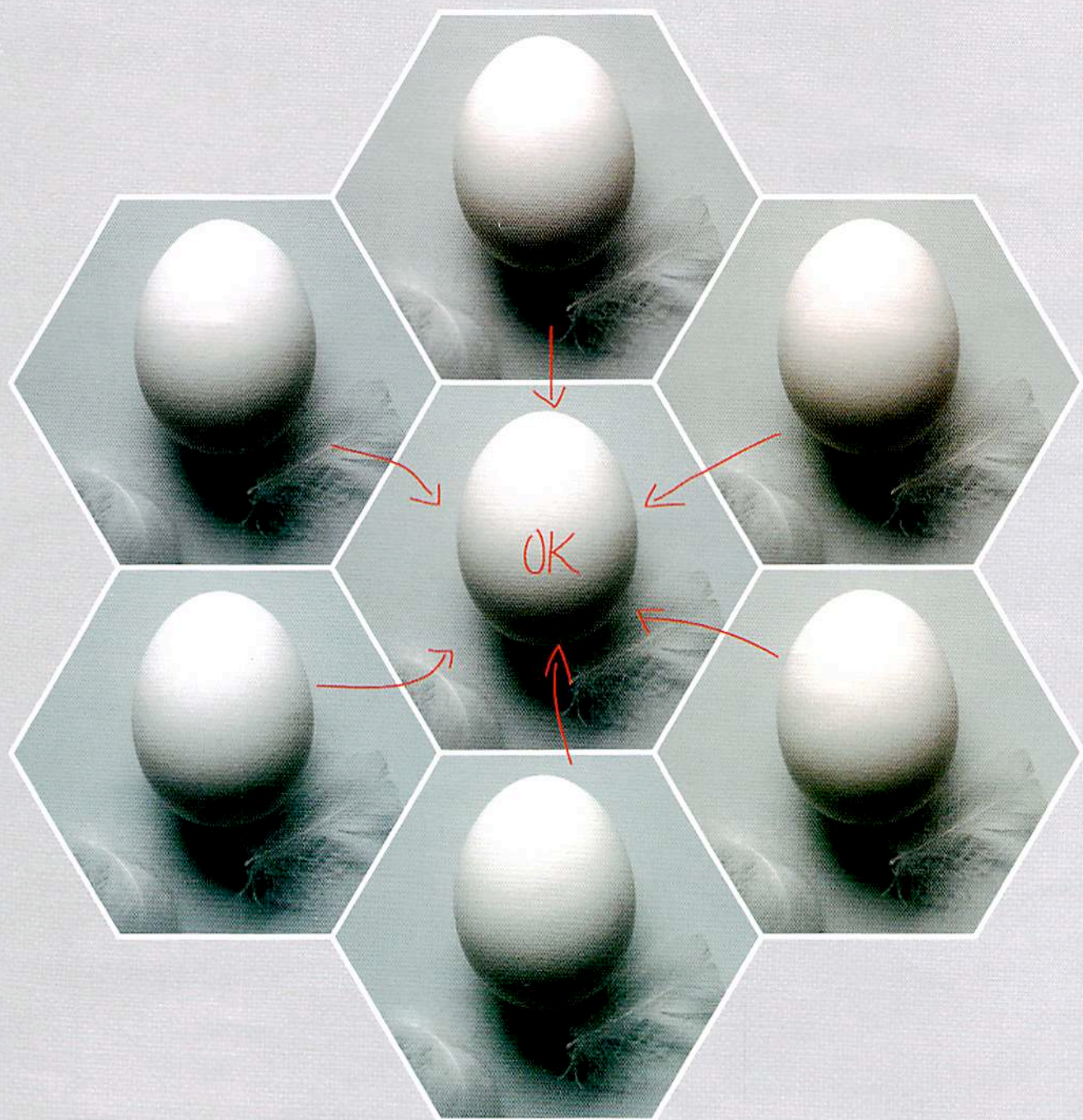




System Brunner okBalance®

Gray balance control for color consistency
never before achieved in illustration printing



