Technological operation (SOP) SOP STUDIO 601

SOP group: studio (store)
SOP number: 601
SOP name: **Print data technical conditions**
Person responsible: sales representative
Version: 2.0
Date: 12. 2. 2013 (Update 19. 9. 2016 pchylik)

Conditions

- none

Technological operation procedure (SOP description)

This customer manual serves to clarify the technical conditions of book printing contract assigning and book printing in the Finidr Ltd. It contains both the commitment of the Finidr Ltd. to comply with international standards and quality indicators, and the requirement for the proper preparation of print data, which the customer must observe for perfect image reproduction.

1. The definition of and our commitment to quality

Under the term "quality printed material" The Finidr printer understands the fulfillment of three conditions:

- Print colors are as close as possible to Fogra39L, 30L, 47L and newly Fogra51/52L standard references; and ISO 12647 2 printing standard requirements
- bookbinding is solid and extremely precise
- Orders are dispatched in prearranged date and at agreed upon price

However, ensuring above described quality requires cooperation with the contracting authority, which agrees to deliver correct print data, and to deliver it in time specified. Printer Finidr then undertakes, using the correct data, to prepare high-quality printed product and deliver it to the customer within the agreed time. The Finidr printer inspects all of its manufacturing processes and regulates their function so as to remain consistent with international printing standards or recommendations of Fogra, Ugra, ECI, and GWG international arbitrators. The Finidr printer has had operating procedure documents prepared for all manufacturing processes, describing the correct outputs; and methods how these processes and their results can be measured and checked for compliance with the recommendations of ISO standards and international arbitrators. Workers are trained to flawlessly manage these processes and to be able to use inspection tools. Implementation of this system means that, high-quality printed material will be made whenever required by the client, assuming the print data is delivered on time and according to given parameters.

2. Supported print data formats.

The customer is obliged to deliver the print data in these formats (films or foils are not accepted):

- PDF (preferably version 1.3)
- PostScript (version 2 or 3)

Any other print data formats such as EPS, TIFF, JPG, CDR, etc., are formats that require different, non-standard ways of processing, and the processing time and output quality cannot be determined in advance. Therefore, the Finidr printer generally does not accept these files.

Preferably the print data should be stored in a single file that includes all pages of the print order, **including vacat pages**. When the print needs to be divided into multiple files, it is necessary to identify the parts clearly and concisely without using diacritics (e.g. textbook_001-100.pdf; textbook_101-200.pdf etc.)

3. Determination of the reference color and allowed ICC profiles.

Reference color printing is based on meeting the requirements of ISO 12647-2. The Finidr Printer uses **Fogra39L, 30L, 47L, 51L, 52L** international references as a reference for color offset printing and all related technologies.

When processing print data, the Finidr printer agrees to maintain this color profile on all printing machines (printing, digital printing, monitor preview). Customer must honor this reference and use only correct licensed ICC profiles that were created based on this reference in the preparation of print data in programs like Adobe Photoshop (these can be downloaded from http://www.eci.org/en/downloads):

- **ISOcoated_v2_eci.icc**
- **ISOcoated_v2_300_eci.icc**
- **Coated FOGRA39 (ISO 12647-2:2004).icc**
- **PSOcoated_v3.icc**
- **PSOuncoated_v3_FOGRA52.icc**

4. Standard materials and standard print preparation parameters.

The Finidr printer performs standard printing using the following print materials (coated paper):

- KL - Coated gloss (CG)
- KM - Coated matte (CM)
- Vol KM - Coated matte with volumen (Vol CM)
- Card stock, i.e. matt postcard card stock coated on one or both sides

For printing on these materials one of the following types of printing screens can be selected:

- Traditional AM screening with frequency 178 lpi, 200lpi, and 240lpi
- Stochastic FM screening with dot size 20 µm (with the exception of Vol CM)

The Finidr printer provides standard print using the following print materials (uncoated paper):

- BO, i.e. white or yellow woodfree offset paper (WO), which has a fixed AM screening frequency of standard 150 lpi CMYK, or 122 lpi Gray.

