HP Latex 300 Series Printers

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Wallcovering Printing Tips and Tricks

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.
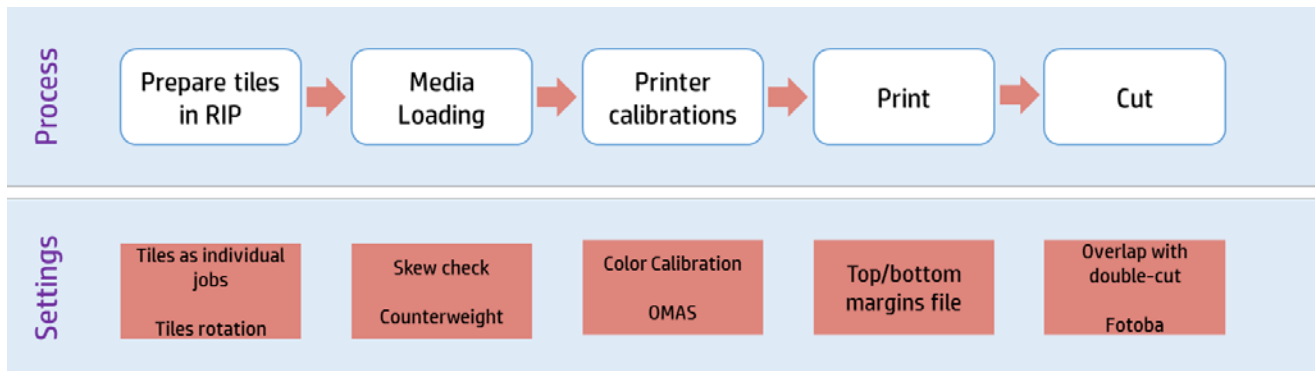
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1 TIPS FOR PRINTING WALLCOVERINGS WITH HP LATEX 300 SERIES PRINTERS

1.1 APPLICATION PROCESS AND CONTROL VARIABLES

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

Process	Prepare tiles in RIP	Media Loading	Printer calibrations	Print	Cut
Settings	Tiles as individual jobs / Tiles rotation	Skew check / Counterweight	Color Calibration / OMAS	Top/bottom margins file	Overlap with double-cut / Fotoba

2 JOB PREPARATION

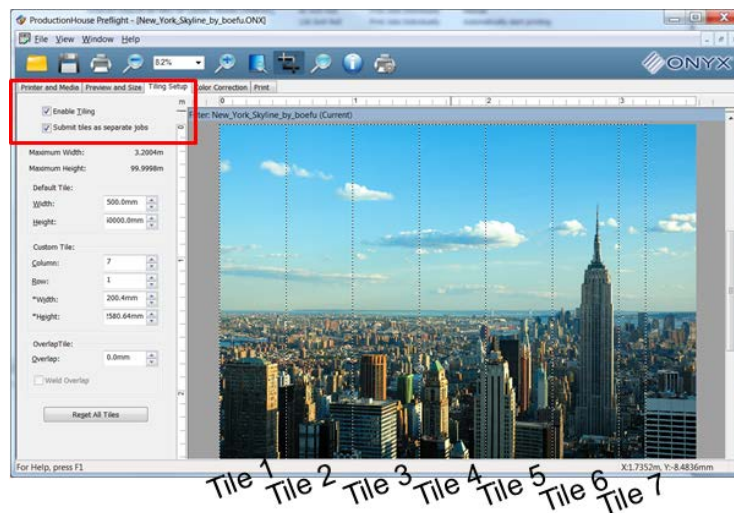## 2.1 PREPARE YOUR FILE IN YOUR RIP SOFTWARE (ONYX, CALDERA ...)

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

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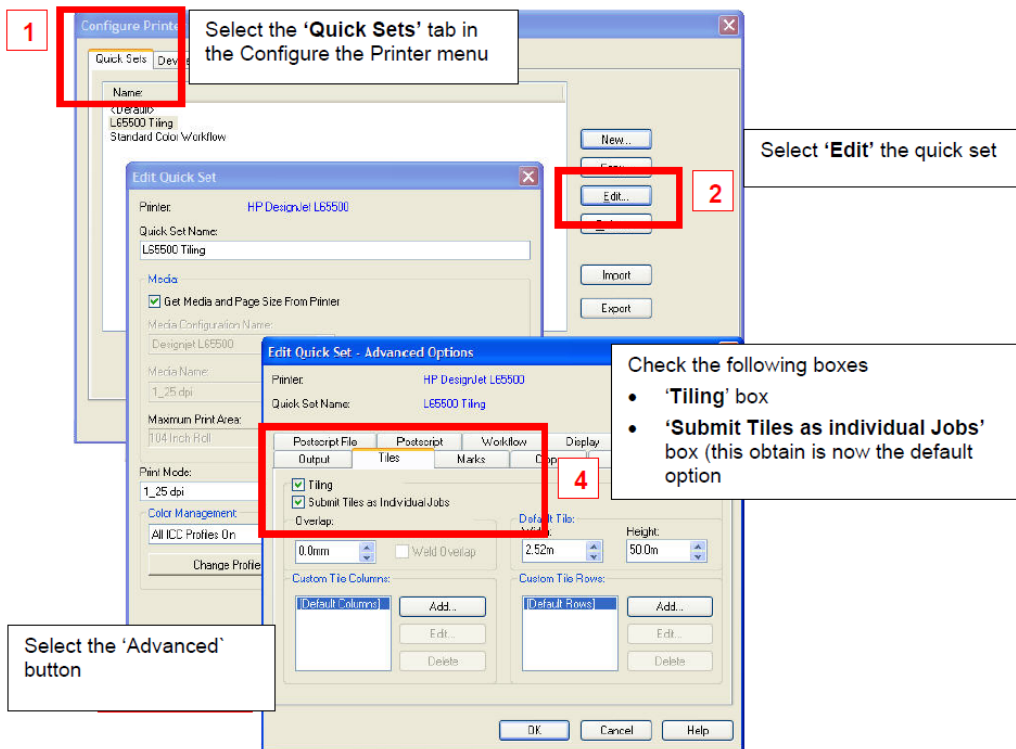- The wall where your wallcovering will be installed.

Set up your tiles (Onyx RIP software)

In the 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 the 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.**

1 Select the **'Quick Sets'** tab in the Configure the Printer menu

Select **'Edit'** the quick set **2**

Check the following boxes
- **'Tiling'** box
- **'Submit Tiles as individual Jobs'** box (this obtain is now the default option

4

Select the 'Advanced` button

3. Selecting the **Submit Tiles as Separate Jobs** option allows you to send each tile to the 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.
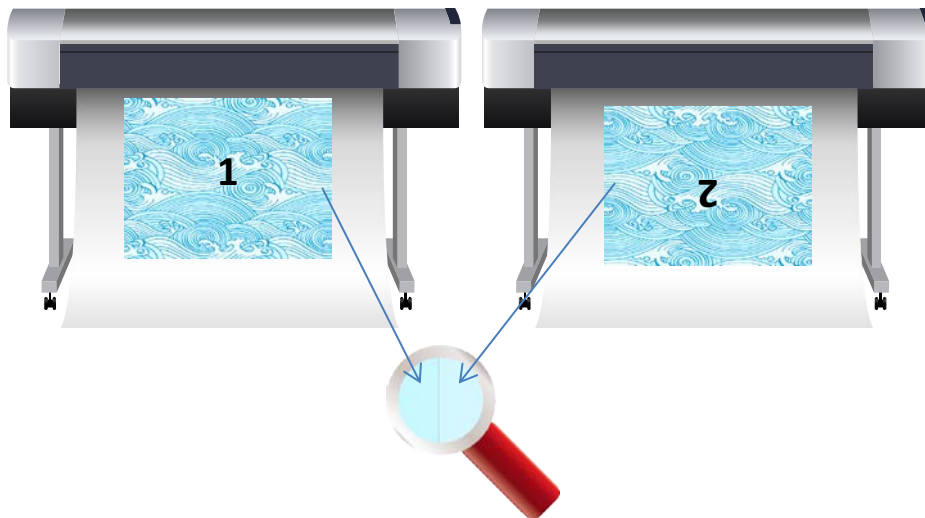

Solution: Rotate the tiles so you do not see the color difference anymore.

