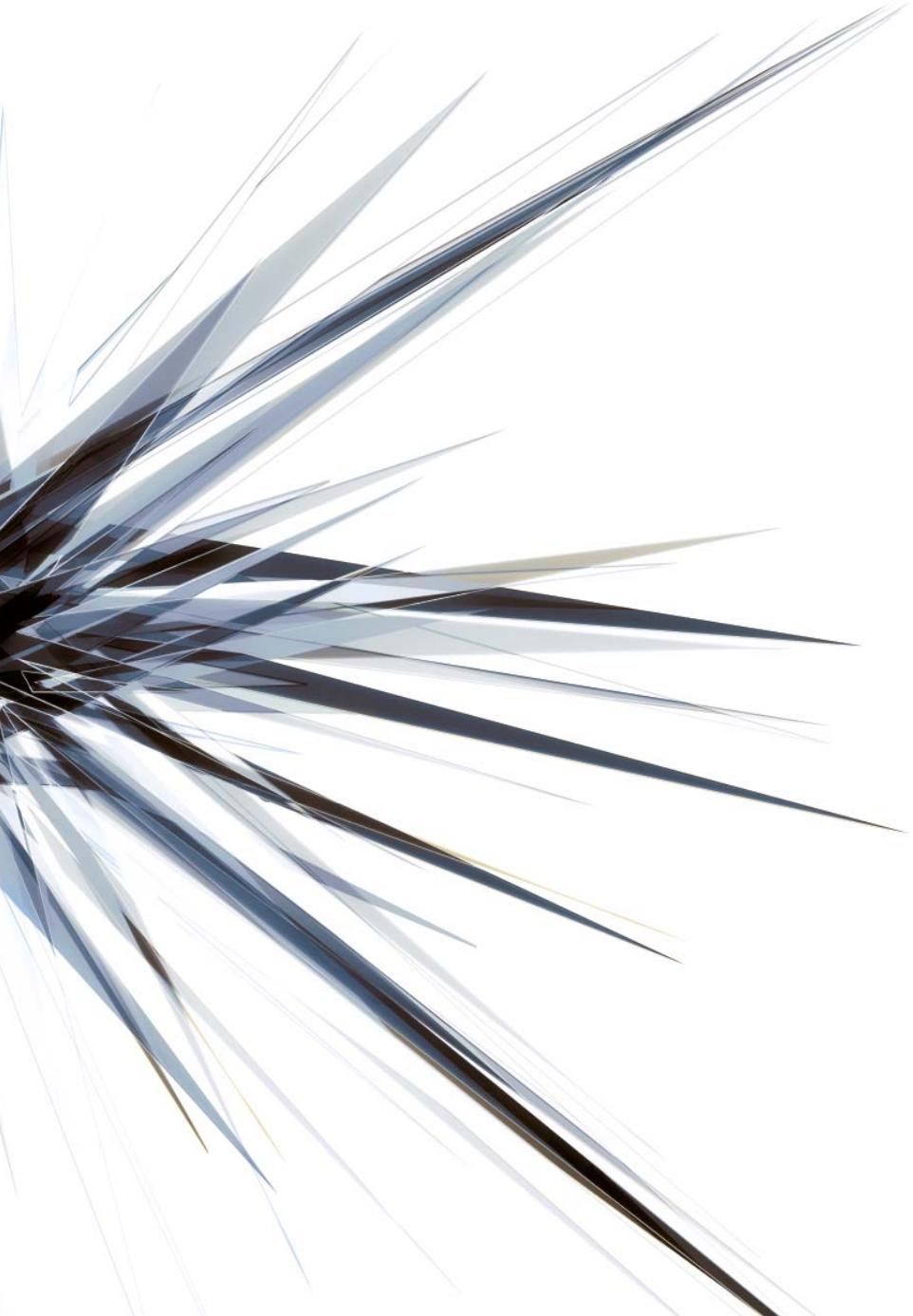
