



TECHNOLOGY REVIEW

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Gerber's Solara ion™ Cationic UV Printer

The Solara ion™ Cationic UV Printer

Gerber's Cold Fire Cure Solution — a flatbed/roll-to-roll printer that applies cationic inks

Key Information

Gerber Scientific Products

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Company Profile: Gerber Scientific Products, founded in January 1980 as a subsidiary of Gerber Scientific Inc., is a developer and manufacturer of computerized signmaking and specialty-graphics systems, software, materials and accessories. Proven start-to-finish digital design, printing and production products are carefully integrated to provide signshops and graphics professionals with comprehensive engineered solutions for durable vinyl-cutting, digital-color-printing and dimensional-signage needs. Gerber also develops and supplies quality state-of-the-art after-market materials to maximize equipment performance and output.

At a Glance: The Solara ion™ UV printer (a UV-cure hybrid) and GerberCAT® UV-cure inks form Gerber's Matched technology Cold Fire Cure™ system. The Solara ion's inks contain cationic polymers, which require less UV light and cure differently than common, free-radical UV-cure inks. These inks, constructed in a broad gamut by Gerber, form a durable, flexible and long-life layer on appropriate media. The printer's unique gantry design allows roll media to remain staged while the system is imaging media on the true, flatbed surface. It will handle media up to 1 in. thick.

If you go to sign tradeshows or review new-product trends in the press, then you've seen or read about the new Gerber Solara ion UV printer. This, however, is its first critical look, and all we can say is "Wow!"

UV-cure printers are fairly common — Gerber sells its SOLARA UV2 — and the technology itself is no longer rocket science. So, what's so special about the ion?

It's radically different because its designation, Cold Fire Cure system, UV-based, cationic inks — GerberCAT UV inks — are key to Gerber's ion system. Incorporated into the Solara ion printer, these two technologies help produce an extremely versatile and fast print solution that will image almost anything with vibrant colors. Gerber also said the ink has an excellent outdoor life of up to three years.



Curiosity piqued? Keep reading and discover the Cold Fire Cure solution.

One Solara, two Solara

As we mentioned earlier, Gerber already manufactures and sells the Solara UV2. Therefore, you may think the Solara ion is an upgrade. True, both are hybrid machines that can print on both flexible and rigid materials, but the similarity

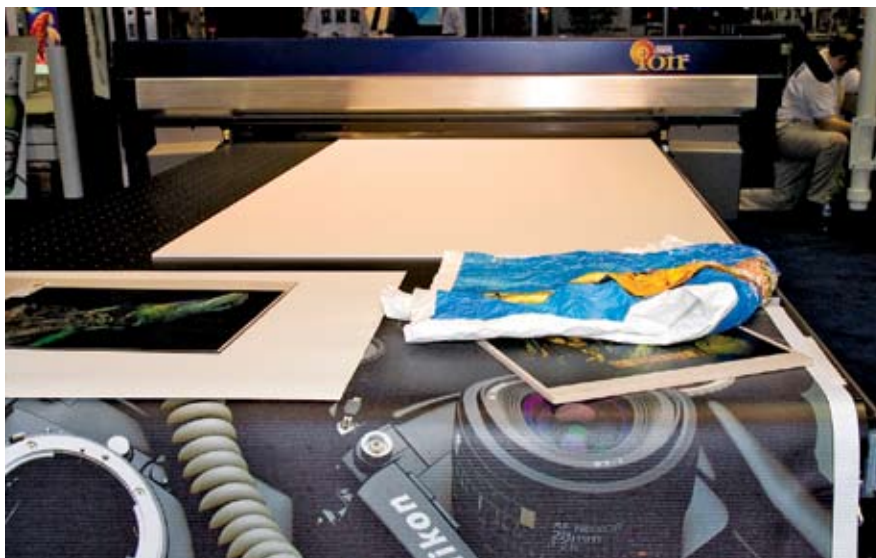


Fig. 1: The Solara ion is totally different from the Solara UV2. It has a large, fixed table and a moving gantry, and prints with Gerber's versatile, cationic-based, GerberCAT UV inks.

ends there. The UV2 comprises a fixed printing mechanism that employs a removable table to handle rigid media.

The ion is a true, gantry-type, flatbed printer (Fig. 1). The UV2 prints six colors: CMYK, violet and green (the latter two extend the color gamut). The ion is a traditional, CMYK process printer (Fig. 2). Although both printers use UV-cure



Fig. 2: The Solara ion is a four-color printer. The ink comes in easily handled bags that are loaded in a drawer on the printer's side.

