

INKS FOR THE IN-PLANT PRINTER

The in-plant printer forms a very important part of the offset litho market. There are, however, a number of distinctions between the in-plant and the purely commercial markets which have led to the development of specialised machinery and printing inks. The type of work being produced can be very different and information can be produced cheaply and rapidly, and by having the printing operation on site, can be readily updated. The clearing banks, building societies and large industrial companies form just three of the major categories of in-plant printer. Although a key factor in running a successful in-plant operation is economy, quality must not be sacrificed. The printed material is frequently sent to clients who have plenty to read already, and a high standard of presentation is essential. Part of the responsibility for balancing the need for economy and quality lies with the machinery and ink manufacturers as in-plants often use semi-skilled operators and ease of use becomes most important.

The press

Sit a single colour small offset press next to a large four-colour commercial machine, and the differences in complexity and size are immediately obvious. Both machines serve identical functions – that is to distribute ink from

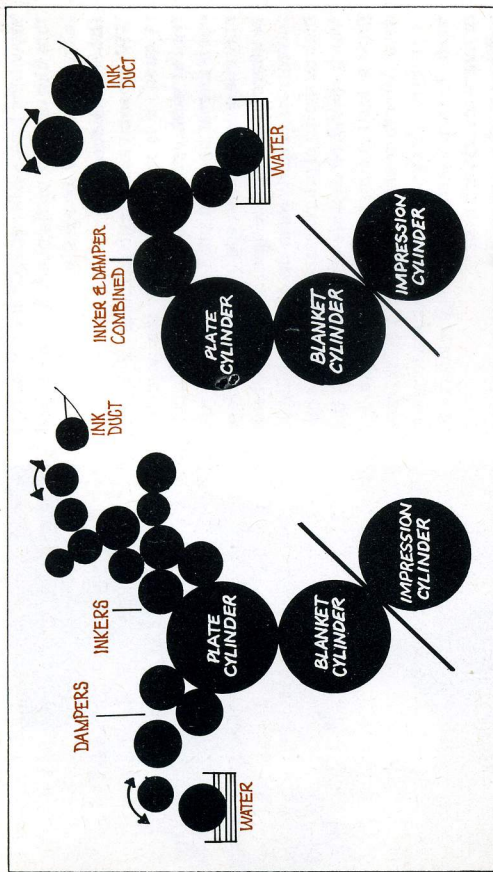


Fig 3. Diagram showing the difference between conventional (left) and integrated (right) damping and inking systems.

duct to printing plate and to produce a faithful reproduction of an image. The commercial press achieves this efficiently by using a large number of ink distribution rollers and this factor, coupled with the need to handle large sheet sizes, is part of the reason why it needs to be so complex and bulky.

The small offset machine is designed to be simple and compact because (a) it must be relatively inexpensive, (b) the maximum sheet size that needs to be handled is much smaller and (c) space in an in-plant print shop is often at a premium. Because of these factors, the number of distribution rollers has to be reduced and is often no more than three or four. This creates the first problem for the inkmaker. Not only are there very few distribution rollers but those that are there are of small diameter. Their rolling power – the power transmitted into the ink through the rotational motion of the rollers – is very low. Conventional inks will fail to respond adequately to this low power input and poor distribution could result. The flow characteristics of a small offset ink are adjusted to cope with this problem.

Dampeners

The second basic difference between the

presses is less obvious, but the methods used to dampen and desensitize the non-image areas of the plate with water can differ considerably.

The commercial press will have a separate set of rollers to do this job, totally independent of the ink distribution chain. On some small offset presses, the same roller is used to apply both ink and water to the plate – this is known as integral damping. The reasons for this are again simplicity of construction and operation, compactness and reduced cost.

Water is an essential part of the lithographic process and it is also desirable that a small amount of water emulsifies into the ink. It is important that the amount of dispersed water held by a litho ink remains constant throughout a print run – a progressive uptake of water will cause the ink to 'scum' and print in the non-image area. This compromise is often referred to as 'water balance'. This balance is more easily achieved on a conventional press, where ink and water are kept separate until they meet on the plate. On a press with integral damping, ink and water are being rolled together on the last distribution roller (see Fig 3) and there is a greater likelihood of an unstable emulsion being formed. Inks must resist this but at the