

HP LATEX 300 SERIES PRINTERS: WALLCOVERING PRINTING TIPS AND TRICKS



VERSION 1.0

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1 TIPS FOR PRINTING WALLCOVERINGS WITH HP LATEX 300 SERIES PRINTERS

1.1 SCOPE OF THIS DOCUMENT

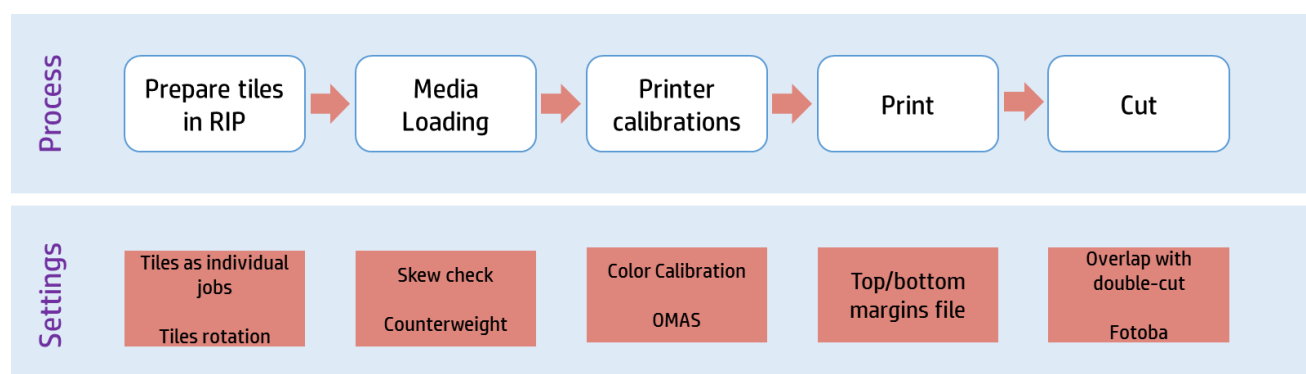
This document is designed to help you to successfully print Wallcovering products with the following HP Latex printers:

- HP Latex 310/330/360/370 printers

It is intended for use by customers that have received HP training on these products. This document is subject to change as and when new information is available.

1.2 APPLICATION PROCESS AND CONTROL VARIABLES

In order to ensure a proper workflow when printing wallcoverings with HP Latex 300 Printer series, users should follow the following process. Each of these steps is described in details into this document.



2 JOB PREPARATION

2.1 PREPARE YOUR FILE IN YOUR RIP SOFTWARE (ONYX, CALDERA, ...)

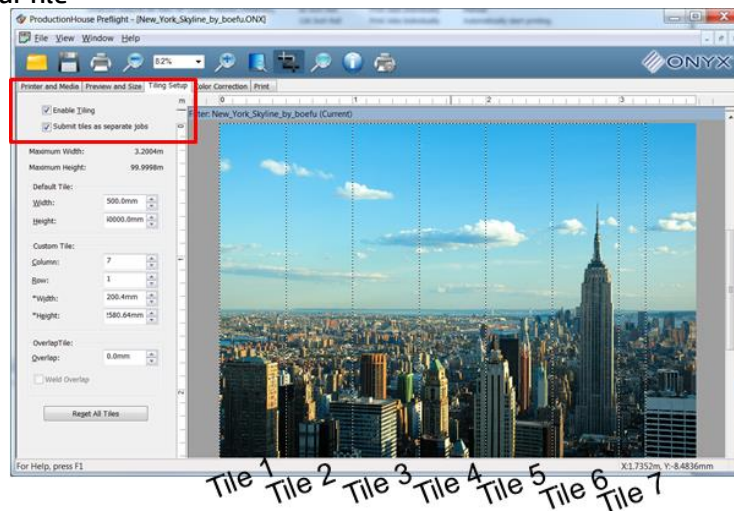
In order to print a file for wallcovering application, you should consider to split the file in several tiles in your RIP application. The width of your tiles will depend on the width of:

- Your design
- Your roll of wallcovering
- The wall where your wallcovering will be installed.

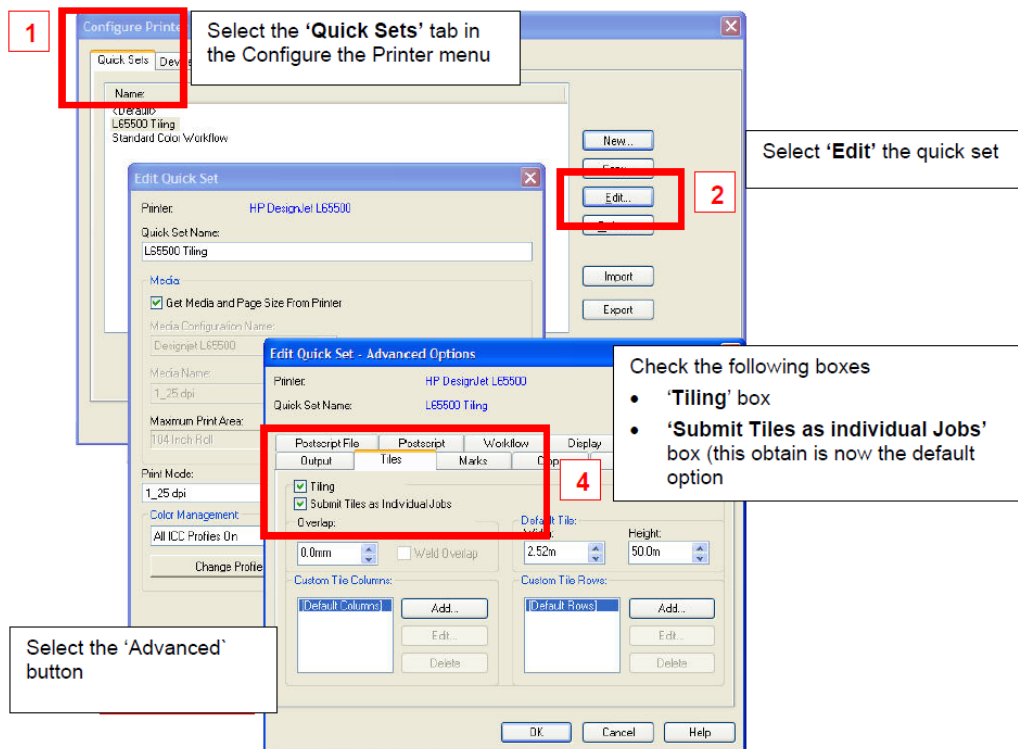
Setup your tiles (Onyx RIP software)

In Onyx RIP software, the **Tiling Setup** tab allows you to control the tiling of your image. Tiling means separating the job into two or more pieces, and it is usually done because the image is too large for the page size or for display purposes. Click the **Tiling Setup** Tab in Job Editor to select the **Enable Tiling** option. Enabling Tiling allows you to choose any width for your image

1. Create tiles for your file



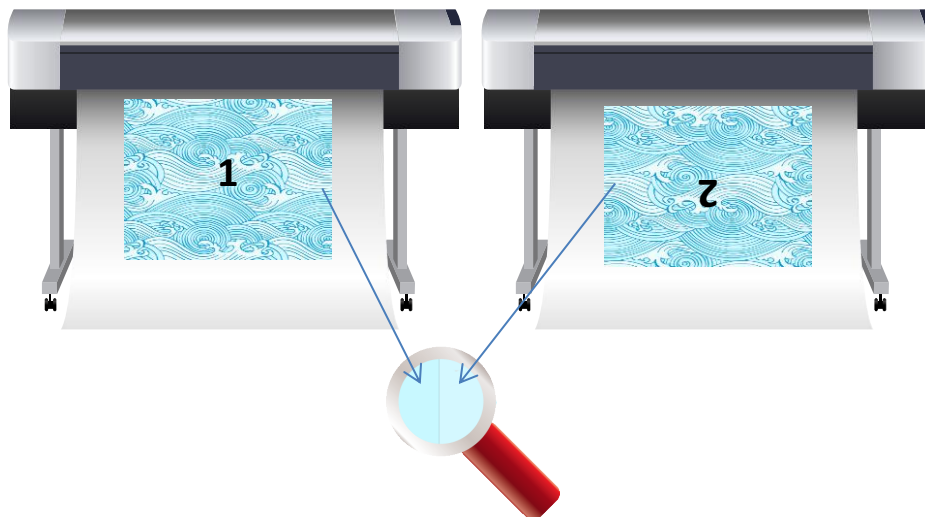
2. Set the tiling option for all the jobs, go to '**Configure Printer**'



3. Select '**Submit Tiles as Separate Jobs**' option allows you to send each tile to RIP-Queue for printing as individual jobs

Rotate the tiles

The diagrams below show the appearance of the two printed tiles, with the color shift greatly exaggerated to better illustrate the problem.

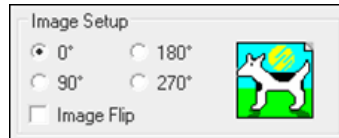


Solution: Rotate the tiles so you do not see the color difference anymore



This issue can easily be overcome by rotating alternate tiles, which has the effect of placing the right side of the first tile next to the right side of the second tile and the left side of the second tile next to the left side of the third, so all contiguous areas have been printed in the same point of the swath and, hence, have the same color.

In Onyx, select alternate tiles, then click the **Preview and Size tab** in Preflight, Select the rotation value from the Image Setup area, and click **Apply**. If your image is a raster file, a dialog appears asking if you want to overwrite the original file or to create a new file. Choose the option you want, and click **OK**.



Print Spit bars

Use **Spit bars** at the sides of each tile. They help with startup problems by preparing the printheads for printing a job. It should be noted the Spit bars available within some RIP application do not include bars of light colors.

The **Spit bars** have to be added at the side of the plot vertically, parallel with the edge of the substrate, towards the cartridge side (they can also be added on the other side, but this reduces the impact they make).

