

Fogra News 55

Munich, New Year 2019



Research _
Testing _
Certification _



Best wishes for the New Year

"Knots can't be tied with one hand."
(Mongolian proverb)

The advent of any new media technology has always seen the faint-hearted forecast the demise of the printed media. This was the case when radio was launched and then again with television, the Internet and, finally, social media.

But the fact is that print has maintained a central position in the ever more colourful media mix, despite losing audience share to other media formats. Even at a time of increasing digitization there is a need for a wide variety of 'physical' printed products, whether it be commercial print or packaging, customized products or long runs, even if no longer running to millions of copies, as the German Otto catalogue and similar examples in other countries demonstrate.

It's not a question of either/or, app or print, but about the adaptability of every individual company. Digitization of your own printing company is a decisive factor in both cutting costs and your ability to respond quickly to altered demands. Data links between business processes, machines and devices mean that disruptions in workflows can be spotted sooner, improvements introduced more quickly and the product structure adjusted more rapidly. The vertical integration of machines and devices allows particular attention to be paid to this strategic question so that batch sizes can be handled flexibly or offset and digital printing combined in hybrid production.

It is easy to see why digitization is still in its infancy amongst SMEs. Its implementation is demanding, it requires a detailed understanding and for it to succeed it must be the focus of attention.

Our new courses are one way in which Fogra can help you and your company to move forward in this important area. They cover everything from explaining digitization to the application of artificial intelligence. Take the proverb above to heart and use us as your other hand when you want to tie some knots.

We would like to warmly thank all our members for their positive cooperation over the past year and to wish you both personal and professional success for the coming year. And if we can contribute to this with our services then so much the better.

Handwritten signature of Stefan Aumüller in black ink.

Stefan Aumüller,
Chairman of the Association

Handwritten signature of Dr. Eduard Neufeld in black ink.

Dr Eduard Neufeld,
Institute Director

FOGRA MEMBERSHIP

About 800 businesses from the field of printing and their ancillary industries are members of the Fogra Graphic Technology Research Association.

Fogra members are the motivation for the consistent practical orientation of our research. As a result they profit quickly and directly from the knowledge gained.

BENEFITS

You will receive a 30 % discount on almost all Fogra products and service, including the purchase of control materials and test devices, as well as any expert opinions you commission.



You have a 'hotline' to Fogra specialists: Call us, tell us your membership number and you will receive quick, competent support for minor queries free of charge on the phone.

Printed copies of our research reports and this Fogra News will be sent to you regularly and free of charge. If you are interested in back copies of our research reports we recommend that you register with the Fogra web site.

You will then be able to download the reports yourself from the Publications section. And not just you! Every employee of your firm will be able to do so.

If you are interested, you can work with us on current research projects and help to produce the results.

More information at www.fogra.org

Coating breaks in the fold

New methods for qualifying paper

Coating strength when printing papers are folded is a key quality criterion for postpress and typical faults that regularly lead to complaints include cracked folded edges and coating deposits in books and brochures. Fogra has undertaken a research project to investigate this question and the results will be published shortly.

A report by Florian Hirschhalmer.

The first step in this project was to characterize a series of illustration printing papers (with grammages of 115 g/m², 150 g/m², 170 g/m² in each case) in order to obtain an up to date overview of their mechanical properties. How might they differ in terms of picking resistance, sizing strength, stretch at break, fold strength and splitting resistance?

Another reason for carrying out this investigation was that the data sheets for illustration printing papers provided no information that was useful for postpress and the standardization of such data sheets (ISO 15397:2014 “Graphic technology – Communication of graphic paper properties”) had done nothing to change

this. Selection of the right material often has a decisive impact on the quality of the final printed product and the only reliable way of making good this lack of information is by means of testing. It is possible to draw on experience but it should be borne in mind that the same grades of paper produced at different sites can exhibit significant differences.

In order to address the production faults referred to above, two new testing methods to evaluate coating breaks in folds were developed for this project. These are referred to as the external and internal fold tests.

External fold test

In the external fold test coating breaks on the folded edge are evaluated by printing strips of paper black, folding them, mounting them on a sample holder, photographing them and analysing them with a programmed script. The specimen holder consists of thin wires on which the samples are hung with the external fold pointing upwards. This means that samples that have previously been reproducibly folded by the Fogra Folder are not subjected to any further stress. The photographs are taken with a monochrome line camera and lit by an LED line whilst the loaded sample holder is moved on a processing unit. Analysis of the greyscale images involves the detection and conversion of reflections and their binarization (Otsu threshold method) followed by cal-

culatation of the total white area as a measure of coating breaks on the folded edge.

Internal fold test

In the case of the internal fold test, the coating particles detached from the folded edge are recorded quantitatively and evaluated. To start with, an unprinted strip of paper is folded. A trap test is used to transfer coating particles from the internal fold to a self-adhesive carrier, which is then photographed and evaluated using a programmed script. After the trap test the carrier can be kept for a subsequent quantitative evaluation.

