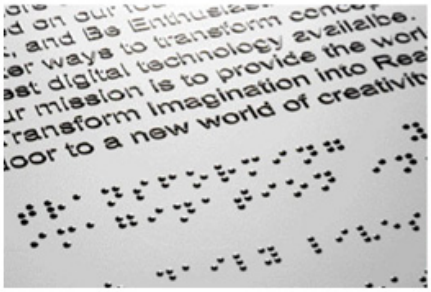
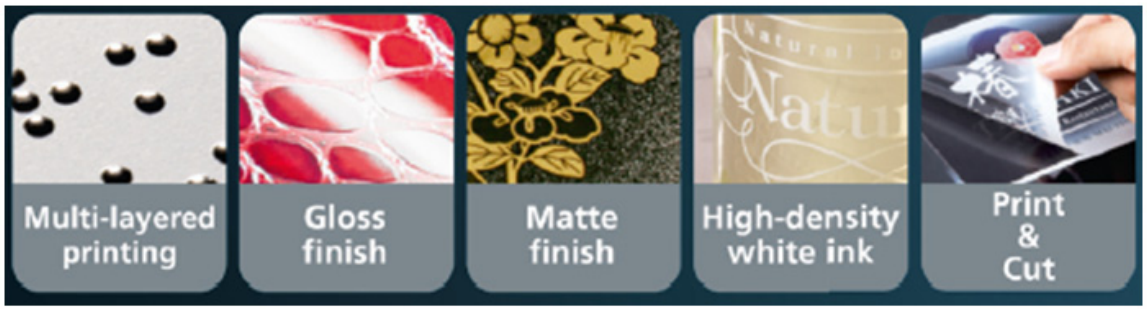
ROLAND VERSAUV LEC-330









The Roland VersaUV LEC-330 (30”) supports the use of ECO UV, ECO UV3, ECO UV4 and ECO UVS inks in CMYK, White, and Clear. The printer can print in multiple passes, and perform cutting. It is quite a complex device, and is not as straightforward to use as you might expect.

The Roland VersaUV LEC-330 is supported in Fiery Colorproof XF and Fiery XF v4.1 Print Pack 2 (Fiery XF 4.1.2).

This document comprises:

1 The physical possibilities and restrictions that the printer imposes and how the Fiery XF printer driver applies them, and works around some of them*

2 How to print jobs*

3 Printer information (by the vendor)*

4 Fiery positioning and key features

* Based on Fiery XF version 4.1.2.

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UV ink curing

UV ink is a liquid that solidifies when exposed to UV (ultraviolet) light. The LEC-330 print head has two UV LEDs connected to it. Depending on which LED is turned on or off, the ink either gets cured (solidifies) immediately (matte) or it gets cured a few seconds later (glossy). This means that all the ink that gets printed in one pass is always cured in the same way — either matte or glossy.

Restrictions

Printer restrictions:

Due to physical limitations, the LEC-330 can only print 4c plus one spot color in one pass. It is not able to print white and clear ink in the same pass. When it comes to colors, the LEC-330 can print the following combinations per pass: W (white), Gl (glossy), CMYK, WCMYK, CMYKW, GlCMYK, CMYKGl.

When a non-glossy mode is printed, both UV lights have to be turned on, so that matte curing will occur. If Glossy curing is called for, this can only be achieved in a clear-ink-only pass. On top of these complications, not all combinations are available in all resolutions.

Software restrictions

Fiery XF 4.1 only knows about the printer spot colors "WHITE_INK" and "CLEAR_INK". The way these colors are processed is determined by the settings made on the Special tab.

For White ink, this means that White can either be printed under CMYK or it can be printed on top of CMYK. However, it is not possible to print White under CMYK and White on top of CMYK as part of the same job.

For Clear ink, this means that clear ink can either be cured matte, or it can be cured glossy. However, it is not possible to mix matte and glossy as part of the same job. These limitations will be removed in a future version of the printer driver.