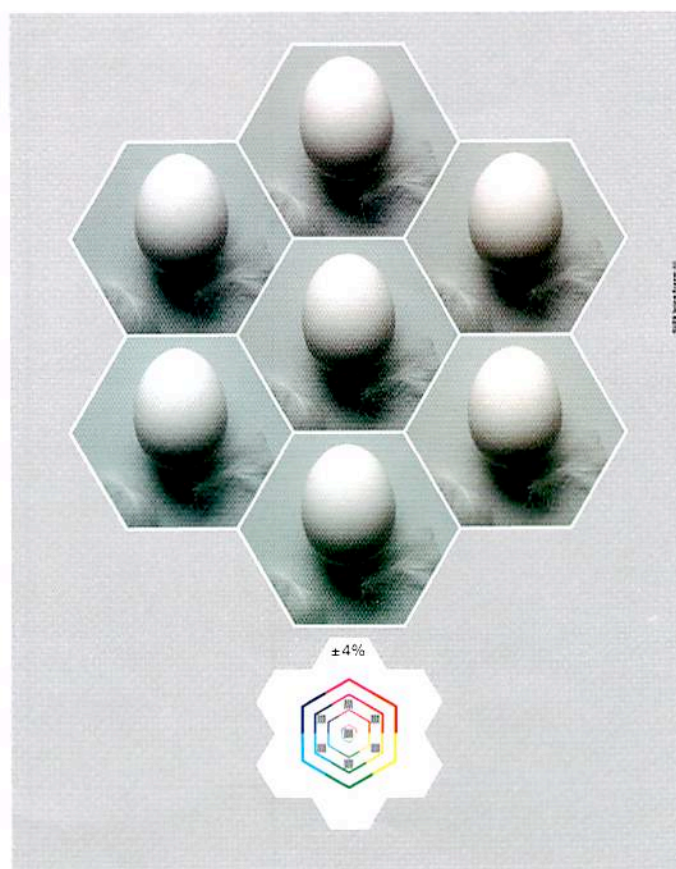
When one egg looks like the others ...

... manufacturers of brand-name products and their agencies are still a long way from being satisfied. They demand that their products be unmistakable in appearance and their packaging and advertising printed matter place high demands on the printing industry. The proof and OK sheet must be identical and there must be no color variations during the production run. This is why with the process colors cyan, magenta, yellow and black more and more customers insist on print quality that conforms to international standards, such as process standard offset/ISO 12647 or Globalstandard®.

For the printing industry the demands of its customers are a great challenge because with the offset printing process the quality of the print products is determined by many influencing variables. For instance the materials used like inks, substrates, blankets and press settings. This is why Globalstandard System Brunner® defines and controls more than 30 influencing variables that determine color reproduction in printing.

For more than 35 years System Brunner has been a pioneer and international leader in the development of standards for the classic printing processes. In Europe these are known under the Eurostandard® brand which is called Globalstandard® in other parts of the world. And solutions are being continually developed to help printers maintain close tolerances in print production.

okBalance® is an optional software module for ColorPilot color control systems that supplements the process diagnosis and evaluation software Print Consult® with ink slide regulation according to gray balance. Print Consult® and okBalance® are based on System Brunner's high-end Instrument Flight® technology. And Instrument Flight® online for MAN Roland sheetfed presses regulates according to balance standards thus providing even more control possibilities.



These color variations in a four-color halftone picture are typical even when the solid area is kept constant.

Why okBalance®?

90 percent of all color differences in four-color illustration printing are caused by variations of the halftone dots in the individual colors and in two- or three-color overprints. Tests have shown that variations which affect the color balance are the most noticeable to the observer.

