

What obstacles are you having today?



SALES

There are many conditions that make it impossible to close the sale according to the customer's wishes.



DESIGNER

Balance of Design & Function.



MARKETING

Difficult to generating leads and finding the right tools to create or moving into new markets.



PLANER

Working with tight deadlines.



PRODUCTION

Produce under the budgeted amount of the Company's production. Difficult to change.

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Newsletter

T.A.O. NEWSLETTER



Mass Customization with Direct-to-object Inkjet Printing

A manufacturing method that produces products in large quantities is called mass production.

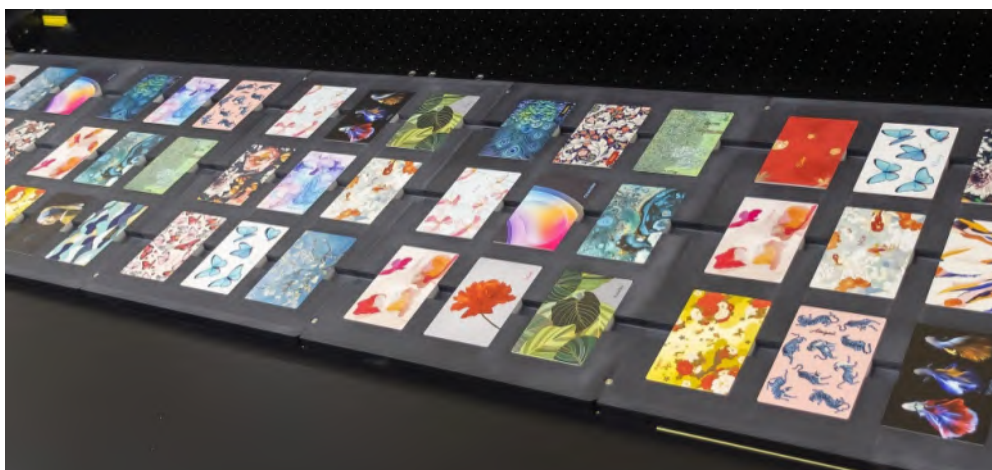
On the other hand, the strategy of optimizing products and services to meet the needs of individual customers is called customization or personalization. Mass customization is the combination of these two contradictory terms. This is a production method that allows customers' individual preferences to be reflected in products while maintaining a high level of productivity.

In this article, we will introduce a solution for mass customization by directly printing individual names and designs on individual cosmetic palette cases, all produced at the same time in mass production.

The advantages of digital printing for cosmetic palette case printing

1 Customization

Digital printing allows for easy customization, enabling each cosmetic case to feature unique designs, pattern, or even personalized elements. In addition, in-line inkjet printers are sometimes combined with other types of presses to print variable data, such as the mailing addresses on direct mail pieces.



2 Flexibility

Digital printing offers flexibility in design changes and smaller print runs. It allows for quick job changes and eliminates the need for printing plates, making it cost-effective for short production runs or limited editions.

4 Multi-color prints are done easily at high speed

6 Low setup costs

3 Color accuracy

Digital printing can accurately reproduce a wide range of colors, gradients and intricate details, ensuring that the final printed design matches the intended visual representation.

5 Able to create special effect / texture



Solution

Machine
& Ink

The printer used in this project is a Roland DG LEC2-S series with a large format flatbed mechanism. Depending on the material to be printed, ECO-UV EUV5-5PR (primer) ink, which is included in the printer, can be printed for pretreatment in order to enhance the adhesion of the UV ink. The product printed is a cosmetic palette case made of ABS resin. The UV inks tend to adhere on ABS resin very well, so primer pretreatment is not always necessary. The printing surface can also be overcoated with spot varnish to improve abrasion resistance and also add tactile effects to enhance the design uniqueness.

		LEC2-330		LEC2-330	
MODEL		F200 Flatbed	F200 Flatbed	F300 Flatbed	F400 Flatbed
PRINTING METHOD	Width Thickness / Height Weight bed		piezo ink-jet		
ACCEPTABLE MEDIA		762 mm 0.01 to 200 mm 100 kg /m2	1625 mm 0.01 to 200 mm 100 kg /m2	1625 mm 0.01 to 200 mm 100 kg /m2	1625 mm 0.01 to 200 mm 100 kg /m2
BED SIZE		820 (W) x 2085 (D) mm	1696 (W) x 2090 (D) mm	1696 (W) x 3090 (D) mm	1696 (W) x 3818 (D) mm
PRINTING SIZE		736 (W) x 1500 (L) x 200 (H) mm	1615 (W) x 1500 (L) x 200 (H) mm	1615 (W) x 2500 (L) x 200 (H) mm	1615 (W) x 3148 (L) x 200 (H) mm
INK CARTRIDGES	Type Colours	ECO-UV EUV5 Cyan, Magenta, Yellow, Black, Orange, Red, White, Glass, Primer, Decal Primer			
INK CONFIGURATIONS		CMYKCMYK, CMYKWhWhGIGI, CMYKWhWhGIPr, CMYKOrReWhWh, CMYKOrReWhGIGI, CMYKOrReWhGIPr, CMYKWhGIGI+Decal Primer			
PRINTING RESOLUTION (DPI)		Maximum 1440 dpi			
MOVEMENT METHOD		High Resolution Stepping Motor			
DIMENSIONS	Printer unit Control tower	1945 (W) x 2152 (D) x 1780 (H) mm	2819 (W) x 2152 (D) x 1780 (H) mm 530 (W) x 530 (D) x 1080 (H) mm	2819 (W) x 3152 (D) x 1780 (H) mm	2819 (W) x 3880 (D) x 1780 (H) mm
INCLUDED ACCESSORIES		RIP Software, User Manual, Power Cable, Cleaning Kit, Installation Toolbox			