You can add the spit bars within the RIP application.



NOTE: The recommended width of the Spit Bars is 3.5 cm (approximately 1.4").

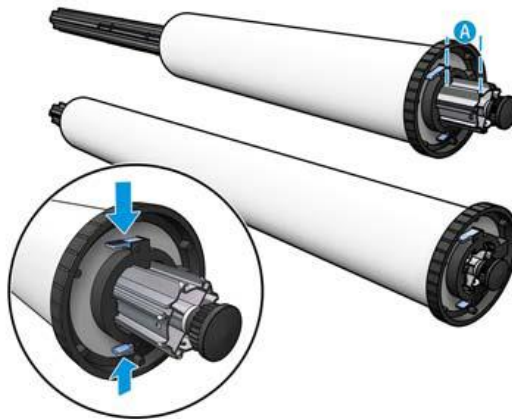
3 MEDIA LOADING


3.1 SUBSTRATE CONSIDERATIONS

In case you still have to print on media susceptible to media shrinkage when placed under the curing Module, make sure that the roll is left within the room where the printer is located for at least 24 hours, this is to ensure the complete roll has the same temperature as the printer.

3.2 LOADING NARROW ROLLS ONTO THE SPINDLE

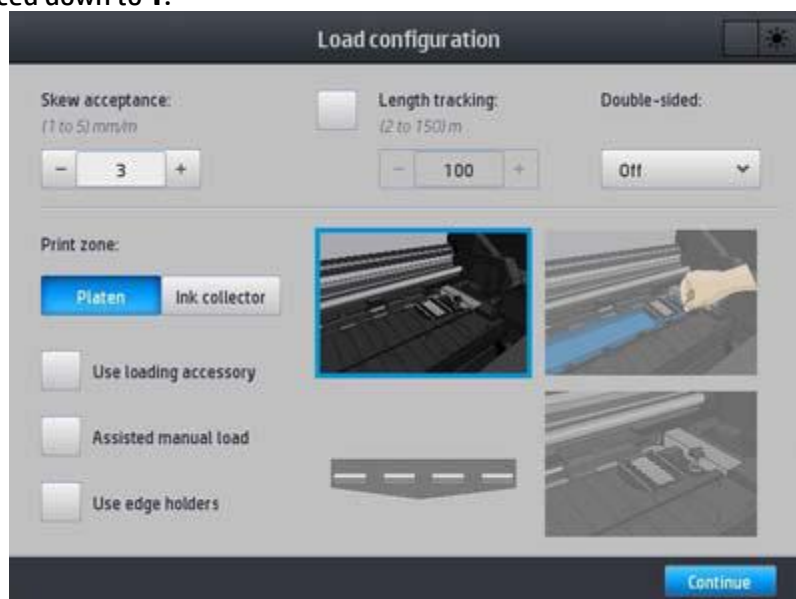
The right stop of the 76 mm (3 in) diameter spindle has two positions: one for rolls of the printer's maximum width, and another for narrower rolls. Remember to use the second position for narrower rolls, which improves the curing process and allows higher printing speeds.



 **NOTE:** The 76 mm (3 in) diameter spindle is supplied with the 360 printer and is available as an accessory for the 330 printer.

3.3 SKEW ACCEPTANCE

During the substrate loading process, the available values for Skew acceptance are between 1 and 5, default 3. For printing wallcoverings, it is recommended to use a value of **1.5**. If the skew level is still too high, it can be reduced down to **1**.



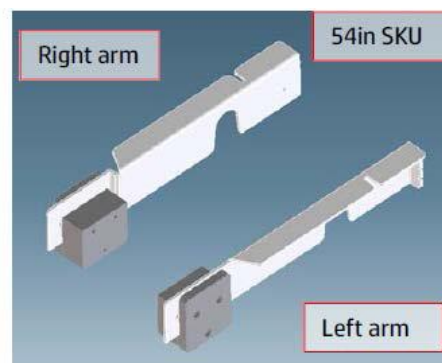
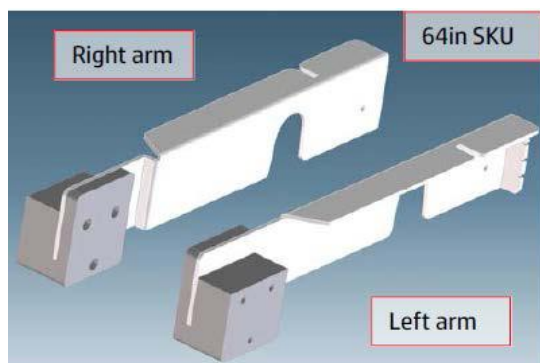
3.4 COUNTERWEIGHT KIT FOR TAKE-UP REEL

Depending on the substrate that is loaded, length inconsistency could be observed when comparing measurements between contiguous tiles in tiling applications using the take-up reel: the left side of a tile compared with the right side of the next tile.

This Counterweight Kit allows for improving length consistency in tiling applications when printing with certain substrates (e.g. Self-Adhesive Vinyl and Wallcoverings). Use of the Counterweight Kit can reduce the length deformation to **1mm per meter**.

Other applications and substrates will work better without this Service Kit (e.g. Banners, textiles, ...).

Please contact your reseller in order to purchase this kit. Reference of the kit: **B4H70-67145 Dancer Counterweight 64 SERV.**



4 PRINTER CALIBRATIONS AND SETTINGS


4.1 PRINTER FIRMWARE CONSIDERATIONS

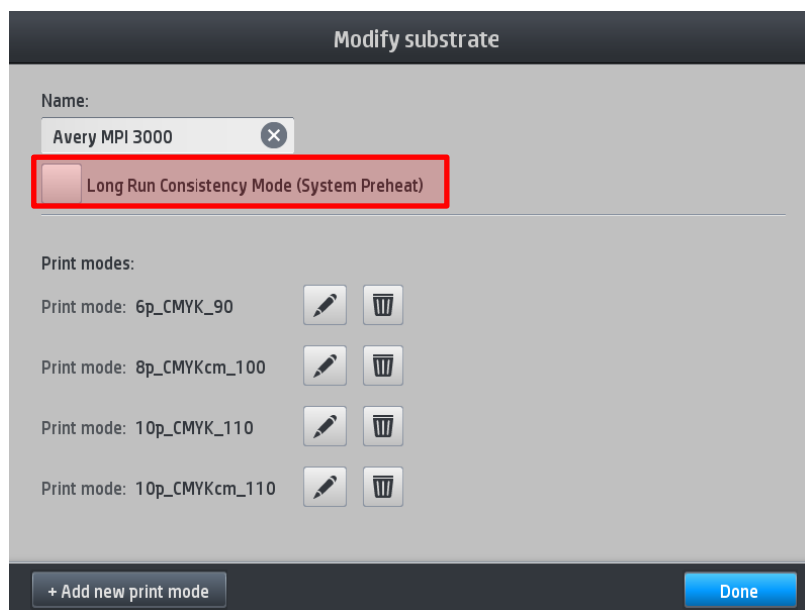
Please ensure your HP Latex 300 Series printer (310/330/360/370) always has the latest firmware version. You can download the latest firmware from HP's web site or from the HP Latex 300 Series printer's control panel:


- **Web**
Go to: <http://www8.hp.com/us/en/drivers.html> . Find your product -> Select your OS -> Download the *.fmw file -> Install it via the printer's embedded web server.
- **Printer front-panel**
Select the **Printer** option > **Check Updates** -> **Check Now**.

Firmware version 07_00.11

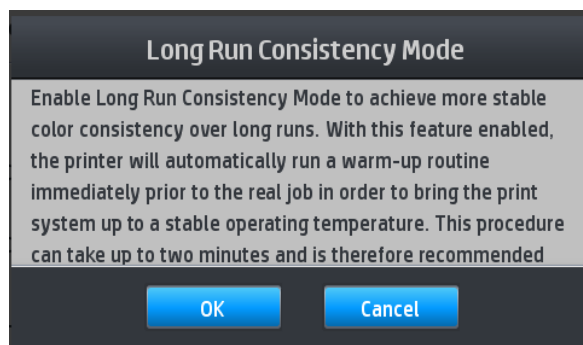
In June 2016, firmware version 07_00.11 was released and it includes significant improvements like the new "Long Run Consistency Mode" feature. This option improves color consistency over long runs.

To enable it, press  on your printer front-panel, go to **Substrate library**, choose the substrate for which you want to enable this feature, tap **Modify** and check the "Long Run Consistency Mode (System Preheat) box:

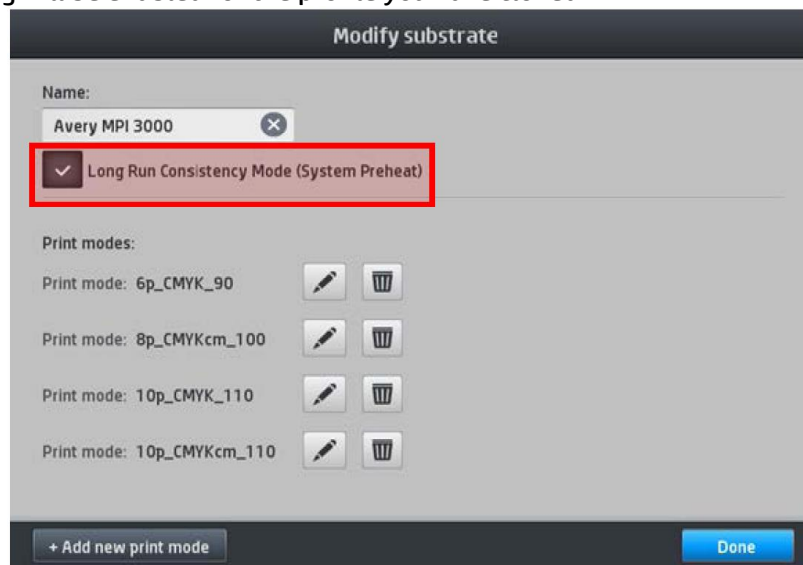


 **NOTE:** The name of this feature for HP Latex 310 and 330 units is just "Long Run Consistency Mode," without the last informative description ("System Preheat").