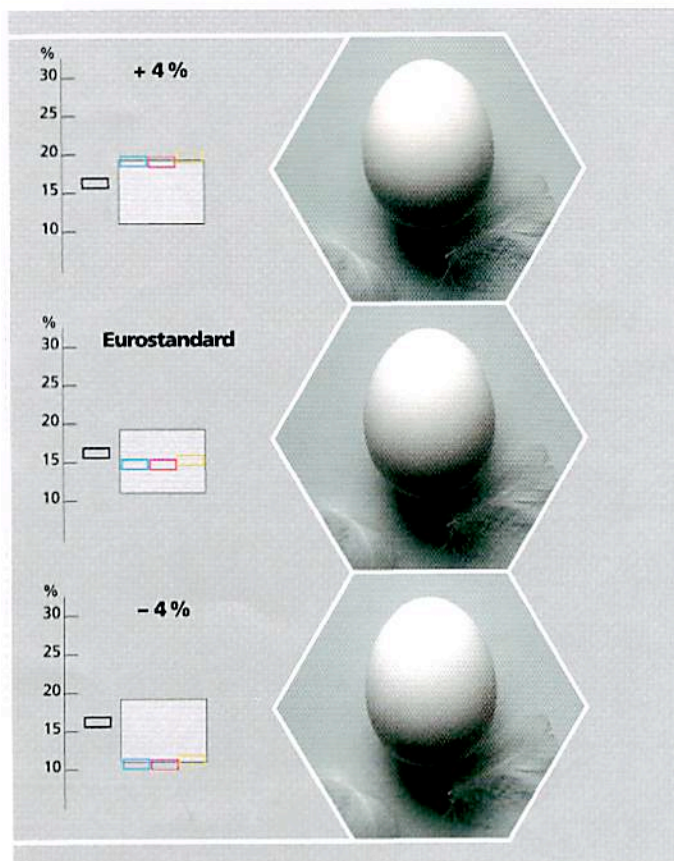
Measuring devices used on printing presses these days regulate the ink film thicknesses of the individual colors. Due to the many variables in the print-

ing process the print results always differ from job to job, and color variations are also noticeable during one production run. Since the proofs often do not sufficiently match the optimal print result as determined by the standard definition, printers have a real challenge but by visually adapting the ink feed they eventually arrive at an OK sheet.

But it is only after the OK sheet that things really start to happen. Despite process-inherent

variations the customer expects the entire run to conform to the approved OK sheet.

And this is what okBalance® makes sure of. okBalance® controls the color in the print just like the printer but even more precisely and reliably. With okBalance® the color result can also be kept constant even when visually or when in individual zones the color matching is deliberately changed from the standard.



After regulating with okBalance® hardly any color variations can be seen. Any brightness differences there may be are almost imperceptible.

What can okBalance® do?

The better and more detailed printers understand the printing process, the more selectively they can influence it. The process analysis software Print Consult® indicates whether the defined standard conditions have been achieved. Print Consult® rates the quality of the gray balances in the mid-tones and shadows along with tone value increase and solid ink densities of the individual process colors and also indicates weaknesses in the printing process. When printers need support a help text is available so that they can take the right steps to quickly achieve the desired quality.

The target values for Global-standard® with the very helpful star rating system lie in the middle of process standard offset /ISO 12647. However Globalstandard® additionally evaluates the gray balance and with illustration printing this is the most important for the printer since it describes the overprint behaviour of the three process colors cyan, magenta and yellow and thus the impression of the picture.

In the definition the OK sheet is allocated five white stars as a reference for the job. If fewer stars are indicated for the analyzed zones during the run, the printer can easily analyze any changes and disturbances and immediately counteract them in a professional manner.

Freedom of choice: controlling by solid ink density or gray balance

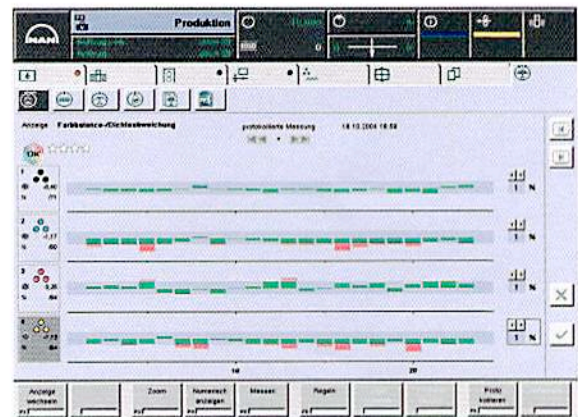
After the OK sheet the printer has the option of regulating the run with conventional solid ink density control or with okBalance® with the priority on gray balance. Here okBalance® measures and regulates all color balances and other influencing variables that are important for the picture in offset printing. Process variables that disturb the impression of the picture with color casts during the run are automatically resolved by okBalance® in no time.

okBalance® is easy to operate and provides the printer with the best possible practical assistance to keep the picture constant during the run – and this is a decisive feature because other systems may make lots of measurements but can only regulate according to solid ink density.

