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Siegwerk has developed ink systems for LED-UV label printing

Siegwerk's pioneering innovation



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At Labelexpo '09 in Brussels (23rd - 26th September), Siegwerk presents its brand new ink systems for label printing using LED-UV lamps. Along with other benefits, this pioneering technology offers significant energy savings (60% and more) and eliminates the need for air exhaustion since no ozone is generated any more during the drying process. At Gallus booth, Siegwerk's new LED-UV flexo-graphic inks are used for printing.

Siegwerk is the world's first printing ink manufacturer to develop the inks needed for the latest UV technology and put them into production. This pioneering achievement involved **developing UV flexographic printing inks, UV screen printing inks and UV overprint varnishes for the highly specific radiation**

spectrum of LED-UV light that cure fully despite the low energy and are a match for conventional UV inks in terms of drying speed. During tests using a suitably equipped flexoprinting machine, print speeds in excess of 100 m/min were achieved, with the inks curing flawlessly. This innovative use of LED-UV drying technology was developed through the joint efforts of Siegwerk Switzerland AG with Phoseon Technology (USA) and the Gallus Group (Switzerland) along with its development and production site in Langgöns (Germany). Stefan Heiniger, VP Research & Development at the Gallus Group, said: "The application of this UV-LED drying system which has been successfully implemented with our partners shows that sustainability and innovation can go very well together."

LEDs (light-emitting diodes) are based on the principle of electroluminescence: a tiny semiconductor panel emits light when subjected to an electric current. This light consumes **very little energy**, the diodes have an extremely long working life and they generate **no ozone**. Unlike conventional UV lamps with mercury tubes, the LED-UV lamp built into the label printing machine consists of innumerable small LED panels arranged across the entire width in multiple rows. The print path can be routed close to the LED panels since **very little direct heat** is generated. While a conventional UV lamp requires a warm-up phase lasting a few minutes, the LED-UV lamp has no waiting time and is **immediately operational** after switch-on.

The LED-UV lamp emits only a small range of the conventional spectrum of UV lamps. **In particular, the high-energy IR radiation and the hazardous UV-B and UV-C radiation are absent.**

Due to the extremely narrow wavelength window of the LED-UV lamp (peak at 395 nm), conventional UV inks cannot be dried using the new lamp. This makes the new ink systems developed by Siegwerk indispensable for the LED-UV technology.

As with every innovation, the lamps and inks are currently still somewhat more expensive than those for conventional UV drying. The additional cost amounts to about 15% to 20% for the inks. However, the much lower energy consumption (savings of 60% to 80%), the elimination of air exhaustion systems and the greater work safety are powerful arguments that are all clearly in favour of the new LED-UV technology.

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