The Finidr printer assumes that data supplied for printing on an uncoated substrate are already in that color space, i.e. Fogra30L, Fogra47L or newly recommended Fogra52L. The Finidr printer customarily does not perform any color conversions, unless otherwise specified by the client.

With uncoated materials, the paper absorbency and surface treatments will suppress saturation. The more the paper type differs from the paper described by 12647-2 standard (standard specifies high-quality uncoated paper), the greater the expected deviation in print.

5. The printer Finidr performs the following color conversions

Standard CMYK color space:

- AM screen, material types CL, CM, Vol CM, card stock - No conversion *
- FM screen, material types CL, CM, card stock -Fogra39L/Fogra51L->Fogra43L
- AM screen, material WO - No conversion

** The maximum sum of colors in print data or TAC (Total Area Coverage) for printing on coated materials should not exceed 300%. If an object with a larger TAC sum is found on the page, the sum is be adjusted to this maximum value. Visual color differences do not occur.*

Converting non-standard color spaces (RGB, CIE Lab, ICC-based)

RGB:

- First, it is ascertained whether ICC profiles are embedded in the data. If so, CMYK conversion is applied. In this case, the conversion is as follows: ICC profile-> Fogra51L, Fogra43L, Fogra52L (depending on the screen and paper type)
- If the ICC profile is not found in the RGB data, it is assumed that the color space is sRGB and conversion sRGB-> Fogra51L, Fogra43L, Fogra52L (depending on the screen and paper type) is performed in the prepress workflow

  Note: RGB-> CMYK conversion is controlled in such a way as to minimize the loss of color (which always occurs in such transfers) and to match the result as closely as possible to the source data. In conversions, the perceptual method is always used.

CIE Lab:

- CIE Lab color space is converted to CMYK regardless of the embedded profile, the transfer is, therefore, Lab-> Fogra51L, Fogra43L, Fogra52L (depending on the screen and paper type)

  Note: Lab-> CMYK conversion is controlled in such a way as to minimize the loss of color (which always occurs in such transfers) and to match the result as closely as possible to the source data. In conversions, the perceptual method is always used.

ICC-based

- ICC-based color space with data in RGB color space is converted using embedded ICC profile, CMYK conversion is then following: ICC profile RGB-> Fogra51L, Fogra43L, Fogra52L (depending on the screen and paper type)
- ICC-based color space with data in CMYK color space is not converted, the embedded ICC profile is removed, thus a "pure" CMYK color space is created, which is then handled like the standard color space in Fogra39L.
  Note: The ICC-based color space occurs in objects that are marked by the ICC profile. ICC-based color space can thus describe RGB data as well as CMYK data.

6. PDF print data quality requirements.

Ideal PDF print data should meet the international ISO 15930-4 standard (format definition PDF / X-1a) and should comply with the recommendations of the Ghent PDF Workgroup for sheet-fed offset printing machines technology (www.gwg.org). We, therefore, recommend that our customers check their PDF print data against the GWG requirements using one of the inspection profiles:

- SheetCMYK 1v4 (Preflight Panel in Enfocus PitStop Pro)
- Sheetfed CMYK print (Preflight in Adobe Acrobat).
- Data transmission via PitStop Connector, provided by the Finidr printer free of charge.

The Finidr printer strongly recommends that data be entered in the required format. However, we offer our customers conversion of the print data into the required PDF/X-1a format and fine-tuning them so the requirements of ISO and GWG standards are met. In this case, however, unwelcome changes in the structure of print data may occur, so the client is strongly recommended to thoroughly check sent previews or plotter drawings.

There also exist five major issues that cannot be corrected in the printer. In such case, the printer informs the client, who should take adequate measures to correct the source application. Following is the list of these issues:

- ☒ Print data must be of the composite type, i.e. "composite color", not four single black and white pages.
- ☒ Print data must not include any passwords locking the document for editing and printing. Data must not be corrupted. (This may happen during the transmission e.g. FTP protocol.)
- ☒ All fonts must be inserted into the PDF document, T1 (Adobe Type 1) and TT (TrueType) fonts are allowed. OpenType fonts can, of course, be used in graphics applications; these are then automatically loaded into PDF as one of the above versions.
- ☒ Bitmap resolution should be:

Screen	Ideal	Minimum
AM screen (contone, 8 bit)	**300 dpi**	**144 dpi**
FM screen (contone, 8 bit)	**600 dpi**	**450 dpi**
Line art (1bit)	**1200 dpi**	**600 dpi**

☒ Clean format size and range (including vacat pages) stored in the print data must correspond with the order while all the pages in the document must be of the same size and orientation (e.g. top side up).