Once enabled, the following message will appear:



Click **OK**. The setting will be enabled for the profile you have cloned.



4.2 CALIBRATIONS


Color consistency with HP Latex printer is very accurate for jobs printed across several panels. But in some extreme cases like the usage of very dark colors and area fills without gradient, you may experience a small color shift with the same job.

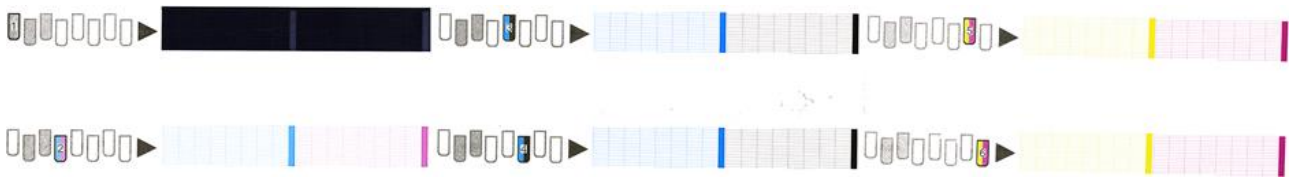
In order to optimize the color accuracy, make sure that all the calibrations below have been performed with good results:

Printhead Alignment

It ensures color to color alignment and bidirectional alignment within a single color by printing the printhead alignment plot. The printhead status plot consists of patterns that are designed to highlight printhead-reliability problems. It helps you to check the performance of the printheads that are currently installed in your printer, and to determine whether any printhead is experiencing clogging or other problems.

How to print the printhead status plot?


To print this plot, go to the front panel and press , then **Image-quality maintenance > Clean printheads > Print test plot**. Vinyl, preferably gloss at least 36 inches wide, is recommended for maximum visibility. Other substrate types may not show enough detail to see the optimizer dashes clearly. The plot consists of small dashes, one for each nozzle on each printhead.



For each individual colored pattern, make sure that most of the dashes are present.


Corrective action

1. Clean any faulty printheads:

To clean the printheads (which often enables them to recover from problems), go to the printer's front panel and press , then **Image-quality maintenance > Clean printheads**, then select which printheads you want to clean. You can clean all of the printheads or only some of them. Then reprint the printhead status plot to see whether the problem has been solved.

2. Align the printheads:

In the case of a substrate jam, if you have used a custom substrate, or if you are experiencing problems with color accuracy or grain; you might need to align the printheads.

To request printhead alignment from the front panel (if the alignment is not performed automatically), press , then **Image-quality maintenance > Align printheads > Auto printhead alignment**. The process takes about 10 minutes and starts immediately.

3. If the problem continues to persist, replace any persistently faulty printheads.

Substrate Advance calibration when using the Take-Up reel

It checks and corrects potential color plane mis-registrations in the paper axis. When using the take-up reel, please perform the substrate-advance calibration once the substrate has been loaded onto the take-up reel.

For the HP Latex 360 and 370 printers only


Calibrate the substrate advance sensor for optimal print quality. At the front panel, press , then **Image quality maintenance > Substrate advance calibration > OMAS calibration**.

Color Calibration (CLC)


It ensures linear tonal response as well as consistency between different printheads and printers. A separate Color Calibration is advised for each media but also when any given printhead is changed. To get an even better performance we recommend performing the Color Calibration regularly, depending on the printer's usage it can be scheduled weekly, every two weeks or longer according to your workflow.

In outline, the process consists of the following steps.


Color calibration for the HP Latex 360 and 370 printers

1. Ensure that the take-up reel is enabled
2. Start color calibration of the loaded substrate from the front panel, select , then **Image quality maintenance > Color calibration > Calibrate**.
3. A calibration test chart is printed.

4. The HP Embedded Spectrophotometer scans and measures the test chart.
5. The calibration target measurements are compared with an internal reference to calculate the necessary calibration tables for consistent color printing on the substrate in use.

To start color calibration of the loaded substrate from the front panel, select , then **Image quality maintenance > Color calibration > Calibrate**.

Color calibration for the HP Latex 310 and 330 printers

1. Start color calibration of the loaded substrate from the front panel, select , then **Image quality maintenance > Color calibration > Calibrate**.
2. A calibration test chart is printed.
3. The test chart is scanned by the line sensor.
4. From the measurements made by the line sensor, the printer calculates the necessary correction tables to apply to your print jobs, for consistent color printing on that substrate type.

4.3 PRINTER SETTINGS

Each supported substrate has its own characteristics. The printer changes the way it prints on each different substrate. The RIP requires a description of the requirements of each substrate. This description is called the “media preset”.

The media preset contains the ICC color profile, which describes the color characteristics of the substrate. It also contains information about other characteristics (RIP and printer settings) and requirements of the substrate that are not directly related to color. Media presets for your printer are installed in the RIP.

The RIP contains media presets for only the most commonly used substrates. If you buy a substrate for which your RIP has no preset, you can obtain a preset for a new substrate in the following ways:

- You can search online for a substrate preset by using the **Online search** function within the **Substrate Library** front-panel menu. The printer connects to the HP Media Locator database on the Internet and allows you to search all available substrate presets for your particular printer model, including HP and third-party substrate brands.
- If your HP Latex 300 series printer (310/330/360/370) is not connected to the internet, try to download the media preset from the HP Media Solutions Locator Web site: www.hp.com/go/mediasolutionslocator .
- If it is not there, try to download the media preset from the substrate manufacturer's Web site.
- If it is not there, try to download it from the RIP vendor's Web site.

Generating color profiles with the RIP or with HP Latex 360 or 370 printer

If you cannot find a color profile anywhere for your substrate, create a new media preset in the printer or with embedded ICC profiling capabilities of the HP Latex 360/370 printer. With the HP Latex 360/370 printers, it is possible to create an ICC profile automatically for a given substrate and print mode, when adding or editing a substrate by pressing the **Create ICC profile** button on the printer front-panel.

Select printer settings and color profile

If you can't find the correct printer settings for your substrate, you can start by copying printer settings from a similar substrate of the same family and apply some modifications to the main hardware settings:

Setting	Description	If too low	If too high
Passes	The number of passes specifies how many times the printheads will print over the same area of the substrate.	The amount of ink fired per time unit is larger and ink has less time to dry on the substrate. This may create coalescence and banding. The boundaries between passes may be more visible. However, printing speed is relatively high.	Colors are vivid, print quality is high. However, printing speed is relatively low. A lower curing temperature is needed, otherwise the substrate may be deformed.
Curing temp.	Curing is needed to coalesce the latex, creating a polymeric film which acts as a protective layer, while at the same time removing the remaining co-solvents from the print. Curing is vital to ensure the durability of the printed images.	The print may emerge not fully polymerized, so that the ink smears when rubbed. The print may appear wet, after printing or later. You may need to increase the number of passes to achieve adequate curing.	The substrate may wrinkle under the curing module, causing defects such as blisters or liner detachment. The substrate wrinkles may also cause vertical banding or ink smears at the beginning of the following plot.
Airflow	Airflow helps to remove the evaporated water from the print zone and thus allows more efficient drying.	In general, use the substrate family default value.	
Substrate advance compensation	Your printer was calibrated at the factory to ensure that it advances the substrate accurately when using supported substrates in normal environmental conditions. However, you may find it useful to adjust the substrate advance when printing in an unusual but stable temperature or humidity level, or if the substrate-advance sensor is not working.	You may see horizontal banding or grain.	You may see horizontal banding or grain.
Input tension	Tension is applied to the substrate from the input spindle. It needs to be constant over the full width of the substrate, thus substrate load is a critical operation.	The substrate skews and may become increasingly wrinkled in the printing zone. Also, substrate advance may be irregular, resulting in horizontal banding.	The substrate may be permanently deformed or damaged. Substrate advance problems may appear in extreme cases.
Vacuum	The vacuum applied to the substrate at the printing zone helps to hold the substrate down on the print platen, keeping the distance to the printheads constant.	The substrate may lift up off the platen and touch the printheads. This can smear the printed image, cause vertical banding, cause a substrate jam or even damage the printheads.	For sticky substrates, friction could be too high and substrate advance irregular, resulting in horizontal banding or irregular grainy patches.



High ink level	The maximum quantity of ink will be laid on the substrate (the High ink level option available only when the number of passes is 10 or more). The ink quantity may be reduced by the RIP color profile.	If not selected, colors may look washed-out.	If selected, there can be excess of ink and some problems related to poor drying and curing. TIP: Select High ink level for backlit and some textile applications, or if you want high color saturation.
Auto tracking (OMAS)	The substrate-advance sensor (also known as the Optical Media Advance Sensor, OMAS) is located under the print platen; it can track the substrate advance automatically.	Disable the sensor in the following cases: <ul style="list-style-type: none">• The substrate allows ink to pass through to the platen. Clean the sensor after using this substrate.• You are instructed to do so by the front panel, because the sensor is dirty or unable to track this particular substrate.	

5 PRINTING

5.1 GENERAL PRINTING ADVICE

If you have any print-quality problem, it's important to make sure that the substrate type that you select on the front panel, and in your RIP software, is the same as the substrate type that is loaded in the printer.