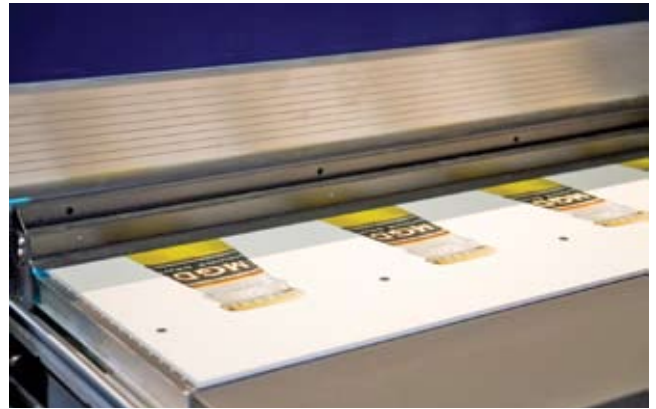


Fig. 3: On a rigid surface, the table's vacuum system holds the media firmly in place. Also, notice that registration circles are being printed, in preparation for a contour-cutting operation.

inks tempered by light sources, their chemistry and cure methods are radically different. So, Gerber's Solara ion is a new printer, not a repackaged UV2.

Specifications

The ion, a true flatbed, requires some shop space at 104 in. wide x 54 in. high x 148 in. deep. Gerber says the crates pass through a 36-in.-wide door. The ion weighs approximately 1,000 lbs. It's solidly built and looks like it could take a beating.

You'll need a single-phase 230VAC (+ or - 10%) circuit that draws 15A continuous. The environment needs to maintain a 65° to 75° F temperature range. The operating humidity range is between 40 and 60% non-condensing.

The table lacks sides that extend above the surface, which probably eases media loading. While printing, a vacuum-table system ensures the media sticks (like glue). It also simplifies media registration. The actual printing mechanism – the inkjet heads and UV lamps – reside in the movable gantry. This feature contributes to accurate printing on rigid media – a flawed roller system or uneven surface (Fig. 3) can't skew the media.

You can load up to 100 lbs. of roll media at all times, and it's easy to switch from rigid to flexible media. The media roll-to-roll and take-up system (Fig. 4) resides at the table's end. When toggled to the flexible-media print mode, the printer's gantry automatically moves to that end. Once the gantry's parked, the ion functions like a fixed-mechanism printer.

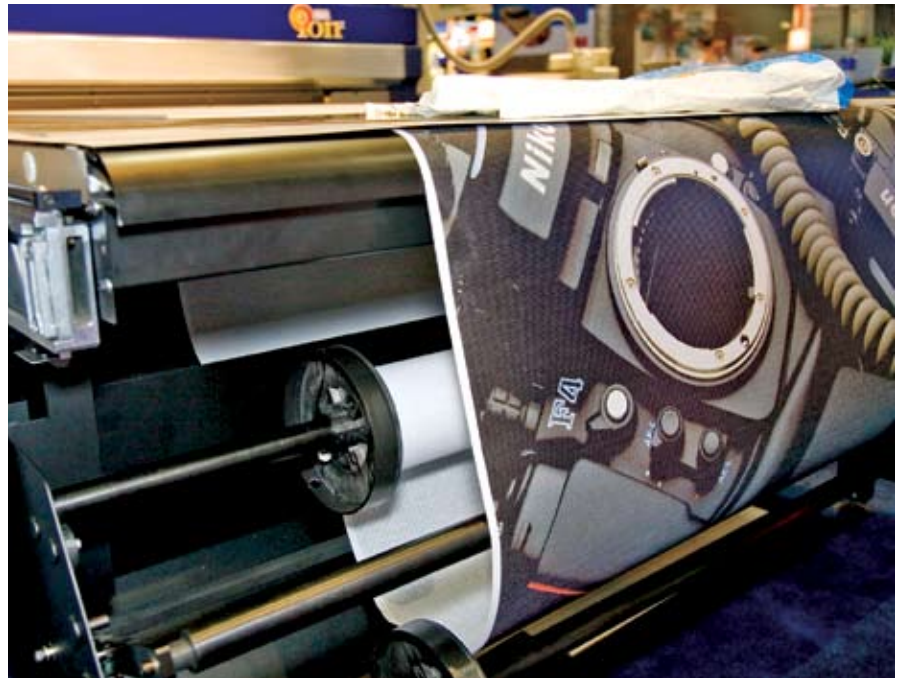


Fig. 4: Printing on roll media is a snap. Everything takes place at the table's end. Notice that the media-path, take-up system is short and simple.