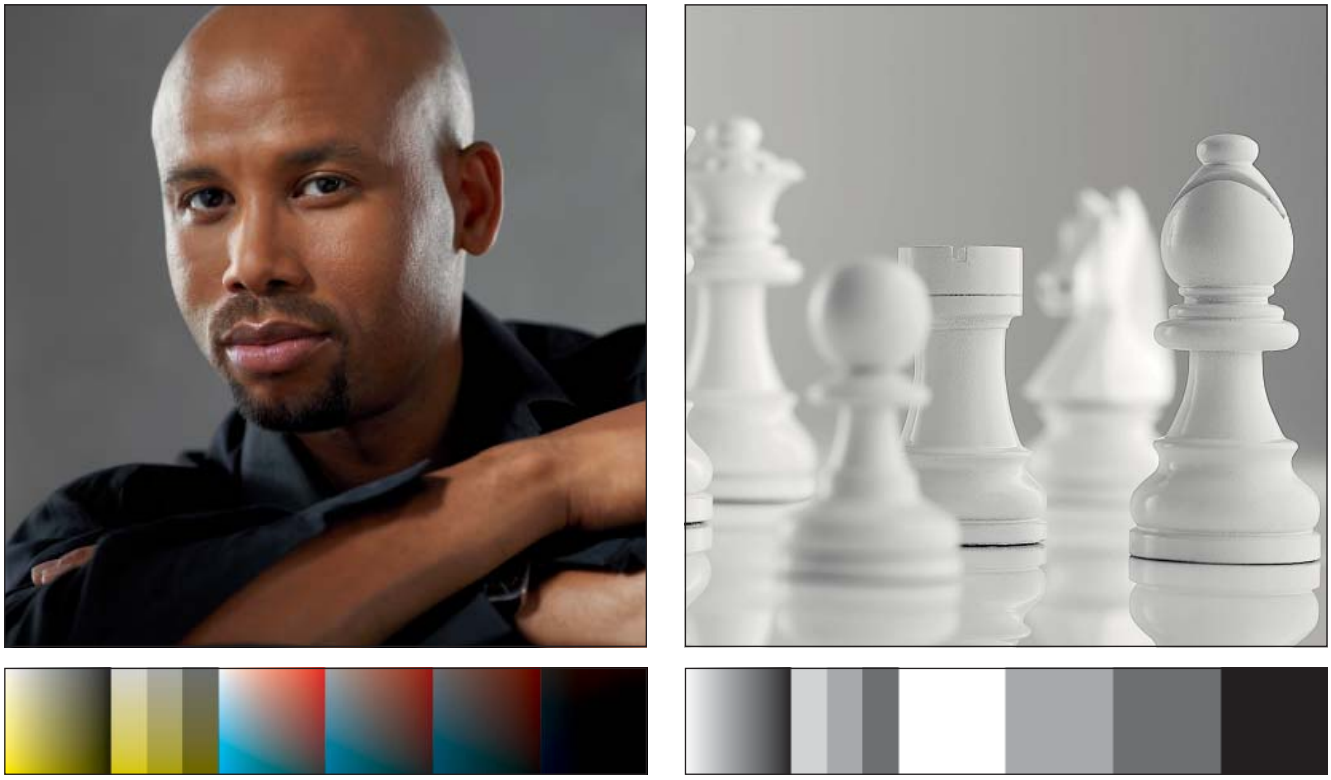
gmg colorServer

