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EiM chooses ProLED

EiM, based in the Sonoran desert of Mexico, is leading the adoption of UV LED curing technology for flexographic label printing, as Danielle Jerschefske discovers

Etiquetas e Impresiones de Mexico (EiM) was established in 1997 to produce and supply the labeling needs of the orange juice manufacturing business of Grupo Sago, a holding company based in the desert of Hermosillo, Sonora, Mexico. Today EiM services the food, beverage and industrial products markets across Northern Mexico and America's Southwest. In fact, today, more than half of the business revenue comes from the US.

Ricardo Stone, EiM co-founder and general manager, says, 'Competing in the US market requires high quality, premium service, and ample training. Most of our clients are meticulous about their brand value and the market's perception of the brand. Therefore, we must continually use new technology to our advantage.'

EiM signed the purchase order for a 17-inch Mark Andy Performance Series P5 8-color press equipped with the integrated ProLED system at Labelexpo Europe 2013. Already familiar with UV LED technology – it prints Harvest Mark VDP codes on produce labels using an Atlantic Zeiser UV LED inkjet system – EiM's Stone comments, 'We had LED curing units on our inkjet system; I figured why not have it for flexo? I've always been a firm believer in investing in the latest technology.'

Mark Andy ProLED was beta tested and demonstrated with success in 2012 at Labelexpo Americas. The system was commercialized for the narrow web label and packaging market in early 2013. Some of the key benefits claimed to be found with UV LED curing versus traditional mercury (Hg) lamp systems are: reduced energy consumption, longer life bulbs, lower heat generation, fewer equipment failures and the elimination of harsh environmental ozone emissions.

Mark Andy's ProLED system is the result of an initial cooperation with Flint Group and Phoseon Technology. Making its first inroads into conventional label printing, UV LED has been used as a curing alternative to Hg curing since 2002 in the digital technology sector, with numerous systems integrated into digital printing presses from manufacturers such as Domino and SPGPrints. Realizing the efficiency and low-maintenance

advantages of UV LED, Mark Andy made the strategic decision to fully integrate the curing technology into their narrow web flexo machine lines.

CHOOSING LED

Seventy percent of EiM orders require pressure sensitive material. The rest of the work calls for BOPP or unsupported films, with some 10-point carton stock work mixed in. The converter's sales force is just being unleashed to drive more flexible packaging revenue.

The newly purchased Performance Series P5, installed in late 2013, has standard servo drives on each print station and includes the Mark Andy QCDC rapid die changing system and the fully integrated ProLED UV curing system. Jesus Leyva, the lead operator for EiM's P5 press has previously worked for two years on the company's Mark Andy P7 which was purchased in 2012. It is also a 17-inch wide machine but equipped with GEW's E-brick conventional UV curing system. Servo driven in both web transport and registration, the P7 is regularly used to produce film work at speeds of 700-750 feet per minute. Paper constructions run on average at 500 feet per minute.

Describing the differences, Leyva says, 'We've found that the P5 press has very good control for self-adhesive paper, and the P7 performs best with unsupported film printing. The die cutting system (QCDC) is much easier and faster than the traditional kind. The ProLED lamps are quieter and they give off less heat. And the lamps are drying the material faster, so we're running at faster speeds with paper materials.'

With simple round die cuts, the P5 press has hit production speeds of 600 feet per minute. For more unique and square shapes, speeds hover around 500 feet per minute.

The Mark Andy ProLED lamps are controlled separately from the machine, so production management is able to make adjustments to the output as needed. Chillers are incorporated to cool the curing system components. There is little heat generated by the lamps.



EiM's Jesus Levya running the ProLED Mark Andy P5 press



P5 press in action

Stone explains, 'With ProLED on the P5 we don't often use the material chill rolls. Because of the low amount of heat produced from UV LED, there's no need to reduce the temperature of the material, particularly when printing on labelstock. Often we're using only the ProLED cooling system to maintain temperature consistency of the lamps.'

