TECHNICAL GUIDE

PACKAGING

DESIGN CONSIDERATIONS

Second Edition

FESPA
profit for purpose

Design considerations

So you have decided to invest in digital print for packaging production, but are new to the market for bespoke packaging solutions. Here are some steps to follow and areas to explore to help your customers get the most out of your offerings.

Don’t be afraid to ask

There are lots of questions to cover with the customer about the intended application of the product packaging and its aesthetic and functional requirements. You will need to know exactly what the product dimensions will be, but also how the packages are to be transported. All of these discoveries will lead to developing a specification that can be engineered and costed.

The customer may have an existing solution that they are not entirely pleased with, so try and figure out what the history is behind this and look for the added value whether in branding, personalisation or material choices. When addressing these considerations it could be that variable data enables bespoke tracking or customising to each client, but more about that later. And there may be special needs regarding security issues or unusual material transport regulations that you need to be aware of.

Of course, you need to know what volume is needed, but not only for this print run: the product might be part of a whole series of packaging design. If you need to spend a lot of time in R&D for this bespoke package, you need to outline the cost for design and development in a single order. But on the other hand, if it's part of a longer series you can spread the cost over the range of the same type of packaging design. If you are expected to store the printed packages, or part-finished packaging, you also need to calculate the costs for warehousing before fulfillment.

There are a lot of embellishments that can be achieved in a digital workflow, like layers of varnish to create the effect of embossing. Here the image to the left, and the mask for varnish on the right, as used in a Scodix press.

Don't undervalue the cost for this because even if you happen to have plenty of space in your facilities, this space is rarely free from overhead. You might choose to rent it out, so the cost you calculate should at least take into account the missed opportunity of what the rent might be for this space if you didn't use it to store client goods.

When you are sure you have understood all the requirements for this job, you are ready to summarise this in the specifications. This will be the basis for your estimate and what the client must carefully check and confirm before accepting your offer.

Full and proper specification is key

Nailing down all the customer's requirements in a complete specification not only helps you when calculating the costs and creating a quote. It also helps you to plan the job properly, ensuring on-time delivery.

