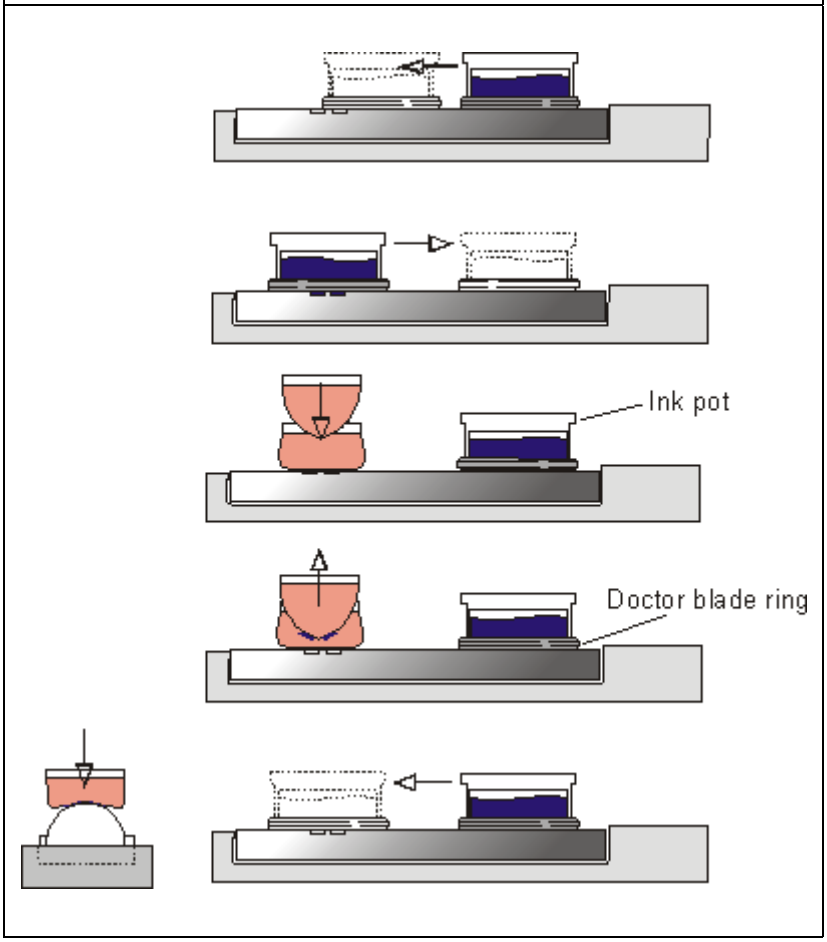
CLOSED CUPS USED IN PAD PRINTING
PDS International – Peter Kiddell

Closed cup systems are increasingly popular in pad printing their main advantage is that they help maintain the solvent balance in the ink, hence allowing easier operation. There are characteristics that must be considered when using this system. Initial mixing of inks and solvents is as critical as when using an open ink system. The mechanism of pad printing remains the same, the evaporation of solvents being the governing characteristic. Solvents must be weighed into the ink and the mix is dependent on the image being printed. For example, when fine detail is being printed the mix of solvent will contain a higher percentage of retarder, otherwise the ink will dry in the etching on the plate.

CLOSED CUP SYSTEM



The most common problem is brought on by the impression that inks have an indefinite pot life when held in the closed cup. This is simply not so. Time and again users who are unhappy with print quality contact us and the solution is to mix a new batch of ink, take out the old and replace it with new. Our recommendation is to do it once a day if print quality is critical. Addition of solvents whilst in production is fraught with problems as the ink volumes are very low and one squirt can completely upset the solvent balance. To resolve this, add a measured amount. This can be done by using a syringe. The ink that you remove from the cup should be disposed of and not mixed back into the new ink. If print quality is not important then ink condition can have a much greater latitude.

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Another problem that can occur is that some ink systems when used form a crust of dried ink around the edge of the cup. This crust will drag lines of ink across the image and ruin the print. Ink manufacturers have developed inks that overcome this problem so if your current supplier cannot solve it investigate other suppliers.

With closed cup systems plates generally have to be twice the size of open ink well plates. If you have a lot of plates this can be a substantial cost increase. In addition, the surface finish of the plate needs to be better than when it is cleared with a conventional doctor blade. If you find your steel plate is not clearing adequately it is likely that it simply is not flat enough. The doctoring characteristics of the cup depend on the contact surface; machined from solid, spring steel or ceramic. This is allied to the bearing and clamping mechanism. There is no such thing as a cheap system. The cheaper it is the more expensive it is to run. At times like these I would love to be able to give you my recommendations as to which manufacturer had the best combination, but I have to remain impartial. By the very nature of these cups plate wear can be a problem. With steel harder flatter plates will be more effective.

Photopolymer plates are best used with cups that have ceramic rings. These rings are very flat and run well on the photopolymer material. Different photopolymer materials will perform better or worse and you will need to experiment. Broadly the harder materials are better not just from a wear point of view but also as regards to print quality.

CUP WITH CERAMIC RING