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 are printed at 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 will appear asking you if you want to overwrite the original file or to create a new file. Choose the option you want, and click **OK**.
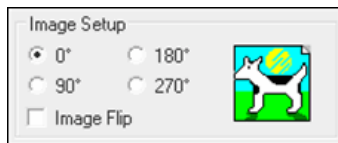
Print Spit bars

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

The **Spit bars** have to be added at the side of the plot vertically, parallel to 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, 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 for higher printing speeds.
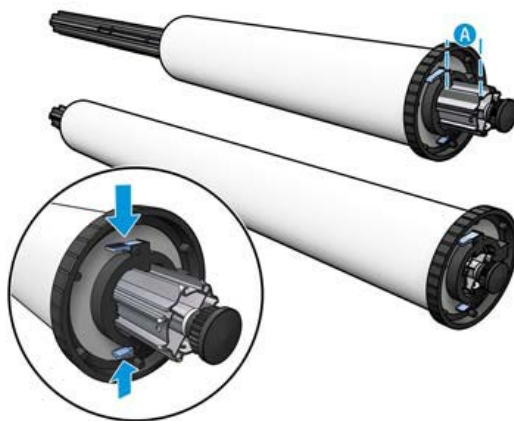
> 🖹 **NOTE:** The 76 mm (3 in) diameter spindle is supplied with the HP Latex 360 printer and is available as an accessory for the HP Latex 330 printer.

3.3 SKEW ACCEPTANCE

During the substrate loading process, the available values for skew acceptance are between 1 and 5, the default value is 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**.
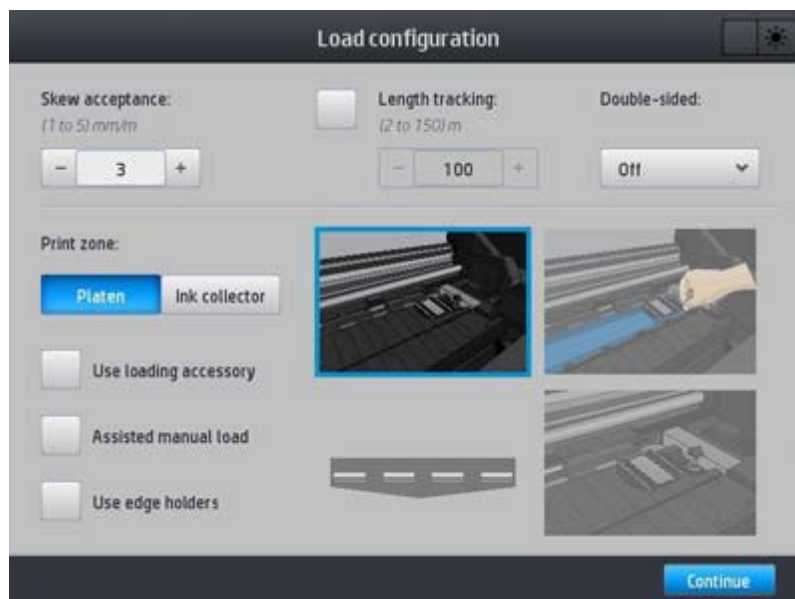
3.4 Counterweight Kit for take-up reel

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 **1 mm 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. Kit reference: **B4H70-67145 Dancer Counterweight 64 SERV**.
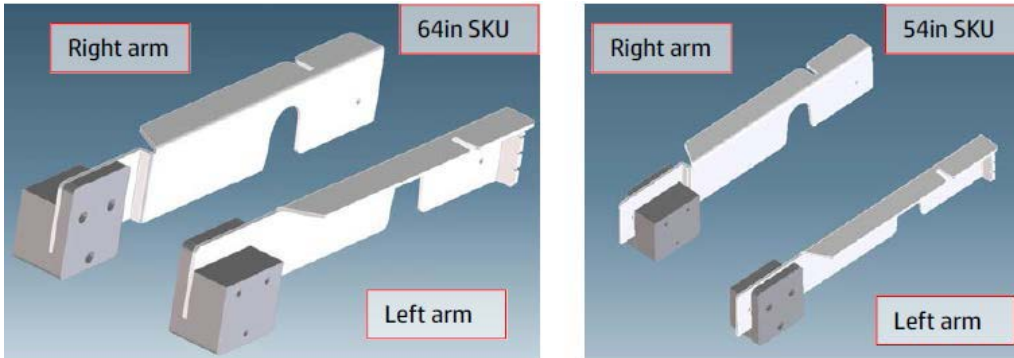
4 PRINTER CALIBRATIONS AND SETTINGS

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.**
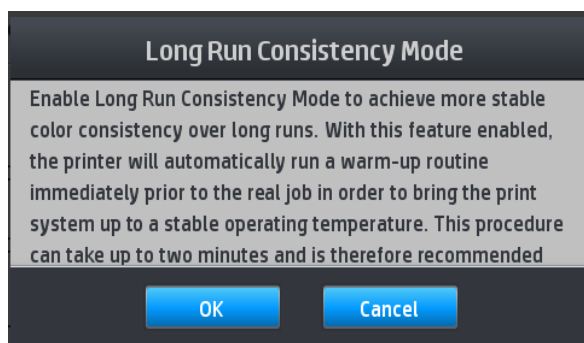

Firmware version 07_00.11

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's 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:
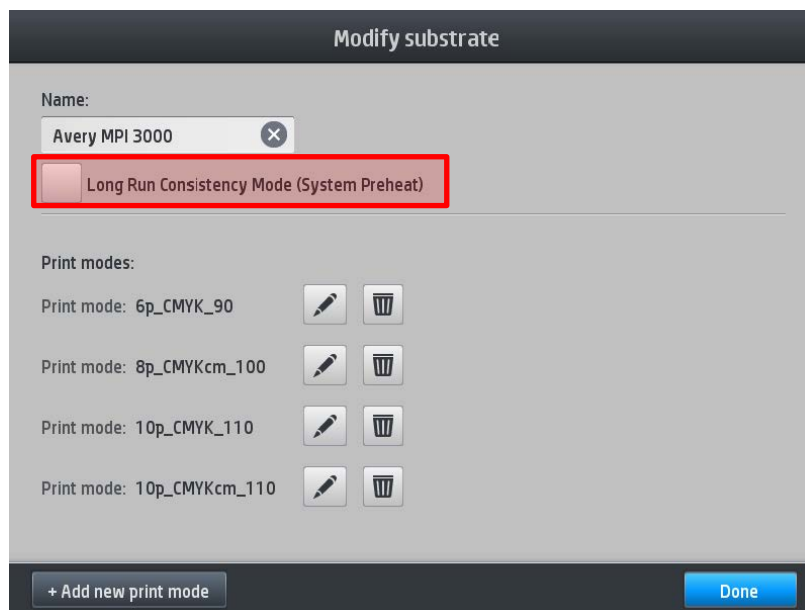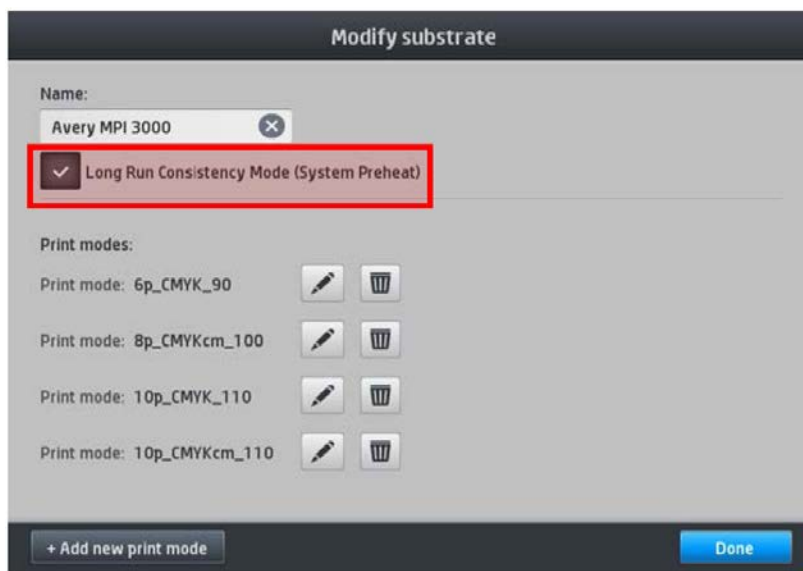

> 📝 **NOTE:** The name of this feature for HP Latex 310 and 330 units is just "Long Run Consistency Mode," without the last informative description ("System Preheat").