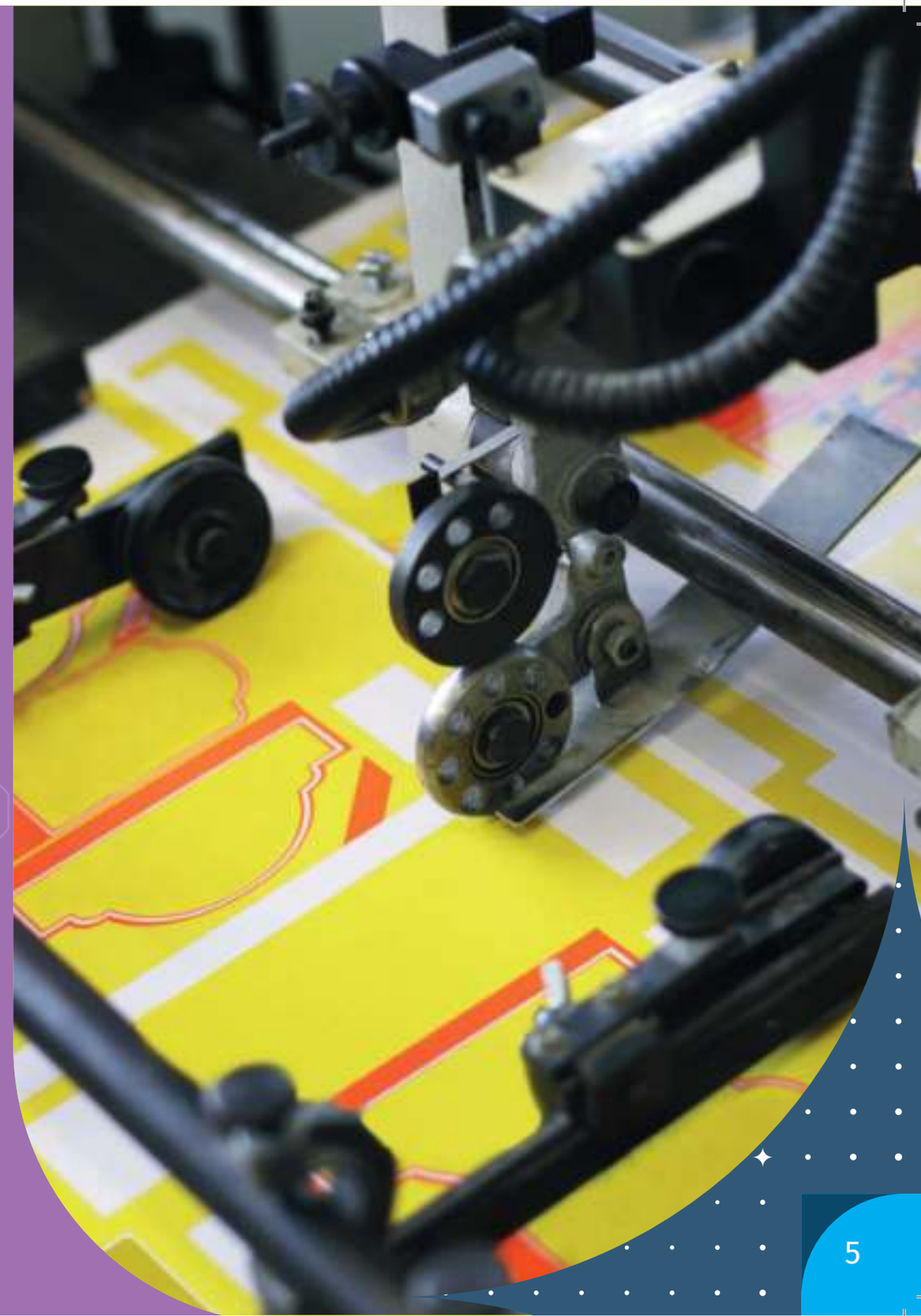
There are some general factors relevant for almost all types of packaging print jobs, for example, the substrate, or material used for the package. There are many types of corrugated cardboard, solid board and folding boxboard and the one used affects the design, the artwork, but also quality perception and printability. Different thicknesses, of course, will affect the strength and durability of the package. The size of the product to be fit into the package is crucial, so avoid having to use any void fill to fill out empty space.

The actual print can be done in many ways. Don't forget too that you can suggest the use of value-added embellishments, like varnish coating (with or without glitter), cold foil, embossing, tactile effects, and/or Braille. You may also want to recommend security effects to protect the brand or additional easy-to-use features helping the end-user (the customer's customer) to return

the product, for instance, the return address printed under a peel-away strip. It's in this area that your experience and creativity make a big difference to clients, and you can offer unique solutions that add value.

All of these factors affect the actual design of the package, and so how the artwork is set up. Make sure you have the right software for this and communicate clearly with the customer what considerations need to be taken into account if the customer creates the artwork themselves (or hires a freelance designer to do it). If you don't already have this in place, create a generic checklist of things to consider in the artwork to make the file preparation and submission processes as smooth as possible. It's always difficult to charge the full amount if you need to fix up client's files and such fix-ups also slow down the workflow and might jeopardise the delivery deadline.

Better to warn the client early if there are possible risks with a particular design approach, and find a resolution sooner rather later.



Packaging designer choosing from FEFCO template library.

But with a solid specification, you can calculate an accurate quote and estimate a realistic delivery date, based on when the final design is approved and the files submitted. If you suspect or realise that there will be a lot of R&D needed for this bespoke packaging solution, make it very clear to the customer that you can't promise delivery at a certain date unless the prototyping is fully over and concluded with a fully satisfactory result. It's all about being very clear and transparent in your communication.

