



# werbetechnik

Signmaking · Large Format Printing · Lichtwerbung

**DAS FACHMAGAZIN**

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**Reprint  
Signtrade**





The UV-LEDs can be regulated between 2 and 7 W/cm<sup>2</sup>. This allows the curing degree of the ink to be determined, which can be decisive for the further processing of the printed media.

## A plea for the use of UV LEDs

In Germany, the Trier-based company M&C distributes the printers from Signtrade.

Signtrade presents the new Signracer LED printer generation: with Gen5 print heads from Ricoh. The good adhesion of the inks on glass – without primer – is a highlight.

If Ralf Timm hears people saying that printers with UV LEDs are good, but quite simply still far too expensive, he reflects for a moment. “Who am I talking to? Someone who knows what it means to invest more money at the beginning and let it pay off within a few years? Or someone who only looks at the initial cost?” Depending on the – guessed – answer, the managing director of Signtrade decides whether to invest time and know-how in the upcoming talks or not. Because that is the initial capital that he invests in his business.

### Initial investment against electricity bill

There’s absolutely no question about it, an initial comparison between a classic UV lamp, in other words a mer-

cury lamp, and a UV-LED unit will make you swallow for a moment. “At a rough estimate, you can say that a gas lamp costs about 2,000 euros,” the Switzerland-based entrepreneur explains. “The complete LED unit – which comprises two UV lamps – will cost more like 12,000 euros.” But one UV-LED unit lasts for about 20,000 hours whereas a gas lamp will only last about 1,000 hours, which means the initial investment quickly pays off in terms of cost. Not to mention the higher printing quality, which Ralf Timm leaves no doubt about. Classic lamps always face the problem that they provide good curing properties in the centre, but the quality declines towards the edges. This results in the inks curing unevenly. UV-LEDs, on the other hand, provide ho-



mogeneous curing conditions. In addition, it is undisputed that LEDs only produce a negligible amount of heat compared with classic lamps – which means significantly more media can be printed. It is true that not every medium is sensitive to heat, and that mercury lamps do not always reach the dangerous peak values of 90 degrees Celsius. However, there are enough application requirements which restrict printing service providers who have printers

with classic UV lamps. A further advantage of LEDs: No ozone is produced. The UV-LEDs used by Signtrade provide wavelengths of around 395 nanometers.

### Nanometers and Watts make the difference

Due to the differences in wavelengths, the ink formulation – particularly with regards to the photo initiators – for classic UV lamps are comple-

tely different to those for UV-LEDs.

And in addition to the wavelength, the power consumption of the LEDs determines the components used in the ink and how it cures. There are differences between the LED units on the market which lead to several inks having different formulations for LED curing. Some LEDs have a power consumption of 3.5 Watts per square centimetre, for example. The LEDs from Signtrade can provide an adjustable performance of up to 7 Watts per square centimetre, and their ink is tailor-made to this performance. Adjustable means that the UV-LEDs can be regulated between 2 and 7 Watts per square centimetre. As a result the curing degree of the ink can be determined, which can be crucial for the further processing of the printed media. The system does not use more powerful LEDs because no water cooling is necessary up to 7 Watts.

As far as power consumption is concerned, there is a huge difference to classic UV lamps: the LEDs from Signtrade are 9 centimetres long and thus have a power consumption of 9 times a maximum of 7 equals 63 Watts. Since there is an LED unit on the left and right of the print head, the system has a total power consumption of 126 Watts which impact almost completely on the inks. In the case of gas lamps, Signtrade assumes a value of 100 Watts per centimetre, which makes 1400 Watts for lamps 14 centimetres long. There are two

lamps in the system in this case, too, so that the assumed values lead to a total of 2800 Watts. In addition, the problem that these UV lamps have is that only around one tenth of the energy – around 140 Watts in this case – have a curing effect on the inks. The other 90 percent are lost in the form of heat or energy. Referring to his printers, Ralf Timm adds, “The power level of the LEDs can be regulated between 30 and 100 percent in order to slow the curing speed, depending on the ink application required.” Another difference between the systems is the way the ink is cured. Whereas gas lamps tend to cure the inks well on the surface, leaving a layer in the centre that is not quite cured properly, the base is cured very well with LEDs. Here, it is the surface that remains somewhat softer. “However, ink carries on curing in daylight. But it’s easier for the surface to post-cure than the ink layer in the centre.”