Dependable print production using efficient colour space transformations



Input data: ISOcoated



The test images are optimised for offset printing on coated paper (ISOcoated), total area coverage (TAC) 350%. The quality of the subsequent colour conversion in terms of skin tone and grey balance can be assessed based on the above images. GMG SmoothCheck (bottom left) contains various CMYK vignettes with a specifically composed Black channel (bottom right). Following conversion, it allows judgment of the Black separation preservation and the reduction of the total area coverage. In addition, the smoothness of the separation can be tested based on the vignette conversions.

Flexible, standardised, colour managed work-flows with CMYK-to-CMYK colour conversions

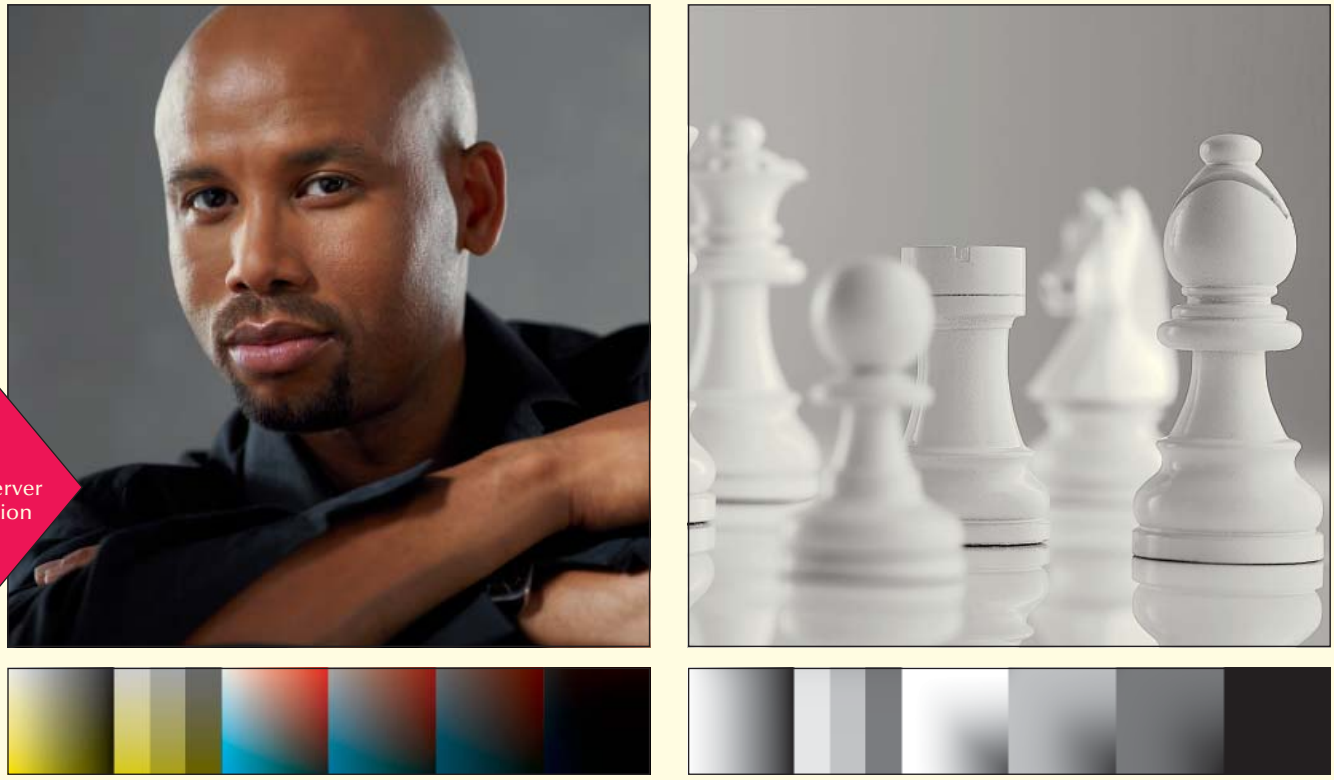
Advertising agencies, prepress businesses and printers today work under enormous time and cost pressures. Customers demand a degree of flexibility that is only possible using highly automated workflows. For example, advertisements produced for an offset-printed magazine today, are often re-purposed in a gravure-printed magazine or newspaper tomorrow. Or print jobs created for a specific press have to be printed on a different press on short notice. To deliver optimum quality in these situations, the respective printing data should be re-processed incorporating paper colour, colour space size and shape, total area coverage, and the dot gain of the target printing conditions. In the past, this entailed a major manual process with extensive technical knowledge.

In these situations colour conversions using ICC profiles produce unsatisfactory results because they change the content's colour composition. Intermediate conversion to the three-colour CIELab colour space, by definition, discards the original separation information. Following such conversions, the Black channel is composed of four colours and vignettes display incorrect breaks. These problems created demand for an automated solution that could quickly process data for multiple uses in different production environments while maintaining optimum reproduction quality. GMG ColorServer answers this need by providing a CMYK-to-CMYK colour conversion method developed in collaboration with Europe's leading high-quality printing companies. CMYK images or pages are automatically converted from one industry standard (e.g. ISOcoated) to another colour space for offset, gravure or newspaper printing, or to an in-house standard. Expensive and time-consuming manual editing is eliminated, and there is less risk of using incorrect settings. At the same time, production becomes more flexible and more efficient.

GMG ColorServer includes a wide range of standard profiles for commonly used standards (SWOP, GRACoL, PSR, ISO, JMPA/JPMA, 3DAP), plus the ability to create custom transformations. Thanks to GMG's proven high-end 4D DeviceLink colour technology, CMYK source colour space values are directly linked to the CMYK values of the target colour space within the colour profiles. The original colour composition is preserved; for example, a black vignette is smoothly altered as required and does get converted into four colours. In addition, intelligent algorithms limit the total area coverage. To preserve the visual appearance on different papers, the conversion also takes paper colour into consideration.