The great thing about software for packaging design is that it is developed around all the technical metrics required and will adjust folds, flaps, and tuck in closures depending on the materials you select from the database and the dimensions you select. Software solutions are available from several vendors and are built around standard carton or packaging templates such as the ECMA (European Carton Makers Association) for folding cartons and FEFCO (European Federation of Corrugated Board manufacturers) templates for corrugated packaging.

These die-line templates offer a great starting point in many cases for a multitude of packaging applications and through

EasyPackMaker online Die-line designer from FEFCO and ECMA templates

Esko ArtiosCAD design and workflow ecosystem for professional packaging

customisation make sure that the heavy lifting of performance evaluation is resolved automatically using tried and tested resources.

Key vendors include Esko with ArtiosCAD, AG/CAD with Kasemake, and alternatives for online customised Die-line creation through developers such as EasyPackMaker. In the case of ArtiosCAD and Kasemake, both systems offer an enormous array of tools. From the construction, impact resistance, and weight-bearing technical issues, through all stages of design evaluation and production workflow.

Proofs, dummies, and prototypes

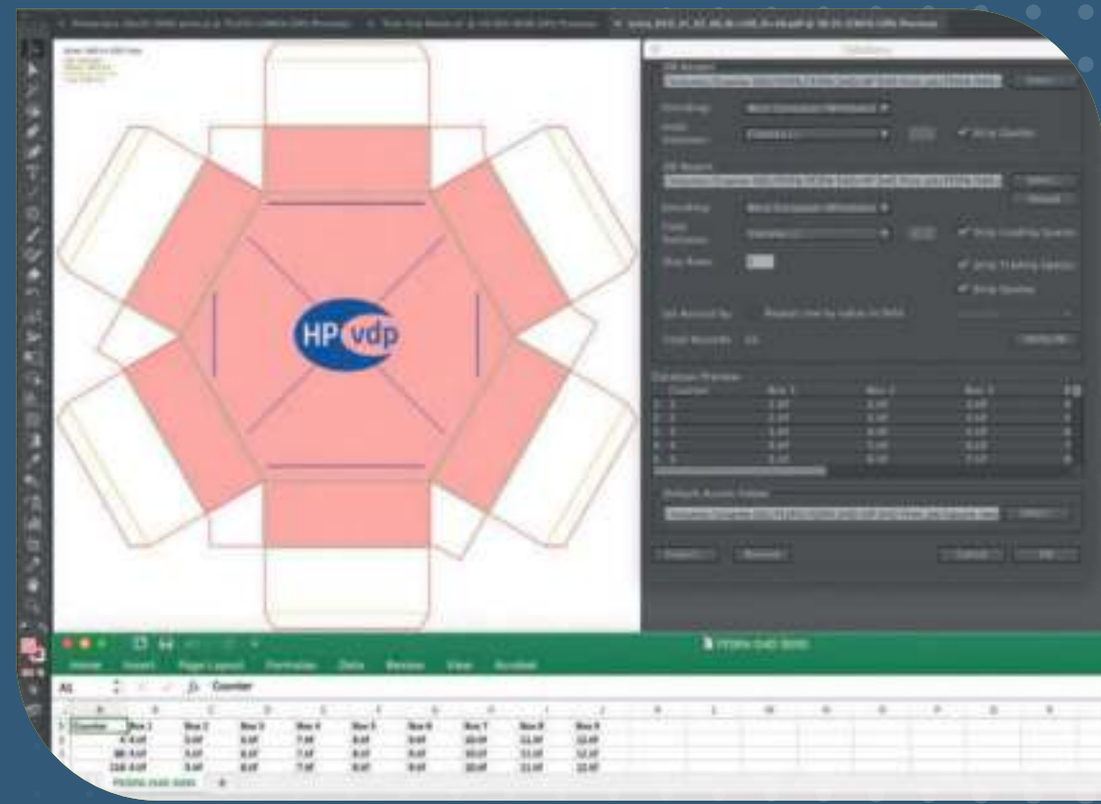
While you may argue that there are so many different factors involved in customised bespoke packaging print production that can be challenging to make colour accurate proofs on a standard proofer that realise process and spot colour working, it is still good to fall back on some international standards for much of the work. So if you produce standard CMYK printed packaging, we recommend that you produce proofs compliant to ISO 12647-7, which is linked to the ISO 12647-2 standard for offset. A very common colour reference is the Fogra 39 colour data set for coated stock. Or you can calibrate and characterise your bespoke printing condition for a particular digital press, and produce your proofs on the device that you will use for the final print run. Make sure you have defined the colour aim values for your particular combinations of inks and substrates, so you can repeat this result the next day, week, or month.