### Flatbed printers and flexible inks

The Signracer flatbed printers use Nutec inks which have been tailor-made for the system: Amethyst A50-UV-MPX-TR or MP. “We are particularly proud of the MPX, the flexible ink,” Ralf Timm emphasises. Just a moment. Flexible ink and a flatbed printer? “Yes, I know this sounds like a contradiction. But there is a very simple principle behind it: the softer an ink is, the better it can cope with the different

### Technical features

Name	Signracer 1610 LED/2512 LED/3116 LED
Media Width	max. 1.640/2.540/3.140 mm
Printbed	1.600 x 1.000/2.500 x 1.250/ 3.100 x 1.600 mm
Media Thickness	max. 100 mm (rigid and flexible material possible)
Max. Production Speed	e. g. 8 pass 12 m <sup>2</sup> /h (single head) to 8 pass 24 m <sup>2</sup> /h (double head)
Resolution	max. 1.440 x 1.200 dpi
Heads	1610 LED: 2 to 4; 2512 LED und 3116 LED: 2 to 4, max. 8
Ink	Amethyst A50-UV-MPX-TR; 1610 LED: CMYK + opt. Lc, Lm, White; 2512 LED/3116 LED: CMYK + opt. Lc, Lm, White, Clear
Dot size	7 - 21 pl, 1.280 nozzles per head (2512 LED/3116 LED opt. double head array)
Curing	2 UV-LEDs; for immediate and for post-curing
Flatbed specs	Honeycomb vacuum table with registration pins (1610 LED: 2 zones; 2512 LED/3116 LED: 4 zones)

further processing methods that can be used for boards. And I don’t only refer to thermoforming, which is the obvious one, but cutting or milling with CNC machines as well. Hard inks tend to chip off at the machined areas.” The development of a flexible ink with good adhesion properties is a balancing act. This is why the company is proud of the fact that this Nutec ink sticks very well to glass or plexiglass even without needing a primer. “The combination of all the printer characteristics is what makes our product unique. Inks stick better with

primer, of course. But we are convinced that no other ink or no other printer without primer achieves the adhesion levels we do,” the mechanical engineer claims. And that is even the case with white ink. The special chemical formulation of white ink, particularly in comparison with CMYK, requires the white ink to circulate. This is the only way to keep the titanium oxide particles, the pigments, dissolved homogeneously in the fluid, allowing them to flow freely through the hoses to the print head. In contrast to many other systems, Signtrade ma-



There are three models available: the Signracer 1610 LED, 2512 LED and 3116 LED.

kes the ink circulate along its complete path to the sub-tank and ink reservoir.

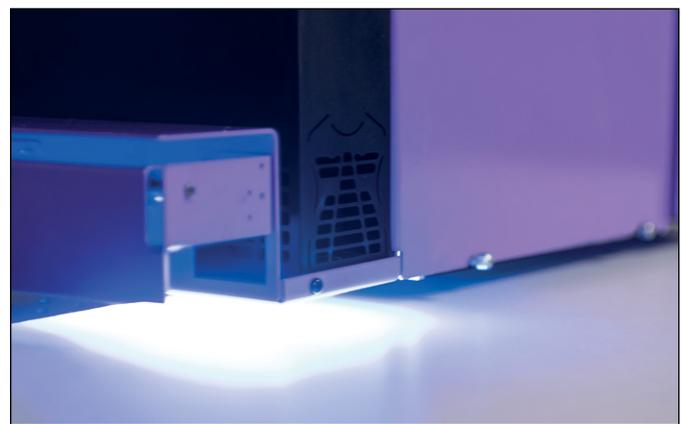
Due to the new Gen5 Ricoh print heads, the LED Signracers now print significantly faster than on the machines presented at the Fespa 2013 in London. The Gen4 version had one print head per colour, the new print heads combine two colours in one head. The result: "If we are talking about a high-quality application such as the printing of plexiglass for backlighting, we are talking about 12 square metres per hour. Before we managed around 7."

According to Ralf Timm, Signtrade has entered the UV market because there is no way around UV systems in the future. The development of good printers is not easy, however. "The risk of banding is much higher than with sol-

vent-based printers. This is due to the fact that the ink drops are fixed immediately by the UV light. If the drops strike at different angles, you will see this. The effect is comparable with a lawn mowing pattern that has "stripes" depending on the mowing direction. Drops of solvent ink can still change slightly even when they are already on the medium. This is why the image is more homogeneous.

### Just a conversion?

With the LED series of the Signracer Signtrade is not launching a completely new printer development in the market. It is based on a device that has been proven and works very well, according to Ralf Timm. He doesn't like the new printer being called a conversion, because there is a lot



Two UV-LED units are on the left and right next to the printer carriage.

of the company's own know-how in it. In addition to several optimisations, European LED technology is used. The LED lamps, the control unit of the LED between 2 and 7 Watts and the power supply unit have been developed by Signtrade. The quality of the LEDs itself, with their particularly homogeneous light, speaks for the specialist know-how involved; as does the CE mark applied for by the Swiss company.

This is not only a plea for the company itself, but for Europe – a good sign by the Swiss. ■

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