5.2 PRINTING WALLCOVERING TILES CONSIDERATIONS

1. While printing, DO NOT TOUCH the Print Adjustments (no change of media advance compensation).
2. Print all the tiles at once
 - Do not split the jobs at different times (1st tile one day, and the 2nd tile the 2nd day)
 - Do NOT change the printmode or the media width between tiles.The objective is to make sure that there is no pause between the tiles.
3. In order to make sure that even the first and last tile have the less difference of length versus the other ones, **add a top margin of 50cms (20 inches) before the 1st tile and add a bottom margin of 50cms (20 inches) after the last tile.**

5.3 RECOMMENDATIONS IN CASE OF SHRINKAGE EFFECT

In case you print on media susceptible to media shrinkage when placed under the curing module, please try to increase the print speed by using a faster print mode (for example, from 10 passes to 8 passes). Thanks to that, the media will be exposed to curing temperatures during a shorter period. You will then have to reconsider others printer settings like:

- Decrease ink density
- Decrease printer heating and curing temperatures

RIP Compensation to wallcovering shrinkage or expansion

Some RIPs may provide a scaling option that allows you to compensate top/bottom easily for substrate shrinkage or expansion. You can then use the distortion factor in your RIP's media settings if you see a consistent print length distortion. The RIP can elongate or truncate the prints automatically by a specific percentage to help offset any print length change that may be caused by the printer drying and curing elements when it heats the wallcovering media. See your RIP documentation.

5.4 LENGTH ACCURACY PRODUCT SPECIFICATION

During the printing process, some substrates may shrink, while others may expand. If this happens, the dimensions of the print will not be correct. As a general rule, you can expect the following percentages of shrinkage **without using the counter-weights accessory**:

- Paper: less than 0.5%
- Self-adhesive: less than 0.5%
- Banner: less than 2% shrinkage.

With the usage of the counter-weight accessory, you can expect the following percentages of shrinkage:

- Paper: 1mm/meter
- Self-adhesive: 1mm/meter

To solve the tiling problem and improve the repeatability of the printed size, you are recommended to ensure that the **OMAS sensor** is **enabled** in the substrate preset, as this will improve the stability of the prints over time:

- Go to the printer front-panel
- Select **Substrate library** option
- Select the substrate you want to print on
- Open the details of the substrate and click on **Modify > Advanced settings**
- Check the option **OMAS enabled** is **enabled**.



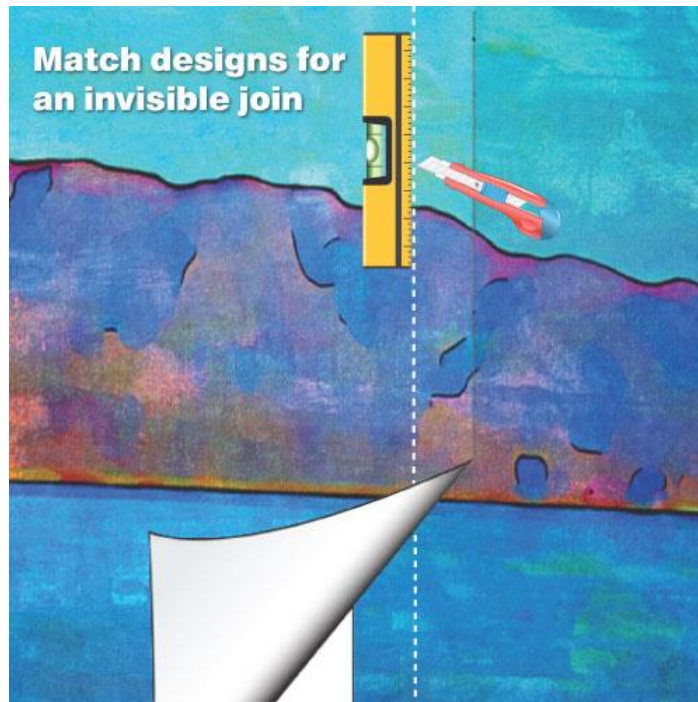
Advanced settings	
Straightness optimization (-6 to 6) mm	- 0 +
Latex Optimizer level (0 to 100) %	- 12 +
Vacuum printing (5 to 100) mm H ₂ O	- 5 +
Advance factor (-10 to 10) mm/m	- 0 +
Inter-pass delay offset (0 to 1500) ms	- 0 +
Printing airflow pressure (50 to 200) mm H ₂ O*100	- 75 +
Input tension (4 to 40) N/m	- 15 +
OMAS enabled	<input checked="" type="checkbox"/>
Color	CMYK

6 TILE CUTTING TECHNIQUES

Two main cutting techniques can be considered to remove the white space on the left and right side of each tile printed with your HP Latex 300 Series printer. These two methods can be used to yield a perfect seam between each tile.

6.1 TILES CUTTING TECHNIQUE #1: DOUBLE-CUT TECHNIQUE

For a close to seamless look with tiles including an overlap, you may decide to double cut your panels to trim the overlap.



Double Cutting - a technique used to obtain perfectly fitted seams. This is done by overlapping one panel of wallpaper over the other until the image or patterns are perfectly matched. Then a sharp blade is used to cut through both layers. The excess edges are then removed.

To trim the overlap you will need a straight edge and a wallpaper trimming knife.

1. Make a clean, straight, vertical cut through both of the layers at the center of the overlaps. You may need to frequently change blades (just snap off old blade).
2. Then peel away the waste on the top layer and lift the overlap and peel away the waste on the bottom layer. Smooth both layers back down, wipe away any surplus adhesive. The result will be a nearly invisible seam between the panels. The nice thing too is that the razor line itself doesn't need to be perfect. Just keep your eye on the middle of the overlap and keep going, slowly.
3. Continue to install panels and double cut the seams in the same manner until your entire mural is hung, finishing finally with Panel A. Take time to make sure everything is smoothed properly into place and that all edges are stuck down.

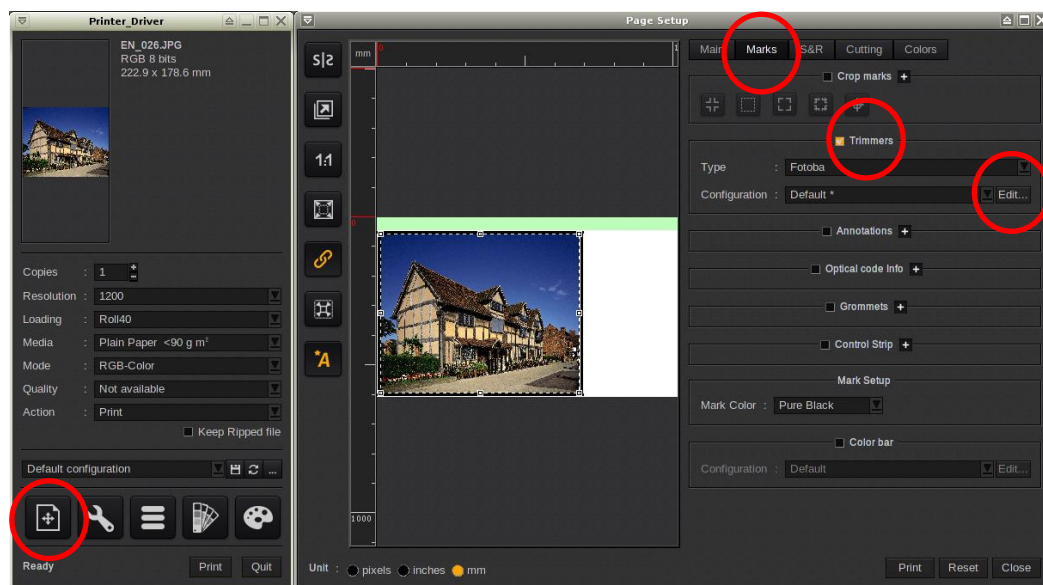
6.2 TILE CUTTING TECHNIQUE #2: AUTOMATIC CUTTING WITH FOTOPA XLD170WP

Fotoba XLD170WP is a complete automatic X/Y cutter which feature true image edge tracking, in order to compensate any misalignment on the print or on the media.

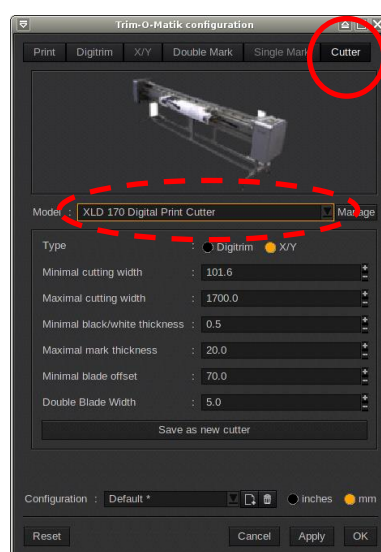
A specific default setting is suggested for the thickness of the cutting mark.

Setup your Cut-Marks for Fotoba XLD170WP cutting (Caldera RIP software)

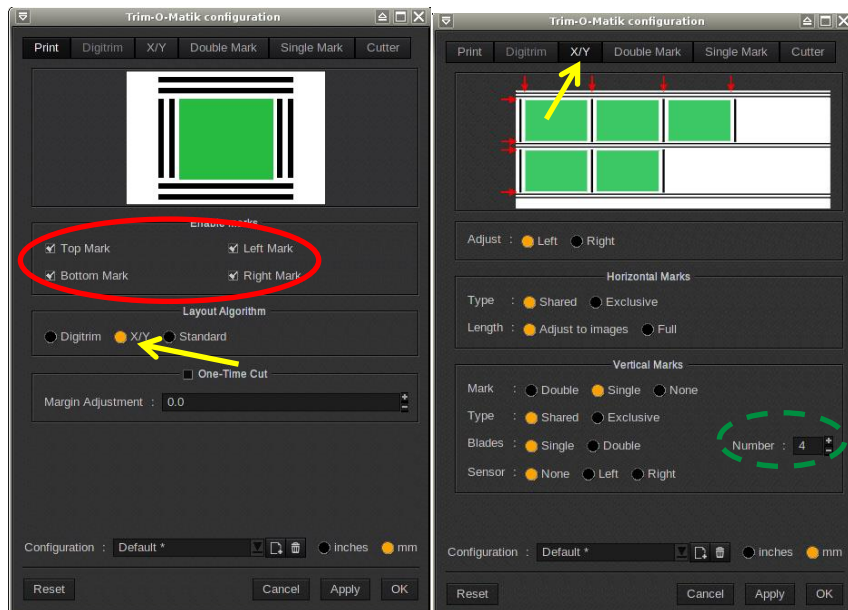
From the Caldera driver controller, select the **Placement** tab and then the **Marks** tab. Enable **Trimmers** and then click **Edit**.