Output data: converted to ISOwebcoated with GMG ColorServer

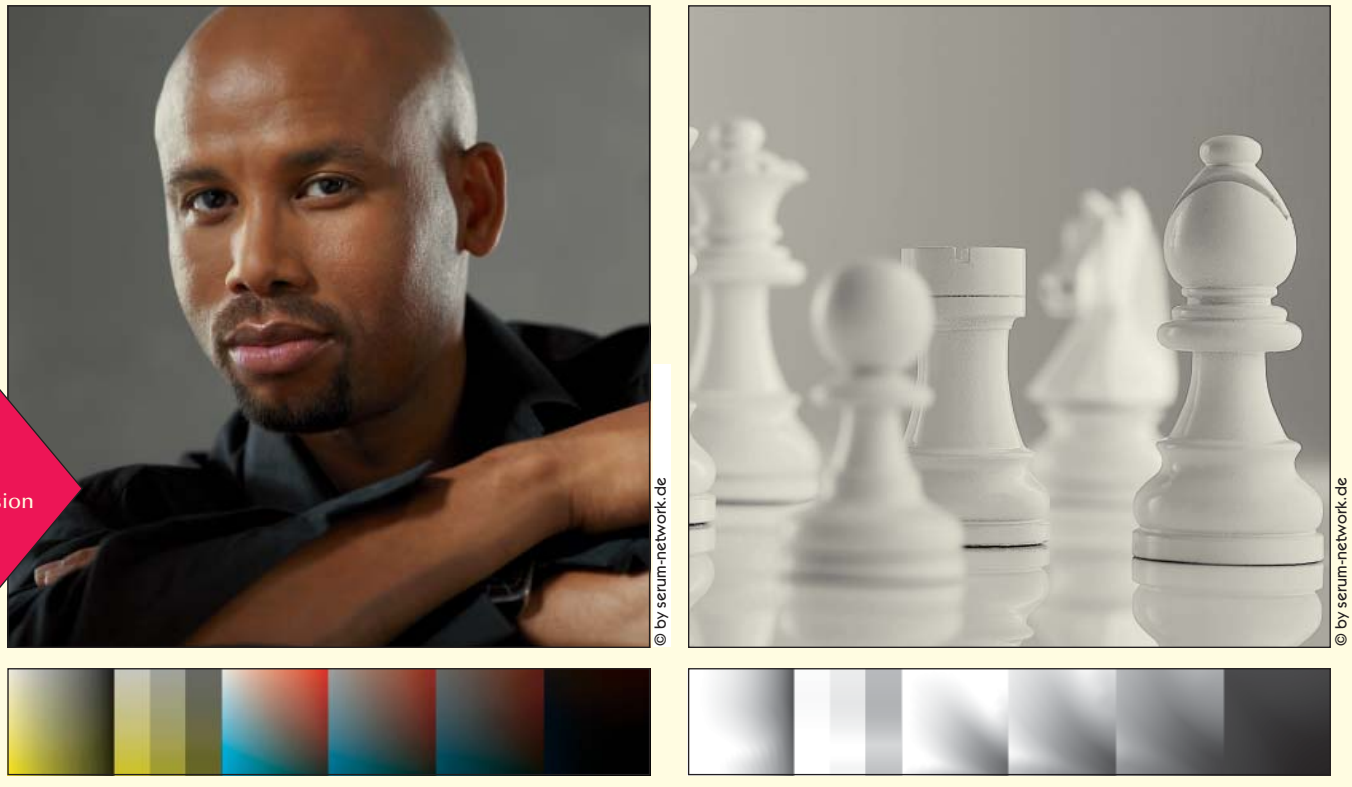
GMG ColorServer conversion



After conversion with GMG ColorServer from ISOcoated to ISOwebcoated (offset printing on LWC paper, total area coverage 300%) - To obtain a better visual match with ISOcoated, the grey balance was adjusted by slightly reducing the Yellow component during conversion (pictures at top). The Black channel in GMG SmoothCheck (bottom right) retains its monochromatic composition. As shown in high ink application areas, the CMY chromatic colour component was replaced by Black in the neutral shadows to achieve the required total area coverage requirements.

