Control of fount solutions

Modern fount solutions are often based on citric acid, and contain buffering agents to keep the solution at a controlled pH. Therefore, checking the fount dilution by measuring the pH is no longer effective, as this will only reflect the buffered value. It is now widely accepted that measuring the conductivity of a fountain solution is a more effective method of checking on the dilution of a specific fount concentrate. Conductivity is not masked by buffering agents, but rises as the proportion of concentrate rises. It also rises with temperature.

The water used can impose a base level of conductivity on the solution, arising from dissolved mineral salts which may also cause hardness. These salts are eliminated by distilling water and are in lower proportions in softer water. However, in hard waters the ionised salts can contribute enough conductivity to influence the reading obtained on a conductivity meter when checking the amount of fount concentrate added, and therefore give a false indication of the amount present.

While it is accepted that conductivity is an improvement for fount solution control, it still seems appropriate to ask whether there is any direct relationship between it and fount solution performance, and if so, why. It might be a more direct measure of emulsion stability, which as indicated above, appears to be important in relation to press performance. Certainly, emulsions are affected by the presence of electrolytes in the emulsion, and this would be reflected in a conductivity measurement.

It must be noted that conductivity is not a good control of new fountain solutions designed to replace alcohol. These are based on glycol ethers and other organic compounds, the concentration of which is difficult to measure by any means and especially in a printing works.

Use of de-ionised water

This has been suggested by some people as the answer to the fountain solution problem in that it removes all variables and provides a constant starting point. It has even been suggested that de-ionsed water may be used by itself - no additives.
This, however is rather undesirable since de-ionised water is rather corrosive. A sensible approach therefore is to start with de-ionised water and add a constant amount of additive to it - one that replaces some of the hardness, but to a controlled degree. Another possibility is to de-ionise the water to a constant level, which is somewhat cheaper to do, and then add controlled amounts of additive.