DIRECT PRINT vs. APPLIED GRAPHICS

We're often asked, "which is better - printing direct to the substrate, or printing on vinyl then applying to the substrate?". There is no simple answer because the reality is that each method has it's pros and cons. Here at The Big Picture, we have the luxury of offering both processes, with both UV flatbeds and multiple roll printers in each branch. This allows us to offer a balanced view. Here's how it looks...

DIRECT PRINT

We use UV Flatbed printers to print directly to rigid substrates. The sheets are placed on a vacuum table to hold them flat, then the printer passes back and forwards over the substrate to lay down the ink, while UV lamps "cure" the ink directly onto the surface of the media.

- ***Substrate Types -*** We can print directly to almost any surface, so long as it is flat and less than 48mm thick. Common substrates include cardboards (eg D-board, Honeycomb board, corrugated), Corflute, Palight, ACM, Plywood, MDF, Acrylic, Polypropylene and more.
- ***Print Speed -*** Full 1200 x 2400mm sheet every 5-10mins at production speeds (though substantially slower for special items or white ink).
- ***Processing -*** Sheets are loaded onto the printer then wiped down (if necessary) before printing. The operator can do other things in the time it takes to print, but needs to keep loading and unloading sheets one at a time until the job is completed.
- ***Economy -*** Cheaper in general due to no added vinyl layer. Can be a lot of setup required for irregular items, however, due to prepping and masking.
- ***Print Quality -*** Varies a lot depending on the substrate. The ink droplets are larger so the max resolution is not as high, but on high-end substrates a very good 7/10 quality can be achieved.

APPLIED GRAPHICS

We print onto rolls of adhesive vinyl, then apply the printed vinyl onto the substrate using a roller application table. We can print the vinyl with Epson or Roland eco-solvent or HP Latex ink, then add a laminate (or not) to suit the job requirements.

- ***Substrate Types -*** We print onto a wide range of vinyls that are best suited to the substrate and the longevity / quality requirements. Can be applied to almost any substrate without size limitations.
- ***Print Speed -*** Full 1200 x 2400mm sheet every 5-10mins at production speeds (though substantially slower for special items or white ink).
- ***Processing -*** Rolls of vinyl are loaded onto the printer, then the job is printed. Full 50m rolls can be left printing unattended, but the operator will then need to trim the prints down (possibly laminate) then apply to the substrate.
- ***Economy -*** More costly in general due to the added vinyl layer. This can be negligible for smaller one-off jobs however as the vinyl print can often be nested alongside another print on the roll. The added time for trimming (possibly laminating) and applying the vinyl to the substrate can add a lot to the cost.
- ***Print Quality -*** Consistently high quality as our vinyl is specifically designed to be printed. High resolution, wide colour gamut, 9/10 print quality regardless of the substrate it's mounted to.

THE BIG PICTURE

DIRECT PRINT vs. APPLIED GRAPHICS

DIRECT PRINT

- ***Finish -*** UV-cured ink sits on the surface of the media, so it has a slightly raised appearance. The ink is crystallised and hardened by the UV lamps and has quite a matte finish (though this, again, varies depending on the substrate). The substrate itself is visible in any non-printed areas, which could be a desirable effect, for example with prints on plywood.
- ***Durability -*** Hard and scratch-resistant prints hot off the press. Direct prints can also be laminated if needed, but this is rarely required or recommended when we balance the economics and longevity against those of applied vinyl prints.
- ***Longevity -*** The amount of time before colour shift or degradation starts to become an issue is highly dependant on the substrate itself as well as the display environment. As an example however - corflute sign outdoors approx 2yrs. Palight print *indoors* over 5yrs. Not recommended for long term outdoor signage.
- ***Environmental -*** There is less plastic used due to having no vinyl layer. *However*... it's not always that simple. A mis-print here means the substrate itself becomes scrap, rather than just the vinyl. It is also more difficult to utilise off-cuts or re-use old panels etc.

APPLIED GRAPHICS

- ***Finish -*** Eco-solvent and Latex inks sit much flatter on the surface of the media and are not raised. They take on the finish of the vinyl, so glossy finish on a gloss vinyl or matte finish on a matte vinyl. The vinyl covers any unprinted parts of the substrate, which can be a positive in hiding the corrugations of corflute for example, but a negative when it hides the finish of a nice substrate.
- ***Durability -*** Generally softer and not as scratch-proof straight off the printer. Can be laminated however for greatly increased durability. Note - we would rarely add a laminate when mounting vinyl onto cheaper substrates like corflute, and likewise we would rarely go without a laminate for high-end substrates.
- ***Longevity -*** Unlaminated short term vinyl - approx 2yrs outdoors. So for the corflute sign example there is no difference here. For long-term signage however we print on higher grade vinyls and add a protective laminate, giving longevity of 5-7 years *outdoors*. With cast vinyl and high grade substrates the longevity is even greater.
- ***Environmental -*** There is more plastic used due to the added vinyl layer, and more again if it's laminated. *But again*... it's not always that simple. We can make better use of off-cuts and re-use old panels by removing and applying new vinyl. As the longevity is generally better too, the signs will not need to be replaced as often.

