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Shine On!

LED LAMP KITS: AFFORDABLE, SIMPLE TO RETROFIT & OFFER SUSTAINABLE BENEFITS

Dr. John Anderson

> *"Exposure times are shorter and energy consumption is lower—which are both very welcome gains."*
>
> JUAN MESA

Innovation and sustainability—in 2024 the two, hands down, are the dominant topic of conversation in the package printing and converting community.

Flexographic Technical Association members are highly familiar with the terminology and its resulting impact on both production and consumption.

Signaling that the concepts are extensively intertwined, the Shine LED Lamp Kit, innovated by Miraclon, has achieved unique double recognition—the first technology to win two awards in one year: the FTA Technical Innovation Award and the FTA Sustainability Excellence Award.

Supplied as a simple, fast, in-the-field retrofit to existing fluorescent exposure frames, the Shine LED Lamp Kit enables flexo trade shops and printers to gain all the efficiency and sustainability benefits of LED exposure technology at a fraction of the cost of a new system. And it does it all in a vendor-neutral package, open to all major plate types and most fluorescent exposure frames from leading manufacturers.

The Shine LED Lamp Kit is a truly exceptional addition to flexo production technology, one that recognizes and meets the pressing requirements

The Miraclon Team accepted both the FTA Technical Innovation Award and Sustainability Excellence Award for its Shine LED Lamp Kit Technology at FORUM & INFOFLEX 2024.

Faster exposure times reduce plate room bottlenecks; and standardize exposure uniformity across multiple fluorescent exposure units from different manufacturers with use of the Shine LED Lamp Kits.

PHOTO COURTESY OF MIRACLON

of today's flexo businesses—to continue investing in efficient, sustainable technology, while minimizing capital outlay and controlling running costs.

FLUORESCENT VS. LED?

One of fluorescent exposure technology's key weaknesses is the fact that bulbs degrade over time, at different rates across and within individual tubes, causing issues that cost users time and money. The additional impact is notable"

- Inconsistent, unpredictable exposure can result in inconsistent print and press stoppages, leading to remaking plates
- Since fluorescent technology is more operator dependent, plate room staff spend excessive time monitoring lamp performance, and calibrating and recalibrating exposure units
- Replacing fluorescent lamps at regular intervals generates hazardous mercury waste that costs money to dispose of, as well as needing recalibrating each time new tubes are replaced
- Other issues are:
    - Waiting for fluorescent lamps to warm up and cool down affects productivity and plate throughput
    - Given long-term supply of fluorescent bulbs is uncertain, users spend money stockpiling

LED'S ADVANTAGES

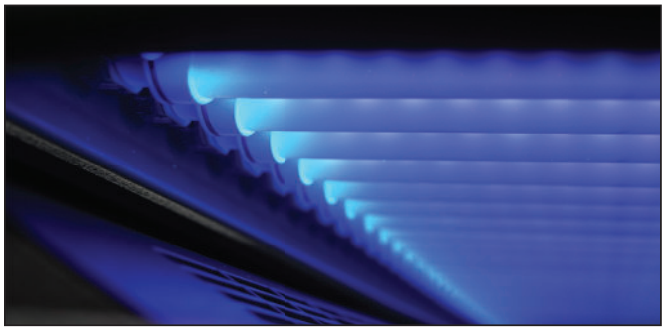
LED exposure technology has many advantages compared to fluorescent. Among the most significant benefits are:

- Better flexo plate exposure consistency, uniformity and quality, resulting in fewer plate remakes and much-reduced plate waste. It also enables efficiencies on press, with more consistent printing and reducing unplanned press stops
- LED lamps last more than six times longer, so they need replacing less often, significantly reducing recalibrations each time lamps are replaced, and eliminating hazardous mercury waste
- LED is more energy efficient

BURST OR BUST?

If LED has so many advantages, why do so many flexo plate rooms hesitate to switch to LED? Quite simply, because the traditional route—investing in a new LED exposure solution—is anything but simple and has significant drawbacks and complications. There's the cost, of course—anywhere from $150,000 - $300,000—finding space for an additional exposure system, and training operators in new practices.

