Ink delivery on press: How it gets there

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By Frank Bourlon columnist

The delivery of ink onto the web occurs in a variety of ways. Here are the basics:

Ink delivery - An ink fountain, which consists of an ink blade and an ink fountain roller - sometimes referred to as the ball roller - and either manual ink keys or electronically controlled ink keys. On some presses the system starts with an ink rail and an ink injector or a digital inking system.

The ink fountain system on Goss International presses uses an ink blade resting next to, but not touching, the ink fountain roller. This system is called a continuous feed system.

Other printing presses, such as the Harris V-15, use a ductor style system. This uses a pickup roller that makes contact with the ink fountain roller and then makes contact with the first ink transfer drum. With this system, the ink blade does come in contact with the ink fountain roller.

Figure 1 illustrates the Goss ink fountain delivery system with manual ink keys, which can be modified to a digital inking system. Figure 2 illustrates one of the Harris ductor systems. Harris also uses the continuous feed inking system on other vintages of its V15 presses.

On the rail

The ink rail inking system is another way to deliver ink to the ink train. This system is found mainly on larger presses. Here, the ink is forced into small tubes spaced approximately a page column apart from one another. The tubes are flexible and have threaded fittings so that the tubes can be easily attached to the ink rail. The other side of the ink rail has a small slot that allows the ink to be applied to the ink fountain roller. This system is controlled manually by an ink page pack and electric switches or by small digitally controlled ink pump motors.

In any of these systems, the ink is transferred to the rest of the inking system when a sufficient ink film is present. The ductor inking system requires a very thin ink film to be present since the ink pickup roller comes in contact with the ink fountain roller. Any ink on this type of ink fountain system will be transferred to the rest of the inking system. The continuous- feed systems, on the other hand, have a small gap between the ink fountain roller and their ink pickup roller (sometimes referred to as the micrometric roller).

The gap between the ink fountain roller and the micrometric roller should be approximately .003-inch to .004-inch. This means that an ink film thickness of more than .003-inch to .004-inch would have to be applied to the ink fountain roller before ink could transfer to the micrometric roller or ink pickup roller. The higher the ink level, the higher the ink density would be on the page at this point.

If the gap between the ink fountain roller and the micrometric roller is too wide, ink slinging will occur and when the press is stopped, gravity will cause the ink to leak between the ink fountain blade and the ink fountain roller.

Additionally, operators will be forced to make the ink blade touch the ink fountain roller, causing excessive wear on the ink blade and ink fountain roller if the gap between the ink fountain roller and the micrometric roller is too close. The fountain roller and micrometric roller will be damaged if they come in contact with one another as well.

The ink rail system delivers the ink to the rest of the inking system in the same way as the continuous-feed system. The distance is normally .010-inch between the ink rail and the ink fountain roller. The ink will transfer once the ink film thickness is greater than .010-inch.

Ink transfer rollers

This part of the inking system, which includes the delivery system, rubber ink rollers and oscillating ink drums - must be clean, dry and free of contaminants to function properly. This means that water levels must be kept to a minimum. Excessive water levels will coat the ink rollers, ink drums, micrometric roller and ink fountain rollers, all of which will reduce their ability to carry ink.

Additionally, the ability of the rubber rollers to carry ink becomes diminished whenever the ink rollers are glazed or become hard. The porosity of the rubber is lessened, which also reduces the rubber rollers' ability to hold ink. The copper oscillators can also develop a coating, invisible to the eye, that affects ink transfer.

Bottom line: Roller contact, or pressure, is the most important component of an inking system. If the pressure is too great, the rubber rollers will deteriorate more quickly. This can also cause excessive loads on the drive system and impact ink delivery to the plate.

If the pressure is too light, slinging and loss of ink control can occur because the ink film has to be thick enough to jump the gap between the ink rollers in the ink transfer system.

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Fig 1

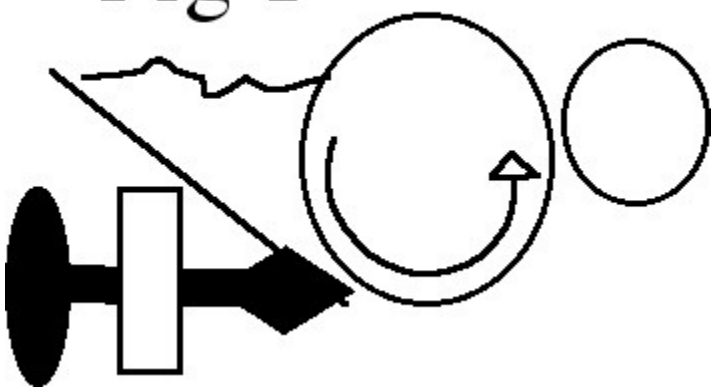

Fig 2