Virtual reality 3D proofs can look very realistic. Shown here is a can created in iC3D from Creative Edge.

But there are many ways to create mock-ups, proofs, and prototypes, and it's by using a fully electronic 3D proof. This enables you to show the prototype to the client at different angles, in different light environments, placed in different situations and with different surroundings. Having the package as a 3D model also makes it possible to look at it from different perspectives and viewpoints. There will be a learning curve to master such 3D software, but you can find specialised tools from several vendors, including for example Creative Edge and Esko. Again, it's all about offering your clients unique features and solutions, and creative proofing is part of that offering. There are plenty of CAD cutting and inkjet printing machines available for physical prototype production which can include white inks and the opportunity to proof on metallic stocks showing both flat colour and metalised imagery.

Personalised packages & variable data production

Digital printing offers unique opportunities in packaging printing, not only for text related features like printing the address of the receiver or customised messages. There is an endless range of visual effects that can be made using variable design elements on the package. And if you use a digital laser-based cutter, the freedom in design will be almost endless. As with 3D based electronic proofs, the learning curve for variable data production is quite steep, but the good news is that there are many well known and effective software solutions on the market to help you get into this quickly. The list is very long, but among the veterans in this segment are companies such as Bitstream, Objectif Lune, and XMPie. HP Mosaic and D4D Smartstream are variable data design tool that creates variable designs based on a single seed design populated with multiple images with the possibility of random scaling and position so that each pack is unique.



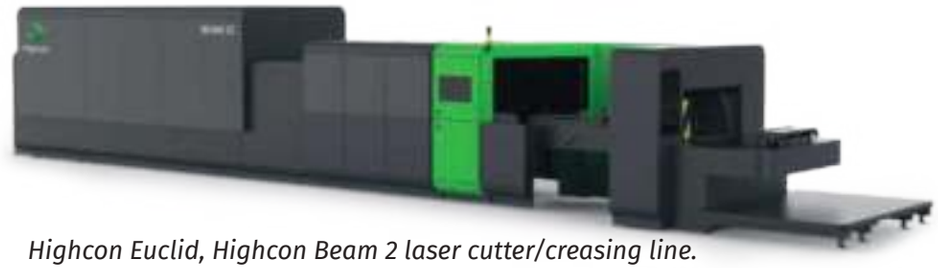
To make the most of variable data printing you need to have a good MIS system and knowledge and experience with database management. Much of the success (or not) in variable data production is the quality of the database you work from, or whether you can extract the right data in a useful way. But

Variable image data using HP Smartstream D4D

correctly implemented it opens up some very exciting and unique solutions. We're seeing the opportunity to create custom-sized boxes in-line one after the other with Packsize's X7 system for corrugated and Highcon Euclid's Highcon Beam 2 laser cuts up to 5,000 B1 sheets per hour.

Variable data can be used for personalisation of packaging and here is an example created with software from Chili Publish.

Packsize X7 creates a protective packaging based on the item on the feed conveyor, scan, design on-the-fly and made just in time.



Highcon Euclid, Highcon Beam 2 laser cutter/creasing line.

Add inkjet sheetfed printing with imaging to fit and you can set up industrial mass customisation.