Document preparation

When a standard Fiery XF system processes a PDF document, it looks for the spot colors present in the document, and tries to map them automatically. In the case of the LEC-330, Fiery XF looks for the spot colors "WHITE_INK", "CLEAR_INK", and "CutContour". Fiery XF then sends to the printer driver the data consisting of:

- Regular CMYK print data
- The spot color "WHITE_INK"
- The spot color "CLEAR_INK"
- Vector path information from the spot color "CutContour"

The printer driver in turn processes this information and sends it to the printer in a form that the printer can digest. In the case of the LEC-330, this means dividing the information up into print passes that the printer can perform.

Job settings

The printer driver retrieves the white and the clear ink information from the PDF document, but it still needs to be told how exactly to print it. You define this in System Manager on the Device tab > Special pane.

- White ink printing
  - Print mode

    The following settings are available:

White ink setting	Meaning
Spot color WHITE_INK	The information is taken from the spot color named "WHITE_INK" in the PDF file.
Inked image	A white ink dot is artificially generated for CMYK information that represents a pixel other than (0,0,0,0).
Bounding box	A white ink pixel is generated for image pixels.
Off	White ink printing is deactivated.

  - White ink coverage

    Here you can select a percentage value from 0% to 100%. The value is multiplied by the white information present in the image or generated according to the setting made for "Bounding box" or "Inked image".

  - Printing order

    Here you choose whether white is printed before color, or color is printed before white.

- Clear ink printing
  - Print mode

    The following settings are available:

Clear ink setting	Meaning
Spot color CLEAR_INK	The information is taken from the spot color named "CLEAR_INK" in the PDF file.
Inked image	A clear ink dot is artificially generated for CMYK information that represents a pixel other than (0,0,0,0).
Bounding box	A clear ink pixel is generated for image pixels.
Off	Clear ink printing is deactivated.

  - Surface

    Here you define how the layer of clear ink is printed and cured. The following settings are available:

Surface setting	Meaning
Glossy	The clear ink is printed with one UV lamp off and the other lamp on. This lets the ink settle for a while to form a uniform, level surface before being cured, leading to a glossy surface.
Matte	The clear ink is printed with both UV lamps on. This means that the ink droplets are hit by UV light as soon as they touch the media surface. This leads to a very rough surface, leaving a matte impression.
Embossed	First, clear ink is printed and cured using the "matte" method. Afterward, a second layer of clear ink is printed on top which is cured using the "glossy" method. This leads to a very thick, yet glossy impression known as "embossed".

  - Coverage

    Here you can select a percentage value from 0% to 100%. This value is multiplied by the clear ink information present in the image or generated according to the setting made for "Bounding box" or "Inked image".

Cut Settings

On the Finishing tab > Cutting pane, you make the following settings:

- Extract contour path from EPS/EPS

  Select the check box.

- Contour colors

  Select the spot color channel from which you want to take the cut path information. Selecting a source for the cut path information is not enough. You still have to tell the printer driver that it should actually cut once the printing is done. You do this on the Special pane.

On the Output tab > Special pane, you make the following settings:

- Mode

  Here you can choose between "Print only", "Print & Cut" and "Cut only". This specifies how the job is output.

Output

Once the printer driver has all the required information, it determines the order in which the different layers are printed. The order is determined by the settings made for metallic ink, white ink and clear ink, as illustrated in the table below:

White ink mode	Clear ink mode	Layer 1	Layer 2	Layer 3	Layer 4
—	—	CMYK			
	Matte	CMYK + clear matte			
	Glossy	CMYK	Clear gloss		
	Embossed	CMYK + clear matte	Clear gloss		
Under	—	White + CMYK			
	Matte	White + CMYK	Clear matte		
	Glossy	White + CMYK	Clear gloss		
	Embossed	White + CMYK	Clear matte	Clear gloss	
Over	—	CMYK + White			
	Matte	CMYK + White	Clear matte		
	Glossy	CMYK + White	Clear gloss		
	Embossed	CMYK + White	Clear matte	Clear gloss	
Neither White + CMYK nor CMYK + White can be performed in one step. The operation has to be divided into two steps.					
Under	—	White	CMYK		
	Matte	White	CMYK + Clear matte		
	Glossy	White	CMYK	Clear gloss	
	Embossed	White	CMYK + Clear matte	Clear gloss	
Over	—	CMYK	White		
	Matte	CMYK	White	Clear matte	
	Glossy	CMYK	White	Clear gloss	
	Embossed	CMYK	White	Clear matte	Clear gloss

