



QualiTronic Color Control with INSTRUMENT FLIGHT® and TECHKON's Spectro Drive colorimeter at the Rapida 106 console

A New Dimension in Inline Colour Quality Control

KBA QualiTronic Color Control with System Brunner's INSTRUMENT FLIGHT®

KBA QualiTronic Color Control is an automation module for inline colour-density measurement and control on Rapida sheetfed presses. Expanding QualiTronic Color Control with the full-scale version of INSTRUMENT FLIGHT®, a software suite developed by our Swiss alliance partner System Brunner, represents a new dimension in closed-loop colour quality control. INSTRUMENT FLIGHT® software factors in both densitometric and spectral colour values. However, colour

control prioritises grey- and colour-balance values and thus assesses the visual appearance of the sheet, which for the viewer and print buyer is paramount. This combination of KBA QualiTronic Color Control and INSTRUMENT FLIGHT® software supports like no other system on the market consistently stable print production from one day to the next and from one press to another.

Closed-loop control for consistent quality
 Electronically linking the inline camera with the controls for the ink keys in the printing units allows extensive automation in stabilising the print quality delivered by sheetfed offset presses. With the KBA QualiTronic Color Control automation module the reference density is attained much faster and maintained throughout the entire print run, cutting waste and makeready time. Colour is measured on the impression cylinder in the final printing or coating unit. On perfector presses it is possible to check print quality on both sides of the sheet by taking additional measurements directly prior to perfecting.

Inline colour measurement with QualiTronic Color Control

The densities measured inline are wet values that depend on the interaction of ink, paper and fount solution. They can

change chromatically in a fraction of a second, so assessment is always relative – wet values do not comply with norms. With INSTRUMENT FLIGHT®, offline reference and calibration measurements are made at the start of production and the values subsequently compared automatically with inline measurements. Unlike many other inline systems this delivers standard-compliant measurements.

Reference measurements can quickly be carried out on the KBA ErgoTronic console copy table using TECHKON's handy SpectroDrive scanning device. Calibration measurements are made in the printed colour control strip. The spectral device also allows control measurements to be made on the printed sheets during production.

On-the-fly inline colour measurement and control is handled by KBA QualiTronic



Closed-loop quality production on a KBA Rapida 106 with QualiTronic Color Control and INSTRUMENT FLIGHT®

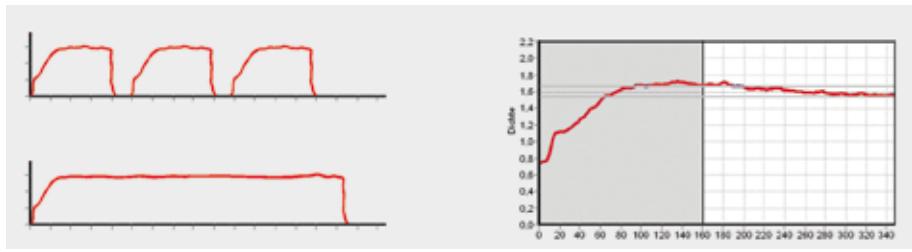
Color Control. The density values for each scanned sheet are passed automatically to the ink-key controls, which calculate the changes (setting values) that must be made based on the differences between the reference value (specified density value) and the actual value for each individual key in each printing unit.

Functions for monitoring e.g. paper white, hickeys in the colour control strip and contamination in the control strip or ink eliminate the risk of undetected spoilage during production.

The benefits of using INSTRUMENT FLIGHT®

Available as an option with QualiTronic Color Control, System Brunner's INSTRUMENT FLIGHT® not only measures the individual colours (typical solid density measurement) but also the direct three-colour overprint in mid-tones and shadows (colour balance). Ink-key controls are based on these prioritised parameters to ensure that the optical result complies with colour specifications. In a halftone image, the optical appearance depends not just on solid densities or $L^*a^*b^*$ values in solids but on colour balance and dot gain, and how the two are controlled. Far from remaining static relative to solid density, during the dynamic offset process dot gain is influenced by the ink, fount solution and temperature and therefore changes constantly. So printing a consistently uniform solid density is no guarantee of consistently uniform images.

This is where INSTRUMENT FLIGHT® delivers some compelling benefits over other systems on the market: whereas QualiTronic Color Control with INSTRUMENT FLIGHT®



Makeready and colour fine-tuning can be conducted on the fly at normal production speeds

measures and controls colour balance and other parameters that are vital for image quality in offset, other systems take a lot of measurements but cannot subsequently carry out corrections based on these measurements. With INSTRUMENT FLIGHT® more than 30 image-crucial parameters are measured in the colour control strip for each ink key. They are then weighted and evaluated and recommendations deduced for inline colour correction.

In addition INSTRUMENT FLIGHT® supports the user with a complete diagnostic tool that with each assessment provides detailed information on weak spots in the printing process or furnishes proof that the printing process is functioning properly.