The Solara ion prints on rigid media up to 1 in. thick. Adjusting the printer to handle various media thickness is effortless – a gantry-mounted sensor gauges the introduced board and automatically adjusts the printhead height. The table will handle rigid media up to 64 in. wide, full bleed, and can print on 5 x 10-ft. media (part of the table is dedicated to the flexible-media printing station). The minimum, rigid print size is 12 x 12 in.

It's all about the ink

By now, you still may wonder what makes the ion a special, hybrid, UV-cure printer. The answer is UV-cure printing's weak point – mainly, that some UV-cure inks break – okay,

flake – when bent. Since the advent of large-format, UV-cure print systems, ink chemists have introduced many new formulations to address flexibility, but some swing the opposite direction and, unfortunately, don't adhere well to rigid surfaces. That's why some UV printers are designed for rigid media, and others are for flexible (roll) media.

The flaking problem relates to the UV-ink polymers. Unlike most ink, UV-cure doesn't dry, it cures – the ink's pigment-holding polymers bind and harden. Most UV-cure printer inks use free-radical polymers with UV lamps to cure (dry) the ink. To cure, each ink polymer must be exposed to UV light. Once the UV

TECHNOLOGY REVIEW

light source is removed, the curing stops, and any unaffected polymers remain unstable.

Incomplete curing can cause problems – one is the ink's ability to bond to the media. Engineers can extend the exposure time, but the added heat may damage the media. Additionally, a quick blast can cause the ink to become brittle.

Gerber has taken a radically different approach. Its chemists and engineers have developed ink that uses cationic (get it – cat-ION-ic) polymers. In curing, cationic polymers react like a row of dominos. Meaning, you don't need to cure each polymer; once one is cured, the rest follow. Thus, once a cationic-ink application is cured, it's fully stable.

Gerber calls this technology "Cold Fire Cure" because it uses a fraction of the heat (almost at room temperature) and also energy consumed by a comparable UV printer to cure the image. Once curing starts, it's rapidly completed. However, the lamp can radiate longer because it's a low-temperature system. Ion polymers receive a one-second exposure as they pass under the gantry. The result is fully cured ink with aggressive adhesive characteristics and flexibility (Fig. 5).

A cationic-based printer offers



Fig. 5: Most UV-cure printers are designed to print on either rigid or flexible media. Gerber's Solara Ion, cationic-ink printer can do both. Does this sample look flexible enough for you?

numerous side benefits, too. For example, the engineers designed a larger lamp – the ion's lamp extends across the full gantry width – which ensures uniform curing over the entire image. Such a lamp has a longer lifespan, requires less maintenance and also requires significantly less energy. Further, it allows you to print on delicate, heat-sensitive media.

We're not scientists, but Gerber clearly has a few in its pocket, because it overcame numerous hurdles to bring the Ion printer and GerberCAT UV inks to market. If it were easy, everyone would be doing it.

Speed and print quality

Okay, the ion is unique; let's see what it can do. Here's another ion distinction. Placed in its ultra-quality

mode (eight-pass, 720 dpi, unidirectional), the ion produces 40 sq. ft. per hr. In higher-quality mode, the speed jumps to 318 sq. ft. per hr. To make it fly, select the Performance mode and increase the speed to 639 sq. ft. per hr. The speed is the same for printing on rigid or flexible media. That's pretty impressive for a hybrid, UV-cure printer with a true flatbed. The higher-quality modes are an apparent 720 dpi (360 dpi for standard modes).

Gerber formulated vibrant, extended-color-gamut GerberCAT UV inks for this printer. The samples we examined were crisp and saturated (Fig. 6). Had we not known, we couldn't tell if the prints came from a six- or eight-color machine. We crumpled up the flexible-print samples and found no indication of cracking or flaking. Gerber said the expected performance life of the ink, outdoors, is up to three years.

Conclusion

The Gerber Solara ion UV may look like a typical flatbed UV printer, but there's much more under the hood. The Cold Fire Cure factor is the key. Together, this system extends the printer's flexibility. It's a true, flatbed and roll-to-roll printer that can produce rigid signage, POP displays, banners and even vehicle wraps.

The price is roughly \$89,000, but it's a real bargain if you need one, "do-all" machine. The price doesn't include software, but Onyx Graphics (Salt Lake City) supports the printer at the time of this writing.



Fig. 6: Can a four-color, UV-cure printer produce high-quality, saturated images? This sample looked very good to us.