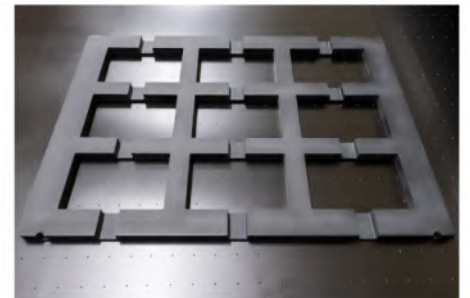
Case study of digital printing on powder foundation case



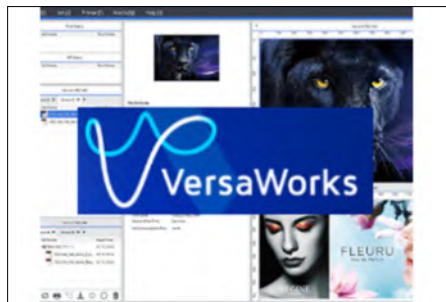
What we need



LEC2-640 S-series UV Inkjet Printer



Printing jig



VersaWorks 6 RIP & Print
Management Software
(included with the LEC2-640)

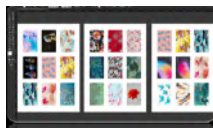


Design software such as Adobe
Illustrator or CorelDRAW



Products to be printed (Makeup
Palette)

- 1 Production of printing jigs
- 2 Design data production
- 3 Install the printing jig on the printer
- 4 Set up print position
- 5 Print CMYK and spot varnish for a simulated embossing effect



Print	Cycle Time (min)	Ink Consumption (ml)	Tape Test & Cross Cut	Rub Resistance	70% Ethanol Rub-Resistance
Option 1 : PrCMYK Generic / 720 x 720 dpi / Bi-Direction	0.8	5.81	✓	✓	✓
Option 2 : PrCMYK + Embossing effect Generic / 720 x 720 dpi / Bi-Direction	1.05	6.78	✓	✓	✓



What is PFD?

PFD stands for Pad Foil Decoration is an innovative decoration process to consolidate both pad printing and hot stamping.

The final visual outcome: Pad Print Color print & Shiny Foil images on 3D (Irregular) surface.

- ▶ Cosmetic Bottle
- ▶ Packaging
- ▶ Plastic
- ▶ Paper
- ▶ Leather Key Tag
- ▶ Bottle Cap

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Pad Foil Decoration

Advantages of PFD

PFD

Metallic Color
Pad Printing



1 Shiny and Hi-Value
decorating

Outstanding Shiny
Metallic effect by PFD
Metallic ink printed
image.



PFD Hot Stamping
Sample: Similar
Effect as Manual
foil handcraft

2 Low cost for hot
stamping process

- High cost of hot stamping die, not suitable for small productions
- Manual stamping, speed is not high
- Need to separate to print pad or another process later

- Can hot stamp on irregular surface objects- Low cost by combination of pad printing & hot stamp foil No hot stamping die.

- Auto stamping by pad printing unit, hi speed out put- Can run auto hot stamping and pad printing process continues with more than 1 color, or only hot stamping or only pad printing

- Can work with robot feeding



Traditional
Hot Stamping



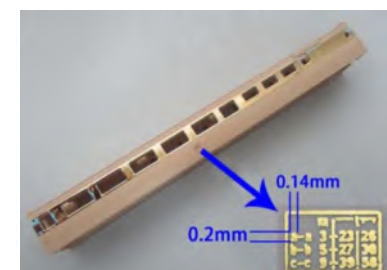
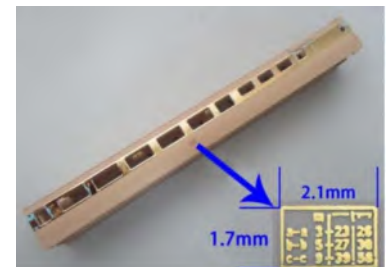
Magnesium



Aluminium



Silicone



Nano Printed Image
Size By PFD on
model train

Image Source : Intenza Fitness@unsplash.com

Advantages of PFD

PFD able to pad print foil on irregular objects surface and even on emboss letters



← PFD 3D Hot Pad Printed Image On Irregular Glass Surface / Embossed letters

→ Ideal For 3D surface like Curved Surface (Electric Tooth Brush Battery Box)



Curve Die



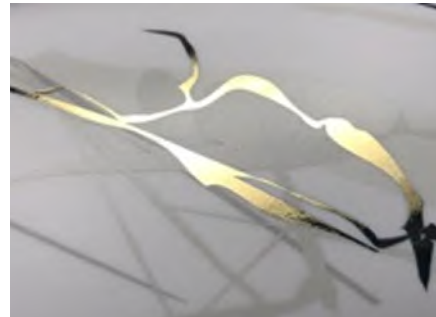
For traditional hot stamping system, hot stamping die must fit perfectly to the shape of the substrate.