On the new window, select **Cutter** tab. Select **XLD170**

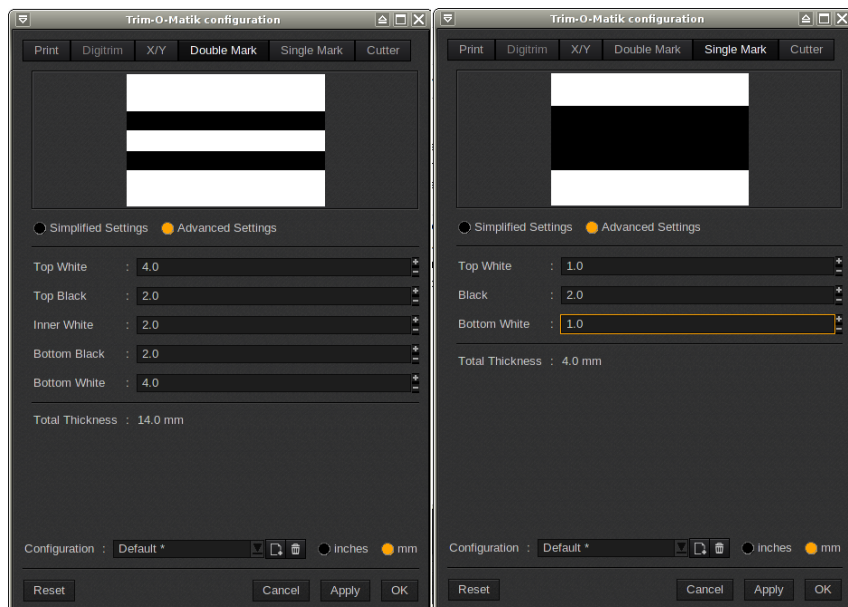


Select the **Print** tab and make sure that **X/Y** is enable (Nest-O-Ba key is required) as well as the four cut-marks. Move then to **X/Y** tab and adjust the setting as follow



NOTE: the value on **Number** (green circle) is depending on how many vertical knives you can install in the Fotoba XLD 170 WP cutter.

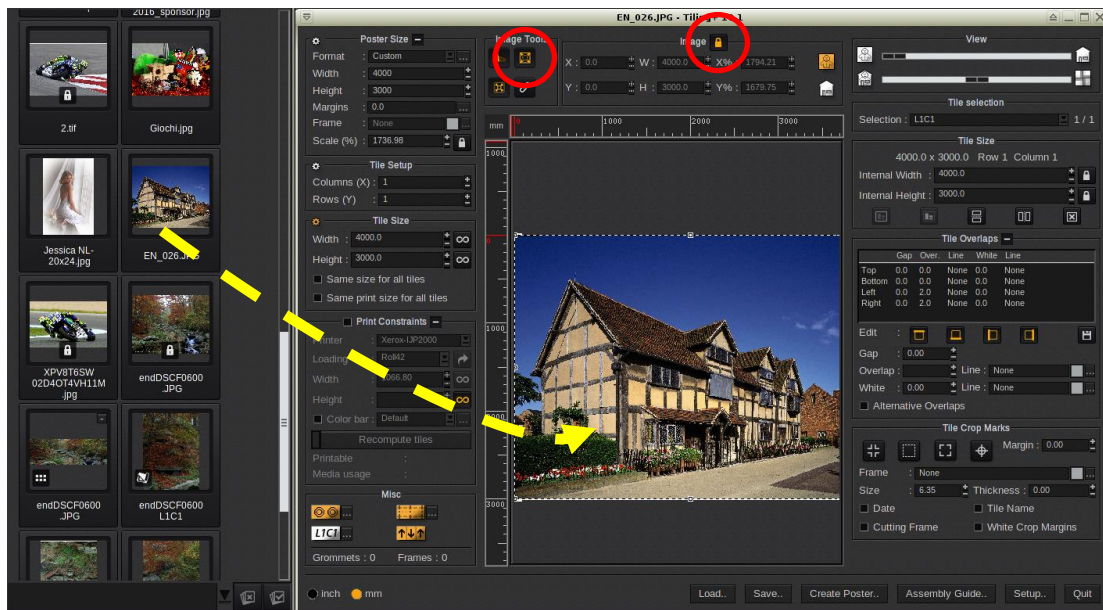
Please check and set the Double mark and Single mark as following:



Press **Apply** in order to confirm the selections.

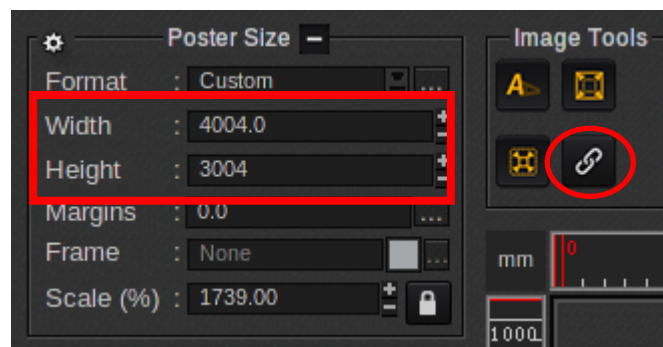
Setup your tiles for Fotoba XLD170WP cutting (Caldera RIP software)

Open the Tiling function and drag a picture into it (in this case the size is 4000x3000 mm.)
Enable **extend image to the poster size** and lock the image dimensions (red circles)

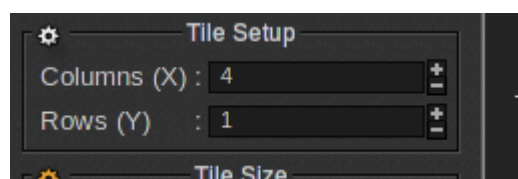


Increase both the dimensions by 4mm (this will create a 2mm bleed for each side on the outer side) and disable the "Proportion" option

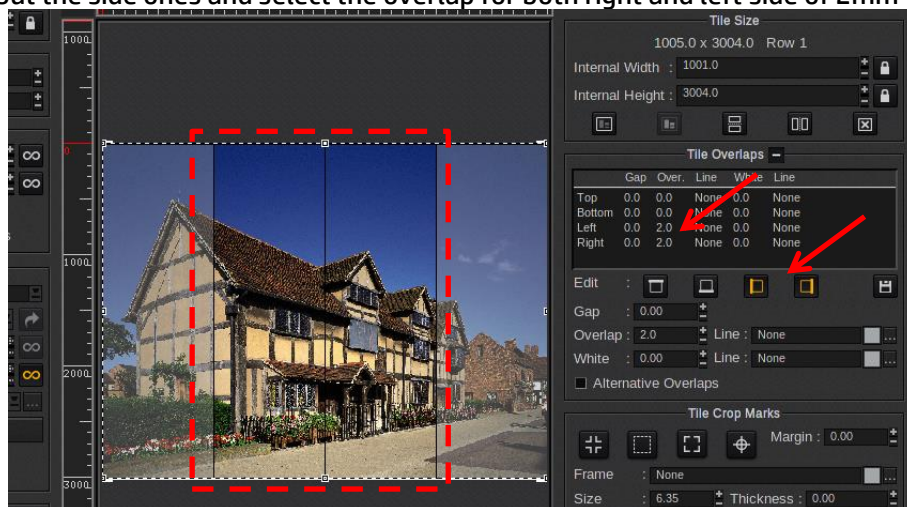
+ 4mm both width
and height



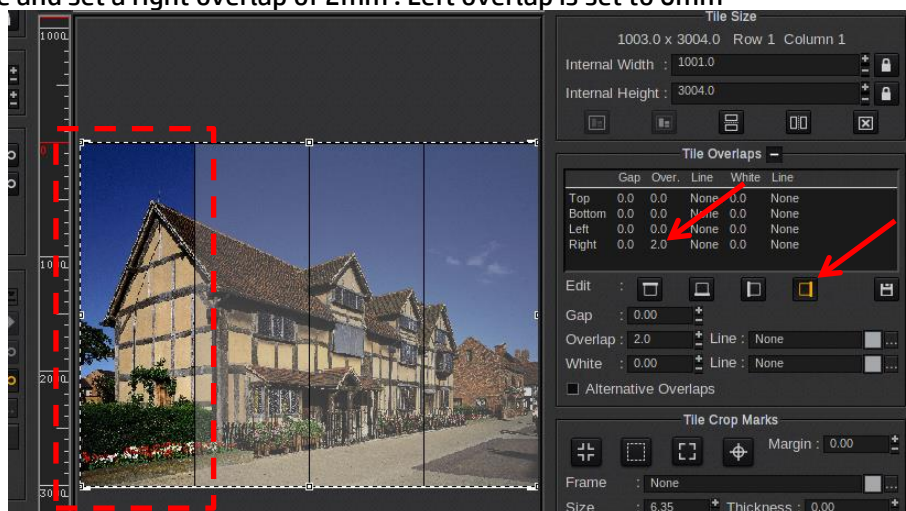
Select the number of columns . For this example we set four columns



