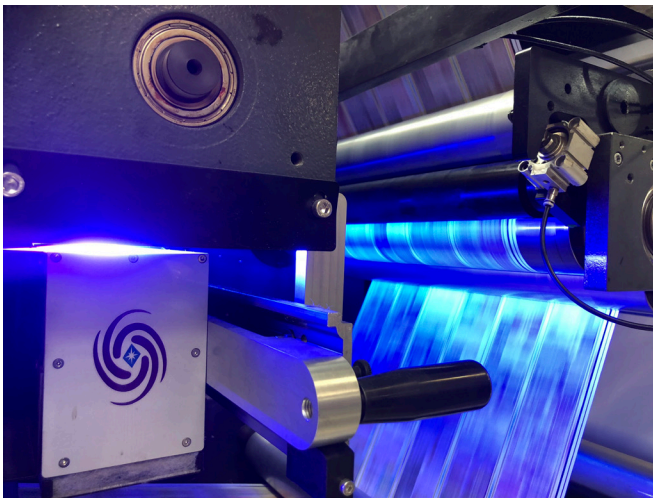


Flexo & Narrow Web

LED Integrated Solutions

Phoseon UV LED curing solutions offer higher print quality, faster curing speeds and a more reliable curing process. New revenue streams become available with the unique UV LED technology benefits, in addition to increasing throughput, saving energy and eliminating replacement part costs.

UV LED technology creates far less heat than traditional mercury lamps, allowing for a more stable cure when printing on heat-sensitive and thinner substrates.



Proven Substrates:

- Heat-sensitive films (shrink/unsupported)
- 0.75 to 2 mil BOPP
- 64% PVC shrink film
- Semi-Gloss
- 1.4 mil Polypropylene
- 2 mil Polystyrene
- Direct thermal paper
- Metalized pouch material
- Pressure sensitive labels - paper and film
- Lamination

Inks formulated specifically for UV LED curing continue to be developed, offering the same, or better, level of performance as traditional UV-cured inks. Working directly with UV LED ink manufacturing partners, including Flint, Nazdar, Siegwerk, Sun Chemical and many others, you can find the optimum inks for your printing applications.

Converter Experience

Phoseon's patented UV LED curing technology offers new capability for converters. The intense UV output paired with UV LED flexo inks achieve record press running speeds. The low heat output enables new capabilities such as heat-sensitive materials, unsupported films, and thinner substrates while requiring less maintenance and energy.

Increased Profitability

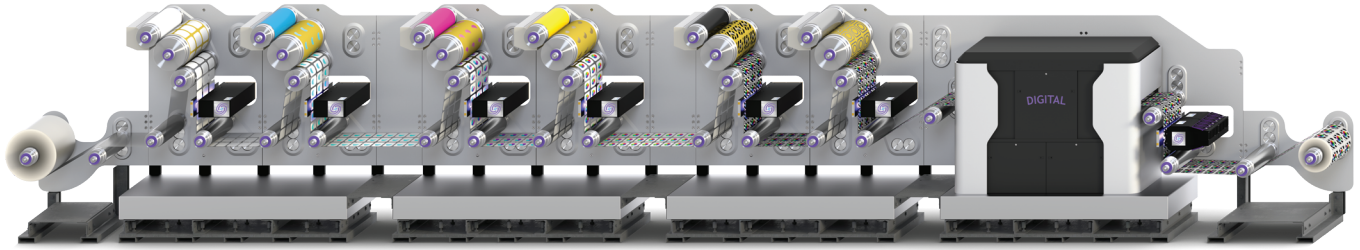
- Higher yields due to reliable curing
- Increased press up-time
- Faster throughput
- Energy savings of 50% to 80%
- No disposal costs for mercury bulbs
- Lower operating costs

New Capability

- Higher quality opaque whites & dense blacks
- Deep through curing
- Heat sensitive substrates
- UV metallic range
- Fluorescent colors without fading
- Low migration process

Turn-key Integration Solutions

Phoseon provides integrated UV LED curing solutions for both new and retrofit narrow web presses. UV LED integration offers higher yields and decreased operating costs, including up to 80% less power consumption versus mercury arc lamp technology. There is no warm-up time with instant-on LEDs, increasing productivity and profitability. Phoseon's patented LED technologies deliver rugged, high-performance solutions with for demanding narrow web applications. Additionally, Phoseon's UV LED technology enables ink manufacturers to provide true low-migration solutions to converters for food packaging.

