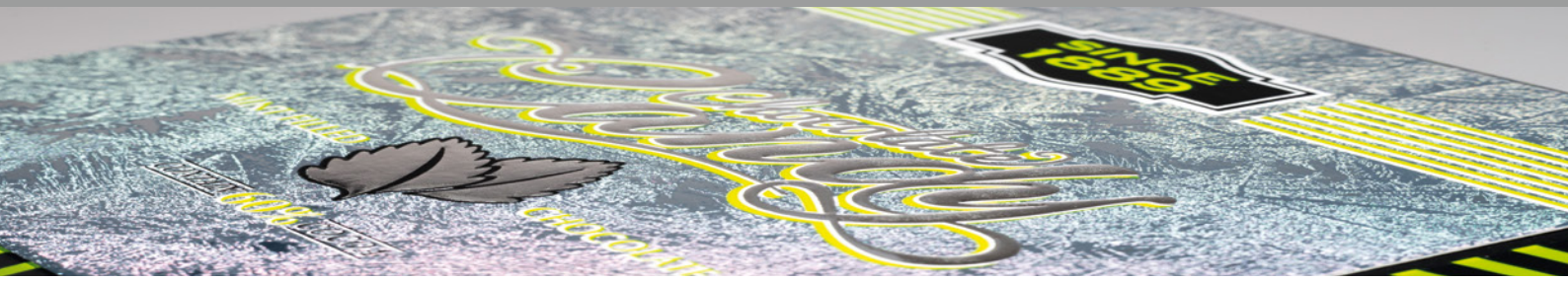
Value Added Packaging – Tutorial Candy Box 1.1



USP:	Food product packaging, manufactured in an inline process, with distinctive shape, look and functionality
Effects:	Haptic SENOSOFT® matt coating in contrast with special effect cold foil, Pyrisma® effect pigment, hot foil embossing, blind embossing
Suitability:	Cosmetics industry | Food industry (indirect food contact) | ~~Tobacco industry~~
Machine requirements:	Heidelberg ICS 670 with 8 EVA platforms, equipped with 6 flexo modules, one cold foil module, one hot foil embossing module; Heidelberg FCL 670 inline flatbed die-cutter with inline stripping and feed stations, gluing system.
Design requirements:	Distinct motif contours that can be rendered via cold and hot foil finishing, embossing and varnish effects. Relatively large areas must be included in the planning when using "frost" cold foil, because it cannot play out its full effect on small areas, due to its special design, reminiscent of window frost.
Special features:	The special shape of the folding box had to be tailored to the requirements of an automated gluing process meaning that a straight contact edge had to be incorporated in the dieline for the gluing system, and the crease/cutting rules required for the dispenser opening had to be configured such that it is easy to open, but will not break open unintentionally during gluing, filling or transport.
Description:	This new project completed by the Value Added Packaging Initiative aims to illustrate that with good planning, even unusual packaging dielines involving extensive finishing can be produced highly efficiently and cost-effectively in an inline process in just a single pass. It further demonstrates that various finishing effects can also be combined to good effect in the food packaging segment. This same package, with a modified dieline, was also produced simultaneously in an offline production process. Here, too, agreements and preparations had to be made in order to perfectly coordinate the colouring and appearance of the two packages.
Remarks:	In this inline process, involving various operations and finishing methods all in a single pass, several parameters had to be taken into account from the outset during production planning. First, in form production (flexo plates/die-cutting and embossing tools), the shrinkage of the carton web caused by exposure to elevated temperatures must be taken into account by using a defined scaling factor. Second, the materials, inks, varnishes and foils must be selected to work together. Consequently, a project meeting with all stakeholders in the preparation phase of such a production process is imperative, as it helps to avoid technical problems from the start. This folding box is intended to serve as secondary packaging for foil-wrapped candy. All the materials and auxiliaries therefore had to be approved for food applications and the contracted print shop had to be certified to produce food packaging. The UVAFLEX FCM Y81 range of low-migration inks from Zeller+Gmelin was specially developed for the safe printing of food packaging. Weilburger's dispersion coatings and UV lacquers in the SENOLITH® FP NDC and SENOSOFT® FP NDC lines are also certified for indirect food contact and thus ideal for this project. The Prime FBB folding box board from MetsäBoard, chosen for this project and specially developed for primary food packaging, is also destined for jobs like this thanks to its homogeneously coated surface, easy shaping and high dimensional stability in processing. Virtually all effect pigments from Merck, and the foils from Kurz used here, are approved for use in the food industry, and therefore likewise present no problems when it comes to the suitability of the final packaging for food applications.