SO WHAT'S THE VERDICT?

- ***Direct Print -*** The clear winner for short to medium term, or medium to high volume production. Particularly suited to promotional and event printing. Use with wood or paper-based substrates for a completely plastic-free production process. Create unique effects even for one-off pieces, contrasting printed and unprinted areas on a wide range of substrates.

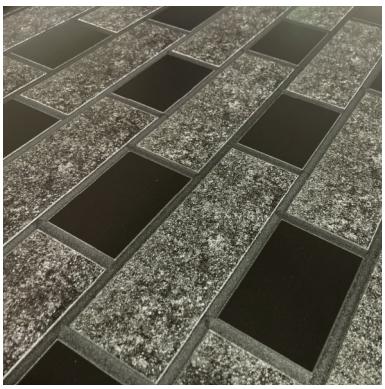
- ***Applied Graphics -*** Extremely versatile, the price and longevity are highly dependent on type of vinyl used. When using high quality vinyls, this provides the best option for permanent outdoor signage and the smoothest image quality. Somewhat counterintuitively, it also often proves the more economical method for short runs. Massive range of vinyl available to produce amazing effects and adhere to a variety of substrates.

Note - the time and cost savings from printing direct are most apparent on larger jobs and cheaper substrates as the vinyl makes up a larger proportion of the overall cost. This factor becomes almost negligible for high-end substrates or one-offs. The production team may therefore sometimes opt to produce items using applied graphics instead of printing direct, but not if direct print has been specifically requested.

THE BIG PICTURE

DIRECT PRINT vs. APPLIED GRAPHICS

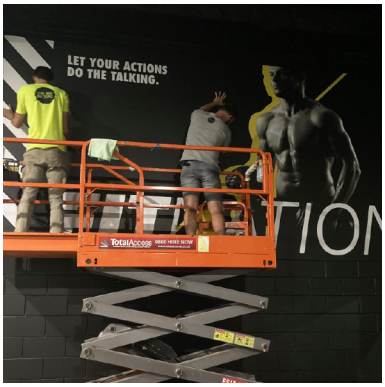
A FEW EXAMPLES



Printed direct to Multiboard.
The boards were router cut part way through to create a realistic bricks and mortar texture, with the edges of the bricks even bevelled with a v-groove bit for added realism. We then printed the colours of the bricks and mortar onto the white substrate using our UV flatbed printer.

Vinyl w Anti-Graffiti Laminate.
Durable, long-term signage. Printed on intermediate vinyl with an anti-graffiti laminate to provide protection against vandalism. Applied to existing ACM panels, this sign has been re-used and updated with new artwork to save money and un-necessary wastage.

Printed direct to D-Board.
High volume and economical print run of hanging "sale" posters for POS displays. Printed direct using our UV flatbed on both sides of the substrate. D-board is a paper-based substrate, making these an environmentally friendly option when compared with something like corflute.



Multi-panel ACM Graphics.
Large graphics installed to a concrete cinderblock wall. We printed on intermediate vinyl, matte laminated, then applied to ACM sheets and wrapped the edges. This made for very tidy butt-joins between the ACM panels so the edges were almost invisible.

Printed direct to Polyprop.
Subtle and classy accreditation for an exclusive event. We printed just black ink onto black polypropylene to create a beautiful contrast of finishes. Digitally cut on our flatbed cutting table and ready to hang with lanyards.

Chrome vinyl "Foiling".
We create unique and very difficult-to-replicate event accreditation using a range of vinyls and pint effects. This example was printed onto a silver chrome vinyl (unprinted where the chrome is showing), then applied both sides onto thin polypropylene sheets, and finally cut to size / shape on our digital cutting table.

Printed direct to Plywood.
Achieve a simple, natural looking finish by printing black ink onto plywood. Detailed designs can be produced without the need for complex weeding and application. Untreated plywood can be used with great effect, but be aware of how it may warp when exposed to heat and moisture etc. For outdoor use, add a few coats of polyurethane.

Outdoor ACM Signage.
Classic outdoor ACM signage. Printed on intermediate adhesive vinyl, gloss laminated, then applied to ACM sheets. This sign was installed outdoors onto a timber frame, with posts concreted into the soil. The timber frame was then painted black to protect it and allow the graphics to stand out.