- High price, not suitable for small productions

- If the shape of die and product do not fit perfectly, the quality of print is affected.



↑ Hot stamping on golf ball with dimples (full around surface)



← Foil Print on multi-angle prism surface. For Premium product example Perfume bottle



↑ Foil print on embossed and concave surface.



→ Irregular plastic / wooden surface (Image across corner)

PFD machine based on pad printing machine



Ink cup

Laser plate

Silicone pad

Elements of PFD

Basic element of PFD

Models of PFD machine

- a) PFD-mini: Either for PFD hot stamp or 2 color pad printing jobs (Economy , Compact)
- b) PFD-90: Either for PFD hot stamp or 2 color pad printing jobs (Solid powerful G-Turbo 90 structure for heavy duty production)
- c) PFD-150/2: PFD hot stamp + 2 color pad printing jobs

Printing Cycle (Speed) of PFD:

- a) Shuttle setup: 9.5 seconds / cycle
- b) Conveyor setup: 8 seconds / cycle

Interested in more information please contact
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Environmentally friendly
solar cells and **helps reduce
electricity bills within the
company by up to 40%**

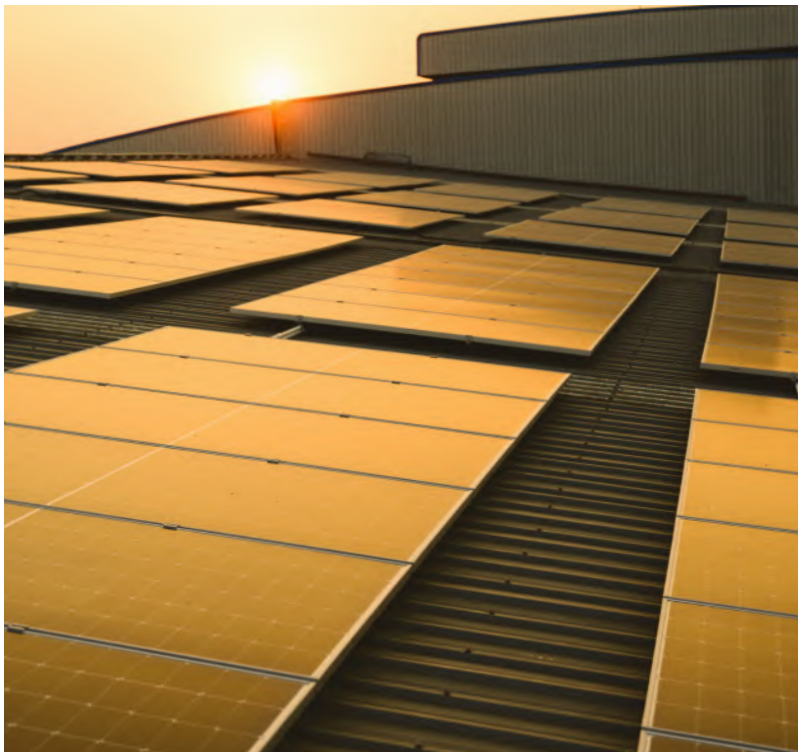


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NEW CHOICE...T.A.O. CHOOSES CLEAN ENERGY SOLAR CELLS



What is a solar cell?

Solar cell is an electronic device made from a special semiconductor.

It changes sunlight into direct current electricity. Normally we need a solar inverter to convert direct current (DC) to alternating current (AC) in order to power an office or factory. We are able to use the electricity solar cells produce immediately or store it in batteries for later use.

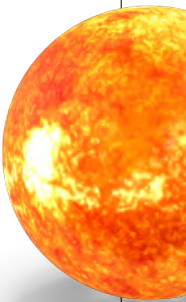
Unlike other energy produced from fossil (coal, oil, or gas), solar cell does not generate carbon dioxide or any greenhouse gas and is well known to be a source of clean energy.



”

**SOLAR ENERGY
IS THE MOST
SUSTAINABLE
NATURAL
RESOURCE**

”



Why did T.A.O. choose solar cells?



As Thailand is a tropical country near the equator, we have almost every day throughout the year sunny day. Solar cell system is a green solution that fits perfectly with us. Energy cost is one of the major costs that we want to manage efficiently. We always want to take part in environmental protection and reduce the Global warming effect. That is why we installed solar roofs in T.A.O.

Future Plan

The installed solar cells obviously reduce our energy cost by 40%. We are very happy with it and plan to increase new installations in the near future.