Output data: converted to ISOwebcoated with ICC profiles

ICC conversion

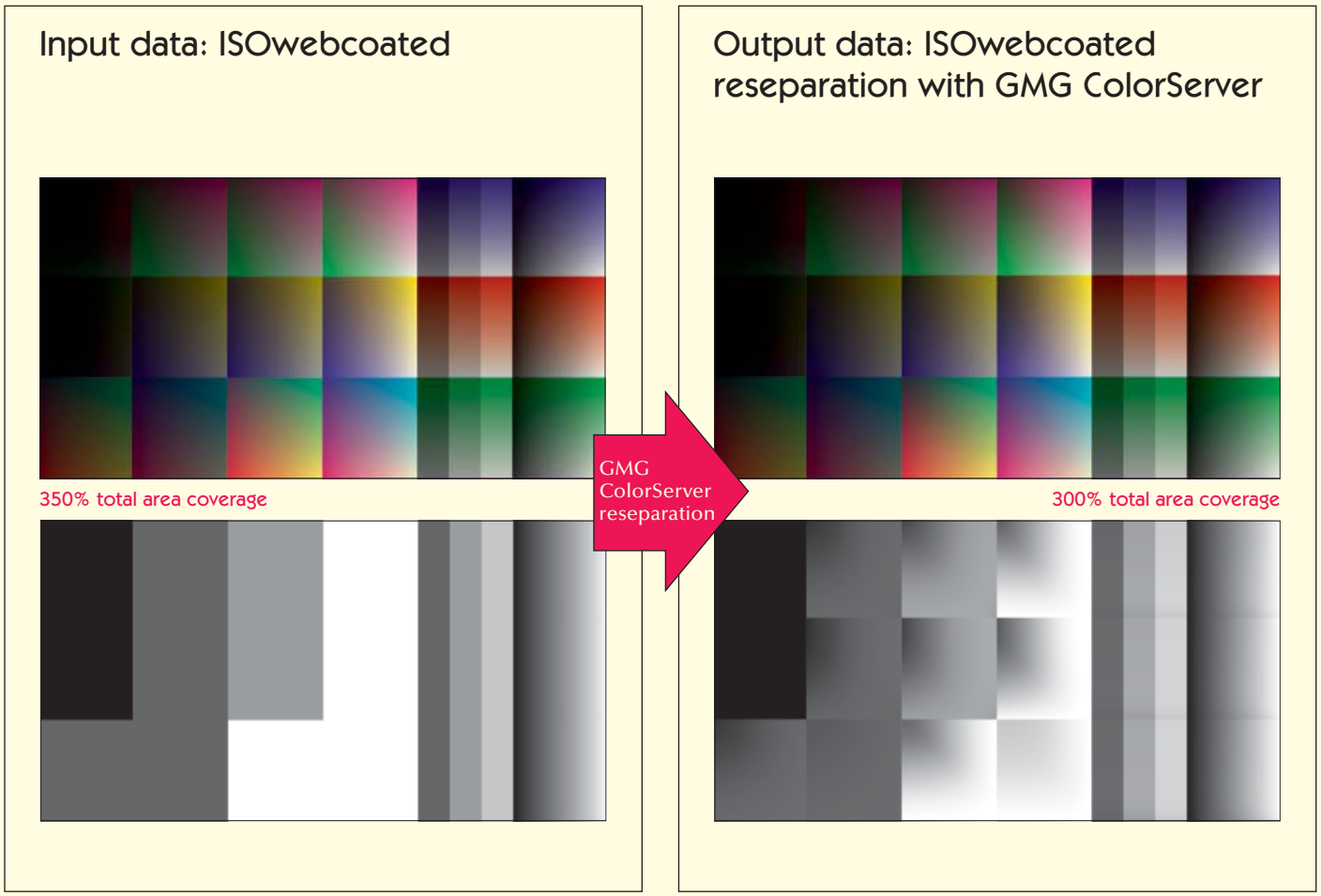


After an ICC conversion from ISOcoated to ISOwebcoated - The grey balance of the original file is preserved, but the more yellowish colour of the paper creates an overall yellowish cast (pictures at top). Following this conversion, as shown in GMG SmoothCheck (bottom right), illustrates how the Black channel is now composed of four colours and vignettes display marked breaks.

Dependable production thanks to CMYK reseparation of printing data

Many printers are familiar with the problem of data being supplied from multiple sources, particularly when it is included in a single customer's job. When this data needs to be printed on the same form, different separation settings make it difficult to preserve the colour and grey balance. The data may already be in the right printing colour space, but it is no longer possible to reconstruct the specific settings that were used for the Black composition (total area coverage, long/short Black, UCR/GCR). The result is a page with a chequerboard content of mismatched colours and grey balances that even an untrained eye immediately detects.

