Furthering possibilities in print

Brian Sims takes a look under the hood of the GCC JF-240UV flatbed printer, of which Grafityp UK is the supplier, and finds out how it is pushing the boundaries of printing technology

I often get quite upset as a 'died in the wool' printing press engineer when I hear in the media about the newest developments in 3D printing and what you can now produce. Rolls-Royce's recent announcement on the production of a 1.5m diameter bearing for a Trent aero engine was led by its Additive Manufacturing (AM) division, which seems to me to be a more appropriate name for the process. The part was 'printed' with Titanium; to me this is stretching the printing term just a little too far. Building your own devices available from a newsagent can allow you to produce model motor engines with fully rotational parts at home.

I am not dismissing the technology at all; the cornucopia of applications that are only just starting to find their way into mainstream use is mind-boggling. To me, printing is the application of ink onto a flat substrate, but when I give that more thought, even that line is blurring. When I started in this industry I recall being told that "one day we could routinely print on plastic film"; that day obviously has come and gone long ago.

Devices such as the one we have chosen to lift the hood on this month is a great testament to just how far we have come and the wide range of substrates that even a traditionalist like me can comfortably still call printing.

Total flexibility

You can truly say the JF-240UV supplied by Grafityp UK can print on almost anything you wish it to. When they say anything, they mean it—wood, glass, acrylic, PET, heat sensitive films, and leather to name but a few. If it can be contained within the 650 x 550mm table, is less than 300mm in height, and less than 15kg in weight, then Grafityp say they can print on it.

1440 x 1440 dpi Printing resolution

So, what sits behind this new and innovative product? At the heart of the machine is a combination of a Piezo electric print head deploying four process colours coupled to a dual LED UV drying lamp assembly. Add to this up to four white combinations or varnish supplied as an option and you have a very flexible flatbed printer.

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The JF-240UV can produce ADA signs with one simple printing process

The GCC JF-240UV flatbed printer is supplied by Grafityp UK

The print head dryer combination can produce an extremely fine dot matrix to a resolution of up to 1,440 x 1,440dpi and a type face output as low as 2pt. This means that whilst the JF-240UV can print on a vast array of substrates, this extremely versatile printer can maintain high quality output throughout the range. An advanced system called Smart Mesh is a unique software system deploying complex algorithms to ensure there is smooth tonal graduation throughout the colour gamut. The ink itself is supplied on a continuous basis via one litre bulk reservoirs, which means production can be completed whilst the machine is replenished with ink and varnish.

When you choose to print on such as large number of substrates, the more mainstream ink combinations are not always the best combinations for your desired result, so white ink is often deployed. With the JF-240UV you can select up to four different white ink solutions to ensure your final product is as vibrant as possible. The printer can provide white as a base, as a spot colour, as an overcoat on colour, and as a white laminate

between colours.

There is great flexibility with the varnish option as well. You can choose up to four different options including gloss, semi-gloss, water mark, or colour varnish and matt coating. These three combinations of colour, white ink, and varnish mean that even the most imaginative client should be satisfied with their product.

So much for the inks and print head, but what makes this printer so versatile is the management of the substrates themselves. The media flatbed itself is the key to this machine and it has a 650

1.91 to 5.78 sq m/h Printing speed

x 550mm vacuum plate that can secure objects of up to 15kg quite securely; necessary if the 1,440dpi resolution is to mean anything at all. This bed has a motorized Z axis control meaning even the heaviest loads can be easily manoeuvred into position with the touch of a button.

To make sure the image itself is placed correctly on the substrate, the JF-240UV uses a patented device called Smart Position which fits the graphic image precisely inside the designated printing area fixed from two datums selected by the operator.

Additionally, AMC or Auto Media Calibration is the device that ensures the print heads are always exactly in the correct position to ensure the sharp printed image is maintained with regards to the contour of the substrate. A small pin deploys which can then calibrate the print head to ensure the

The machine can produce print textured patterns on various materials to create unique designs

The GCC JF-240UV can print onto cylindrical items such as bottles, mugs, and even golf balls

ink droplets fall in exactly the right position.

Between these two devices, whether you are printing on a mobile phone case or golf ball, the JF-240UV will produce an image any client would approve of.

If you intend to print on such a wide range of shapes and sizes, the last thing that you need would be for the print head to be damaged by an accidental collision. As you would expect, the JF-240UV has a smart device to ensure this will not happen. An optical anti-crash module uses sensors that will

609.6 x 508 mm Printing area

detect exactly where the substrate or object is and protect the printing head and drying unit from unnecessary damage.

> "Smart Mesh is a unique software system deploying complex algorithms to ensure there is smooth tonal graduation throughout the colour gamut"

No obstacles

Clearly the standard JF-240UV has the ability to print on a vast number of different objects and materials but our materials are not always in the form we find the easiest to print on. However, this places no obstacle in the way should you consider the JF-240UV; there are a number of options that can cover most eventualities.

First off, round objects. Should you consider that bottles, mugs, or glasses need an image printed on them, there is an option extra that will provide a solution. A cleverly designed counter rotating wheel assembly will allow the image to be placed on round objects with ease.

Reel-based substrates can also be accommodated. The JF-250UV can come with a reel-to-reel device, meaning even some of the longest substrates can be printed on, providing they can pass under the print head and drying assembly. Finally, the JF-240UV comes with a pass-through working area that will allow long materials up to 20mm thick to be printed.

The user interface is via an intuitive touchscreen panel, making this machine straightforward and easy to use.

So, if you have a client base that can conjure up more challenges than you currently have solutions for, then the JF-240UV from Grafityp UK may just provide some of the answers.

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