QUALITY

For pre-press, the converter produces plates internally using an Esko CDI system and DuPont solvent wash out. It has a distillation system for the solvent, cleaning and reusing as much as possible.

EiM has talent in-house where its lead designer has worked for eight years. There, all incoming artwork is checked and modified as needed to work best with different press fingerprints. There is often a requirement to match gravure quality when competing for flexible packaging business.

Matching print output from the two curing systems, UV LED and traditional mercury UV, has not been problematic. Both systems behave in a similar way. Anilox volumes and line screens generally remain the same when shifting from one press to the other. Stone says, 'In print comparisons we've found only small differences that we adjusted by slightly changing the BCM volume on our anilox rolls.'

Javier Carrillo, EiM production manager says, 'We have created a fingerprint for each of the presses to compare the printing output of each and will continue this regularly as we get accustomed to the two systems. Initially the tones for the LED machine look brighter.'

For the ink sets, the converter is running

trial production with both Flint Group and Nazdar UV LED inks. While Nazdar inks cured properly at 60 deg. F, EiM found Flint Group inks to perform best at 75 deg. F, and has found it useful to add a small amount of additional photoinitiator to the black ink. Nazdar currently has custom color mixing available in Mexico. Flint Group supplies custom color in the US and will make it available in Jalisco, Mexico in a few months.

The same tooling can be used across all Performance Series presses so any tool can be easily interchanged between machines, providing more consistency and efficiency in the operation.

INVESTMENT

The Mark Andy P5 with ProLED was more expensive than a comparable press with a traditional UV system, but EiM was able to offset some of its additional cost by taking advantage of a government endorsed opportunity for rush depreciation on manufacturing equipment.

It took one week to install the press and Mark Andy provided one week of training. The P5 press has been producing saleable work since.

'In another year we will add another P Series machine exactly the same with the ProLED,' Stone comments. 'Machinery turns obsolete so quickly these days, it's important to get ahead in adopting new introductions, and to continue doing so.'

At the moment, the price of UV LED inks is higher than traditional UV formulations. EiM isn't concerned since ink accounts for such a small amount of the overall cost to produce each label.

SERVICE AND SAVINGS?

Mark Andy has made strong claims around the ProLED technology: energy

input 50 percent less than traditional Hg systems (sometimes communicated as 50 percent carbon footprint reduction); maintenance costs reduced by as much as 85 percent (LED systems do not have shutters or mirrors, only LED light heads); and increased bulb life by as much as 10x (estimated 20,000 hours as compared to Hg at 2000 hours).

While Stone and his team haven't yet measured the energy consumption and costs of production for the ProLED press versus the conventional UV press, it's always better to consume less energy if possible, and the cost models are shifting. The converter has plans to undergo formal energy consumption measurement and documentation in the fall.

The desert can reach extreme temperatures. It reached 50 deg. C during L&L's visit. To cool the conventional UV system, energy must be pulled out of the facility air conditioning system. Says Stone, 'This energy figure is not easy to calculate or to measure because there are so many variables to account for like outside and inside temperatures, pulled-out air temperature, peak times and more.'

Over the summer and during the rainy season there can be many power outages in Hermosillo. The ability to flip the ProLED on and off without any warm-up or cool down delays has a proven advantage in energy and time savings.

Logistics and servicing challenges arise when located in the far northwest of Mexico. EiM can't afford to have a lamp head break down, pinching production time. Traditional UV lamps are fragile and complex, and demand a regular cleaning schedule; LED units are simple and easier for in-house maintenance teams to attend to.



EiM conveyor delivering finished rolls to shipping department

As EiM advances, the converter is confident in its selection of ProLED UV curing technology. The performance has proven comparable to that of traditional curing systems and the production team has experienced few hiccups with the start and ramp-up. Only time can tell us about maintenance requirements, energy reduction and bulb lifetime. Until then, the new technology will take its course.

'In the end, service is the name of the game. If we can produce quality work, at less cost and exceed our customers' expectations, we win,' says Stone.

