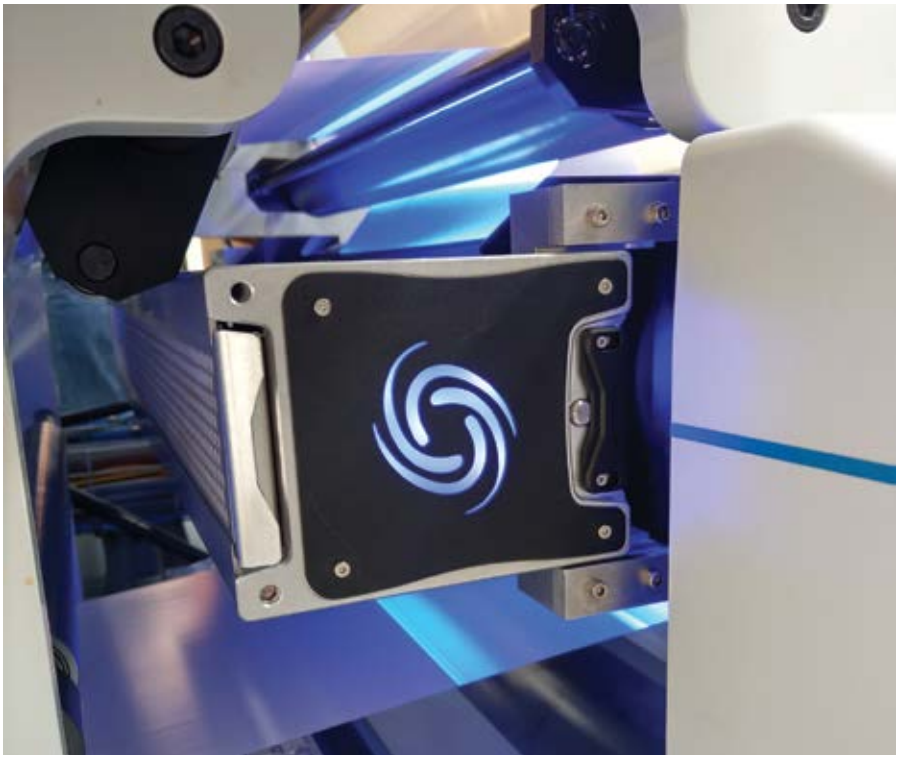
CREATING SUSTAINABLE PRINT TECHNOLOGY

Sustainability has always been an ethical imperative, but has now become an economic necessity. Stacy Hoge, of Phoseon Technology, takes a closer look at sustainable printing technology and some of the processes required to support it

Like any industry, the printing sector has an environmental impact on the world. With sustainability becoming an increasingly important goal in the face of climate change, key players in the printing industry must look at the big picture. Taking a step back to reduce ecological footprints today, will only benefit printing businesses and the world's ecology. Companies can reduce their carbon footprint through reduced energy consumption, pollution prevention and waste reduction. There are several factors in the printing process that contribute to these factors. The curing technology, presses, substrates, inks and factory processes have a significant role to play in sustainability. Through collaboration, co-operation and commitment, businesses can create a sustainable print technology and, in many cases, reduce operating costs.

Phoseon works with its customers who run screen, digital inkjet, flexographic and offset printing processes. Throughout all of these, the company has continued to observe pressure on sustainability. Today, all the major brands require their suppliers to deliver more sustainable printing practices. In some cases, these large companies ask all their printers and converters to eliminate mercury-based curing technology and upgrade to UV LED. This can be a multimillion-dollar investment over a period of a few years. As the pressure for sustainable processes increases, more companies have directors of sustainability who want to see real progress with costs and auditing for these initiatives.



Phoseon Nexus ONE™ UV-LED curing system

THE BIGGEST DRIVER

Sustainability has risen on the agenda, but the power consumption brings the economic aspect to the table. The economics are driving this change and, at the end of the day, this is the biggest driver. In the past, making sustainability changes was typically more expensive. But today, it is possible to meet economic targets and increase sustainability initiatives simultaneously.

