question the validity of pin register systems. The need for better register in post print applications increases with the increase in higher quality graphics and process color printing.

Some of the systems now available can mount patch plates, but the others require so-called full size, or in-position, plates; that is, only one plate around the cylinder (which may comprise of multiple images). Plate size is worth considering in evaluating how much plate material is required for the system.

Safety precautions

Before utilizing any of these processes described within this document, contact equipment suppliers to determine if any safety precautions are recommended.

Systems available

System A - Flat mounter

System A is a computerized flat mounter for the corrugated board industry.

Photopolymer plates can be mounted either analogously [TEACH IN MODE] or digitally [RUN MODE]. Two individually controlled cameras, each with an enlargement factor of 20, and a computerized table, permit easy, automatic mounting. The flat mounter runs on a Windows platform. All order data can be stored and recalled on the PC that is supplied.

System B - Automated single head video drill corrugated mounting system

This system is no longer marketed, but is currently in use.

The Automated Single Head Video Drill Corrugated Mounting System is designed to provide a complete solution for mounting plates onto carrier sheets for corrugated post-printing. Carrier sheets are drilled, then pin-mounted (either "in the round" or flat) to the drilled photopolymer plates. This system allows you to capture the digital workflow from your prepress department to simplify mounting.

Using software, register marks are accurately placed for the graphic elements relative to the die structure. Importing layouts from other programs is also possible. The software generates coordinates of drilling locations for the plate-mounting step.

Films are output on your imagesetter, which now contain register marks generated in the prepress step. Using these films, the plates are then exposed and processed.

Using the video monitor, each of the plate registration marks is drilled.

The punch table eliminates image squareness problems, which occur when lead edge strips are sewn or stapled to the carrier sheet. This allows multiple carrier sheets to be drilled simultaneously.

The data file, consisting of drill location coordinates, is loaded onto the computer-driven automated single head drill. The carrier sheet is placed on the table and drilled automatically in the precise locations determined in prepress.

Mount the plates to carrier sheet using transfer adhesive on the back of the plates. Mounting pins are placed through the back of the carrier sheet. Drilled plates are positioned through the mounting pins. Register problems associated with traditional mirror mounting such as parallax error and hand-to-eye variation in mounting plates are eliminated. Mounting is possible either "in the round" or flat.

These lead edge strips will always be parallel to plate images, assuring squareness of image and easy registration for both the proofing step and the press run.

Further refinements to this system allow film output and carrier sheet drilling steps to be done simultaneously. After plates have been processed and drilled, they can immediately be placed on drilled carrier sheets. Plate-mounting time may be reduced by 75% or more when 4-color, tight register work is required by using the carrier sheet punch table and lead edge fastening system.