LABEL SOLUTIONS FOR THE US

Before EiM purchased its first press, a Mark Andy 830, the investors closely reviewed a study on the label market in the northern states of Mexico. The number one complaint about labels was the service.

Stone comments, 'At the time, the average lead time was two weeks at best. We didn't realize the lack of quality until we started on our own.'

The group's orders filled a mere 10 percent of the machine's capacity. It made sense to look at other potential markets to the North. It's a four-hour drive to Tucson, Arizona and six hours to Phoenix, which is only a one-hour flight. From Mexico City to Hermosillo, a flight takes nearly three hours. In 2004 EiM made its move.

Stone recalls, 'At first it was tough. Our US development lead, Fabian Valenzuela, diligently knocked on doors and didn't sell anything for six months. It's a different culture in the US. Once we started working on it in the American way, we started to sell labels and have established a positive reputation as a service provider.'

EiM adjusted its marketing strategy for penetrating the US market, turning towards direct mail, which has historically proven to deliver positive results in lead generation and sales. The move won business with both traditional and Latin-focused businesses in the Southwest.

AUTOMATION, WORKFLOW AND BORDER RUNS

In late 2013, the converter expanded its operations by 500 sqm. This has greatly improved workflow. Now there is a clear path from

MORE ALTERNATIVE INVESTMENTS

The business will continue to adopt other new technologies besides machinery that will make the company more efficient, improve operations and reduce its environmental footprint. It's currently using a solar reflector system from SolaTube in the materials warehouse. The tubes bend sunlight beams through a focused channel to provide ample natural lighting inside. The SolaTube system is connected to automated lighting controls that dim and brighten as needed. Solar panel installation is in the bidding process.

LABELS&LABELING



EiM Shipping label with QR code

master roll delivery, slitting, ink and tooling preparation, print production, inspection and shipping.

From early on the converter has tracked the performance of each machine operator, returning a dividend based on production efficiency and waste reduction. Every machine in the plant is connected to a main system that monitors makeready times, production details and changeovers.

Says Stone, 'It was such a simple advancement that made a real impact on our business.'

A conveyor belt runs along the backside of the building behind the finishing and inspection machinery to deliver completed rolls of labels to the shipping department. There a shipper applies a label to the core with job information while another label is placed on the outside of the shrink-wrapped roll. The outside label has a QR code that is scanned into the system. When it is scanned, it tells the user what percentage of the job the roll accounts for and shows with a bar chart how much is contained in the shipping box, for example 20 or 70 percent of the total order. It's highly visual, easy to understand and reduces error.

EiM will roll out custom, internally built management information software (MIS) over the coming months. Employees are in training now.

Each process within the operation will incorporate a scanning system that links each production step together. The system will drive efficiency on the floor, improve lead times and enhance cross border service and delivery. It will support more accurate job estimates and more closely manage inventory. Team members will have access to the history of every job. There will be more accountability.

Job tickets are already color-coded and this has been incorporated into the software system: highly urgent – red, urgent – orange, on schedule – blue. Says Waldo Durand, sales manager, 'If a customer calls by 10:00AM we're typically able to send the order out in the same day. Since the expansion and workflow improvement, we have far fewer rushed orders.'

Delivering orders across the border can be tricky. The MIS workflow will expedite the process further. When the shipping labels are printed out and placed on the box, the inventory paperwork is automatically generated and emailed to border authorities. Matching inventory sheets are also posted on the outside of the boxes so that inspectors can easily control and confirm a vehicle's inventory.

Materials inventory management will be automated. It can take up to two weeks to receive roll materials in Hermosillo. The converter has improved response time by managing roll cutting in-house, allowing for a consistent turnaround time of about three days. HCI converting machinery slits and rewinds materials to order. 'This is a major strength of ours,' explains Stone.

The converter uses more than 20 types of materials. It too incorporates a color-coding system to make each type of material easy to distinguish and pull from storage.