The evaluation being supplemented by details of particle number, size, shape and distribution. A watershed segmentation was required to separate superimposed

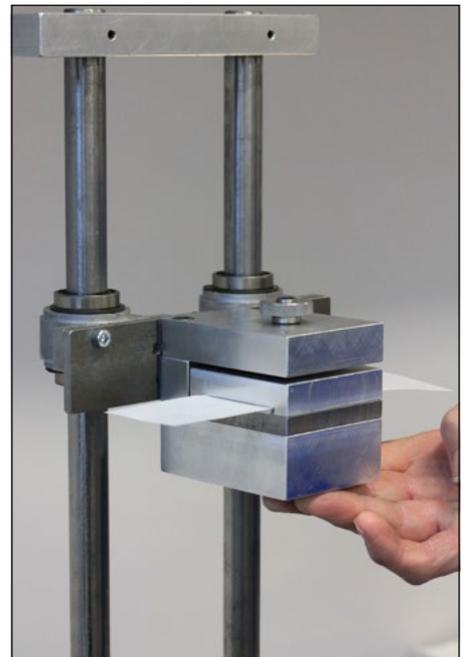


Image. Trap device with clamped paper specimen.

particles. Impulse-based particle separation was chosen in preference to the other methods investigated in the project due to its simplicity and reproducibility.

Key findings of internal and external fold tests

→ It is easier to distinguish paper grades using the internal fold test than the external fold test and with the internal fold test the differences are more marked for papers with a grammage of 115 g/m² than with higher grammages.

i Florian Hirschhalmer

After finishing his training as a bookbinder, Florian Hirschhalmer studied Print and Media Technologies and graduated from the Munich University of Applied Sciences. He has been with the Fogra institute since 2008 and, among other things, has been involved in various research projects in the area of print finishing. He was involved in the revision of the pull test standard and has also provided more than 250 expert opinions for international clients.



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- For a given paper grade, coating breaks in the fold clearly increase from a grammage of 115 g/m² to 150 g/m² whilst no systematic increase is found between 150 g/m² and 170 g/m².
- No systematic relationship exists
 - > between the fold direction (parallel/right angles to the grain) and the coating breaks in the fold
 - > between the paper surface (gloss, matt satin, matt) and the coating breaks in the fold
 - > between the bulk and coating breaks in the fold
 - > between the coating component of the paper and coating breaks in the fold double and triple coated papers. However, a single-coated paper grade did exhibit reduced coating breaks in the fold.
- In the case of the internal fold test increasing the folding force did not result in any systematic increase in the coating breaks in the fold.

The project also investigated the influence of dispersion and UV coatings as well as various creasing processes on coating breaks in the fold.

New, more practical tests

In developing the internal and external fold tests the emphasis was explicitly on their practical usability and also on a high degree of reproducibility in order to ensure the methods achieved a high degree of user acceptance. The methods can be used for qualifying materials by paper manufacturers, testing laboratories and postpress companies. A draft standard for both test methods has been submitted to the ISO/TC 130 WG 12 "Postpress" work group and the test methods are now awaiting responses. A paper manufacturer will have tests carried out at Fogra in the near future.

Fogra members will receive the detailed report (number 71.012) free of charge and can download it in February 2019 from the publications area of the Fogra website after registering and logging in. Non-members wishing to obtain a copy need to complete the order form PDF, which they will find in the same location, and will be charged a small fee.

Digital printing system check

The new press acceptance guidelines for electrophotographic presses

Acceptance guidelines for digital presses were developed as part of a Fogra research project supported by the Free State of Bavaria and now form the basis of a service offered jointly by Fogra and the regional printing and media associations.

Jürgen Gemeinhardt explains the background.

For many years now there has been a proven set of guidelines for the acceptance of offset presses. These lay down criteria that offset presses must meet if they are to be suitable for production and that can be objectively checked. Given that digital printing has now secured a firm place in the printing landscape alongside conven-

For the time being, the guidelines are restricted to electrophotographic printing but they can also be applied to other printing methods provided these relate to the four-colour printing of A3 sheets. Toner is a key component of electrophotographic presses and so it is the system rather than just the press that is checked.