Once enabled, the following message will appear:

Long Run Consistency Mode

Enable Long Run Consistency Mode to achieve more stable color consistency over long runs. With this feature enabled, the printer will automatically run a warm-up routine immediately prior to the real job in order to bring the print system up to a stable operating temperature. This procedure can take up to two minutes and is therefore recommended

OK   Cancel

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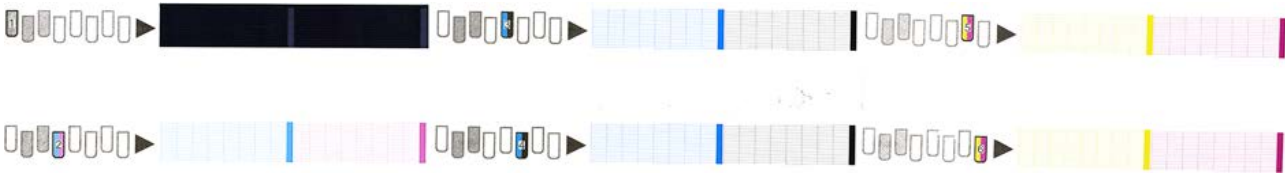
For each individual colored pattern, make sure that most of the dashes are present.

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 misregistrations on 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 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 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 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 and so the printer changes the way it prints on each different substrate. The RIP requires a description of the requirements of each substrate and this description is called the "substrate preset."

The substrate 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. Substrate presets for your printer are installed in the RIP.

The RIP contains substrate presets only for the most commonly used substrates. If you buy a substrate for which your RIP has no preset, you can obtain a preset for the 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 the HP Latex 360 or 370 printer

If you cannot find a color profile for your substrate anywhere, create a new media preset in the printer or with the 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 cannot find the correct printer settings for your substrate, you can start by copying the 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 the 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 become deformed.
Curing temp.	Curing is needed for the latex to coalesce, creating a polymeric film which acts as a protective layer, while at the same time removes the remaining co-solvents from the print. Curing is vital to ensure durability of 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 graininess.	You may see horizontal banding or graininess.
Input tension	Tension is applied to the substrate from the input spindle. It needs to be consistent 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 consistent.	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 the 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 is only available 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 an 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: • When the substrate allows ink to pass through to the platen. Clean the sensor after using the substrate. • When you are instructed to do so by the front panel because the sensor is dirty or unable to track the particular substrate.	

5 PRINTING

5.1 GENERAL PRINTING ADVICE

If you have any print-quality problems, it is 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 into different times (e.g. the 1st tile one day, and the 2nd tile the 2nd day).
   - Do NOT change the print mode 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 the first and last tiles have the lowest length difference versus the other ones, **add a top margin of 50 cm (20 inches) before the 1st tile and add a bottom margin of 50 cm (20 inches) after the last tile**.

5.3 RECOMMENDATIONS IN CASE OF SHRINKAGE

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 the curing temperatures during a shorter period. You will then have to re-consider other printer settings like:

- Decreasing ink density.
- Decreasing printer heating and curing temperatures.

RIP compensation for Wallcovering shrinkage or expansion

Some RIPs may provide a scaling option that allows you to compensate easily for top/bottom substrate shrinkage or expansion. If you see consistent print length distortion, you can then use the distortion factor in your RIP's media settings. 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's drying and curing elements when they heat 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 counterweight accessory**:

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

Using the counterweight accessory, you can expect the following amounts 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's front panel.
- Select the **Substrate library** option.
- Select the substrate you want to print on.
- Open the details of the substrate and click **Modify** > **Advanced settings.**
- Check that the option **OMAS enabled** is **enabled**.
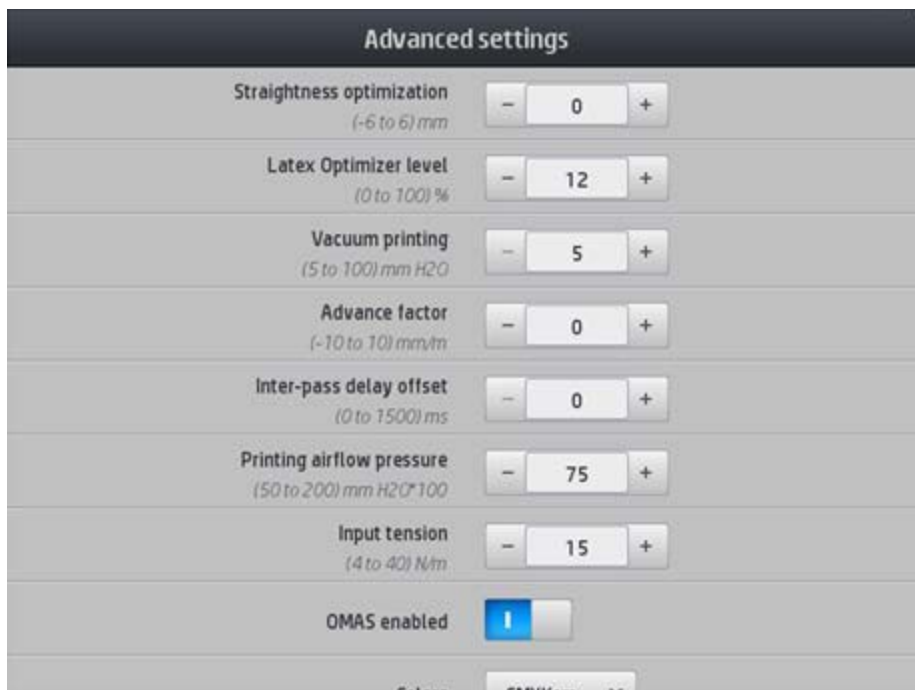
6 TILE-CUTTING TECHNIQUES

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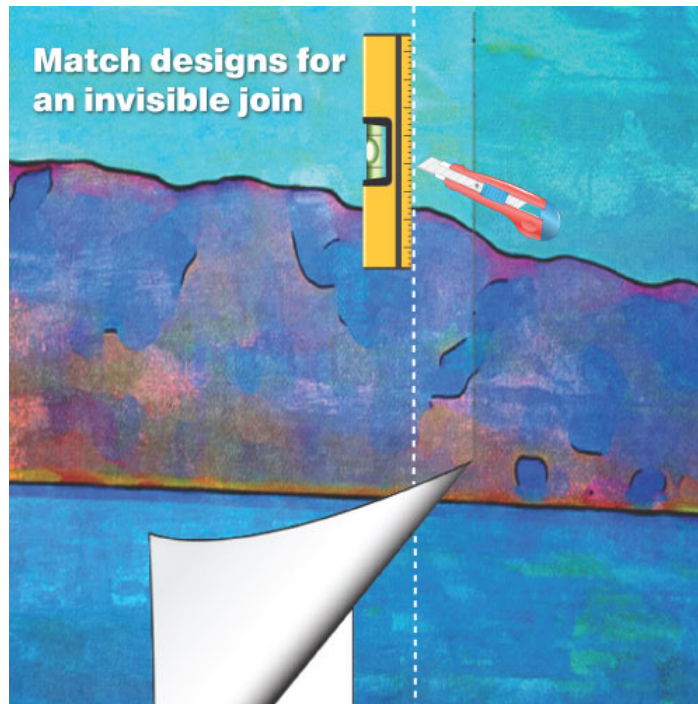
Double-cutting is a technique that is used to obtain perfectly fitted seams. It is done by overlapping one panel of wallpaper over the other until the image or patterns are perfectly matched. Then a sharp blade is used to cut through both layers. The excess edges are then removed.

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 change blades frequently (just snap off the old blade).

2. Then, peel away the waste on the top layer, 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 other nice thing 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 the panels and double-cut the seams in the same manner until your entire mural is hung, finishing finally with Panel A. Take some time to make sure everything is smoothed down properly into place and that all edges are sticking down.

6.2 TILE-CUTTING TECHNIQUE #2: AUTOMATIC CUTTING WITH FOTOBA XLD170WP

Fotoba XLD170WP is a complete automatic X/Y cutter which features true image-edge tracking, in order to compensate for any misalignment on the print or on the media.
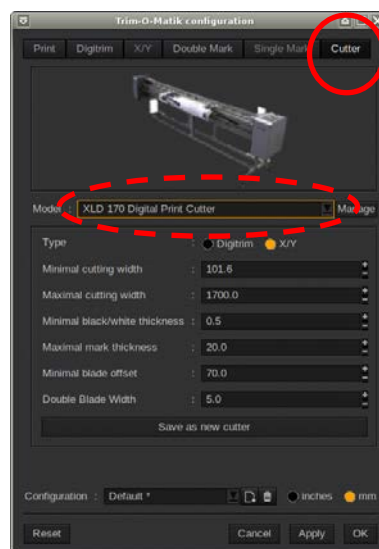
A specific default setting is suggested for the thickness of the cut marks.

