gmg printControl

Printing process control
at a click of the mouse

Printing process control with GMG PrintControl and GMG RapidCheck

The significance of process control in the graphic arts industry has grown substantially in recent years. Only with a reliably controlled process is it possible to produce the necessary quality and at the same time achieve high profitability. More effective and sustainable process control will acquire even greater importance in the future. It is increasingly the case that the companies involved in the process of producing a print product are far apart – in some cases being based in different countries or even on different continents.

Great importance will be attached to working mainly according to international standards – or to user-defined in-house standards. Tools are needed that offer the businesses involved the possibility of uniform communication and compliance with international standards.

The establishment of international standards, such as the ISO 12647-2:2007 standard, promotes good process control by defining the necessary parameters to ensure that a reliable match between proof and print is possible.

GMG PrintControl for standardizing the press

Since conforming with these guidelines in daily work is not exactly child's play, there is a need for low-cost software tools that enable the printer to comply with these parameters. GMG PrintControl Pro and GMG RapidCheck make it far easier to adhere to the guidelines and to verify them. PrintControl Pro illustrates the complete printing process for the printer by following a series of defined steps. A detailed numerical and graphic analysis supports the printer's work. The graphic representation of key parameters sim-

plifies process control on the press and in plate making. This ultimately enables the printer to guarantee a standardized printing process with predictable printing results.

To rule out problems with the proof, there are proof verification tools like GMG ProofControl, which establishes beyond doubt and in a matter of seconds whether the proof is within the specified tolerances. Such verification tools are also needed for printing.
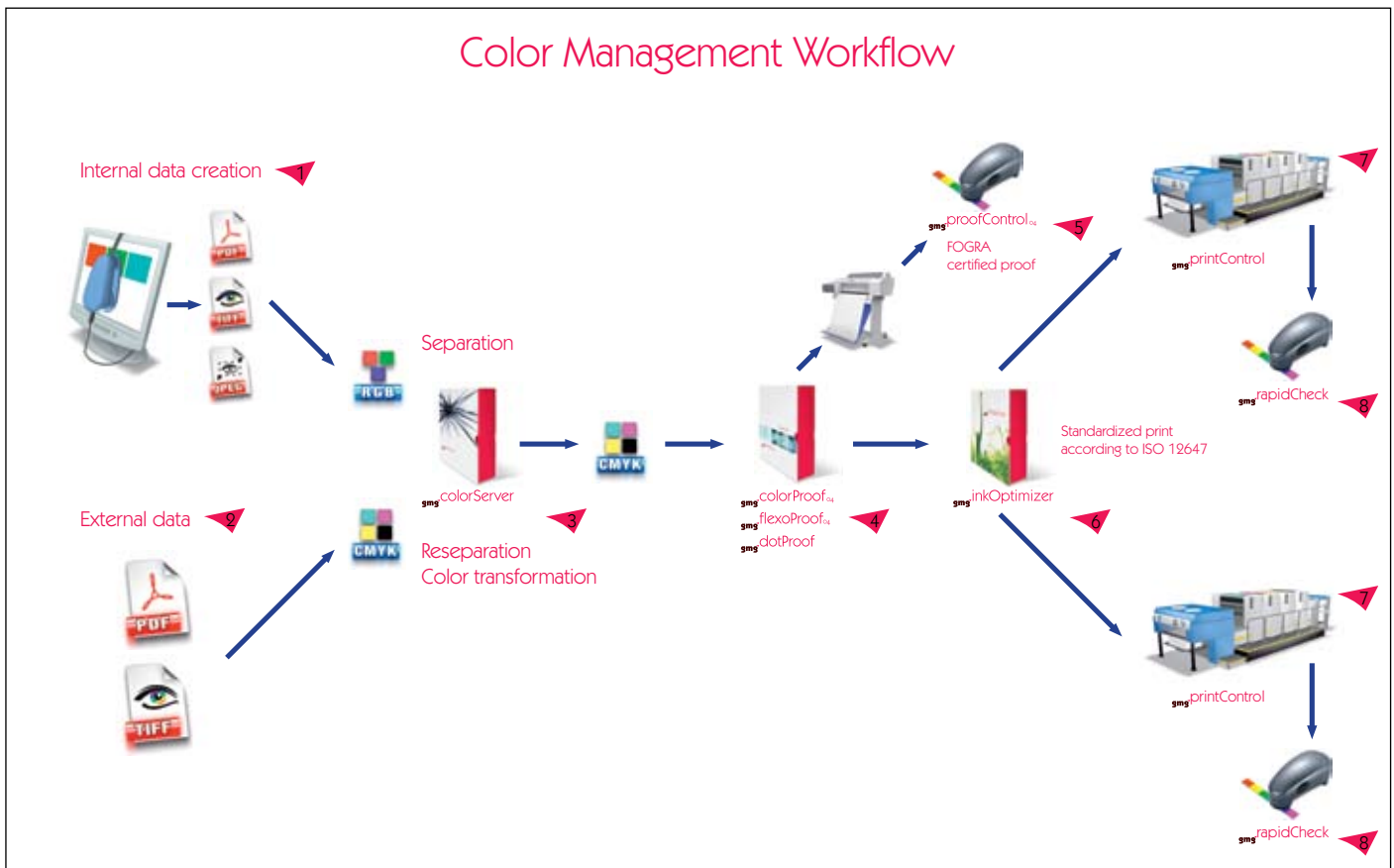
GMG RapidCheck fulfills these requirements by quickly and clearly showing if the press is operating within the defined tolerances.