Sun Automation CorStream single-pass sheetfeeding inkjet press.

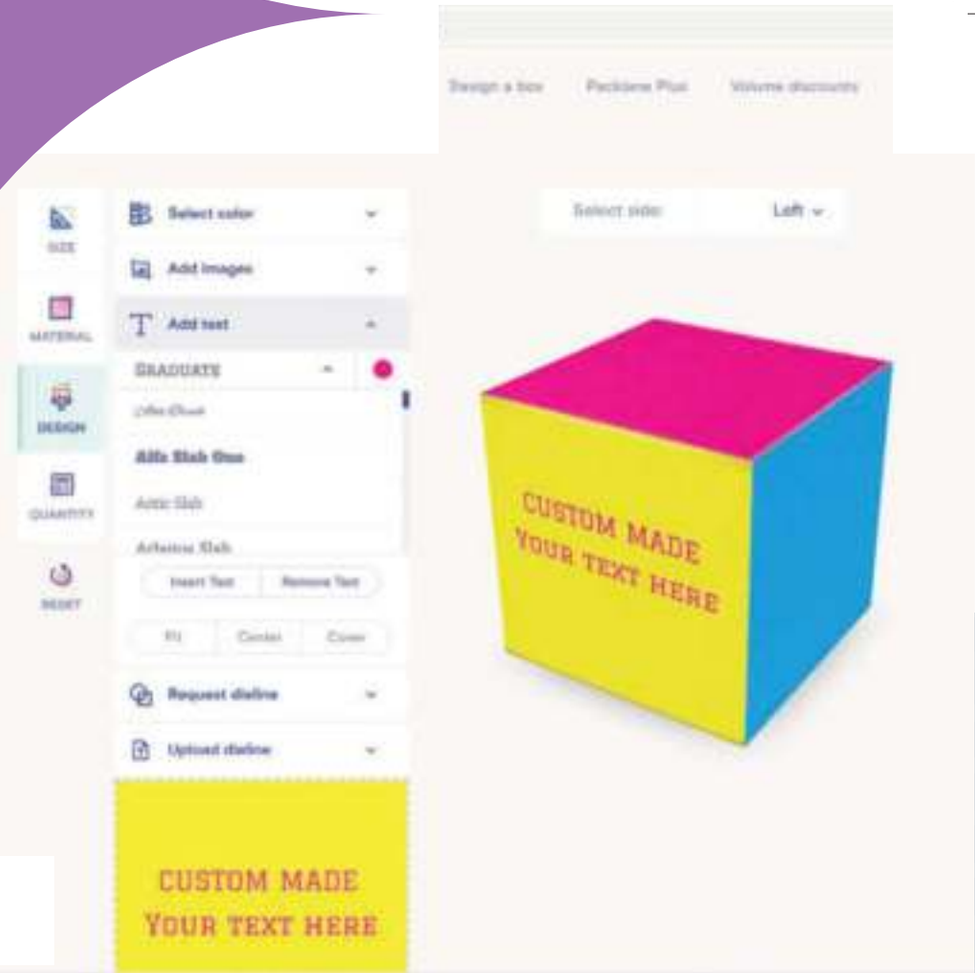
CIRCULAR ECONOMY

LINEAR ECONOMY

TAKE MAKE DISPOSE

Packaging design that supports the circular economy is another area where packaging businesses can add value. Large brands want to improve transparency and to support consumer efforts to reduce, reuse, and recycle packaging. Greater consideration is being given to product Llife Cycle Analysis and that of its packaging.

Puma was an early pioneer in sustainable packaging. Re-imagined footwear packaging minimised material with an elegant answer for customers in this box and bag combination.



Packlane is one of a host of Web-to-print solutions with online design.

While customised packaging print production may be one of the more complex and therefore challenging areas you can pursue with print, it's probably also one of the niches within graphics arts production that has the biggest potential for growth and profit and numerous channels to market.

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