**Set up 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.**
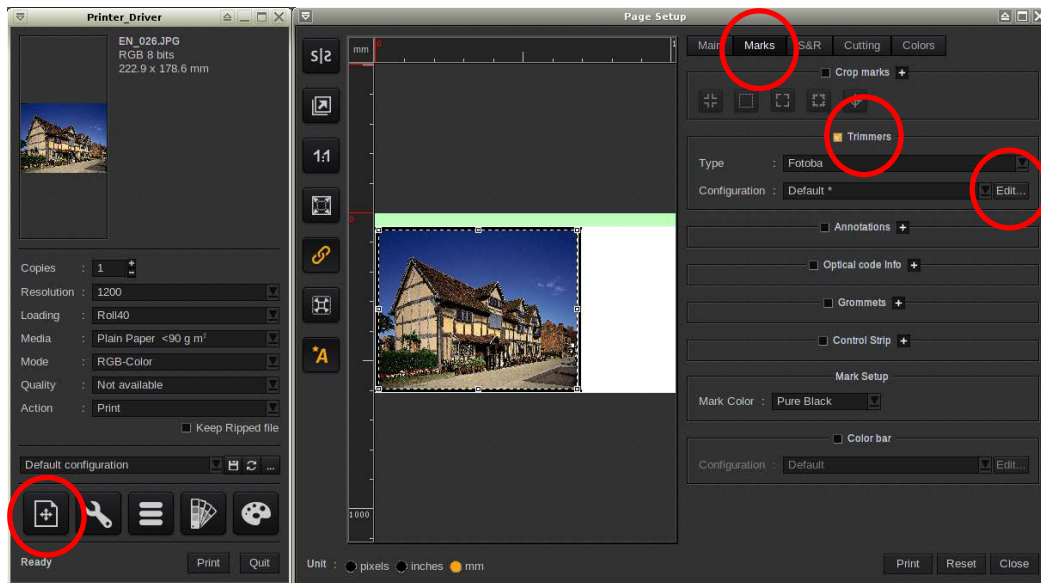
In the new window, select **Cutter** tab. Select **XLD170.**

Select the **Print** tab and make sure that **X/Y** is enabled (Nest-O-Ba key is required) as well as the four cut marks. Move then to the **X/Y** tab and adjust the setting as follows:
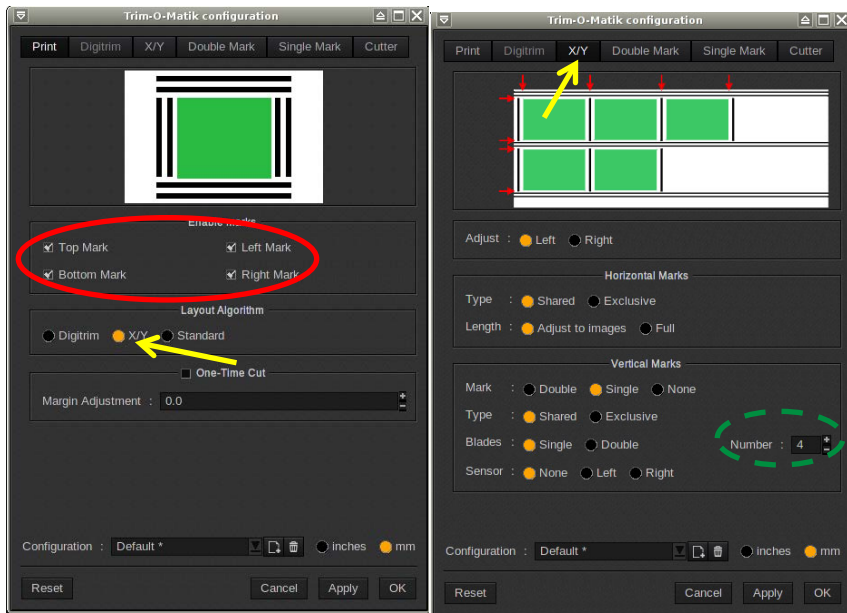
NOTE: the value for **Number** (green circle above) depends on how many vertical knives you can install in the Fotoba XLD 170 WP cutter.

Please check and set the Double mark and Single mark as follows:
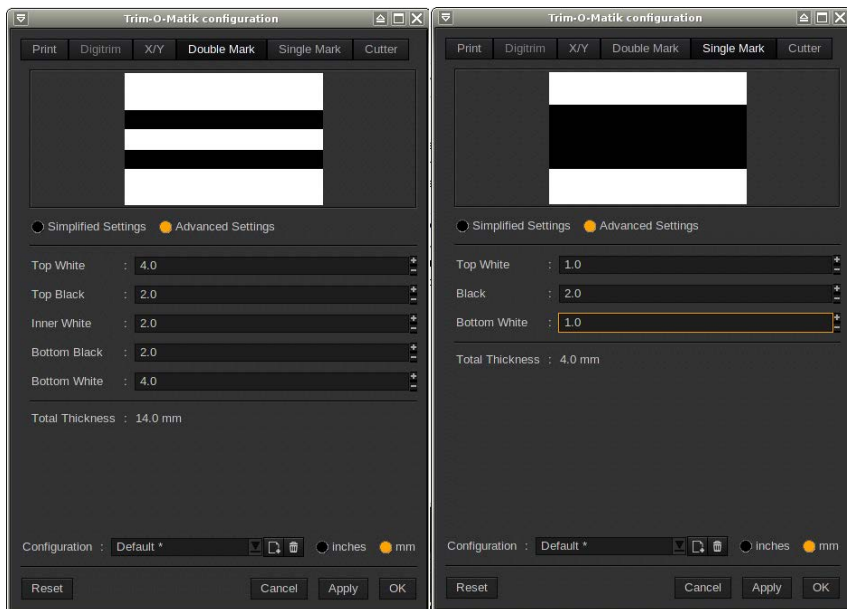
Press **Apply** in order to confirm the selections.

Set up 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 4000 x 3000 mm).
Enable **extend image to poster size** and lock the image dimensions (red circles below).
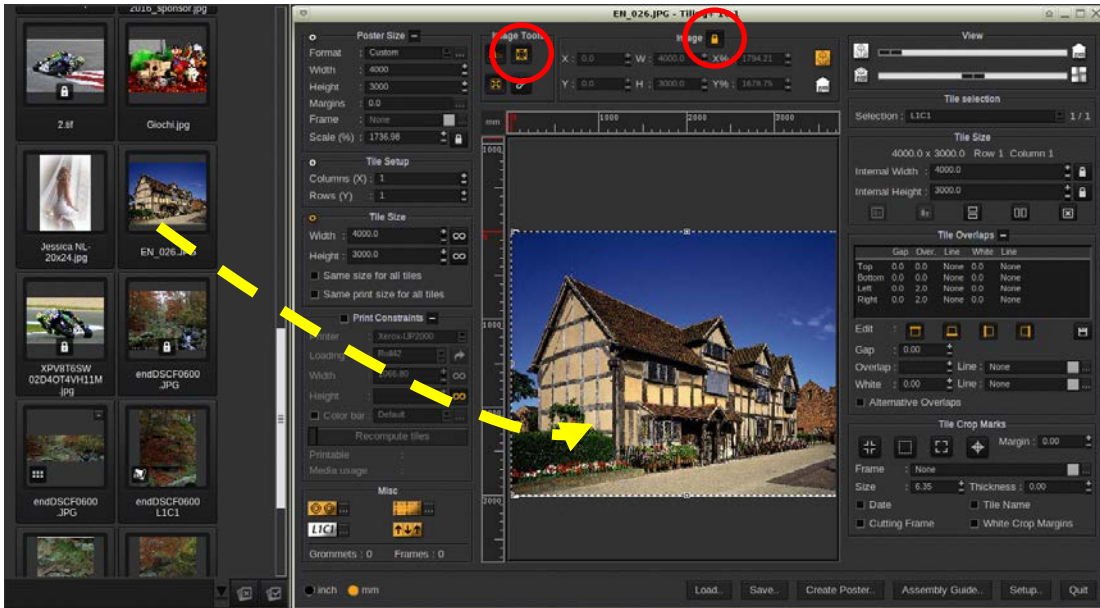
Increase both dimensions by 4 mm (this will create a 2 mm bleed on the outer side for each side) and disable the "**Proportion**" option.