The energy crisis in Europe, caused by the Russian invasion in Ukraine, has changed people's behaviour. Phoseon recently visited a label converter in Europe with eight printing presses and learned that one-third of the entire energy consumption of the factory is attributed to mercury lamps on the presses. If Phoseon had approached that customer a year ago, with energy-saving numbers, it would not have been as compelling. However, currently, energy prices have tripled and, because of this, printers have become very eager to install LED on the press to replace mercury. Upgrading to UV-LED curing can reduce energy bills by 50–80% overnight with return on investment in well under a year.

A FINE EXAMPLE

Eticod in Poland is a great example of a company that has embraced sustainability not only in printing, but also in the way its factory is designed. In the second generation, Eticod is transforming the self-adhesive label industry with state-of-the-art labels printed on paper, film, foil, aluminium and wood. According to Eticod, sustainability starts with small steps and many are needed to become fully sustainable.

Eticod's printing house was designed as a passive facility. The main source of energy is the heat stored in the ground. Vertical bore holes – located on the company's plot – have a total length of over three kilometres. To ensure the right climate and temperature in the company, it currently uses seven ground source heat pumps. To obtain the highest efficiency of the system, Eticod uses low-temperature capillary water and phase change mats. These are hidden in walls, ceilings and floors.

Additional support systems are air-ground heat exchangers located under the production hall and in green areas with a capacity of over 7,000m^3/hr. All ventilation uses recuperators and, in winter, excess heat is used to heat the parking lots.

In the production hall, the company uses surface radiators to minimise air and dust movement.

> ***"But today, it is possible to meet economic targets and increase sustainability initiatives simultaneously"***

As one of a few companies, Eticod does not use chillers to cool printing machines. Its own 50,000W photovoltaic power plant allows the company to be even more eco-friendly.

Eticod does not have air conditioners, heaters or traditional light sources, using 100% LED lamps. Roller shutters and external blinds create an exceptionally good barrier

against excess sun and are connected to the weather station. These react to the current weather on an ongoing basis. Thanks to the huge number of sensors, valves and bypasses, Eticod can maintain a constant temperature and humidity regardless of the time of day or year. The whole operation is supervised by a highly intelligent, proprietary control system in the mobile and PC version.

A CHANGE TO UV LED

Eticod runs five flexographic presses that reduce energy consumption by using Phoseon UV-LED curing on two of its presses instead of traditional mercury lamps. The company also has two HP indigo presses in the factory and several converting machines. Instead of chillers, the company uses geothermal energy to cool the water for its presses. Eticod is the only company worldwide to run HP indigo presses without chillers. "When we made the decision to invest in a new machine, we knew we could only remain competitive if we invested in the latest technology and our future. In opting for Bobst and Phoseon, we liked the perfect combination of two suppliers that have shaped the past and will shape the future of flexography," states Aron Huc, Managing Director and co-owner of Eticod.

SUSTAINABLE AND COST-EFFECTIVE

When Eticod compared its two newer M5, 10-colour Bobst presses – with UV-LED curing from Phoseon and inks supplied by Flint – to the older presses (with traditional mercury lamps), the newer presses reduced the energy costs by 70%. In addition to this saving, the newer presses with LED have better machine-up time, do not require bulb changes, require chillers and no ozone is generated. The eco-friendly inks from Flint have much better adhesion and current performance at higher speeds than traditional inks. Eticod is very happy with this combination.

In summary:

- 70% less energy consumption than a traditional press
- No spare parts
- No ozone = no under pressure and better thermal dynamics in the plant
- Better machine-up time (no heating up or cooling down of lamps)
- No mercury (no hazardous waste)
- Smaller carbon footprint
- Eco-cure inks from Flint (better adhesion and curing performance at higher speeds)

Mercury systems need to be running all the time, while LED is instant on/off and can be used as needed. With mercury, there is a lot of heat to manage, stray light, components that deteriorate over time and a very short lifespan. In contrast, LED brings stability and lasts for so much longer.

THE FUTURE OF LED TECHNOLOGY

It is clear that the economic factor is further driving the change towards sustainability, which is already boosted by customer and legislative demand.

Phoseon continues to focus on research and development. Last year, the company introduced the industry's first fully air-cooled system for flexographic UV-printing systems and continues to collaborate with customers to broaden their range of products. With Phoseon's wide portfolio and continuous development, the company is ready to meet growing demand for sustainable LED technology in the print industry. ■

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