

Printer Width & Table Utilization

Printer manufacturers' published speeds are typically "up-to" speeds and do not always correlate to actual production modes. As a rule, the stated, or up-to, speeds of printers are for full-width continuous feed printing. These speeds may not reflect the significant decrease in hourly yield when printing partial-width materials. This brief explores the variables and factors affecting production speeds and the considerations when selecting a superwide format printer.

Many factors are critical in achieving optimal printer productivity including overall width, table utilization and value-add capabilities. A clear understanding of a device's design approach and limitations are needed to accurately determine return on investment and productivity in real world usage scenarios. To maximize speed and optimize productivity, two key factors to consider when selecting a printer include:

- Printer Width: Maximum board size and orientation
- Table Utilization: Material Placement and Registration Accuracy

Printer Width

Printer width is among the most important variables driving productivity. The three essential width related questions to ask when selecting a printer are:

- Board Width - What size rigid material will primarily be printed?
- Finishing - Is most of the printing to finished board size or cut later? (Production departments can save considerable time and money by printing to larger boards and then cutting the material after printing.)
- Flexible Material - Is roll-to-roll or sheeted material also a factor and what width?

Board Width - A 3.2m printer will accommodate long-edge-first printing of industry standard 5'x10' boards, roll-to-roll media up to 126" wide or 2-up industry standard 60" wide roll media. This not only translates into potential savings on substrate purchases but also minimizes print time and increases productivity by using the full-width print bed.

3.2 meter printer widths also enable 2-up, short-edge-first printing. By maximizing your printer's width you are able to reduce time between boards and increase productivity.



If printer width is less than 3.2 meters wide, a 10' board must be rotated to print short edge first. This increases

overall print time because a larger number of printer carriage passes are required.

Printers 2.0 or 2.5 meters in width will suffer with this application using only 5' of the total width of the printer, thereby limiting printer performance and published speeds by up to 40%. The result is that a printer that quotes 1200 ft²/hr raw throughput may, in fact, deliver only 720 ft²/hr of real productivity. The same is true for full width 10' roll-to-roll media. Full width roll-to-roll media not only utilizes the full bed of the printer, it also saves additional time between prints.

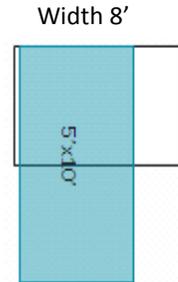
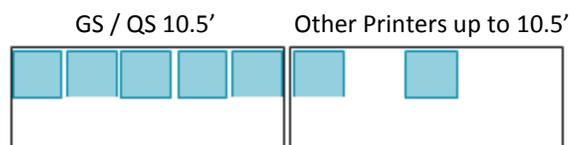


Table Utilization

When printing multiple boards up, material placement and accuracy is critical to maximizing production capacity. VUTEk hybrid UV printers allow for up to five boards or sheets to be printed at a time. This feature maximizes the full width of the printer making versatility of the VUTEk hybrid platform ideal for various production requirements. By contrast, printers that only allow up to 2 boards at a time cost valuable printing time and a significant loss in capacity.

Printing smaller boards, i.e. 2'x2', 2'x3', 2'x4':

How are the sheets/boards aligned for registration? Utilizing the adjustable stops on the VUTEK printers' precision alignment fence, an operator can easily and accurately position identical or various sized substrates across the bed. The Operator adjusts the precision stops depending on board size, and simply aligns the corner of the material to the appropriate stop. Competitive printers allow up to 2 boards at a time and do not include a precision fence to ensure accuracy of the board placement, so material often skews and mis-registration occurs.





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Printing a mix of small and large boards, i.e. 2'x2, 5'x10':

Many situations call for a combination of different board sizes to optimize bed utilization. To recognize the best productivity from the printer the width needs to accommodate both large and small boards efficiently and with precision alignment. Why would one purchase a printer that prints up to 1200 ft²/hr if in reality it will ultimately achieve 720 ft²/hr, or less? The table below summarizes different print job scenarios highlighting true board speeds for various printer speeds and media dimensions.

Full Bleed Print Support

Support for full-bleed (edge-to-edge) printing is essential for printing to finish-sized substrates, however many printers available today do not support full bleed due to their Teflon belt coating and do not recommend printing full bleeds due to affecting their vacuum system and material hold down. VUTEk hybrid printers allow customers to print full-bleed prints on finished substrates for immediate shipping to the end user after printing.

Calculating printer board times

Calculating printer board times is one of the most important obstacles for a printer operator to overcome. Beware: Printer manufacturers may quote board speeds with odd sized boards or impractical sizes. How does the quoted speed compare to boards/hour? Quoted speeds are usually what the printer can do in a continuous feed capacity or what the speed is for ONE board to go through the printer. It may not take into account the time between boards or unused space across the width of your printer.

Let's say that a 2.5 meter printer quotes 1200 ft²/hr. Raw calculation says that a 5'x10' is 50 ft² and should be able to run 24 of them an hour based on the speed quoted. Now let's look at the size of the bed... 2.5 meters will not accommodate the 10' edge of the board so you must turn the board on the short edge. This cuts your productivity down as you are only using 5' of the 8.5' width (-42%) cutting your speeds down to 750 ft²/hr (15 boards).

The time required to load additional boards is generally not calculated when comparing printer specifications. However, it's not uncommon for printers to require up to 30 seconds between boards for alignment procedures and accuracy of board placement. To accurately determine boards per hour, you need to calculate as follows: 750 ft²/hr = 4 minutes to print 1 board. Add the time between boards and that is 4.5 minutes per board. Now take an hour, 60 minutes/4.5 minutes per print = 13 boards per hour.

By comparison, a VUTEk QS3220 can accommodate 2 boards side by side to cutting its average 20 second delay to only 10 seconds between boards. And the GS3200's new material height sensing method cuts that in half to only 5 seconds per board with similar operating conditions. Since the VUTEk 3.2m printers can fit the long edge of the board across the width, there is no productivity decrease. There is only a time between boards to consider which is much faster than the leading competition. The QS3220 is quoted at 900 ft²/hr. For every 100 sq ft (2-5'x10' boards) there will be about a 10 second delay for alignment. This means that the QS3220 can put 2 boards out every 7.25 minutes, for a grand total of 16 – 5'x10' boards per hour.

	QS3220 (3.2m)	GS2000 (2m)	GS3200 (3.2m)	Competitor (2.5m)
Square Feet/Hour	900	2000	2400	1200
10' x 5' Boards/Hour 2-up	16	Not Supported	46	Not Supported
10' x 5' Boards/Hour	16	29	42	13
8' x 4' Boards/Hour 2-up	22	Not Supported	44	Not Supported
8' x 4' Boards/Hour	20	37	40	28
2' Boards/hr	180 (5-up)	264 (3-up)	420 (5-up)	109 (2-up)