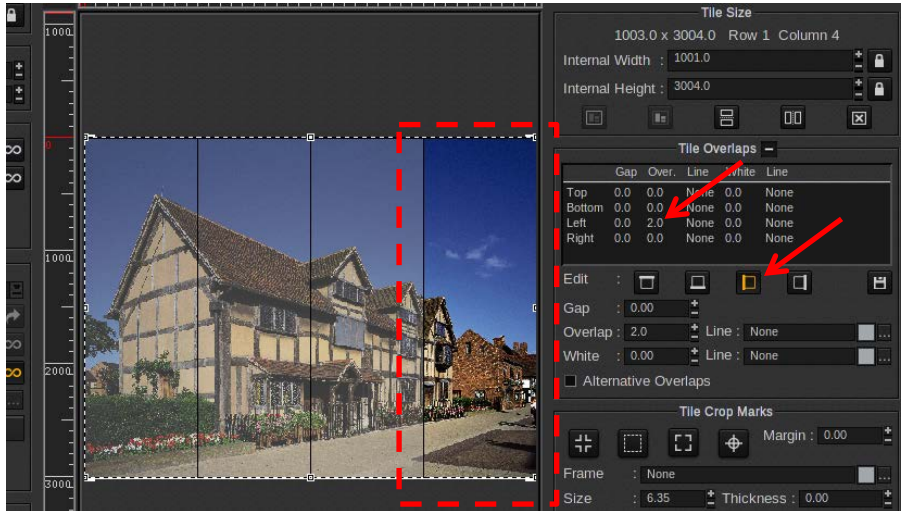+ 4 mm, both width
and height
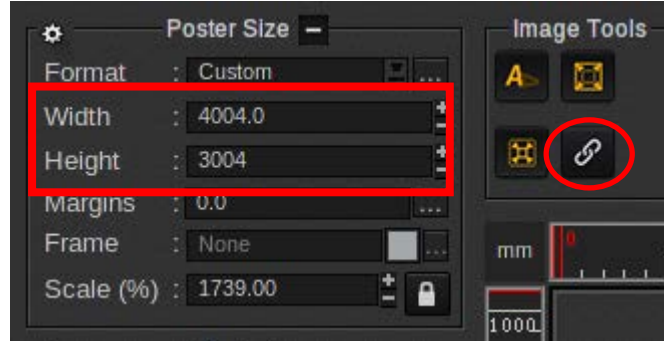
Select the number of columns. For this example, we set four columns.
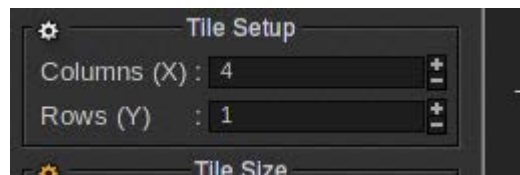
Select all tiles except for the side ones and select an overlap of 2 mm for both the right and the left side.
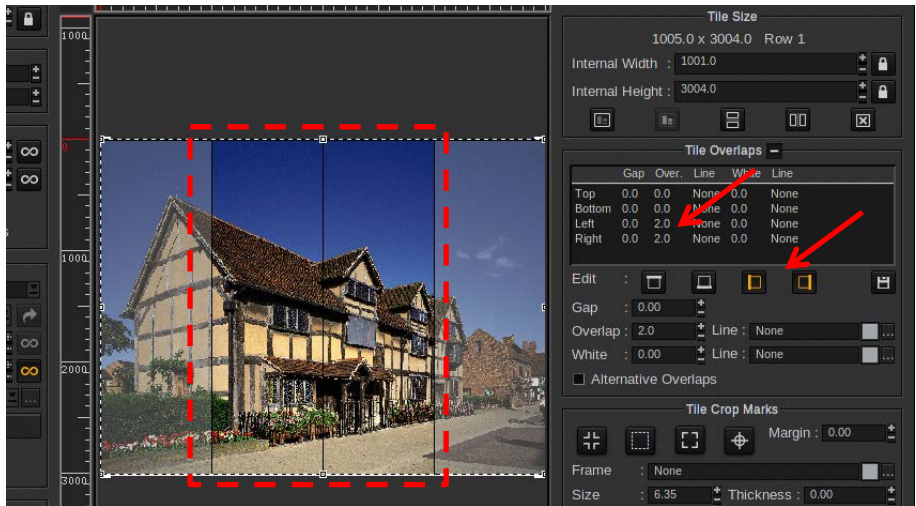
Select the left tile and set a right overlap of 2 mm. The left overlap is set to 0 mm.
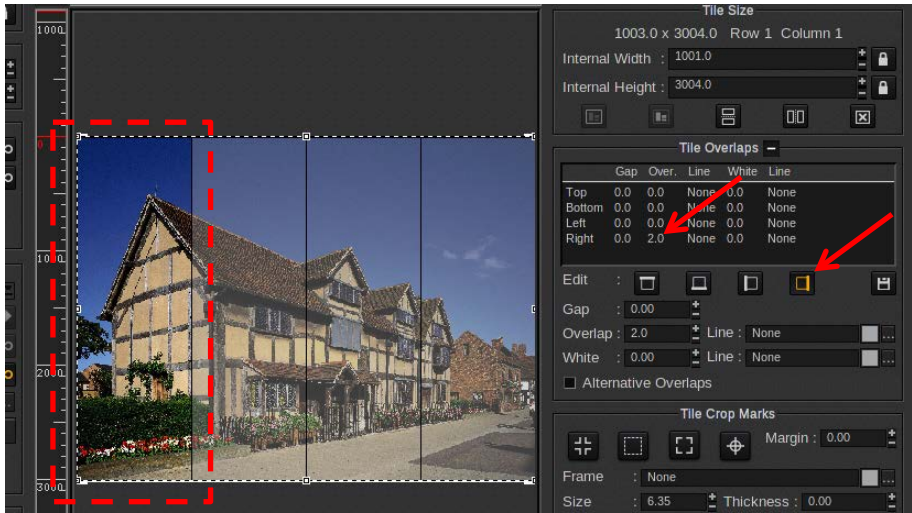
Select the right tile and set a left overlap of 2 mm. The right overlap is set to 0.