GMG RapidCheck for the quick verification of compliance with printing standards

With GMG PrintControl and GMG RapidCheck, there is nothing to get in the way of reliable production.

Color Management Workflow

Internal data creation ◀1

Separation

External data ◀9

gmgcolorServer 3

Reseparation
Color transformation

gmgcolorProof₀₄
gmgflexoProof₀₄ 4
gmgdotProof

gmginkOptimizer 6

gmgproofControl₀₄
FOGRA
certified proof ◀5

gmgprintControl 7

gmgrapidCheck ◀8

Standardized print
according to ISO 12647

gmgprintControl 7

gmgrapidCheck ◀8

Usually, many businesses and divisions are involved in a color management workflow. However, multiple interfaces always generate problems. In order to ensure that the required quality is ultimately produced, it is a must to set up the entire color management workflow in the most efficient way. The key to this end is to work with standards and to constantly verify compliance with these standards.

Data can be delivered from external suppliers ◀9 or generated internally. ◀1 It is unavoidable that different data formats and also color spaces will occur. Great importance is attached to the GMG ColorServer ◀3 within the color management workflow, because its task is to convert the data to a uniform color space through separation, reseparation and color transformation. Only this procedure ensures that all images will show a uniform color appearance when printed.

The next step involves the proofing of the data according to the required print standard with the GMG proofing system. ◀4 It is essential to verify the proof with GMG ProofControl ◀5 in order to guarantee that the proof really does comply with the predetermined parameters, such as ISO 12647-7 or a user-defined in-house standard.

GMG InkOptimizer ◀6 helps to optimize the separations, resulting in faster make-ready. The reduction of ink use leads to a more stable printing process for sheet-fed offset printers and additionally to substantial cost savings for web offset and gravure printers.

The printer now gets the data together with a proof, knowing that his press can achieve the predefined proofing parameters. This is only the case if he makes sure that the press complies with ISO standards or the user-defined in-house standard.

To cope with this task, he needs GMG RapidCheck and GMG PrintControl Pro. With GMG RapidCheck, ◀8 he verifies whether all printing parameters comply with the defined standard. In the event of deviations, the printer can make the necessary corrections of the parameters with GMG PrintControl Pro. ◀7

Only working with standards and precise proof and print verification guarantee reliable, secure and high-quality production.

Production security by standardizing with GMG PrintControl
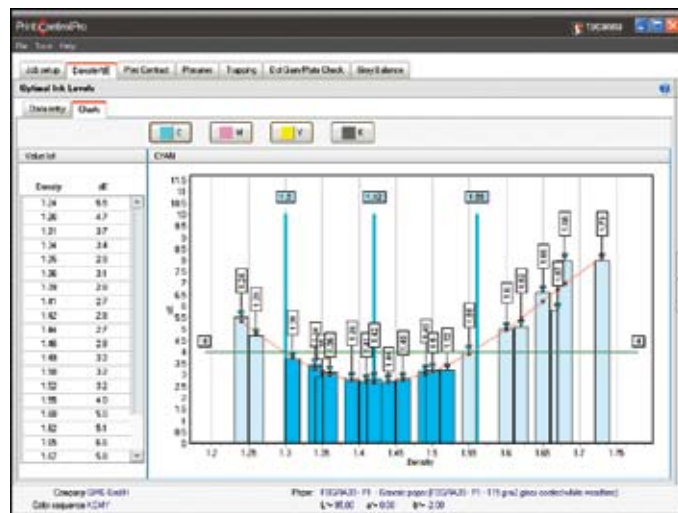
Supported standards

PrintControl Pro automatically installs the parameters of standards ISO 12647-2 and ISO 12647-3. However, users can also create their own in-house standards. This is a particularly attractive option when dealing with printing conditions that are not yet covered by international standards. Printing with elevated densities and FM screens are examples in this context.