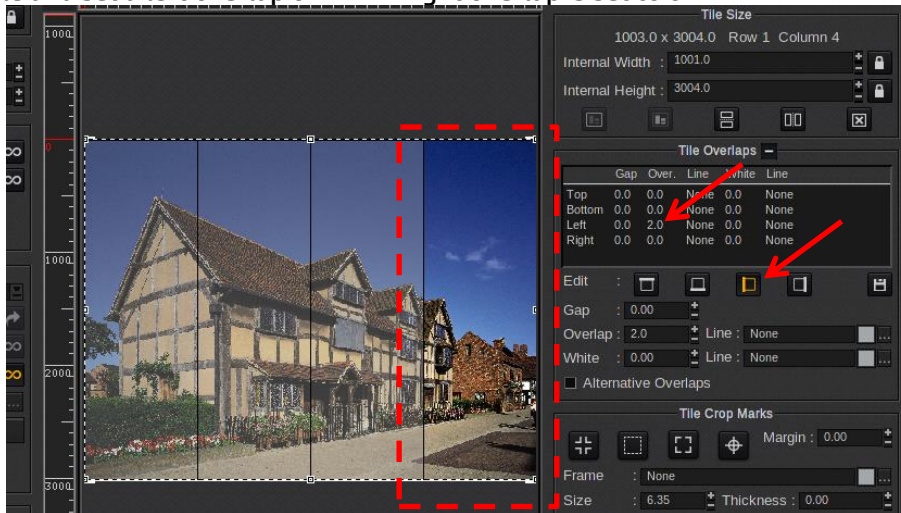
Select all tiles but the side ones and select the overlap for both right and left side of 2mm



Select the left tile and set a right overlap of 2mm . Left overlap is set to 0mm

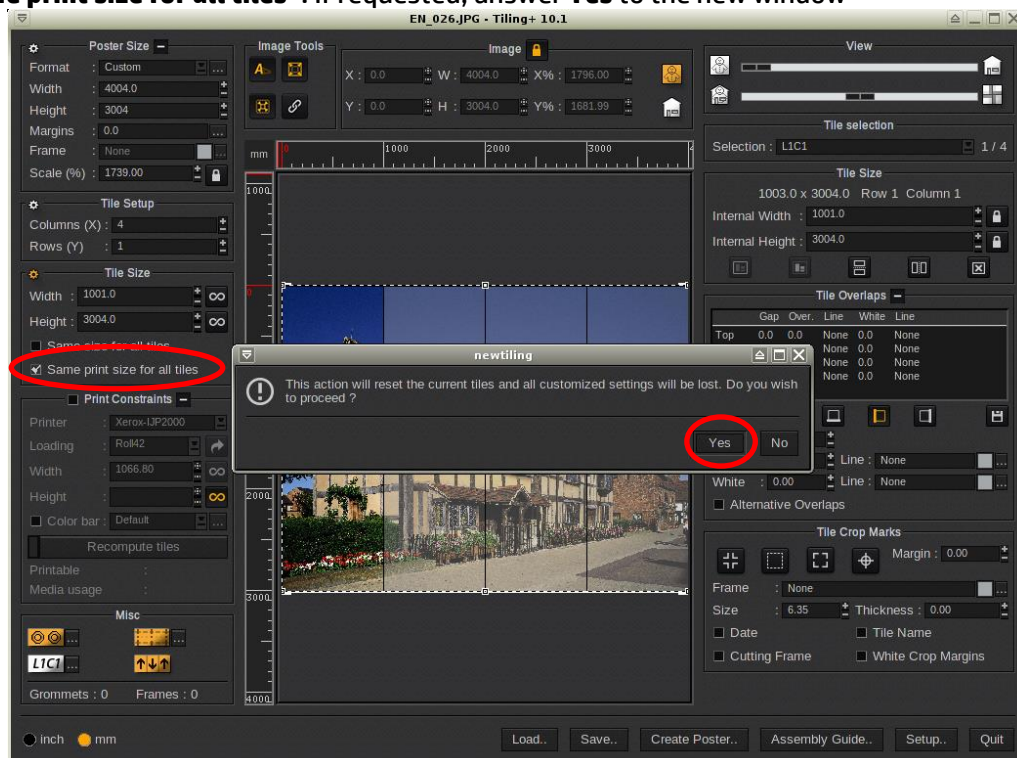


Select the right tile and set a left overlap of 2mm. Right overlap is set to 0

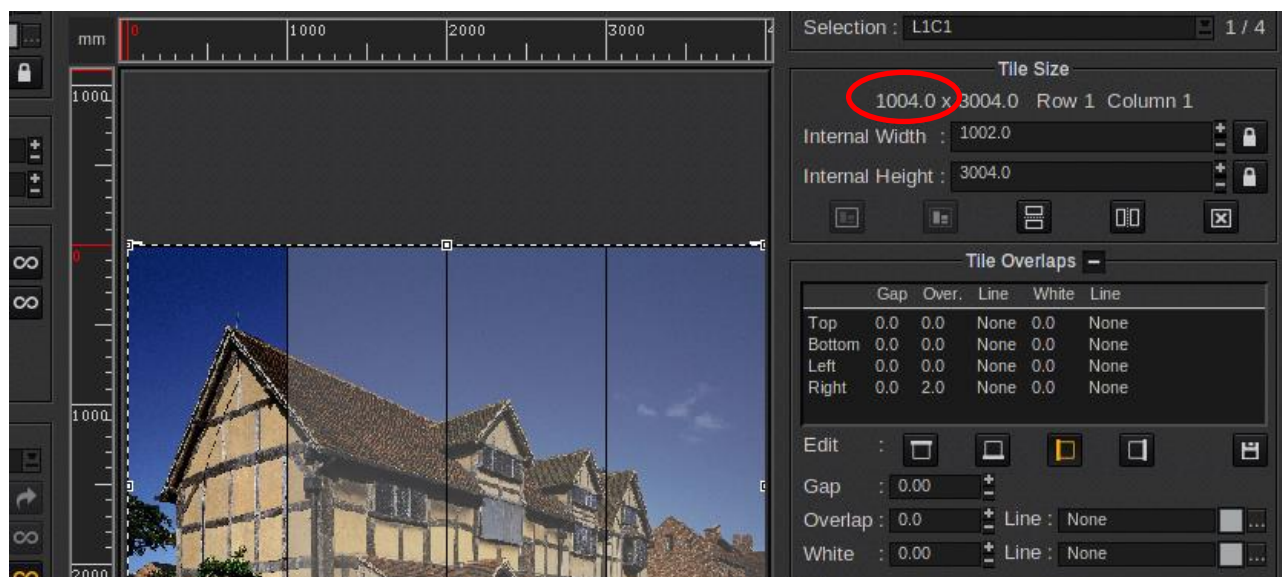


NOTE: Every other overlap different from 2mm must be set to 0mm.

Enable “**same print size for all tiles**”. If requested, answer **Yes** to the new window

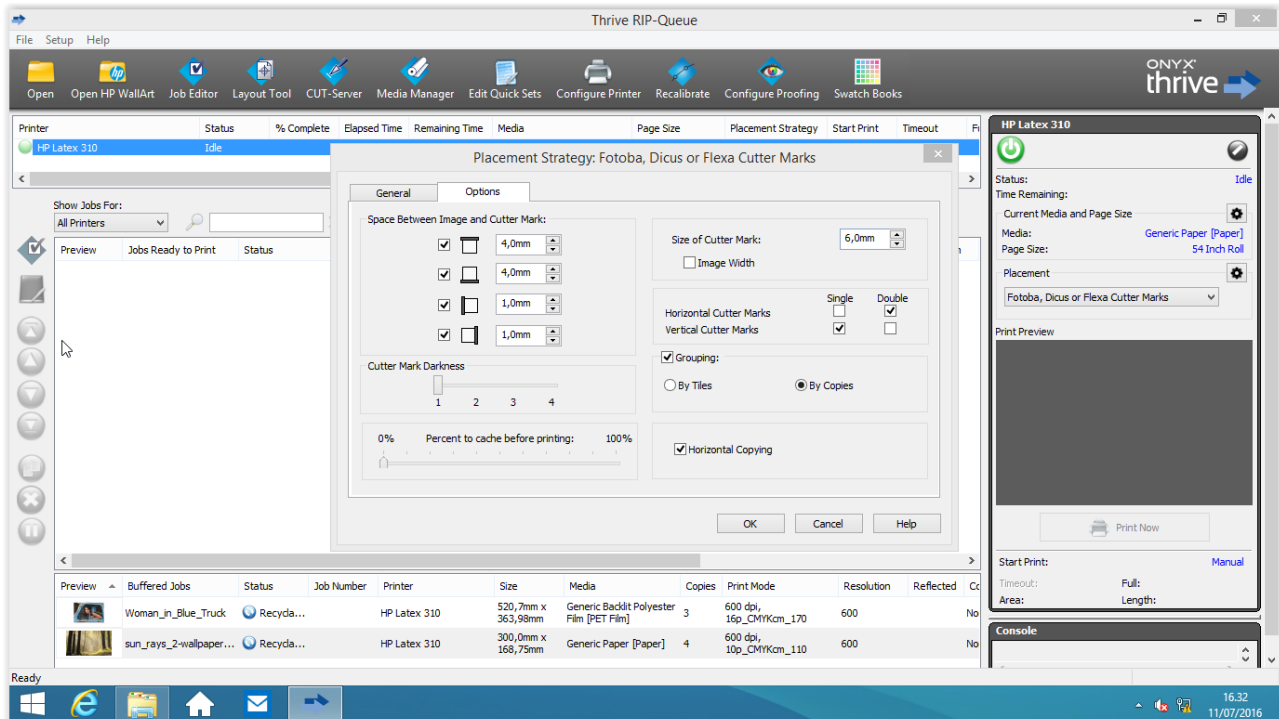


Check that all tiles now have the same printing width. For this example they are all 1004 mm (1000mm + 4mm overlap cut-out). To proceed, click to **Create Poster**.