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

Enable "**same print size for all tiles**." If requested, answer **Yes** in the window that appears.
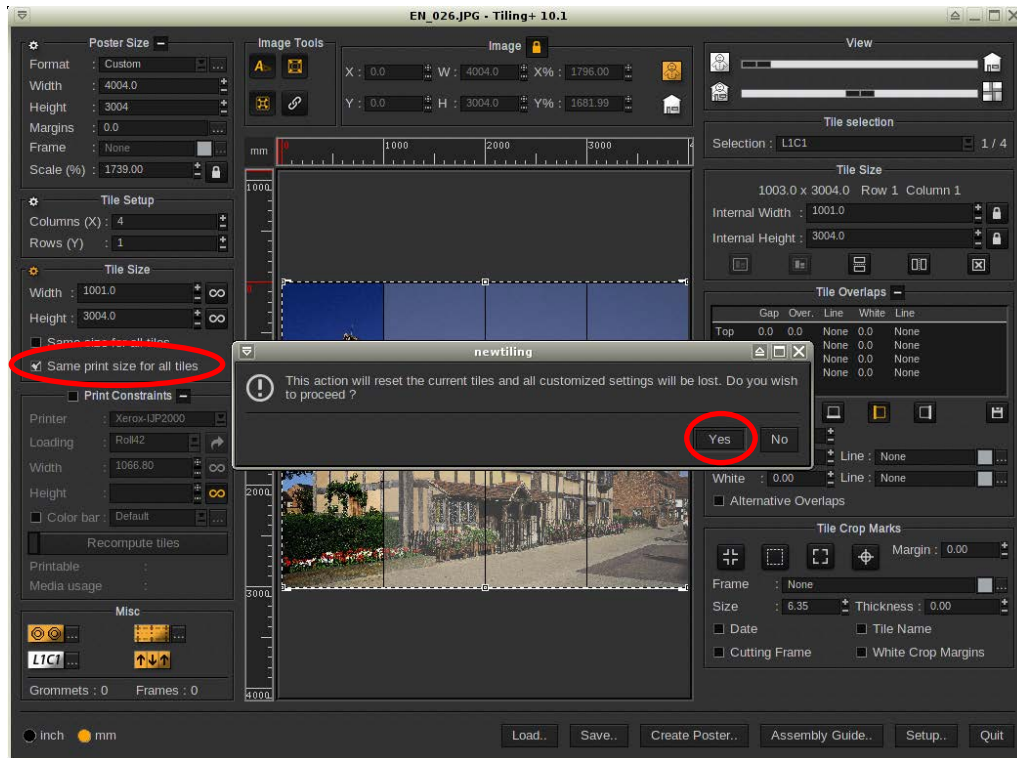
Check that all the tiles now have the same printing width. For this example, they are all 1004 mm (1000 mm + 4 mm overlap cut-out). To proceed, click **Create Poster**.
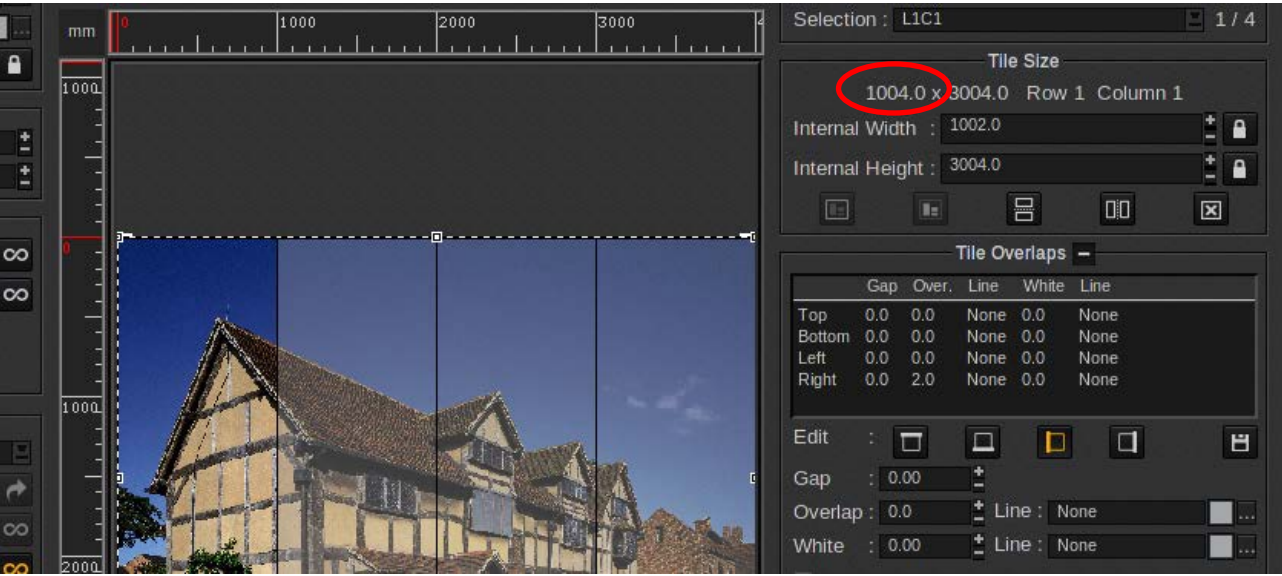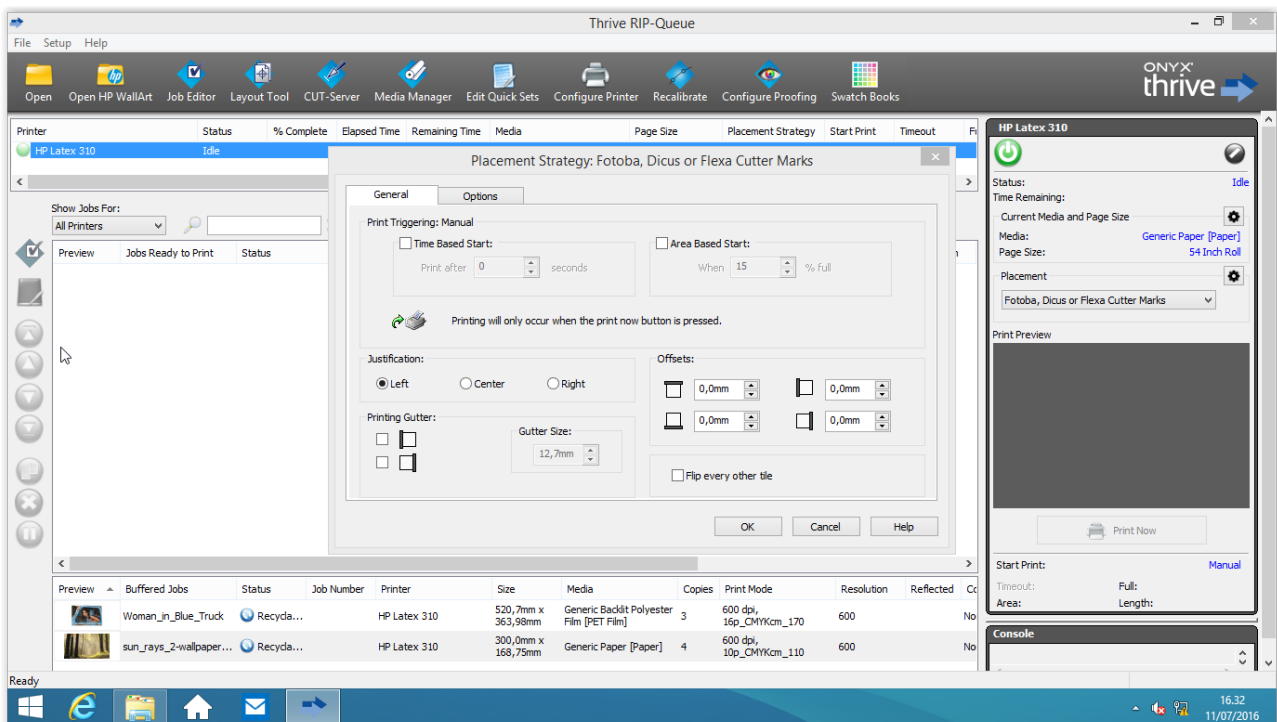
Set up your cut marks for Fotoba XLD170WP cutting (Onyx RIP software)