In addition, there is greater operational complexity, caused in particular by the difference between LED's high-power "burst exposure" process and the low-power continuous exposure of



The Shine LED Lamp Kit is a truly exceptional addition to flexo production technology, one that recognizes and meets the pressing requirements of today's flexo businesses—to continue investing in efficient, sustainable technology, while minimizing capital outlay and controlling running costs. *PHOTO COURTESY OF MIRACLON*

fluorescent technology. This causes differences in dot structures (flat-top instead of round-top) and surface structures, and presents a number of challenges:

» To reduce long exposure times, plates need to be reoptimized for high-power burst exposure

» Because changes in dot structures prevent plate remakes that match prior plates made using fluorescent bulbs, when using the new LED system, it is necessary to retain the fluorescent equipment for a period—typically two to three years

» Holding multiple plates for LED and traditional fluorescent exposure equipment means increased inventory costs

» There is limited ability to self-calibrate leading high-power LED systems to address changes in plate materials, due to age, batch or manufacturers' changes

A BETTER WAY

Seeking a better way to deliver the benefits of LED exposure technology to the thousands of users of fluorescent exposure frames, Miraclon gave its R&D team a challenging brief. The solution should:

» Be affordable, at a fraction of the cost of new LED hardware, easy to upgrade and simple to retrofit—by customers themselves—to their existing fluorescent exposure frame hardware, yet deliver the same sustainable benefits as new LED hardware

» Be vendor-neutral

» Eliminate plate remakes by providing better exposure consistency and uniformity

» Deliver visual parity of the final dot structure, enabling remakes of legacy jobs on the same exposure frame

» Remove the hassle of frequent fluorescent bulb changes, disposal and recalibration

» Help users reach their sustainability goals by reducing waste, cutting power consumption and giving new production life to older fluorescent equipment

In addition, it should offer two major benefits over new LED exposure systems. Faster exposure times reduce plate room bottlenecks; and standardize exposure uniformity across multiple fluorescent exposure units from different manufacturers.

To meet this challenge, the R&D team:

» Tested existing LED replacement lamps available from third parties, finding that they fell short of delivering the required uniformity, quality, and productivity

» Developed Miraclon's own solution and made certain it could be compatible with most third-party fluorescent exposure frames, as well as working with both FLEXCEL NX and all major LAMS plates

» Extensively tested this solution on customer sites around the world to ensure that it would be easy to upgrade and deliver the same benefits of new LED systems at a fraction of the cost of new LED hardware

The result is a solution that more than meets all the challenges. Gone are the frequent bulb changes, plate remakes and mercury disposal necessary with fluorescent technology. With no lamp warm-up and cool down, exposure times are up to 20 percent faster, increasing plate room productivity and reducing bottlenecks.

Instead of spending unproductive hours monitoring and recalibrating an unpredictable, inconsistent process, highly skilled operators have greater confidence in plate making consistency and repeatability over time.

Furthermore, there is no need for special tuned plates to accelerate plate making because of the short high-power bursts of alternative LED solutions—the Shine LED Lamp Kit works with any plate compatible with traditional fluorescent exposure bulbs.

USERS' VERDICT

How does Miraclon know it has successfully met the challenge of finding a better way to deliver the benefits of LED exposure technology to the thousands of flexo users of fluorescent exposure frames? Users of the Shine LED Lamp Kit say so.

"The installation of Shine LED has proven to be exceptionally straightforward, seamlessly integrating into our production processes, " reported Tim Hirsch, owner and CEO, Pacificolor USA. "It has emerged as our preferred exposure solution, primarily due to the notable enhancements it has brought to plate uniformity and efficiency."

Elaborating on the point, he explained, "By adopting Shine LED, we've successfully eliminated the variables associated with fluorescent UV tubes, resulting in consistency across every plate. Our operators have expressed their satisfaction with this change, as they no longer have to wait for lamps to warm up, and the change in exposure times, leading to an overall improvement in productivity within our plate room."