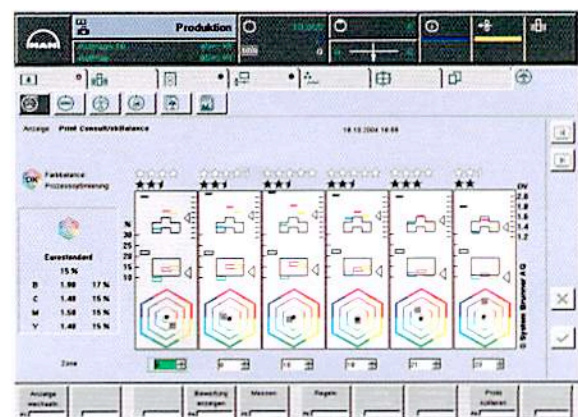
And besides that:

The color regulation software corrects deviations to the OK sheet just like solid ink density or halftone density regulation by opening or closing the ink slides. But as opposed to solid ink density or halftone density regulation, the ink slide settings are primarily calculated from the deviations of the overprinted process colors cyan, magenta and yellow. Tone value increase and solid ink densities of the individual CMYK colors are also taken into account but have a lower priority.

The combined measurement and regulation of the CMYK colors according to gray balances, tone values and solids gives results that correspond much better to human color perception than the results achieved solely by solid regulation. Regulation with the priority on gray balance controls precisely the variables that have the greatest influence in illustration printing.

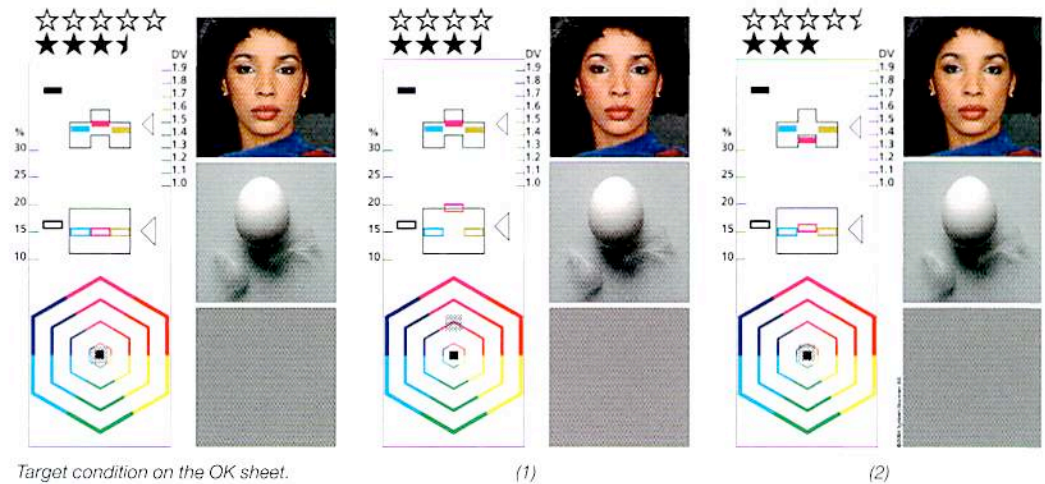


The color balance deviations calculated by okBalance® are corrected by pressing a button.



A detailed quality evaluation with process assessment can be called up in the ink slide zones of the sheet.

How okBalance® works



In four-color halftone pictures the observer's impression of the picture is created by screen dots of different sizes overprinted in several colors. If for example the color magenta changes due to a temperature increase or alterations to the damping solution during the run and the tone value increase rises, this leads to a red cast in the picture (1). This change is recognizable in the Hexagon diagram because the square color balance symbol moves towards magenta and the tone value increase for magenta moves upwards.

Color regulation according to solid ink density does not recognize this because the solid density has not changed and therefore no deviation to the target densities is indicated.

okBalance® corrects the color cast as far as possible back to the defined gray balance so that the impression of the picture again corresponds with the OK sheet (2).

Print quality is analyzed from a Print Consult®/Instrument Flight® print control strip which provides the most comprehensive measurement and analysis of the process colors cyan, magenta, yellow and black. In every zone the solids of the process colors and up to two spot colors are measured along with the overprinted gray balances of cyan, magenta and yellow in the mid-tones and shadows. Within two adjacent inking zones the measuring and regulation system records the complete halftone information of the individual process colors – in ten measuring patches per zone. No other system can do this.