Easy-to-use software

The user prompting of PrintControl Pro is intuitive, meaning that any user can reliably handle the application and analyze the results after just a short time. Analysis is simplified by clearly structured diagrams.

Detailed documentation

GMG PrintControl Pro documents every production step in a detailed report. All key parameters, such as CtP curve, optimum printing density (wet/dry), trapping, dot gain, gray balance and gamut, are recorded and presented in graphs. The colorimetric target values of the ISO standards are stored, enabling the creation of reports in compliance with the standards. Needless to say, the report can also be printed out with all data, graphs and comments.

Display of wet density and color deviation from the target value

These analyses are the fundamental prerequisite for understanding the printing properties of the individual presses and identifying the differences between presses. The analyses and reports make it possible to localize problems quickly and easily. The documentation of all parameters from start to finish enables rapid and inexpensive elimination of error sources.

The functions in detail

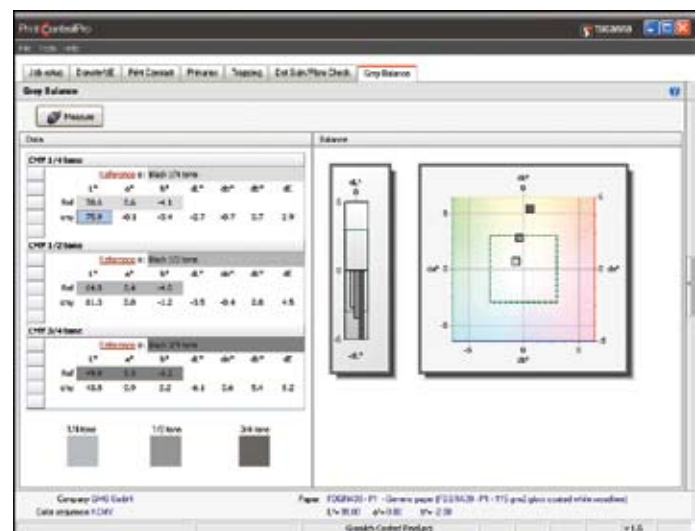*Determination of the optimum density*

Inking series can very easily be analyzed and evaluated in order to get as close as possible to the target values of ISO 12647-2:2004. The evaluation shows the optimum printing density corresponding to the smallest color deviation from the ISO colorimetric reference values in both graphic and numerical form.

CtP correction curves

The Dotgain/PlateCheck section allows the user to measure the plates to make sure that the values set in the CtP RIP are the same as the actual images on the plate. Once the tone value increase is read, PrintControl Pro calculates the CtP compensation curves automatically, applying an advanced smoothing algorithm to make sure that no bumps or peaks are introduced.

Analysis of the gray balance

GMG PrintControl Pro displays the deviations of the gray balance in the quarter, half and three-quarter tones. The user is offered both numerical and graphic evaluations for analysis. In the a*b* graph display, the user can assess the hue deviation of the gray balance from the selected gray definitions, and in the L* graph the lightness deviation can be determined.

Analysis of the gray balance

Tone Value Increase

The tone value increase (TVI) is measured, and the resultant printing characteristic curve is presented in a graph. A comparison of

the actual tone value increase with the optimum reference values is displayed, including upper and lower limits. Virtually any control strip is supported, e.g. UGRA/FOGRA, as well as in-house strips.

ProfileEditor

The user can make his own printing standard, based on either a current ISO standard or his own values. Colorimetric values for primaries, secondaries, and paper can be specified, as well as TVI with tolerances. This is especially useful for flexographic printing, where many different substrates are used. Profiles can also be exported to GMG RapidCheck for subsequent use for quality control checks.

Trapping

In addition to classical monitoring of trapping and its display in percent, it is also possible to compare color deviations colorimetrically with the ISO target values on the a*/b* axes.

Paper classification

The database provided allows the user to classify all papers in use, and compare them with the ISO 12647 paper classes and with each other.

Print contrast

The combination of the "Print Contrast" function and the optimum density values guarantees maximum print contrast in the given density range.

Target groups

GMG PrintControl is one of the standard work tools of any printshop that uses printing methods like sheet-fed offset, web offset, newspaper printing, flexographic printing, etc. and has corresponding four-color printing presses.