High-performance pairing for precise colour quality

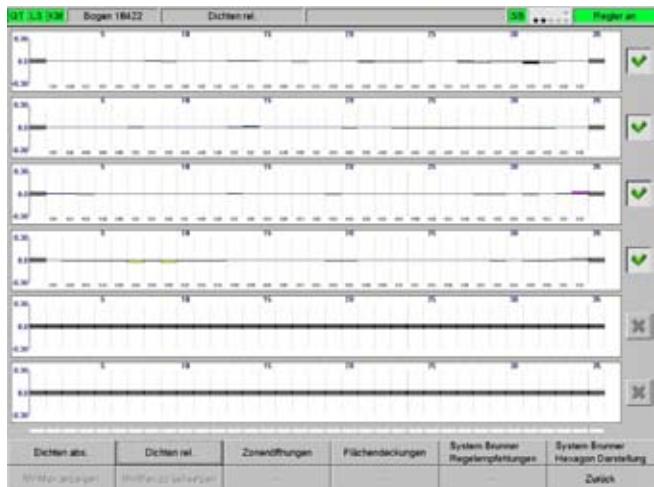
Numerous tests have proven that KBA QualiTronic Color Control and INSTRUMENT FLIGHT® interact smoothly for precise colour control. Together, they ensure that even in the most challenging layouts, such as double-spread images in perfect printing, or multi-up images for covers, packaging or large-format posters, the colours are automatically harmonised and

Fast run-up to colour with KBA QualiTronic Color Control

this harmony consistently maintained throughout the production run via inline colour control. For discerning customers a uniform image quality and compliance with international quality standards such as System Brunner's GLOBALSTANDARD® and ISO norm 12647-2 are compelling arguments. Mid-tone deviations of just 1% are detected and automatically corrected.

Why choose INSTRUMENT FLIGHT® grey-balance control?

A reproduced image essentially comprises halftone dots in various tonal gradations. With the four process colours CMYK it is possible to create thousands of different hues. At the same time this is the biggest threat to colour accuracy in print production because the process is influenced by so many variables, all of which can affect the colours in the reproduced image. 90% of all colour differences in 4c printing arise through fluctuations in the halftone dots in the individual colours (dot gain) and in two or three-colour overprinting. Studies by System Brunner have shown that process-related fluctuations affecting colour balance – even minor ones – are the first to be spotted by an observer and are



The inline controller has corrected all the density differences



System Brunner's INSTRUMENT FLIGHT®, which is available as an option, supports the highest quality standards in print production



Dramatic colour fluctuations like those around the original (centre image) typically occur in 4c print production, even if solids are consistently uniform

Photo: System Brunner

control strip definitions are exchanged via a data interface. SpectroDrive automatically scans the entire control strip on a printed sheet in a matter of seconds. The software simultaneously receives the measured data wirelessly via a radio module.

SpectroDrive's spectral measuring technology enables it to deliver both densitometric and colorimetric values. Not only that – simply lifting it off the horizontal rail transforms the automatic system into a portable hand-held measuring device for one-off measurements.

considered extremely severe. If the grey balance is correct then colour balance throughout the reproduction will also be correct. A stable grey balance during impression is thus the key to consistent print quality. Because an image contains individual colours as well as solids, these must also be factored into the complex algorithms of balance control. INSTRUMENT FLIGHT® is System Brunner's high-end software solution to this issue. At the same time it is an invaluable aid to printers with standardised high-volume production incorporating process control at the highest level.

Precise colour correction with System Brunner's BALANCE NAVIGATOR®

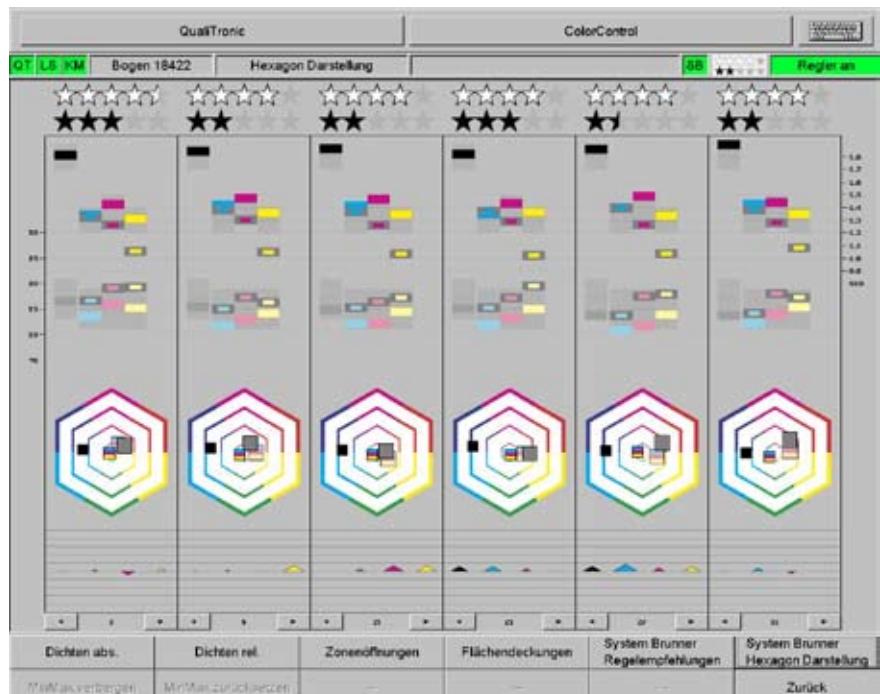
Non-standard proofs or printing conditions and particular customer requests can be aligned on the computer screen with elegance, speed and confidence by modifying the balance or contrast. BALANCE NAVIGATOR® achieves the maximum colour match without destabilising the printing process.