Other errors or omissions in print data which are generally corrected by the printer in the prepress workflow:

- Transparency and layers must not be present in PDF; otherwise, these will be automatically merged.
- Requirements for bleed and safe area are based on inaccuracies in the finishing process, especially when folding and trimming. Bleed around the text must be at least 3 mm, print marks begin inside the bleed (the marks must not interfere with the bleed). Minimum bleed for covers is 14 mm, 5 mm for wraps and endpapers and 3 mm for dustjackets. The safe zone is an imaginary area 3 mm around the edge of printed material where there should be no text object so it will not be cut off during trimming. Therefore, indent objects and text within the page (i.e. in a clean format) at least 3 mm from the cut (inside). The print data must have a trim box defined, which defines the size of the clean print format, and media box, which represents the area of paper on which to the page design is placed. The print data should also have bleed box defined, which represents the size of the bleed.
- Objects reprints are preserved as they have been set by the customer or the application. Automatically corrections are performed only when reprinting "black text" objects type in size up to 17pt.
- color space types of and their conversion are explained above in the section "Converting non-standard color spaces (RGB, CIE Lab, ICC-based)"
- The maximum sum of colors in print data or TAC (Total Area Coverage) for printing on coated materials should not exceed 300%. If an object with a larger TAC sum is found on the page, the sum is adjusted to this maximum value. Visual color differences do not occur.
- Minimum text/line size is defined as follows:
    - 5 pt. minimum for 1 plate test print, e.g. black,
    - 8 pt. minimum for 2 or more plate text print
    - 0,075 mm or 0,213 pt. for the smallest pass.
    - Smaller text sizes are unintelligible (serifs bleed together), or they cannot be ideally aligned (such text will be fuzzy when printed on an offset printer).
    - Lines thinner than specified are in many cases difficult to print on offset technology. Even if a thin line is visible on an inkjet printer and plotter

printouts, it will not be the case in the final offset print, or it will be damaged. Therefore passes under 0.04 mm are automatically adjusted to 0.075 mm

- The actual page design must be centered horizontally and vertically relative to the page geometry.
- Spot colors are allowed and their names in the data should be consistent with the names on the swatches, for example. Pantone177C. HKS color swatches are also allowed. If no spot colors are specified in the order, it is assumed that they are not in the data intentionally and are converted to CMYK separations.

7. Language mutations.

Language mutations may be submitted in two ways:

1. One file, which will contain only complete CMYK images/objects without text information (design should, therefore, include only data which has to remain the same for all book mutations) + additional files, which will have only mutated text in K color (black).
2. Complete CMYK data for each language version (with this option, precise images positions must be respected in all versions).

8. Color profile requirements.

The Finidr printer is obliged to comply with and accepts only these color profiles:

- Certified digital proof (the proof) simulating Fogra 30, Fogra39L, Fogra47L, Fogra51L, Fogra 52L reference and is validated in accordance with ISO 12647-7methodology. The proof must have Ugra/Fogra Media Wedge validation range, must also have a label with the measurement result attached and must contain information about the time and date of proof fabrication and with ICC profile or reference designation.
    i. The proof is made from the supplied print data and therefore contains the same objects and the same design as the print data (proof should be delivered to the printer along with the data; at least three days prior to printing)
    ii. The proof is made only on 1:1 scale, i.e. without enlargement/reduction (100% scale)

- Other types of originals, such as sample books, will be subjected to examination by the printer and compared with the benchmark color that matches the color of given reference. If found matching, it may be accepted as a color profile.