For CMYK + gloss varnish use 360 x 720 dpi or 720 x 1440 dpi to make sure that an optimum amount of varnish is applied. This ensures a smooth finish.

The specified tasks are carried out automatically without any user intervention.

Automatic multi-pass printing

When you have made the above settings, Fiery XF proceeds to output the job, e.g. it prints the white layer first, pulls back the media, prints the CMYK layer, pulls back the media, prints white again, pulls back the media, prints clear ink cured matte, pulls back the media, prints clear ink cured glossy, pulls back the media, and then cuts.

If you frequently have to output the same types of document, it is recommended that you create a workflow for each type, and make the settings at workflow level. That way, all you need to do is to import the job into the workflow, and the rest will happen automatically.

Manual multi-layer printing

The LEC-330 is able to print multiple layers of ink on the media. By applying multi-layer printing, you can create many different special effects. Some of these special effects are not possible in an automatic workflow, but can be achieved with a little manual intervention.

The key to this is the check box "Return to origin after print", which is located on the Special tab. If you select this check box, the printer will first print the whole job, and then pull the media back into the printer and return it to the start position. This means that the next job sent to the printer will be printed exactly over the first job. In this way, the LEC-330 can print several layers of ink on the same sheet of media. However, be careful not to print too many layers of ink on top of each other — this can result in a head crash if the print head collides with the solidified ink!

On the whole, multi-layer printing with the LEC-330 is an open research topic, and only limited experience is available.

Printer Information (by the vendor)

- 30" UV inkjet print & cut device
- Environmentally friendly ECO-UV inks:
  - CMYK+White+Clear, CMYK+White+White, CMYK+Clear+Clear
- Layered Clear produces unique textures and finishes
- Supports hundreds of media options
  - Metallic and synthetic papers, foils, BOPP, PE and PET film and flexible substrates
  - Features a redesigned hood to support card stock, plastic board, polycarbonate and other rigid substrates (except metals) up to 1 mm (0.04") thick
- Prints up to 101 sq ft/hr
- Safe, long-lasting and energy-efficient LED Lamps
- Outstanding image quality
  - LEC-330 — 1440 x 1440 dpi max. resolution
- Intelligent Ink Circulation System prevents white ink from settling
- Advanced Media Take-Up System
- List price: US$62,995

Fiery positioning

- Packaging, decor, label proofing and printing
- Special applications: braille (embossed printing), texture printing (using varnish (clear & matt))
- Production of a huge range of refined products from packaging mock-ups, decors up to fine arts

Fiery key features in Fiery XF

- Comprehensive white ink support
  - Definable printing order for white (color on white/white on color or surface print and reverse print)
  - Selectable white ink printing modes (bounding box, image areas only or white spot color channel only)
  - Adjustable white ink density
  - Opacity simulation for transparent media that is more transparent than the original substrate
  - Support of multiple white channels defined in a print file
  - White ink density level definable for each white channel within the job
- Comprehensive clear varnish support
  - Glossy, matt or embossed printing
  - Relief printing by multi-layer clear varnish support (back to origin)
  - Selectable clear varnish printing modes (bounding box, image areas only or white spot color channel only)
  - Adjustable clear varnish density
  - Support of multiple clear varnish channels defined in a print file
- Flexible handling of white and clear ink for special effects
  - Any job layer can easily be routed to white & clear ink
  - Multi-layer printing
  - Layers can even be inverted, e.g. to use an inverted matte layer to apply gloss
- Automated job processing until refined print result