Exclusive quality rating at a glance

☆☆☆☆☆

★★★★★

The quality of a printed sheet relative to a predefined print standard is indicated visually using System Brunner's exclusive star-based ratings. Over 30 process variables are grouped, weighted and evaluated using a scale of five white and

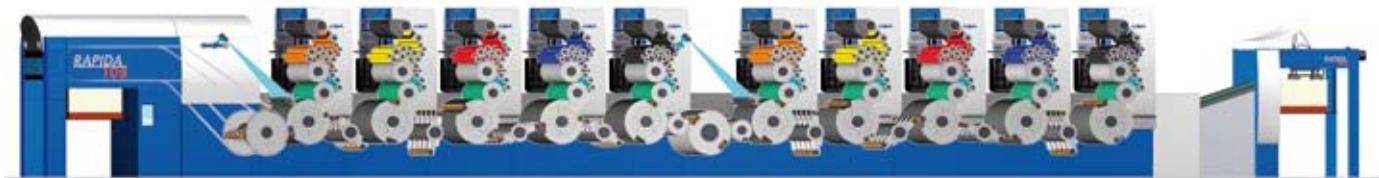


five black stars ☆☆☆☆☆ ★★★★★. The press operator can therefore assess the quality at a glance and intervene where necessary.

Process analysis with System Brunner's star-based ratings for colour quality is embedded in the KBA QualiTronic data screen at the console

Fast calibration and control with TECHKON SpectroDrive

The recommended reference measuring system and standard measuring device is TECHKON's SpectroDrive, a motorised scanning device that is integrated in the sheet inspection desk at the console. The spectral measuring values and the colour



KBA QualiTronic Color Control with inline colour measurement on the front and back of the sheet in a ten-colour Rapida 106

KBA QualiTronic Color Control specifications

Measuring process:	inline	Colour density measurement by camera with 3 filters
Measuring geometry:	0/45 °	
Measuring aperture:	2 x 2 mm	
Measuring light:		Maintenance-free long-life LED illuminant
Measuring range:		D = 0.00-2.50
Lowest strip height:		5 mm for Rapida 106
Measuring strip:		Standardised INSTRUMENT FLIGHT® measuring strip with grey-balance patches, halftone and solid tone patches in five- and six-colour versions
Inks:		Process inks, visible special colours
Functions:		Inline measurement, inline colour control, production log, display of measured values



System Brunner

We simplify printing.™

INSTRUMENT FLIGHT® properties and functions

- Integrated software modules for KBA QualiTronic Color Control
- Control system prioritising colour/grey balance during colour makeready and print production
- Display of recommended balance-prioritised adjustments for each ink key in every printing unit
- 6 standard definitions for coated and uncoated stock as per System Brunner's GLOBALSTANDARD®, including grey balance
- Accepts user-defined standards
- OK sheet function and adjustment according to the grey balance, dot gain and solids measured in each ink zone
- Quality assessment with System Brunner star rating ★★★★★ ★★★★★
- BALANCE NAVIGATOR® for closed-loop colour balance and contrast corrections in the monitor
- Graphic measurement and depiction of colour/grey balance, dot gain in CMYK (50%), dot gain in 3c overprint (50%, 100%), solid densities
- Image-specific setting of control priorities by the user
- Direct switch to quality analysis of measuring results from top to bottom side

TECHKON SpectroDrive specifications

Measuring process:	online	Spectral remission and colour density measurement as per ISO 5-3/4, spectral range: 400 to 700 nm in 10 nm steps
Measuring geometry:		0/45° optics as per DIN 5033
Measuring aperture:		Ø1.5mm
Measuring light:		Gas-filled tungsten lamp, illuminant A
Polarisation filter:		Double linear cross-positioning, activation/deactivation by software command
Density norm:		DIN 16536, DIN 16536 NB, ISO/ANSI T, ISO/ANSI I, ISO E, spectral density
Measuring range:		0.00 D - 2.50 D

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System Brunner: INSTRUMENT FLIGHT, GLOBALSTANDARD,
BALANCE NAVIGATOR, HEXAGON, ★★★★★ ★★★★★

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