- Open the RIP Queue.
- Select **Fotoba marks** in **Placement** settings and adjust the settings accordingly.
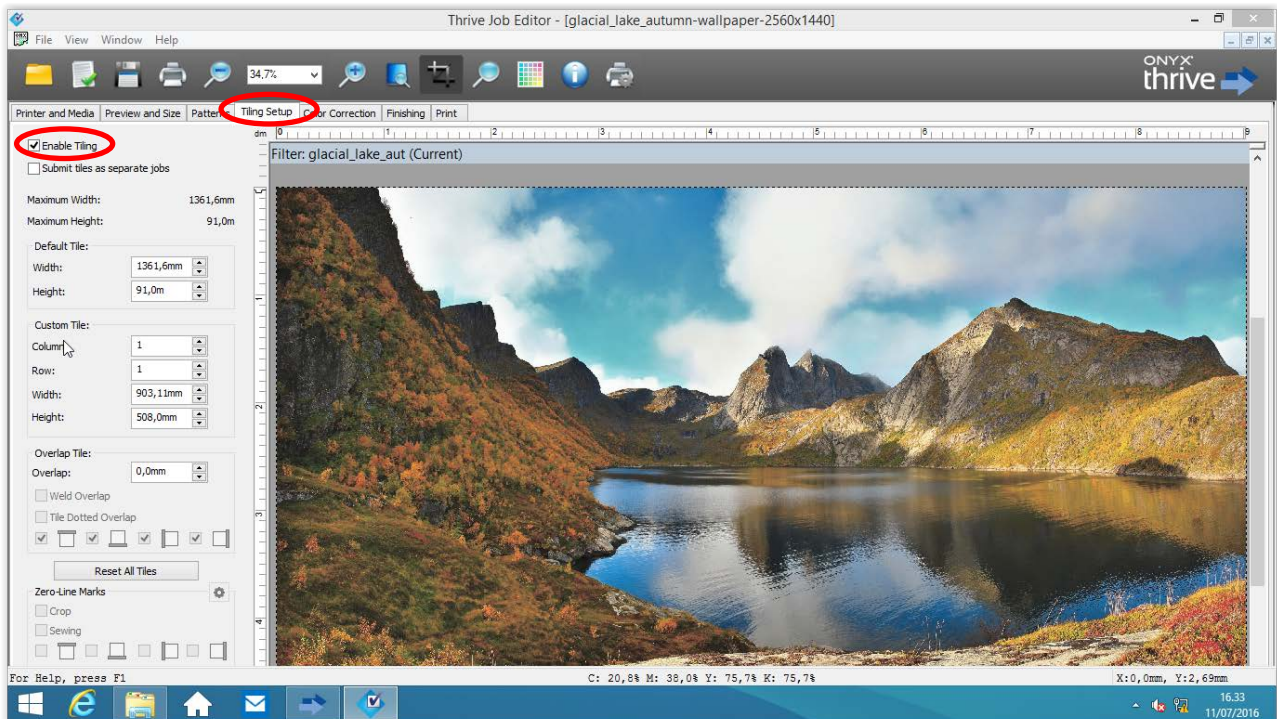- Select your printer and then select **Placement.**
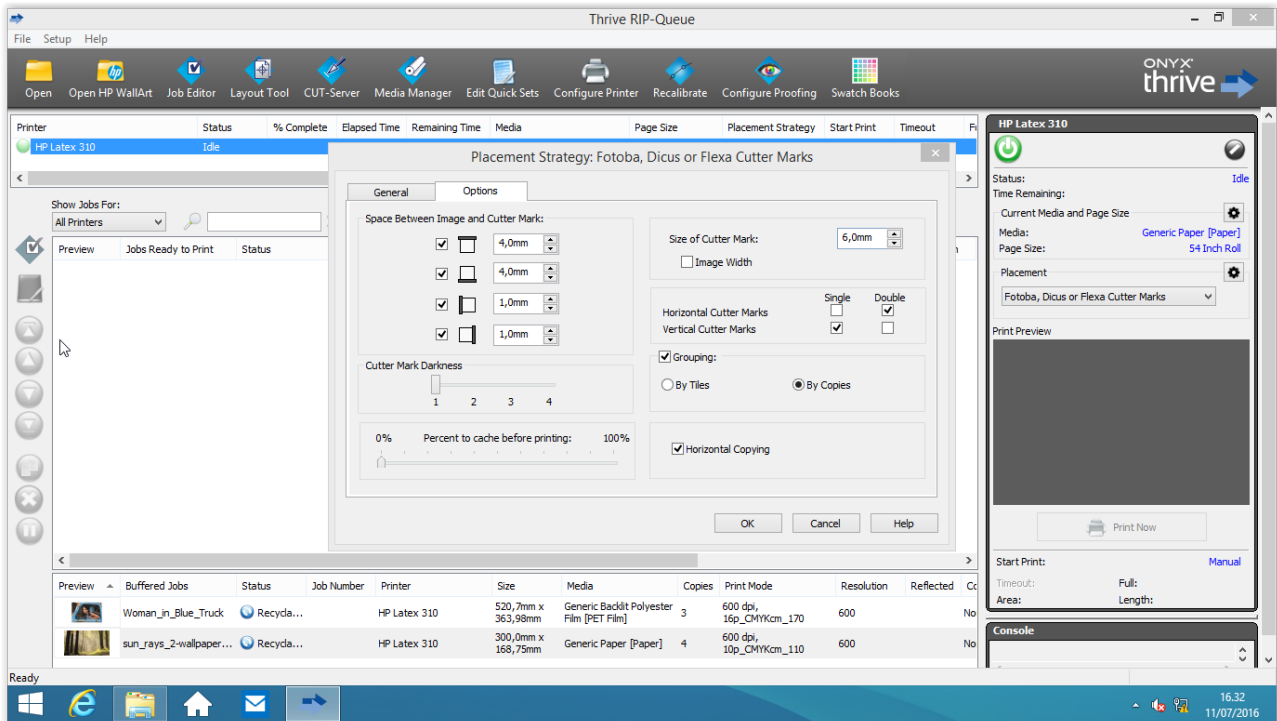
You can adjust the printing position in the **General** tab. This might be different depending on your printer.
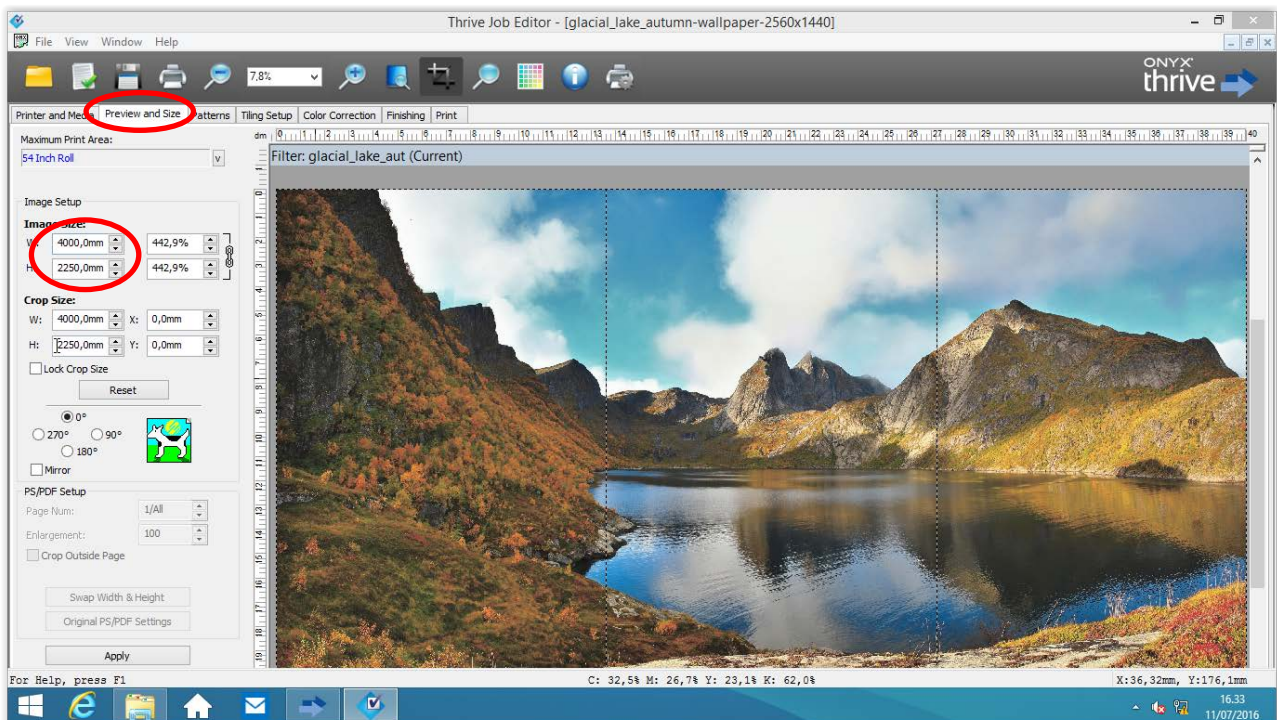
# Set up your tiles for Fotoba XLD170WP cutting (Onyx RIP software)

Open a new job in the **Job Editor** and select **enable Tiling**.

Now go to the **Preview and Size** tab and insert the desired overall wall dimension (in this case 4000 x 2250 mm).