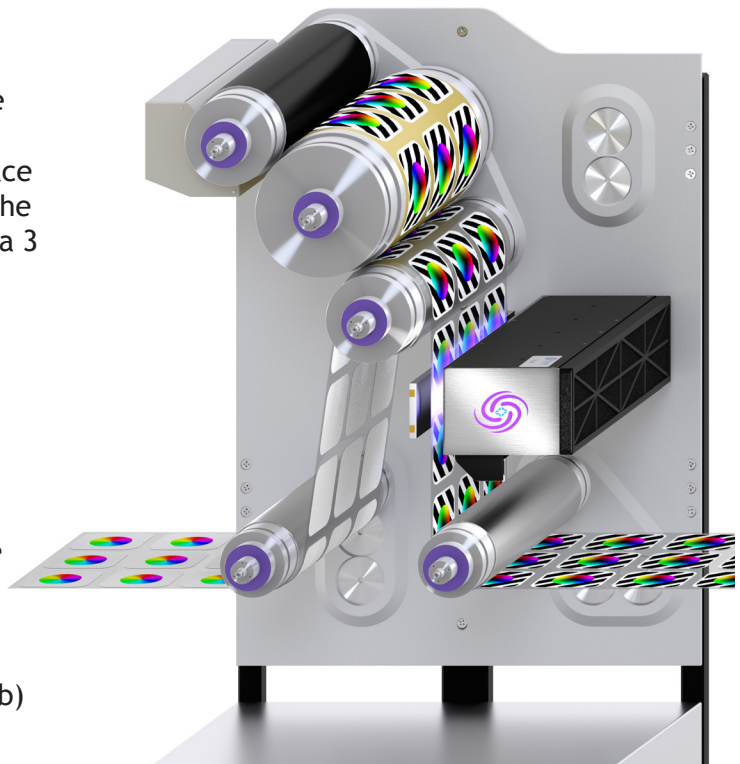


Retrofit Installation Kit

Unlike mercury UV curing lamps, UV LEDs do not emit ozone, eliminating the need for large blower systems or exhaust air ducting and allowing converters to optimize their floor space. UV LED retrofit kits are configurable to meet the needs of each application and are eligible for a 3 year warranty with certified installation.

Phoseon's retrofit installation kit includes the following options:

- UV LED light sources
- The Flex Tower power and control system
- Power, data, and press integration cables
- Custom mounting brackets, for ease of use
- UV shielding (as necessary)
- Air or water-cooled chill plate (captures excess UV energy without touching the web)
- Cooling system (for water-cooled only)
- Water manifold (for water-cooled only)



Phoseon Maintenance & Service

Routine maintenance evaluations for your Phoseon LED curing system will keep your system up and running through the expected lifetime of your curing lamps. Just like a regular service schedule for your car, Phoseon service offerings optimize your curing system up-time and productivity, which in turn optimizes your press time availability, especially in harsh environments.

Flex Tower & User Interface

The Flex Tower provides a modular power and control system for flexo and narrow web, with easy installation for retrofit or new equipment. The modules include a user interface for individual lamp control, press integration, and DC power distribution to the lamps.

The modular design allows customers to start with a few stations for the most difficult to cure colors (for instance one for opaque whites and one for dense blacks). After proving the advantages on just one or two stations customers will want the full benefit of UV LED technology. Additional modules can be added to the Flex Tower to upgrade the rest of the press.



	FT200	FT500		FT1000		FT5000
	System	Control Module	DC Module	Control Module	DC Module	System
Station Control	Up to 2 Stations	Up to 3 Stations		Up to 6 stations		Up to 12 Stations
AC Input	Americas/Asia: 208-240VAC, 2ph, 50/60Hz Europe/Africa: 400VAC, 3ph +N, 50HZ	380-480VAC, 3ph-Y, 50/60Hz	380-480VAC, 3ph-Y, 50/60Hz	380-480VAC, 3ph-Y, 50/60Hz	Direct from Control Module: 380-480VAC, 3ph-Y, 50/60Hz	380-480VAC, 3ph-Y, 50/60Hz
Input Current	37A at 208VAC, 31A at 240VAC	<0.5A per line	20A per Line at 380VAC, 16A per Line at 480VAC	61A per Line at 380VAC, 49A per Line at 480VAC	20A per Line at 380VAC, 16A per Line at 480VAC	121A per Line at 380VAC, 97A per Line at 480VAC
DC Power Capacity	5.4kW, 48VDC For up to 2 Light Sources	N/A	6kW or 12kW, 48VDC, for up to 4 Light Sources	N/A	6kW or 12kW, 48VDC, for up to 4 Light Sources	Up to 72kW, 48VDC For up to 12 Light Sources