Instant verification of prints with GMG RapidCheck

For efficient printing process control, GMG PrintControl is needed, on the one hand, to determine the printing parameters. On the other hand, GMG RapidCheck is also required – a solution that quickly and easily examines whether all printing parameters comply with standards ISO 12647-2 and 12647-3 or user-defined in-house standards. The software is essential – by instant verification of the media wedges – for quality assurance in daily production.

A single measuring procedure is all it takes to acquire the relevant data, analyze them and present them in graph form. A report is generated automatically and can be printed out.
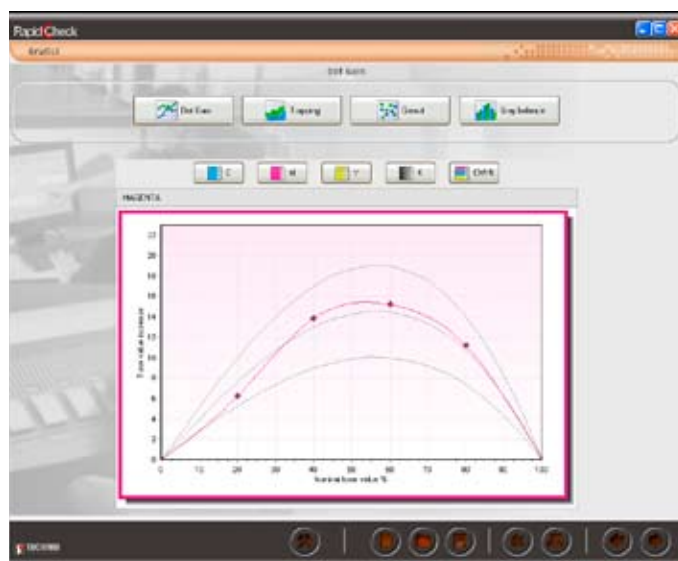
In the event of deviations from the specified tolerances, the printer can then quickly make the necessary corrections on the press and thus ensure compliance with the selected printing standard.

Analysis of the most important printing parameters
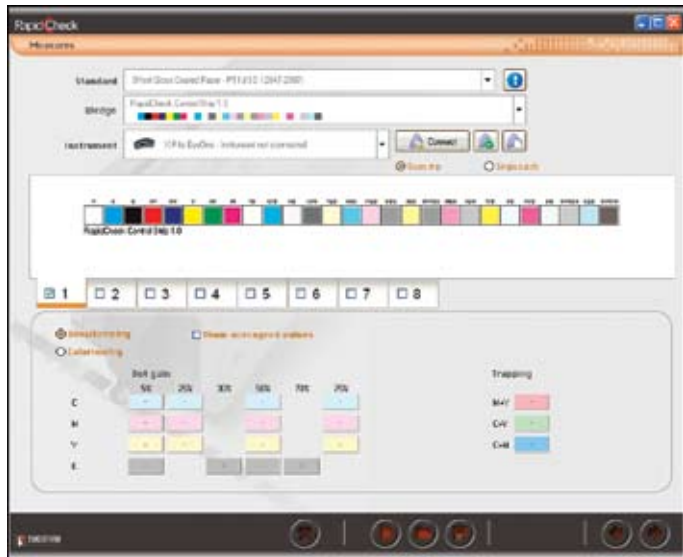
RapidCheck analyzes the following printing parameters:
- Density: The density of the four process colors Cyan, Magenta, Yellow and Black is displayed.
- Tone Value Increase: The colors are displayed individually, and there is additionally a display of the four process colors when printed in combination.

- Trapping: Trapping is displayed with the help of easy-to-interpret bar charts for the colors Cyan + Magenta, Cyan + Yellow, and Magenta + Yellow.

Graphic display of the tone value increase

- Gamut: Different displays permit colorimetric analysis of
  - the color space (reference color space in comparison with the measured color space)
  - the primary colors (C, M, Y, K) and the secondary colors (R, G, B) (absolute deviation from the target value and its direction)
  - the paper color (deviation from the standard).
- Grey balance: Any color deviation present is displayed in three-dimensional form: the absolute deviation from the target value, and the direction of the deviation.

Evaluation of the ECI Gray ControlStrip with GMG RapidCheck

The values determined can be exported and further processed in GMG PrintControl Pro, e.g. in order to generate a new CtP curve.

Detailed analysis of the printing conditions by GMG RapidCheck

Target groups

GMG RapidCheck is one of the standard work tools of any print-shop that uses printing methods like sheet-fed offset, web offset, newspaper printing, flexographic printing, etc. and has corresponding four-color printing presses. It is also a very helpful tool for print buyers, such as editorial departments, ad agencies, and others.

Dealer's stamp