Color profiles, which do not allow an accurate prediction of matching the final printing on an offset machine (the printer usually does not accept these)

- Refined printed matter (e.g. lamination or varnishing).
- Other types of originals that do not simulate offset printing, such as laser or inkjet printer documents.

9. Printed matter refinement.

Printed materials can be refined (coated) using various refining agents (e.g. varnishing or lamination) according to customer requirements.

It should be noted that these surface treatments have a great impact on print color. Images may be darker or have a reddish or yellowish tinge due to refraction of cover varnished/laminated layers. Match with the original color must therefore be assessed on the print without surface treatment.

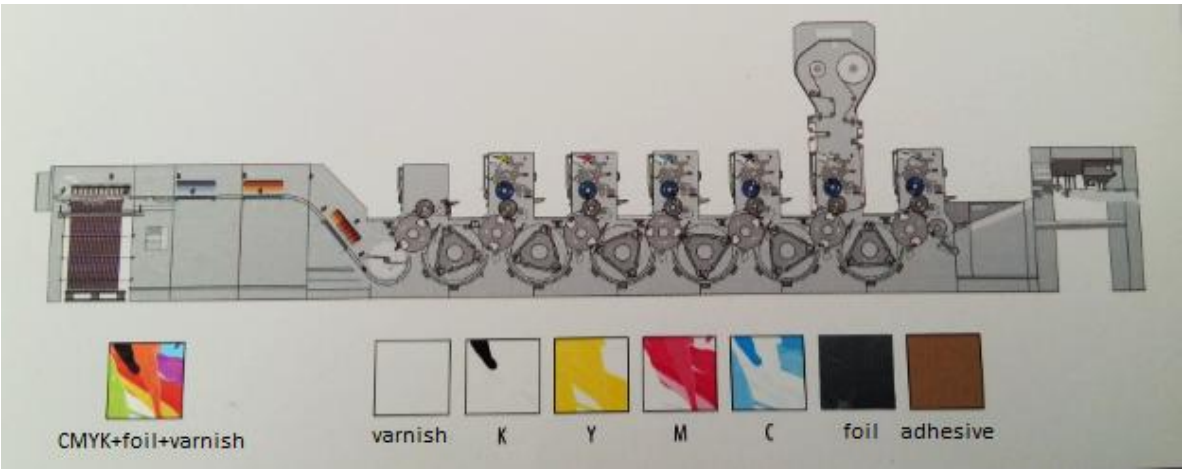
Customers can use the standard Fogra49L Fogra50L reference to check the color after lamination. The first reference shows how the offset print default color will change with matte film lamination; the second reference shows changes with glossy film lamination. The following ICC profiles then help to simulate this change of color on a monitor or digital proof (can be downloaded from http://www.eci.org/en/downloads)

Fogra49L	PSO_Coated_v2_300_Matte_laminate_ eci.icc
Fogra50L	PSO_Coated_v2_300_Glossy_laminate_ eci.icc

Cold stamping – data preparation and check

Technology information:

- Cold stamping is performed on an offset printing machine. The maximum size of the print sheet is 1020 x 720 mm; maximum width of applied foil is 980 mm.
- Device configuration
  - Tower 1 - adhesive application to places where cold stamping effect is desired according to data
  - Tower 2 -silver foil application to areas with adhesive applied in Tower 1
  - Towers 3-6 - traditional color offset printing towers
  - Tower 7 - protective dispersion varnish application
- Applied **foil is always silver in color** and is placed under the print.
- Foil supplier swatches are used to **simulate CMYK color profile** - these are available with the technology
- Pantone color profile on silver foil cannot be simulated prior to printing, **paid** test is necessary.



Cold stamping data preparation and check:

- All data for tower 1 and towers 3-6 must be in one file
- Adhesive for tower 1 must be applied exactly in the foil placement location
- Adhesive is specified as the fifth color called **„cold stamping"**
- Data for towers 3-6 have standard CMYK or Pantone designations.
- If the customer is not sure, whether the resulting color effect will be to his satisfaction, a print test must be performed. Print on cold stamping **cannot be simulated on a computer.**

10. Document Editing

PDF a PS files are in other words „closed data", in which the Finidr printer does not perform any text corrections or image changes.