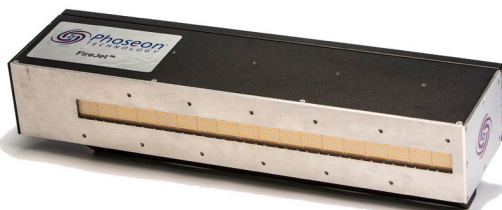
UV LED Light Sources

UV LED curing solutions from Phoseon offer many benefits to printers and converters that make it an appealing option for any size operation. If you are interested in utilizing UV LED technology, consider both the quality of the UV LED system and also the capability of the company. The product must work within your machine, process and factory requirements.



Water-cooled

The high power output of the FirePower™ FP601 water-cooled solution cures UV LED flexo inks at speeds of up to 1200fpm (365m/min) with a small form factor ideal for integrating into flexo presses with limited space. The FirePower FP601 is available for print widths up to 675mm.



Air-cooled

The FireJet™ FJ605 and FireJet FJ601 are both self-contained air-cooled solutions, which do not require a water chiller or air extraction system.

The FireJet FJ605 provides a power output that enables cure speeds of up to 1000fpm (300m/min) with advanced control capabilities. The FJ605 is available for print widths up to 675mm. For flexo presses that have other speed limitations (for instance, speeds only up to 750fpm or

230m/min) and don't require advanced controls, the Phoseon FireJet FJ601 air-cooled solution may be a preferred option. The FJ601 is available for print widths up to 525mm.

Narrow Web Printing

Phoseon's UV LED curing technology is ideal for the UV curing of inks in a variety of narrow web printing applications. Here are some examples:



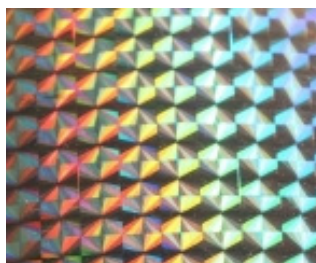
Labels

UV LED curing technology is ideal for a variety of label printing applications, enabling end users to print high-quality material at maximum speeds. Label printing can be used for beverage, household, medical, personal, promotional and many other industrial markets. UV LED curing shows measurable advantages in higher productivity, lower energy usage, while utilizing thinner substrates with improved adhesion along with clear environmental benefits.



Packaging

UV LED curing can be utilized for printing on flexible films, boxes, cartons, corrugated containers, and a wide variety of other packaging materials. UV LED curing shows measurable advantages in higher productivity, lower energy usage, while utilizing thinner substrates with improved adhesion along with clear environmental benefits.



Decorative Printing

Decorative printing processes allow for ultra high gloss, matte and holographic effects. "Cast and Cure" is a fast growing technology that creates a holographic style decorative finish on a variety of substrates for sheet-fed and web applications. "Cold Foil" allows the decorative printing application of metallic foil, in line, at press speed in an infinite spectrum of colors. These effects can be created in a variety of label and narrow web environments.



Food-safe/Low Migration Process

Process stability is the key to consistent, reliable low-migration printing. Phoseon's UV LED systems ensure every packaging run receives the same consistent, uniform UV output for repeatable results.

The term Low-Migration (LM) describes a process for UV-cured food-safe or medical packaging to ensure all materials utilized do not transfer through the package in quantities that would affect the final product safety, odor or taste. To meet food-safe requirements, Good Manufacturing Practices (GMP) must be used to ensure consistent, stable process control.

UV LED offers excellent through cure due to the long UV-A wavelength, which penetrates through to the media. LED technology provides a uniform output across the print width which again ensures fully cured product. All of these benefits improve the GMP for manufacturers, with confidence that their products consistently meet food-safe process requirements.