

Guide to Retrofitting a UV Flexo Press for Productivity Advantage

UV LED Curing Equipment Features to Consider

Considering an upgrade to UV LED curing technology on your flexographic (flexo) press can feel daunting. This guide helps you navigate the UV LED curing equipment features that will deliver higher press productivity.

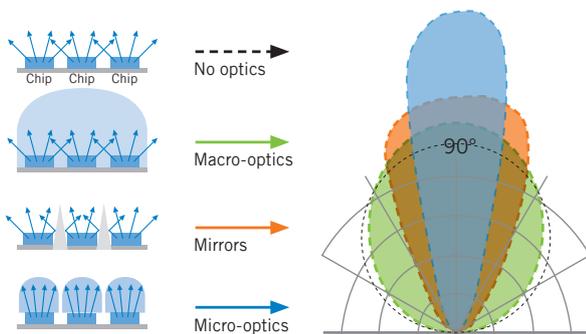
UV LED curing and press production rates

Medium pressure mercury arc UV lamps have been the mainstay UV curing technology for printing processes such as offset, flexo, screen, digital and others for many years. UV LED curing technology is gaining traction due to its much longer operating life, instant on/off capability, and reduced maintenance time which combine to improve press productivity compared to traditional arc lamp UV curing. In fact, flexo label and tag producers using UV LED curing report significantly faster press speeds compared to arc lamp UV curing. Read more about the benefits of [UV LED curing for flexo processes](#).

When retrofitting flexo presses with UV LED curing it's important to understand which product features matter most for delivering reliable and high capacity label printing and converting processes. To deliver the highest press capacity and production rates, the UV LED solution you choose needs to provide the fastest speeds and the most reliable and consistent curing results. And with the trend toward smaller print runs, minimizing changeover time between print jobs is another critical factor.

UV LED curing system features that deliver:

Faster press speeds



Flexo press speed depends on UV wavelength (365, 385, or 395 nm) and UV energy (mJ/cm^2) delivered to the ink or varnish. Most UV LED flexo inks use 385 nm or 395 nm, but ask your formulator to be sure. Make sure you **compare UV LED curing systems of the same wavelength and at the same working distance from the substrate.**

And don't be swayed by the W/cm^2 ratings of UV LED curing units – this only tells you the static peak irradiance at the emission window, not on your substrate! The measurement you care about and need to compare is the amount

of UV energy reaching the web surface. UV LEDs do not use internal reflectors like arc lamps do since the energy output from the LEDs is all forward facing.

However, the UV energy leaves the emission window at high angles typically. So UV LED equipment suppliers use various means, internal or external, to redirect stray UV energy down onto the substrate where it is useful. Some UV LED curing units incorporate external mirrors, glass rods, etc., or internal micro-optics, as a means to better control and enhance the output onto the substrate. **Internal optical control is preferable** because it delivers more UV output without concerns about dirt accumulation or damage during operation.



Semray® with micro-optics: Reduced exit angles in to higher intensity at higher working distance

For example, the Semray® UV LED curing system uses internal micro-optics to focus more UV energy onto your ink or coating resulting in **30% faster print speeds than comparable systems.**

To compare the UV output of different UV LED systems, best practice is to ask each manufacturer for data (same wavelength and working distance) or take measurements yourself. ([Learn more about measuring the output of UV LED curing systems](#))

Reliable UV curing process

A reliable UV curing process will reduce waste and increase uptime to deliver higher press production rates. Since there are essentially no moving parts, the **reliability of UV LED curing systems depends primarily on adequate temperature management.** While cooling needs are dramatically less than for arc UV lamps, the life of a UV LED will be cut short without adequate cooling. Air-cooled UV LED systems are less complex than water-cooled systems and easier to retrofit onto flexo presses. So **look for air-cooled UV LED curing systems that actively manage cooling.** For example, Semray UV LED curing systems use self-regulating fan control to dynamically optimize cooling to ensure longevity and reliability.



Reliable UV curing process

With the trend toward shorter press runs and customer demand for quick turnaround, fast changeover time is a critical productivity advantage for flexo label presses. So the UV LED curing system needs to **enable quick changes to different wavelength emitters, and flexible controls to adjust cure width and/or dimming setpoint for different print jobs.** And if you plan to move the UV LED curing system among different press stations, **look for quick release modules.** For instance, Semray's [modular plug and play UV curing platform](#) makes switching to different wavelengths quick and easy with no tools. And a flexible control unit enables up to 5 presets for fast adjustment of UV output dimming level (100% down to 40% in 1% increments) and curing width (in 25 mm increments across the press width).

UV LED curing system features that deliver:

UV LED curing systems can deliver faster press speeds, more reliable UV curing, and shorter changeover times between press runs resulting in higher press productivity than existing arc lamp UV curing. Make sure the UV LED curing system you choose has internal optical control, dynamically optimized cooling, flexible controls for cure width and dimming, and modular quick release design for easy changeovers.

Start learning more now by clicking the following:

[6 Ways UV LED Curing Improves UV Flexo Label Converting Processes](#)

– Improving label converting processes is an ongoing challenge given how hard it is to keep up with the latest technologies. If you already have medium pressure arc lamp UV curing on flexo presses, this article will help you learn about the benefits of retrofitting existing presses with UV LED curing technology.

[Optimizing Flexo Label Production: Upgrading Traditional UV with UV LED Curing](#)

– Upgrading traditional UV curing equipment on flexographic presses to UV LED curing technology offers significant process benefits for label and tag production. But it's prudent to learn what the options are and how each can optimize your label production processes before selecting a UV LED curing system provider.

[UV Curing for Flexo Comparison Chart: Traditional UV versus UV LED](#)

- When considering UV LED curing for your flexo printing and label converting processes it's helpful to compare your existing mercury arc UV to UV LED curing technology. This chart provides concise and easy comparisons, the characteristics of each, and process design considerations for typical narrow web flexographic label converting processes.