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Control elements of modern quality management

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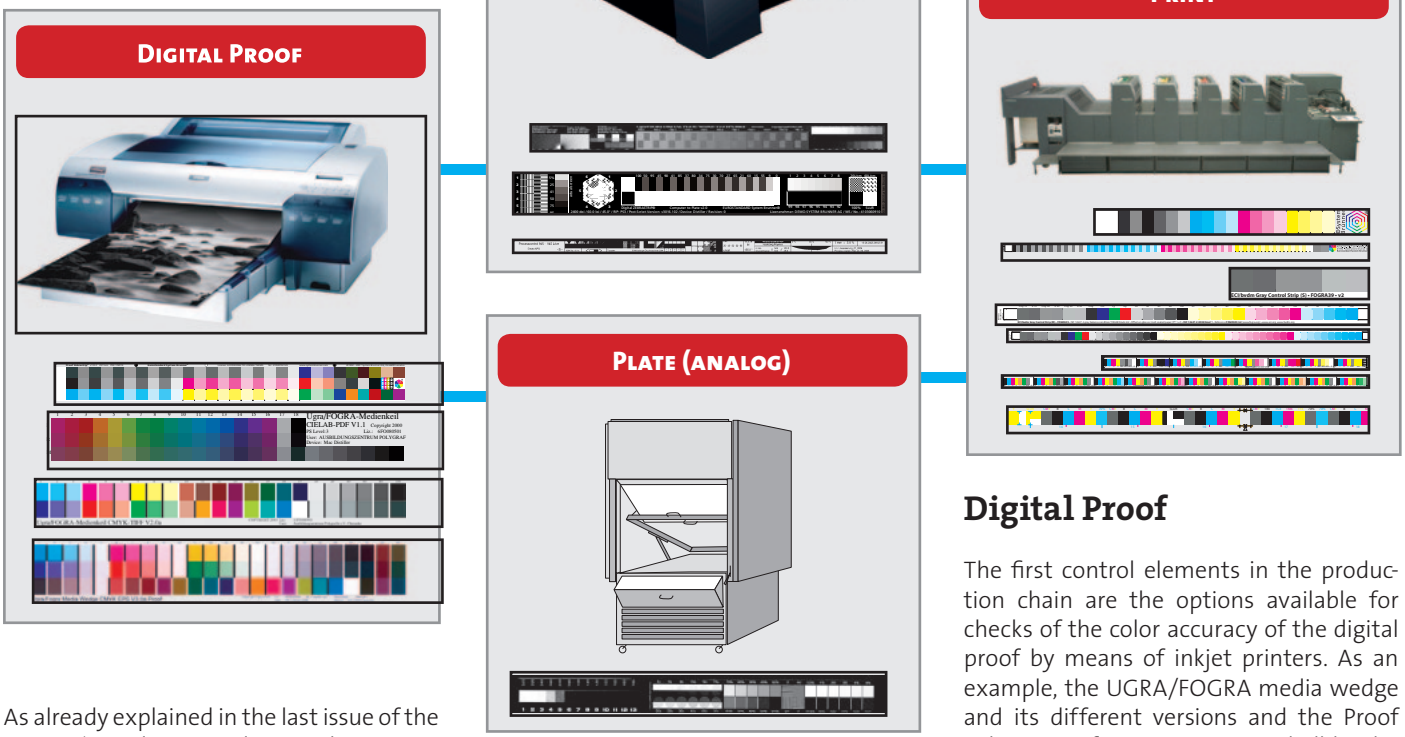

As already explained in the last issue of the Printers` Guide, a trend to production according to binding standards can be seen in the graphic arts industry world-wide. With growing demand from large-scale print buyers, printing houses are more and more urged to take on this subject.
At present, there are, however, different approaches to standardization. All of them aim at making print production and print products predictable and repeatable. With increasing globalization of the market, this should also be possible irrespective of where production takes place.
With this in mind, there are different ways to achieve this aim. In-house standards are mostly based on experience values in production and/or have been precisely adjusted to a company's production environment (special printing substrates and/or printing methods), and they are strongly dependent on the know-how of the staff. General standards like ISO 12647 or the Global Standard in accordance with System Brunner give standards for specific frequently used printing methods (e.g. sheet-fed and web-fed offset printing).
But no matter which approach is taken, control elements are needed in order to check the parameters used in the standard. As a result, the most important task after the implementation of a standard is to check the individual steps of the workflow on a regular basis. The description and function of this means of control shall be the focal subject of this and the next few Printers` Guides. The present part gives a general overview; a detailed description of the specific means of control will follow in the subsequent parts.

Digital Proof

The first control elements in the production chain are the options available for checks of the color accuracy of the digital proof by means of inkjet printers. As an example, the UGRA/FOGRA media wedge and its different versions and the Proof Zebrastrip of System Brunner shall be described.
These elements must be available in digital format and should be a component of every proof. They consist of individual solids and tint patches of the primary, secondary and tertiary colors. Other components of these wedges are control patches for a comparison of K-only gray against CMY gray.
The ultimate purpose of these control wedges is to check the proof by means of measurements in order to find out whether it can be reproduced on the printing press in the actual production process without major problems, or whether there will perhaps be differences between the proof and the printed product resulting in delays, problems and, in the end, costs. They can be avoided thanks to the use of the media wedges for control measure-

ments, because this enables to identify and correct any imperfect reproduction of color at a very early stage of the production process.

Printing plate

Both, in an analog and a digital workflow, continuity must be guaranteed during the total platemaking process. This above all applies to the transfer of screen dots to the plate. Irregularities as regards dot size often turn out to be a problem in the color-true production of printed products.
Control wedges that can be used for quality assurance during the imaging process are the UGRA offset control wedge for the analog process and, e.g. the digital plate wedge of the FOGRA or the process control strip (Prozesskontrollstreifen - PKS) of Heidelberger Druckmaschinen AG for the digital process.
The purpose of these control elements is above all to view and document the measurement results of the transfer of the dot sizes onto the printing plate with high precision. Other possibilities of control are the viewing of highlight and shadow areas, the control of the total tonal value range as well as the focusing of the laser for the exposure of CtP plates.

Printing

Quality control in printing which has been performed for quite some time shall also be mentioned at this point of the workflow. There are a variety of print control strip versions of different manufacturers on the market, e.g. strips from Heidelberger Druckmaschinen, Techkon or manroland. These strips do not differ very much as to their general structure. For instance, the print control strips in most cases consist of a solid patch and 40 % and 80 % screen patches for the determination of dot gain in the individual color patches. Unfortunately, control strips for measuring only solids are still used at some printing houses. In most cases, checks of a print product using only solid patches, however, no longer satisfy present-day standards of quality assurance.
Other control options during printing are e.g. ink acceptance, gray balance, slur and ghosting as well as print contrast.

A detailed description of the control wedges and control options will be given in the following issues of the Printers` Guide.

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