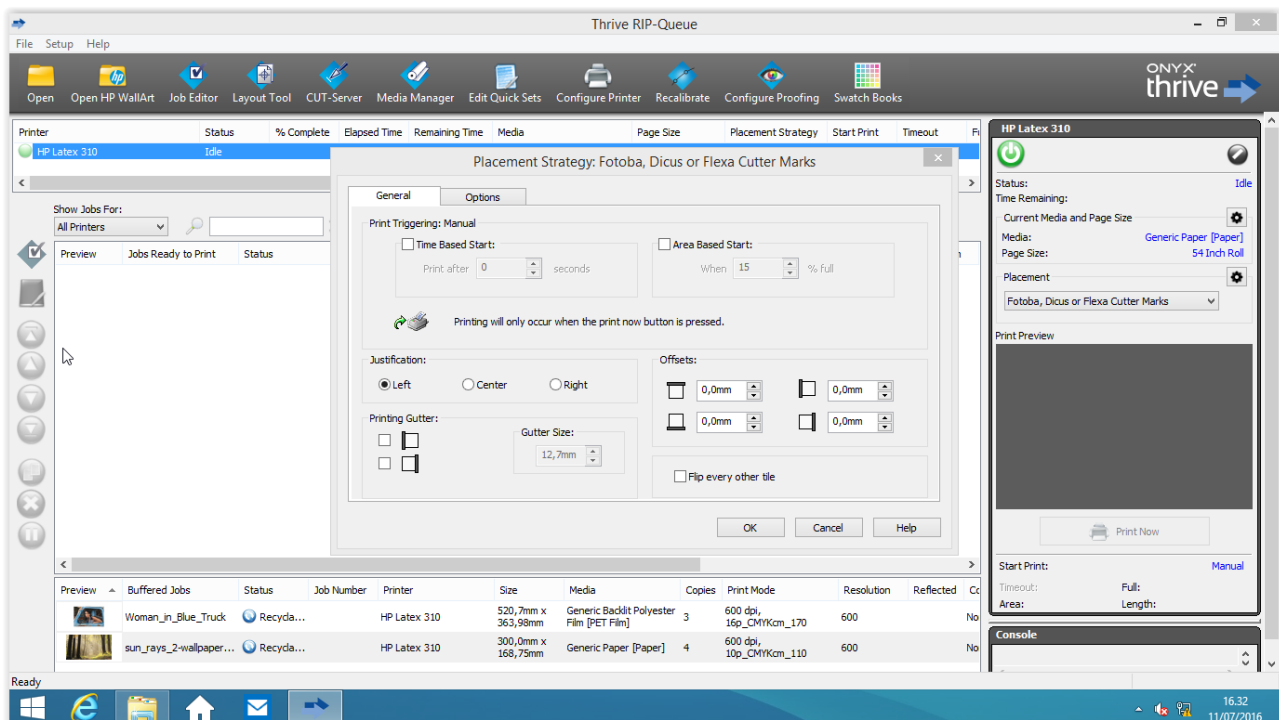


Setup your Cut-Marks for Fotoba XLD170WP cutting (Onyx RIP software)

- Open the RIP-Queue
- Select **Fotoba marks** on **Placement** settings and adjust the settings accordingly
- Select your printer and then select **Placement**

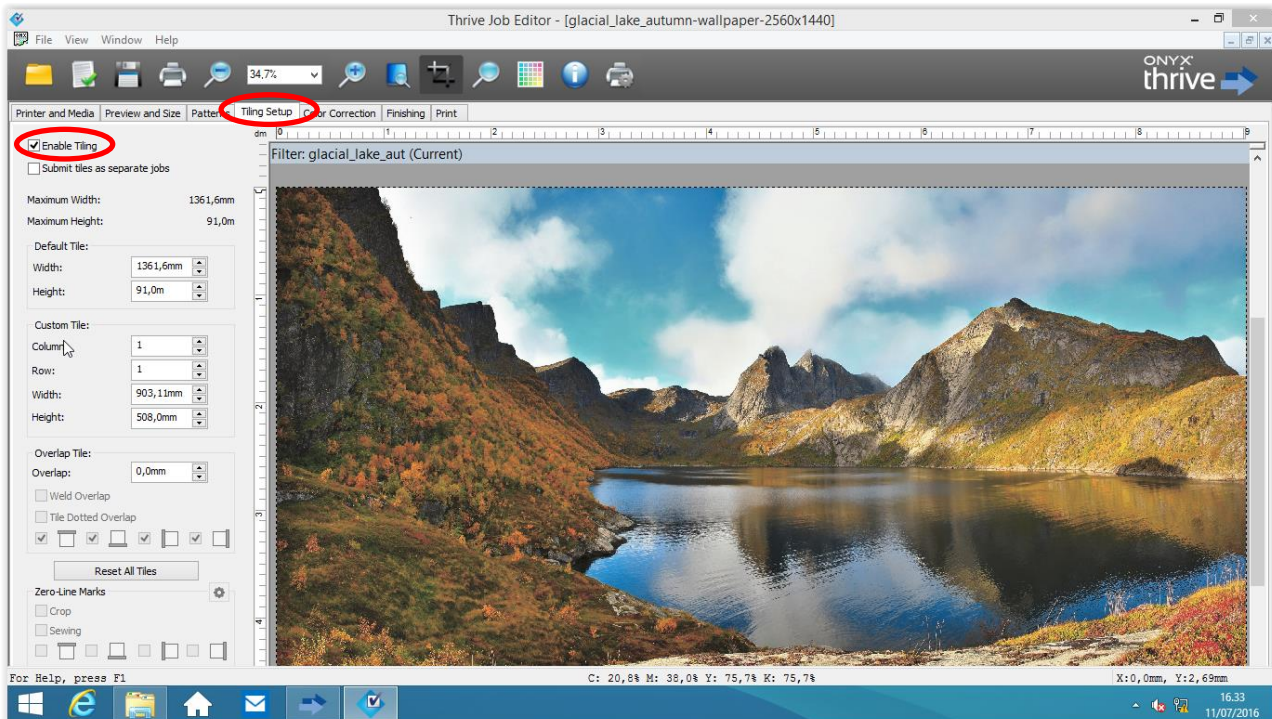


You can adjust the position of printing on the General tab. This might be different depending on your printer

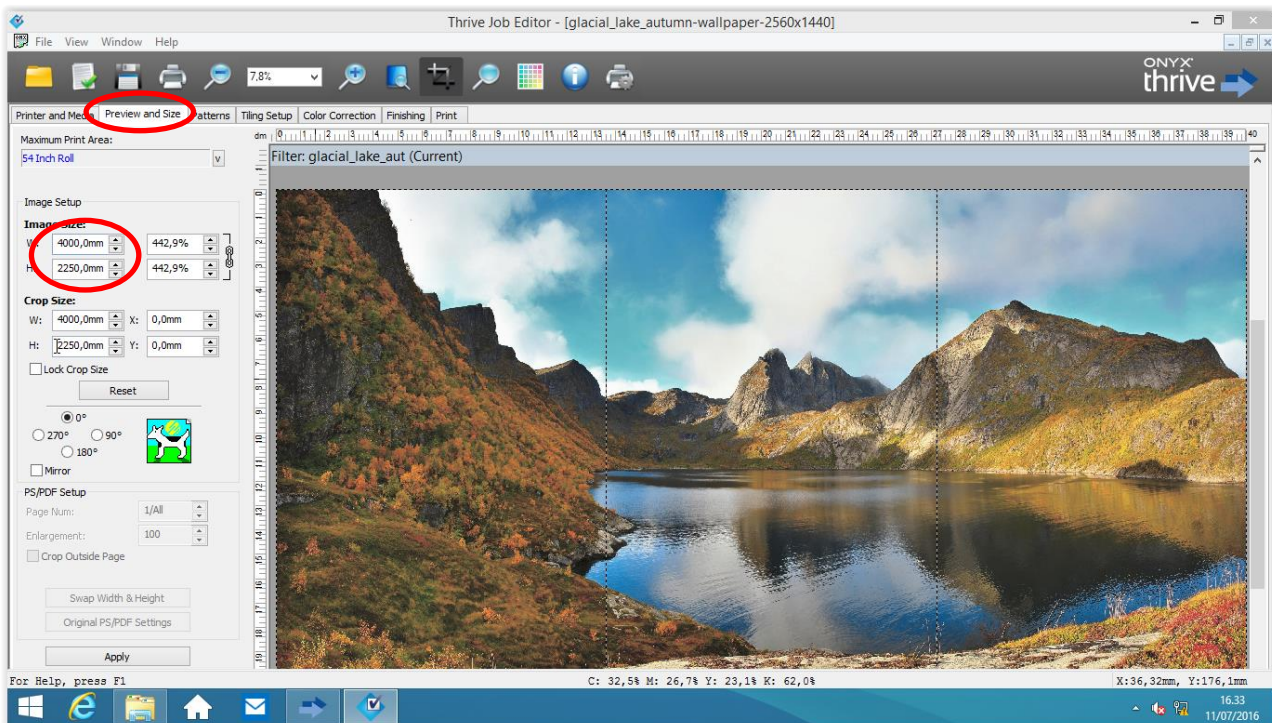


Setup your tiles for Fotoba XLD170WP cutting (Onyx RIP software)