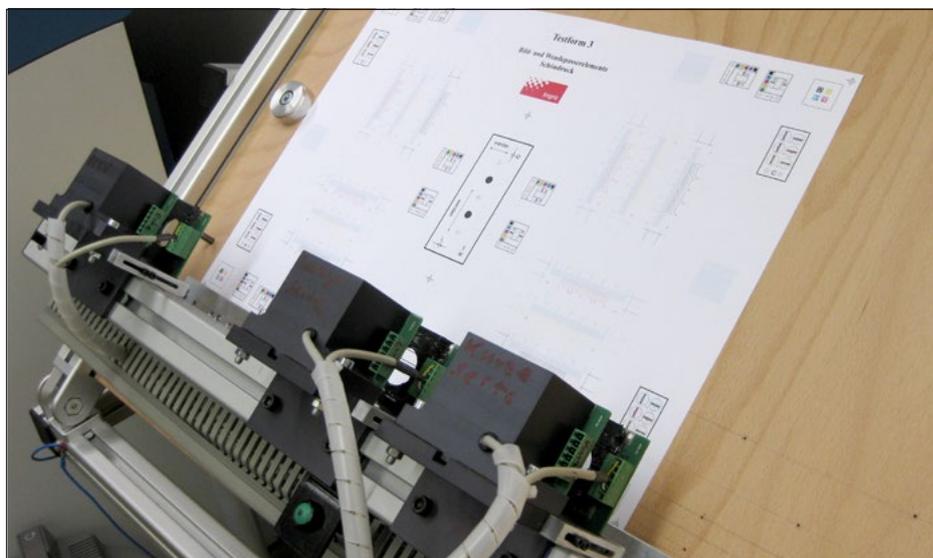


Image. Camera-based measuring table to determine the positioning accuracy of digital prints.

tional printing methods, there has been a pressing need for appropriate guidelines to be drawn up for such presses.

Such guidelines have been developed as part of a Fogra research project and now form the basis of a joint service offered by Fogra and Germany's regional printing associations. You can download them as a PDF file from the Fogra website.

In addition, the results always relate to a particular, individually specified substrate and this forms an integral part of the system.

Unlike the offset guidelines, the ones for digital printing do not contain any tolerances but simply a description of the test procedures, including test forms, characteristic values and their evaluation. This

is due to the fact that commercially available digital presses exhibit a very broad range of quality properties because the very varied requirements imposed on different printed products mean that the printing systems are similarly varied in how they are set up.

Guidelines in practice

There are various different possible ways for the guidelines to be used in practice. One possibility is for manufacturers to incorporate the characteristic values they contain into the specifications for their presses. Another is for printing companies to compare their print quality requirements with the quality delivered by the press in question and then choose a system that meets their requirements. They also allow the quality properties promised by the manufacturer to be objectively checked in the course of a technical acceptance trial.

It is often difficult for the individual user to specify suitable quality attributes. In order to help with this, the guidelines contain a range of values for each characteristic value that reflect the spectrum of electrophotographic printing systems that

are currently commercially available. The results for a typical offset print are also included for guidance. In addition, Fogra holds sample books for selected image quality attributes and these can be viewed on request.

Fogra service

Fogra offers three different levels of service based on the new digital press guidelines. The basic level involves checking the colour accuracy, the rendering of spot colours, colour variations over the format and the print run, banding, the rendering of detail, edge sharpness, as well as print out uniformity. Optional gradation and geometry modules can also be ordered. The first of these examines the tone value resolution and the reproducible tone value range, whilst the second examines image register and positional accuracy (simplex and duplex), as well as the dimensional stability of the colour separations.

It is possible to order either a complete package in which trial prints are overseen on site and then evaluated or a more limited one in which printed samples are submitted for evaluation. The complete package is recommended for a contractually agreed acceptance trial by a neutral institution, whereas evaluation on its own is more suitable for manufacturers who simply want to record the characteristic values that define the quality of their presses. When submitting prints for evaluation, it is important to ensure that print trials are carried out precisely as laid down in the guidelines.

Interested?

The guidelines are available as a PDF download from the *FograCert > Print > Digital printing system check* section of the Fogra-website www.fogra.org, along with further information and the prices for Fogra services.

If you'd like to talk about your personal requirements, please contact Jürgen Gemeinhardt:

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TRIBUTE TO MEMBERS

Fogra would like to thank the following members for their long term commitment.

15 YEARS

ILATEC, San José de Costa Rica

10 YEARS

ColorConsulting S.r.l, Saronno (VA), Italy

Starleaton Holdings, Rhodes, NSW, Australia

Digital Distributors PTY (Ltd), Cape Town, South Africa

Esti Chem A/S, Gadstrup, Denmark

Join SRL, Florence, Italy

Océ Technologies B.V., Venlo, Netherlands

Tecnografica srl, Lomazzo (Como), Italy



Dear Members and Friends of Fogra,

You are more than welcome to visit us in our new institute whenever you are in Munich. Feel free to contact me when you are nearby - it would give me great pleasure to offer you a tour through our laboratories and testing facilities!



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#OPS2019

Be there when the international online print industry meets again on **3 and 4 April 2019**. This is the 7th time that this leading industry event will take place, returning to the "Bavarian Silicon Valley", München-Unterschleißheim.

Under the motto "**Think Global – Print Online**", attendees can once again expect an exciting and informative programme about e-business print.

www.online-print-symposium.de/en/

IMPRINT



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