Go back to **Tiling Setup** and select the desired **Tile dimension** (in this case we would like to have tiles that are 1000 mm wide after cutting). Also enable the **Submit tiles as separate jobs** option. All the tiles should have the same width.
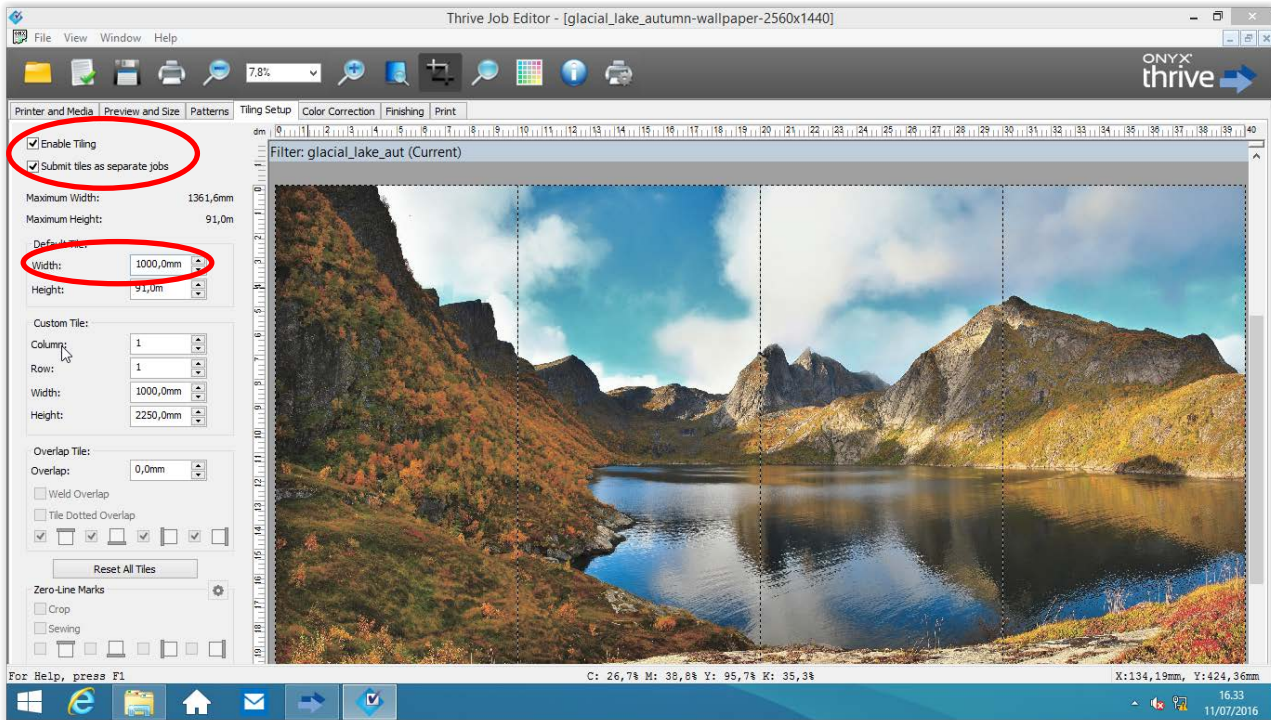
Go to the **Finishing** tab and enable the **Enable Image Bleed** option. Select a 2-mm bleed for each side. For **Bleed type**, we suggest using the **Mirror** option.
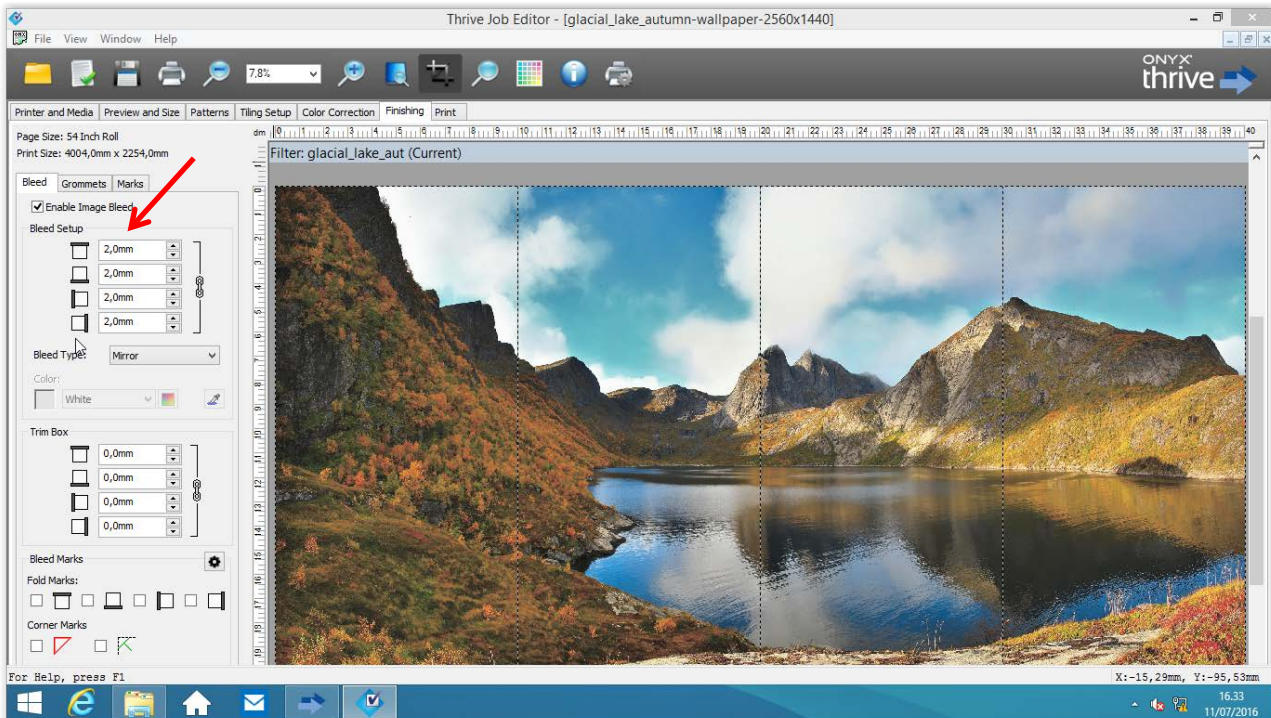
Now send the file to the RIP queue. All tiles will have the same width, which will be the desired tile width plus four millimeters (in this case 1000 mm + 4 mm).
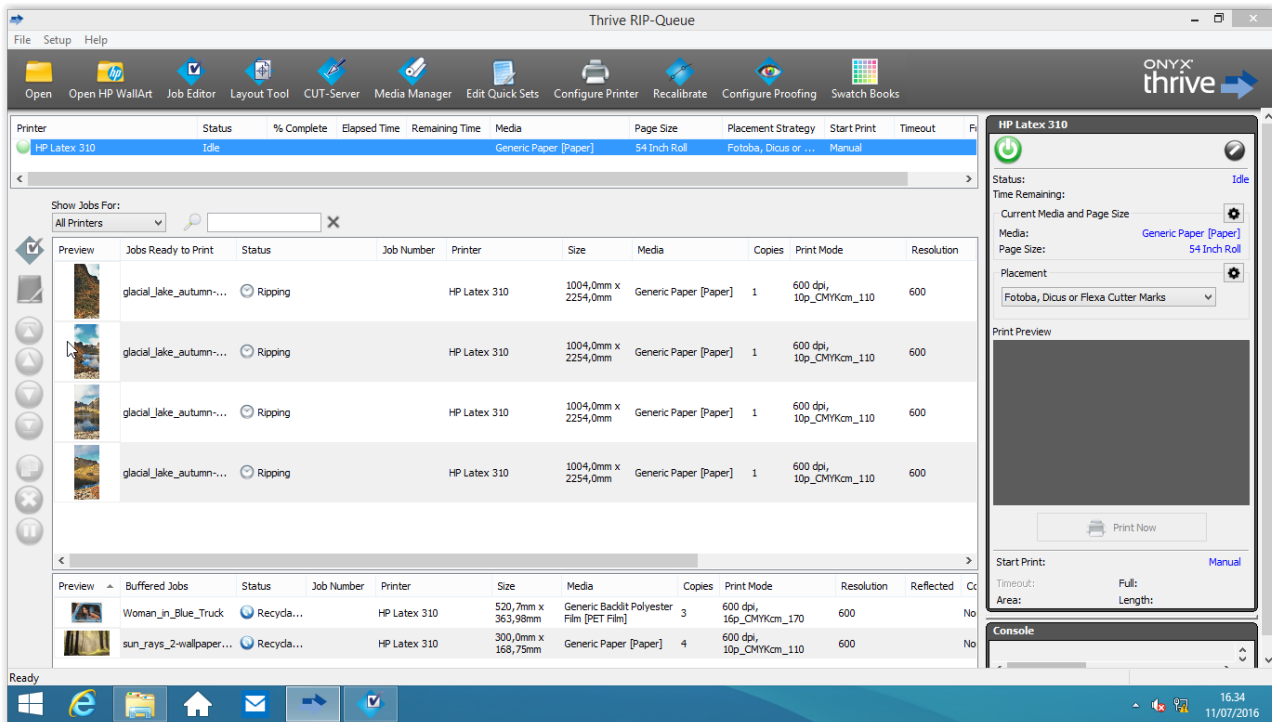
Tips and Tricks for better cutting accuracy with the Fotoba XLD170WP cutter

We suggest keeping the following settings for the XLD170WP:

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

It is recommended to print one tile across the full width of the media. Having more than one tile printed may decrease the precision of the cutting.

Values different from the suggested ones might result in lower cutting precision. To increase the precision, we also suggest using a sloping collection table outside the cutter to prevent any problems with handling the weight of the cut material.

Depending on the media, the ink coverage and the type of printer, the printed tiles might be printed un-squarely. 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 image) 1.5-2 m long in order to stabilize the media and the printer temperature before printing the roll.