



TECHNOLOGY REVIEW

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The Graphtec JS501-18ES

Graphtec's JS501-18ES

Twelve heads are better than one.

If you're contemplating expanding your business in what many describe as a shaky economy, you might consider adding vehicle wraps or full-color, outdoor banners, both of which would require a solvent-based, wide-format printer.

However, that type of printer requires venting; eco-solvents give you outdoor durability without creating a hazard. Also, you need fast throughput so you can offer quick turnaround.

If the \$30,000 pricetag for an eco-solvent, wide-format printer that offers a quick turnaround isn't in your budget, do some spring cleaning, flip the sofa cushions and find \$20,000 in small change.

Finding that much money hidden in your sofa might be farfetched, but Graphtec's JS501-18ES is the real thing – a fast, wide-format, eco-solvent printer. This SignJet Pro model can add much capability to your shop for roughly \$21,000.

We test-ran the inkjet printer at the 2007 SGIA show, and we were very impressed. Stick with us and learn more.

Specifications

The first printer in the latest Graphtec JS500 printer series, the 72-in. JS501 weighs 507 lbs., including the stand. Because it measures 121 x 37.5 x 43.8 in., you'll need more than 12 ft. of floor



space to accommodate this beast.

This eco-solvent printer needs a 200- to 240VAC circuit at 50/60 Hz; power consumption is 2.7kW. Also, make sure you provide temperature controls in the printer area to maintain a range between 68° and 82° F. The humidity should be between 40 and 70%.

The printing system uses 12 Xaar piezo-electric printheads, with 35-pl ink drops. Well known in the industry, Xaar manufactures heads for many printer manufacturers. With 12 heads, you might think this is a 12- or 6-color printer. Actually, the JS501 is a four-color printer; three heads per color account for the 12 total, which makes this a CMYK x 3 model.

The printer ink-cartridge system has a unique appearance. The back edge is rounded, instead of square (Fig. 1), perhaps an aesthetic touch. The large cartridges hold 500ml of ink, which enable you to crank out many prints before changing a cartridge.

Four buttons under the printer's fairly modest, four-line, LCD display (Fig. 2) bring the printer on or offline, select functions, confirm selections or escape from

Key Information

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Company Profile: Graphtec Corp. was established as Watanabe Instruments in Tokyo in 1949. The company introduced its first plotter in 1961. With the growth of computing in the 1960s, Graphtec branched out into computer-aided design (CAD) and now offers a wide range of computer input devices, such as digitizers and scanners, and such output devices as pen plotters, direct-imaging plotters, cutting plotters for the sign and apparel industries, thermal printers, thermal-transfer printers and inkjet printers.

Contact: Glen Liebner, product planning manager

At a Glance: The Graphtec JS501-18E wide-format, mild-solvent printer utilizes 12 Xaar printheads, with three heads per color. The three-zone, media-heating system is designed for better ink adhesion. The SignJet Pro 72-in. model is compatible with most solvent-inkjet sheet and roll media.

a menu. To the right of the LCD, a round, positioning control scrolls through menus and positions the cursor in the display. It also helps position media during loading or moves the printheads to the cleaning station or the standby position.

The printer's one connection, a USB 2.0 port, provides a high-speed interface that will connect to virtually any system built in the last few years. The printer lacks internal Ethernet connections, but you can easily network the system where the JS501 is connected.



Fig. 1: The ink cartridges load into the back of the printer. The curved back edges offer a unique look. The 500ml capacity means the operator shouldn't have to worry about frequent ink changes.



Fig. 2: All the printer's functions, including heater- and dryer-temperature settings, are handled through the LCD control panel. The well-arranged buttons facilitate menu navigation and parameter setting.

Image quality and speed

The heads' native resolution is 360 dpi, but the printer can attain printing resolutions of 360 x 360, 360 x 720, 720 x 720, 720 x 1,080 and 720 x 1,400 dpi. Why the large selection? To match the job requirement, whether it's speed or print quality. Use the 360 x 360 mode for banners and signs that comprise text and simple graphics. The 720 x 1,400 mode accommodates images for POP signs. We found these high-quality images to be bright and dense (**Fig. 3**).