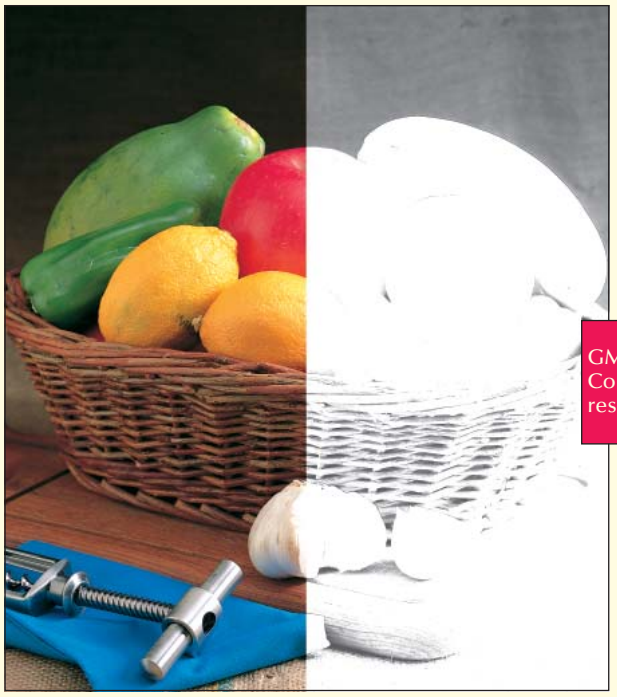
The reseparation function of GMG ColorServer resolves this dilemma. GMG reseparation profiles create a uniform standard for the colour composition. Incoming data is automatically reseparated in the same colour space, without the colour being changed. The total area coverage and the grey balance are standardised and the Black composition is consistent. The effects of reseparation are clearly noticeable, particularly when printing 'by the numbers'. Shorter make-ready times, less time to colour, and less paper waste are experienced. Colour separations produced with GMG ColorServer are less susceptible to fluctuations during the press run and job-related tolerance limits are easier to achieve and maintain. Moreover, the colour appearance is right over the entire press sheet. This offers competitive advantages. Cost savings are significant as a result of shorter, automated work processes, and process reliability due to predictable and repeatable colour results means satisfied customers. GMG ColorServer supports the lean manufacturing practices today's leading printers are implementing to achieve more efficiency, productivity and profitability.



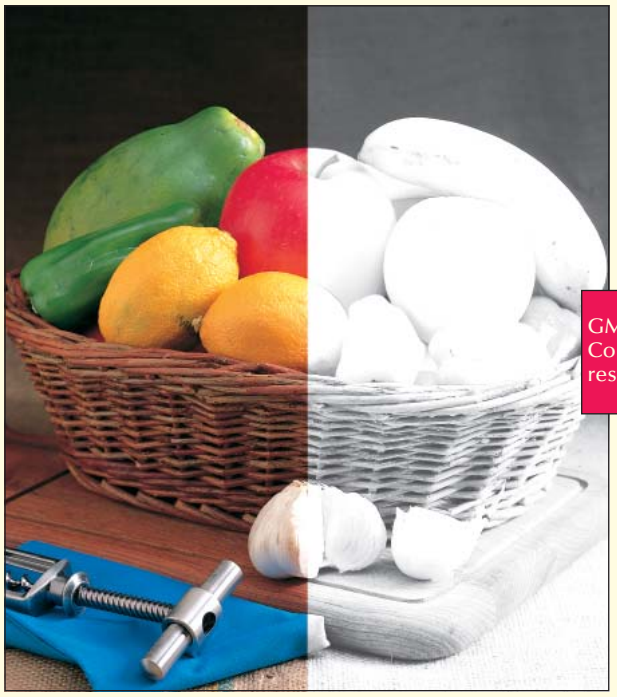
GMG SmoothCheck (top picture) tests the quality of the conversion of vignettes during reseparation. The preservation of the Black channel and the reduction of the total area coverage can be determined based upon the Black separation (bottom picture).

The original Black channel is preserved following reseparation with GMG ColorServer. In addition, the CMY chromatic colour component is uniformly reduced and replaced by Black in areas with a high level of total area coverage. Primary and secondary colours remain unchanged.