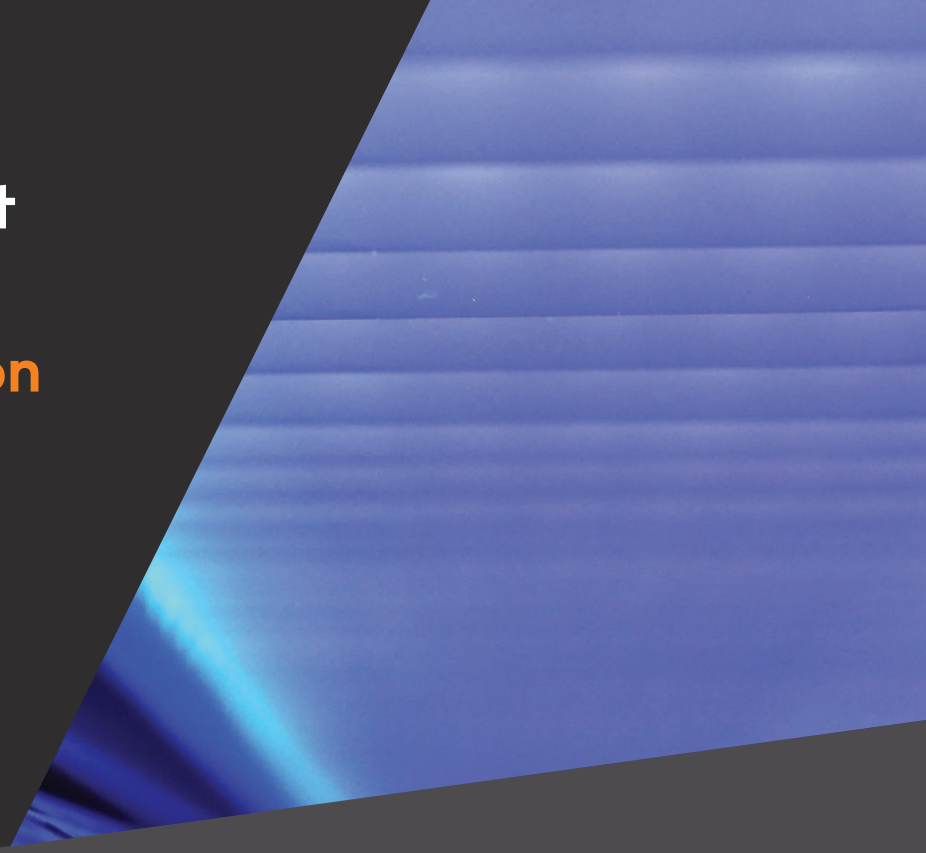
Echoing Hirsch's view, Adam Malengowski, prepress manager Fleksograf Studio Prepress in Poland declared, "It's a very good solution for flexo plate makers looking to increase production efficiency by switching to LED exposure from fluorescent technology at a very competitive cost."

He also offered, "LED avoids one of the main issues with fluorescent tubes—the way they degrade over time, and at different rates. This means operators can spend a lot of time on process control, checking and recalibrating the tubes." In contrast, he indicated, "With the Shine LED Lamps, operators can just 'Set It and Forget It,' They're confident exposures will be consistent over hours of production, from lamp to lamp and within each lamp."

For his part, Juan Mesa, manager of Magnegraf and Prepack, Spain, said, "Exposure times are shorter and energy consumption is lower—which are both very welcome gains. However, for me the most important benefit of switching has been the consistent, repeatable exposures that come with the Shine LED Lamp Kit. We have built our business on guaranteeing customers high-quality plates, and Shine LED makes this even easier. Installation was also very fast—we were up and running within three hours!" ■

ABOUT THE AUTHOR: *Dr. John Anderson, a mechanical engineer from the University of Wales Swansea, has been in the flexographic industry for 26 years, working for both the EFTA (UK) and FTA before joining Kodak in 2007. He has held various roles in Kodak and now Miraclon including marketing, sales, technical and business development. For the last five years, he has been director of the advanced print applications group, working on technologies and processes to improve print and accelerate the growth of flexography.*

Anderson will chair FTA's Fall Technical Conference and INFOFLEX at Fall Technical Conference, set for Oct. 7-9 at The M Resort Spa Casino in Las Vegas, NV. Among topics he plans to address: color, experimentation, sustainability and LED. Registration for the event is now open at fallconference.flexography.org.



What if you could get the benefits of LED exposure at a fraction of the cost of a new LED system?

Now you can.

The Shine LED Lamp Kit, innovated by Miraclon, allows you to retrofit your existing UV exposure device, saving time and money with improved exposure uniformity and pre-press efficiency.

Learn more:

Visit miraclon.com/go/ShineLED

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