The other resolutions provide a wide choice of print quality with speed trade-offs. For example, Graphtec specifies 360 x 720 dpi as the standard printing mode. At this setting, the printer will produce a shade less than 194 sq. ft./hr. Compare this to the high-quality, 720 x 720-dpi mode, which can produce images at 97 sq. ft./hr. However, if you have a big banner job with simple graphics, the 360 x 360 dpi mode will scream at 387 sq. ft./hr.

Media handling

The JS501's media take-up system is included with the printer. The printer can handle media widths from 8.3 to 73.2 in. The maximum printable area is 70.86 in. The maximum roll weight is 88 lbs. The head height can be adjusted to two positions, 2.2mm or 2.7mm.

The media-handling system is robust, but not the simplest we've seen (**Fig. 4**). A strong bar with collars holds the roll. The bar



Fig. 3: These printed images' excellent saturation attests to the output quality. Notice the good pop to the reds.

inserts into a set of inverted arches, and an enclosing piece, screwed in place, prevents the bar from wobbling. The media, fed from the back of the printer, winds through a slack bar and is inserted through the front of the printer. Once the locking lever is set, the media guide rollers can be adjusted to ensure even pressure on the media.

An empty cardboard tube can hold printed images if the take-up system is used. Simply pull out more media, thread it behind the dryer, and tape it to the take-up core. A media sensor ensures

proper slack is maintained in the media path during printing.

Keeping things hot

Eco-solvent/solvent inks adhere to most media without special coatings; they're also UV and water safe. This makes them ideal for vehicle wraps and graphics.

In this printing technology, the media must be "conditioned" or softened to become ink-receptive. Also, the ink must flow through the nozzles *and* "stick" to the media; a less aggressive or milder solvent helps the ink adhere to the

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substrate. Most printers, including the JS501, use heaters to achieve the correct results.

The JS501 has an ink heater, a platen heater and a dryer. Temperatures are determined by the control panel. The position and temperature level of the dryer, which is built in to the front of the printer, can be adjusted from the front panel (Fig. 5). The unique printhead heater allows a constant ink flow in a larger range of environmental conditions.

Maintenance

Eco-solvent and solvent printer inks can clog inkjet nozzles and reduce image quality. Contrast them with aqueous-based inks, which are fairly forgiving and can remain on the nozzles for a few days without cleaning.

Graphtec engineered functions and designs to make maintenance easier and less painful. For example, a head roller wipes the jet plates during the printing process.

Two cleaning modes are built



Fig. 4: Though the images aren't taped to the take-up roll, you can see the path the media takes. The large, core ends can easily handle heavy media.

into the printer. The standard clean, which wipes up detected misfires, is initiated from the control panel – operator intervention isn't required if the problem is resolved. For stubborn clogs that can't be resolved with a standard clean, the heavy-cleaning cycle uses significant ink.

Software

The printer's low price doesn't preclude software – two applications are included. The Graphtec Printer Utility, which assists print-

head adjustments and media-feed compensation, comes in handy when you use new media.

The mini JS RIP will allow you to print immediately, but don't expect a full-featured application. Nesting or color-profile creation capabilities aren't included. The JS RIP will let you process TIFF, JPEG and BMP files to the printer, and you can set the image size, print quality and speed. The software works with Windows 2000, XP and Vista.

If you need, or own, a high-end RIP, you're in luck. Most big players, such as Onyx, support the JS501. The money you save on the printer can easily be applied to purchasing a new RIP.

Conclusion

The JS501 is a great bargain. Though it's not laden with extra features, it shines where it really counts. It uses industry-standard Xaar heads, handles 72-in. media, includes a take-up system and dryer, and cranks out prints at very competitive speeds – competitive with much more costly printers.

We like the use of 500ml cartridges, compared to 220s. Graphtec estimates 12- to 18-cents per-sq.-ft. ink costs, depending on density. The printer comes with a one-year warranty and pretty much everything you need to get started. With a list price under \$21,000, this is a great way to get into eco-solvent, wide-format printing. ■



Fig. 5: From this view, you can see the dryer unit, which comes standard with the printer and spans the maximum width the printer can produce.