Input data: ISOwebcoated



Separation with short black

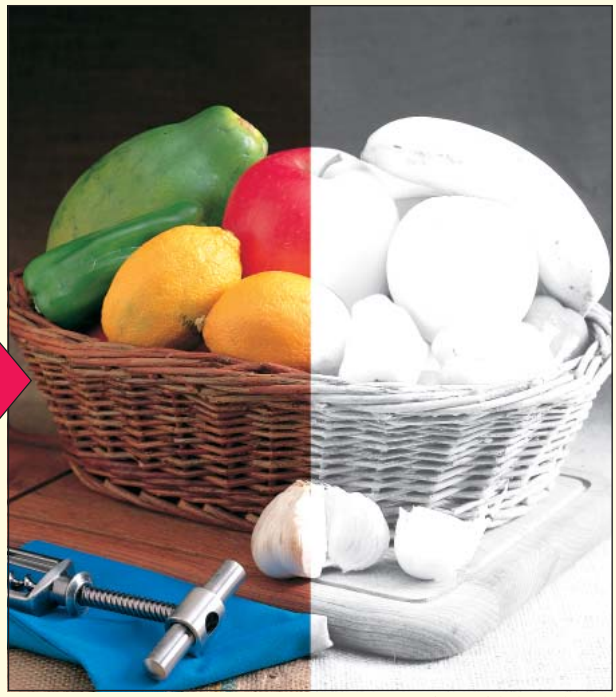


Separation with long black

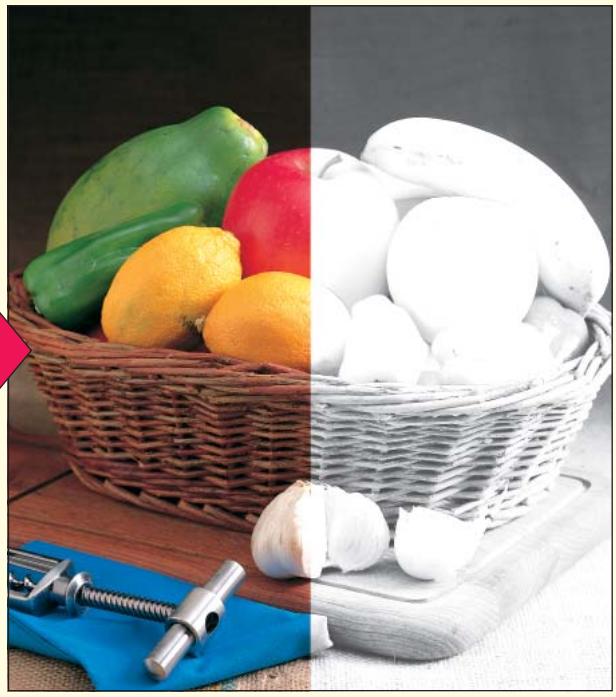
GMG ColorServer reseparation

GMG ColorServer reseparation

Output data: ISOwebcoated reseparation with GMG ColorServer



Separation with long black



Separation with long black

The test images are in the ISOwebcoated colour space. It can be seen in the Black separation that the input data were separated using different settings for the Black composition. The separation with short black is more susceptible to colour fluctuations.

Following reseparation with GMG ColorServer, the Black composition is consistent and smooth. Both, the colour and grey balance can be adapted uniformly for both images even when the input files were created with different separation settings.

Automatic RGB-to-CMYK colour separation

The end-to-end digitisation of prepress operations is driving demand for re-purposing and multiple uses of data. The acceptance of digital photography is also increasingly leading to RGB workflows supplementing classic CMYK production environments. Even in classic CMYK workflows, RGB data still needs to be separated for the respective output conditions. Within this context, data should be processed independent of the respective output process, and be converted into multiple target colour spaces – print, CD/DVD, or Web – as required.

GMG ColorServer makes it possible to put the advantages of process-neutral data storage to practical use. Expensive, manual work steps are eliminated as a result of automatic colour separation and the possibility of simultaneously resizing RGB images during processing, and sharpening them as a function of the image size. Constant and reproducible results improve the reliability of production. To guarantee convincing results, the requirements of every printing condition (Black composition, total area coverage, UCR/GCR) are taken into account in the GMG colour profiles. The individual colour channels are separated harmoniously, tonal breaks are prevented. This is particularly noticeable when converting vignettes. Moreover, GMG has developed an innovative Gamut Mapping method that calculates the optimum substitute in the available printing colour space for colours that cannot be reproduced. Thanks to adaptation of the grey balance to the paper white, the colour impression is optimally preserved when converting a file to different CMYK colour spaces. This results in a uniform colour appearance with the greatest possible preservation of the contrast and saturation of the colours.

In addition, GMG ColorServer also compensates for the disadvantages of an RGB workflow, text composed in RGB Black can be converted to 100% Black using GMG ColorServer. When separating with ICC profiles, it is often composed of four colours, which can result in register problems in subsequent production printing. Furthermore, vector and pixel data are converted differently by ICC transformations, depending on the Rendering Intent used. GMG ColorServer ensures uniform conversion of vector and pixel data.

GMG ColorServer includes RGB separation profiles for converting sRGB, ECI-RGB and AdobeRGB data to all common printing standards. Needless to say, users can also fall back on the GMG ProfileEditor to create their own RGB separation profiles.

ISOwebcoated with GMG ColorServer

ISOwebcoated, colourimetric with ICC profiles

ISOwebcoated, perceptual with ICC profiles

The RGB test images were each separated for ISOwebcoated (left-hand column) and ISOcoated (right-hand column).

