

Addressability – what is it, and why do I need it?

A UV LED head is made on many hundreds/thousands of individual LED's. In it's simplest form- addressability is the capability to switch these LED's on and off as required, or vary their intensity. For convenience this is usually done in groups of LED's, say ~100 at a time.

Historically, UV curing has been carried out with arc lamps. These are single piece, large tubes, similar to fluorescent tube used for lighting. These can be switched on, or off, and varied in power. If you have a 18" (500mm) arc lamp, the whole length is always either on or off, and the entire length is always at the same power, brightness.

If you have a machine that can run product up to say 18" (500mm) wide, then using a 18" (500mm) lamp will work, so why bother with addressability?

The answer is usually one of the following:- *energy saving, stray light/heat or print effects.*

Let's look at energy saving.

With a machine designed to run 500mm wide products, when ran in this mode, I need all the LED's on to cure my product. If I run a product that is smaller i.e. a narrower web, or smaller sheet sizes, there may be parts of the lamp that are illuminating dead space. Either at the sides (ends) or even in the middle. If you can switch these off, you can cut the energy costs associated with these dark areas.

If we now say that this normally 500mm product, has corporate branding printed on it. If branding can be in any location on the product, the LED's need to cover the full width. But the actual printing for any given customer may be only a portion of this area. The illumination area, (curing area) can be adjusted for that given design. On a CNYK print set up each of the colours could be set with different cure widths to cure only what is printed at each station.

The adjustment can be carried out electronically, and if the printing is via say inkjet and constantly variable, so can the width and position of the curing.

The energy saving & cost saving become obvious.

Stray light & heat.

Less obvious at first- is the impact of too much curing width.

One of the main benefits of UV curing, is the ability of inks to remain fluid until exposed to UV light. Of course once exposed to UV, the inks cure rapidly, so any unintended exposure needs to be minimised, particularly on inkjet nozzle plates. When running narrow product through a machine, over exposure of UV can create significant "stray light", which can potentially start to cure ink on nozzle plates or other unintended location. Being able to adjust the curing size can help minimise this risk.

All energy reverts to heat. Although UV LED's radiate very little direct heat (IR), the energy in the UV wavelengths convert to heat once absorbed by the media. Hence products can warm significantly during curing. Limiting the illumination area, will reduce the heat transferred to a media, and in turn will reduce any distortion or other heat related issues.

Print effects/artifacts.

UV curing is not all about a massive blast of UV to solidify the ink as quickly as possible. Whilst this is true in a good number of applications. Many printers use a process of “pinning” to create a gelled effect with the ink prior to hard curing. This can aid ink to ink adhesion and/or effect the gloss of the printed product. With an addressable UV head you can assign different intensity levels to different areas of the product, locally changing the UV exposure. Hence creating the capability of localised gloss or other print effects. ISTINTECH have an established European patent, covering the benefits of UV addressability. Their product range supports addressability from simple switching of zones or stripes, to complex mid print pattern changing.

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