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Realisation:

Because this folding box was not to have a standard dieline, the shape of the final carton (essentially a section of a pyramid with a square base) first had to be developed in a CAD software program. For this purpose, the targeted capacity of the box and the ideal thickness of the substrate first had to be calculated and the optimum package size for standard palletising requirements determined.

Based on these values, the dieline for the folding box is generated and optimized for automated gluing. In this context, it is important to incorporate a straight side edge in the final dieline, which can be used as the contact edge. The creases, cuts and perforations incorporated in the dispenser opening then had to be optimized for the chosen substrate to ensure easy opening of the final packaging, but prevent the dispenser opening from breaking open unintentionally. This makes it necessary to conduct tests on the original substrate using different crease/cutting rules.

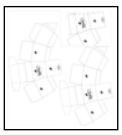
Once the contour data is complete, and has been evaluated and optimised on the original substrate via cutting plotter tests, the graphic design process can begin. The actual design is created in Illustrator. The contour of the folding box is imported first and evaluated for dimensional accuracy.

Any spot inks for all forms, tools, and dies (green tone, grey tone, three different varnishes, hot foil, cold foil, blind embossing, die-cutting and creasing) are created first, followed by a print margin of about 3 mm outside the dieline as a path. The position of the blank areas for the glued flaps must then be set in such a way that no unwanted white-space is visible on the final, erected and filled package and all glued areas are free of ink and varnish. For this purpose, it can be helpful to cut a colour proof with a cutting plotter or by hand, and construct a sample folding box.

Because the SENOSOFT® matt coating is excellently suited to overstamping, the area left blank for the hot foil elements can be ignored for once in the coating form and the underlying printed image. This reduces the risk of unwanted white-space being visible as a result of slight misregistration in the embossing process and thus increases process reliability.

After the design process was concluded, the next step was to prepare the data for printing. This involved applying the trapping technique as dictated by the targeted design and effects, and generating the imposition for the folding boxes as well as the DIN A4 print sample also incorporated on the sheet. The substrate's grain direction plays a decisive role in this context, where the fibre in roll paper is always in the direction of web travel. Finally, the data and all other detailed information was forwarded to the embossing tool, cutting die, coating plate and flexo plate suppliers.

During production, the right anilox rollers must be used for the inks and three varnishes. The grey-coloured, adhesive printing ink used for cold foil transfer is applied with a 12 cm^3/m^2 anilox roller with 100 lines/cm, the Pantone Black 7C with a 7 cm^3/m^2 anilox roller with 180 lines/cm, the Pantone 376 C with a 5 cm^3/m^2anilox roller with 280 lines/cm, the SENOLITH® pigment carrier coating with an 8 cm^3/m^2 anilox roller with 160 lines/cm, the SENOSOFT® matt coating with a 10 cm^3/m^2 anilox roller with 120 lines/cm and the final SENOLITH® gloss lacquer with an Apex XL anilox roller.



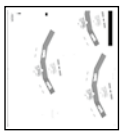
Die-cutting and stamping (die-cutting tool from **Buchner** with cutting/creasing rules from **CITO**, stamping die from **inderer+mühlich**)

WEILBURGER Graphics
SENOLITH® UV GLOSS LACQUER INLINE
FP NDC
360424

Kurz
Hot stamping foil Luxor Alufin MTU Spezial Silber
stamping die from **hinderer+mühlich**

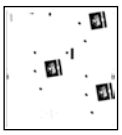
WEILBURGER Graphics
SENOSOFT® WB MATT COATING
FP NDC
350210

Merck
Pyrisma® effect pigment
T 30-24;
in carrier coating
WEILBURGER Graphics
SENOLITH® WB GLOSS PRIMER
FP NDC
350072



Zeller+Gmelin
Pantone 376 C
UVAFLEX FCM Y81

Zeller+Gmelin
Pantone Black 7C
UVAFLEX FCM Y81



Kurz
LIGHT LINE®
Frost Silver
cold foil
with
Zeller+Gmelin
ZG-UV-Flex U0842

Design, technical design:
MetsäBoard Packaging Services

Technical design optimisation, gluing:
AR Packaging

Production management / Reprography / Documentation:
Alexander Dort

Coating plates:
Flint Group

Substrate: :
MetsäBoard Prime FBB 270 g/m²

Printed at:
Heidelberg Web Carton Converting GmbH