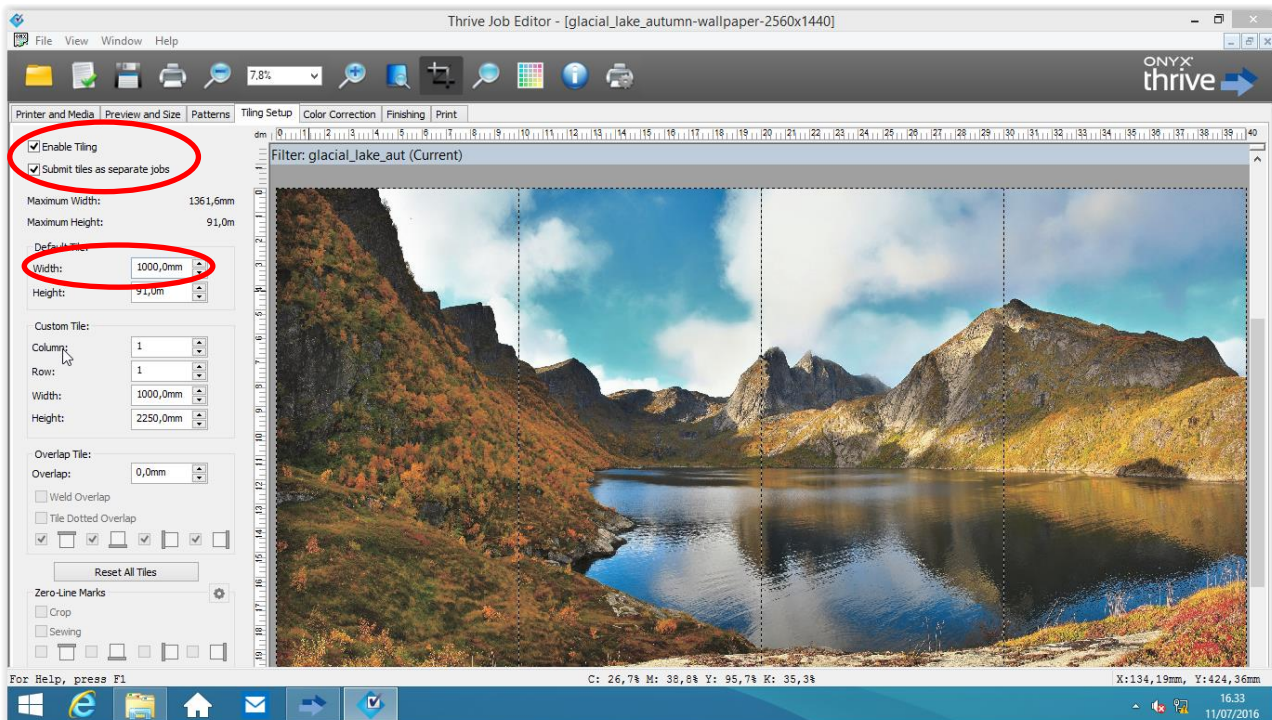
Open a new job into **Job Editor** and **enable Tiling**.



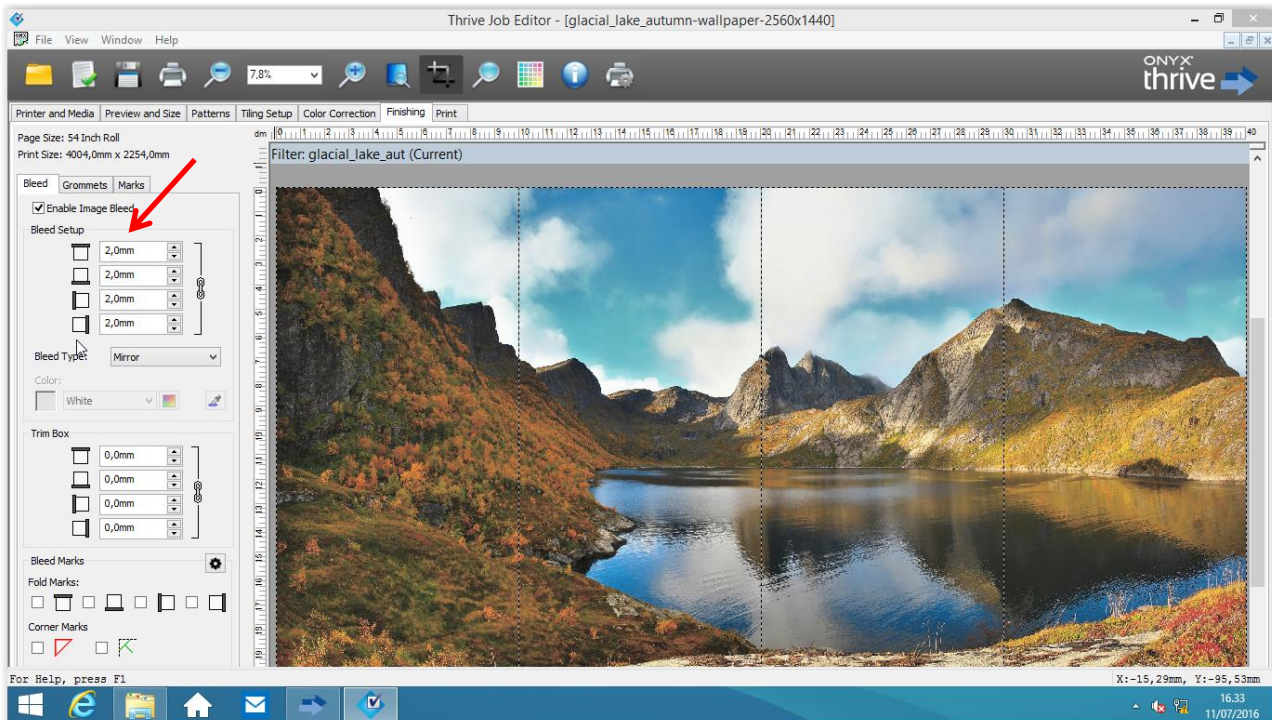
Now go to **Preview and Size** tab and insert the desired overall wall dimension (in this case 4000x2250 mm)



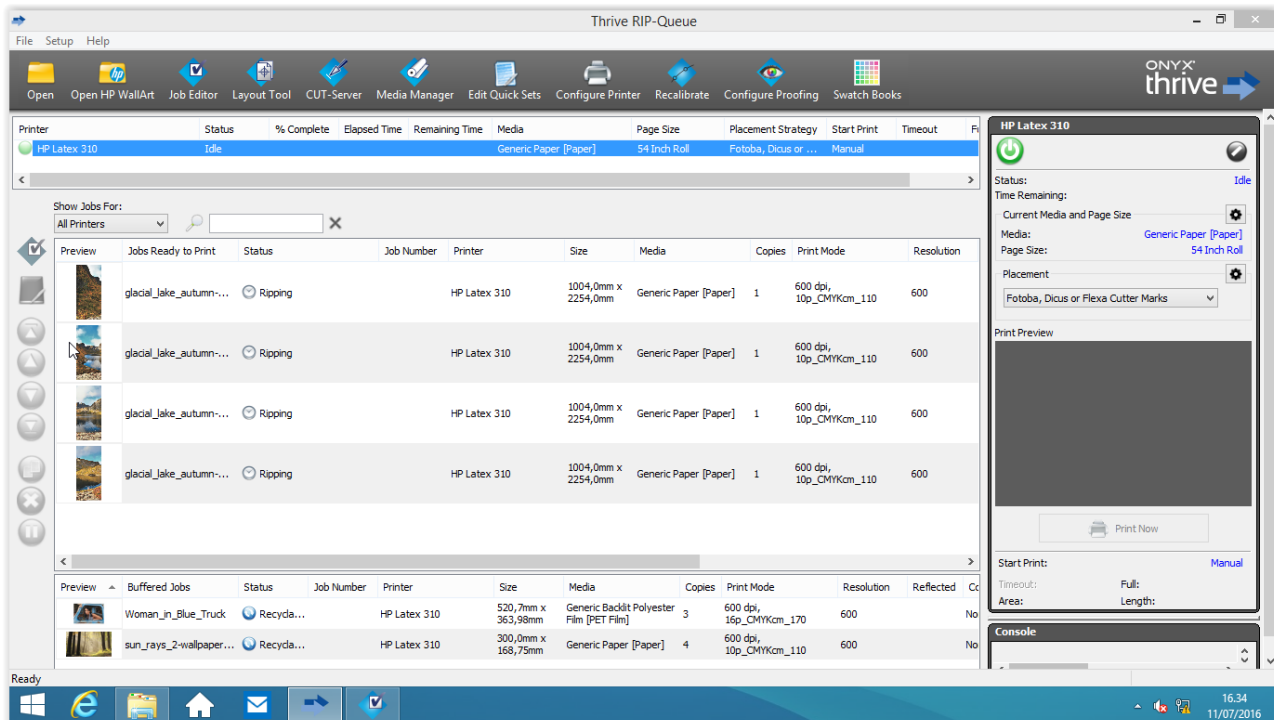
Go back to Tiling Setup and select the desired Tile dimension (in this case we would like to have tiles 1000mm wide after cut). Enable also **Submit tiles as separate jobs** option. All the tiles should have the same width



Go to Finishing tab and enable **Enable Image Bleed** option. Select for each side 2mm bleed. On **Bleed type**, we suggest to use **Mirror** option.



Now send the file to RIP-Queue. All tiles will have the same width, which will be the desired tile width plus four millimeter (in this case 1000mm + 4mm)



Tips and Tricks for a better cutting accuracy with Fotoba XLD170WP cutter

We suggest to keep the following settings on the XLD170WP :

- **Paper speed** = [5]
- **Resync side sensor** = ON
- **Follower sensitivity** = [2] or [3] depending on the material

Different values from the suggested ones might result in lower precision on the cutting. To increase the precision we also suggest to have a sloping collecting table outside the cutter to avoid any problem on handling the weight of the cut material.

Depending on media, ink coverage or type of printer the printed tiles might be printed not square. This means the width is different along the tile.

This will of course create problems when cutting or applying the tile to the wall. The most effective way to eliminate or reduce this problem is to print a “fake tile” (it can be any picture) 1.5-2mt long in order to stabilize the media and the printer temperature before printing the roll.