ISOcoated with GMG ColorServer

The colours and the grey balance show a good visual match following GMG separation for different papers.

ISOcoated with GMG ColorServer

CMYK overprint

CMY separation

Black separation

ISOcoated, colourimetric with ICC profiles

The match is clearly poorer, especially in the grey balance, following separation with ICC profiles.

ISOcoated with ICC profiles

CMYK overprint

CMY separation

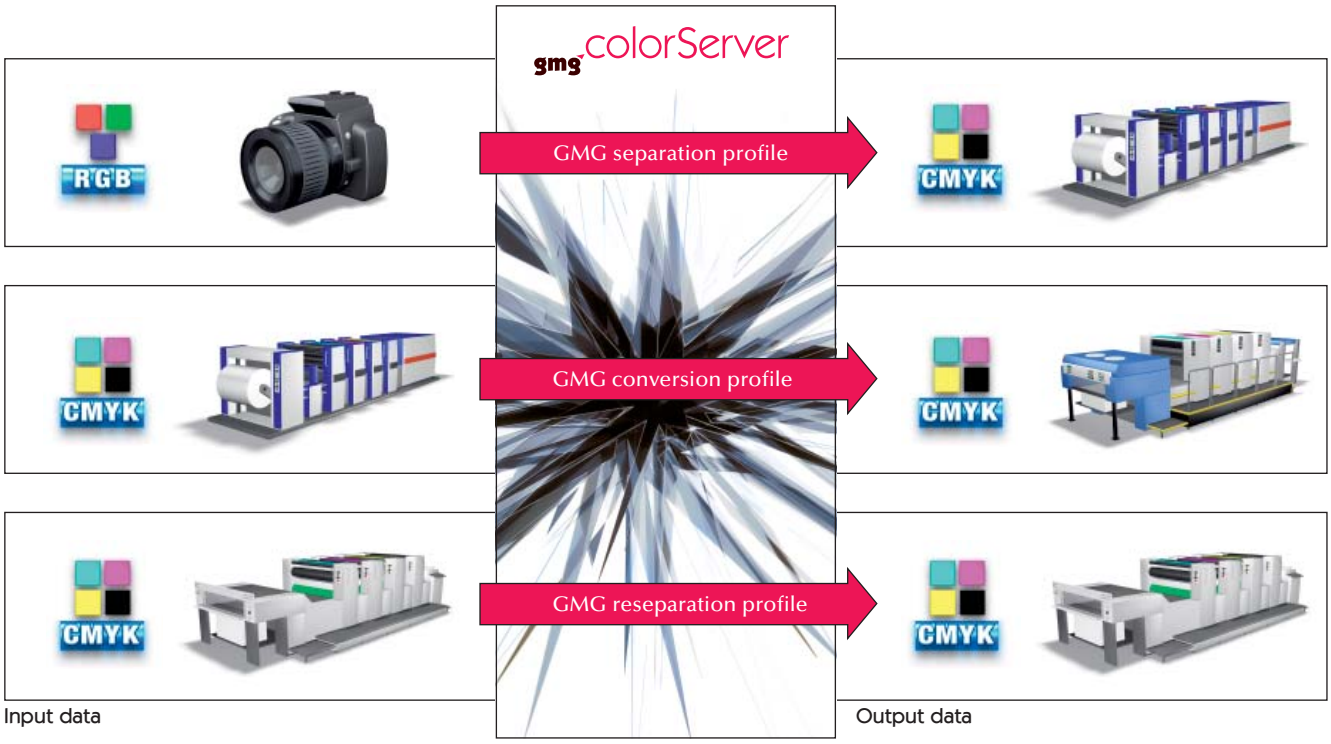
Black separation

ISOcoated, perceptual with ICC profiles

When separating with ICC profiles, the different Rendering Intents likewise lead to different colour results.

Various vignettes are integrated in GMG RGB SmoothCheck. The consistency of the colour transformations can be assessed visually following separation to ISOcoated - The separation using ICC profiles (bottom) shows clear breaks that are particularly visible in the colour separations. In contrast, GMG ColorServer (top) permits consistent separation without breaks in the colour channels, and ensures far more homogeneous vignettes. The result is greatly enhanced production printing behaviour.

Overview: GMG ColorServer colour profiles



Disclaimer
This brochure is intended to illustrate how GMG ColorServer operates. It was not printed to ISOwebcoated specifications which are mentioned herein to illustrate key concepts.

Trademark notice

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