// iPQ-Spectral

Precise color measurement during the printing process.

Be inspired. Move forward.

BST eltromat INTERNATIONAL

FULLY AUTOMATED IN-LINE MEASUREMENT FOR COLOR QUALITY RIGHT FROM THE START OF THE PRINTING JOB.

Competition in the printing industry is stiff, and the requirements are continually increasing. Exact control of the print is a prerequisite for error-free printing products – and for satisfied customers.

Precision based on experience

As the leading manufacturer of quality assurance systems for the web-processing industry, BST eltromat International has performed more than 100,000 installations in more than 100 countries all over the world.

The powerful all-rounder

The increasing Productivity & Quality-Center (abbreviated: iPQ-Center) of BST eltromat is a modular product line for the central control of numerous quality assurance functions. BST eltromat integrates web viewing, 100% inspection and spectral measurement as well as other functions into a single system. Configure your quality monitoring based on a modular concept.

Spectral color measurement

iPQ-Spectral allows you to comply with pre-defined color standards by performing inline measurements within your printing machine during productions. This means measurements after roll changes using print samples with hand-held devices are no longer necessary.
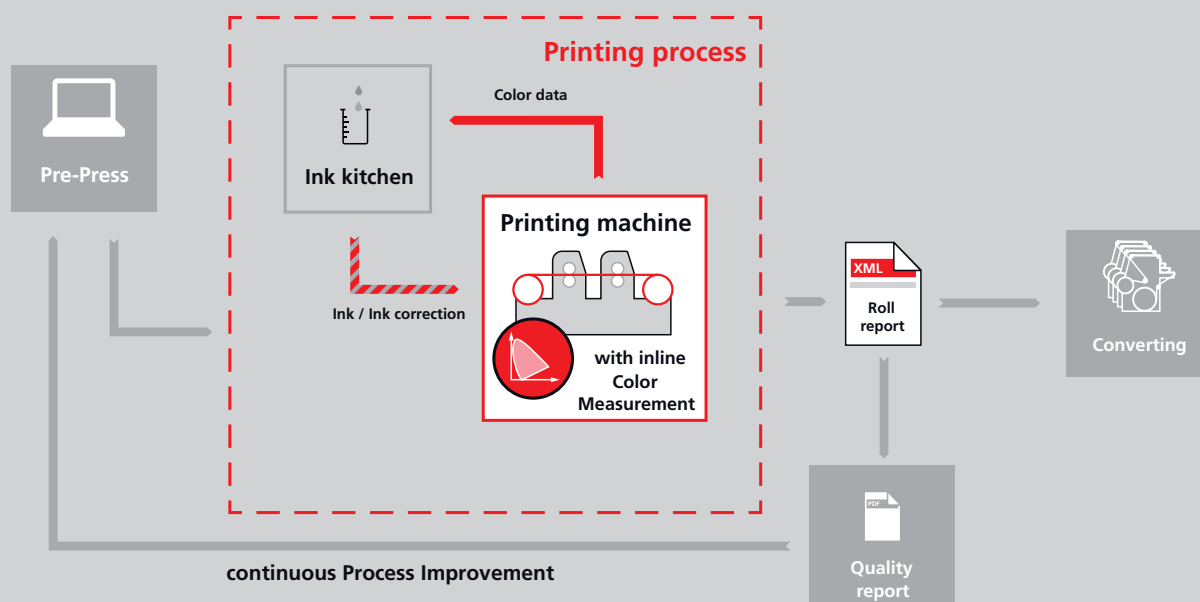
Fully-automated measurement

- provides easy operator setup
- permanently records color data during the job
- objectively evaluates the color data and will trigger warnings and alarms if the preset tolerances are exceeded
- logs color deviations and generates a job report

This on press monitoring allows for a rapid response to color deviations, resulting in reduction of waste. Furthermore, you will get a deeper insight into your printing process. Evaluation of the data enables you to optimize the internal production processes, thus gaining a competitive edge because cost savings can be easily identified.

In summary, the spectral inline color measurement system will help you to create an economical printing process that will also consistently impress customers with the highest possible color sensitivity.

Inline color measurement for your continuous improvement process

Pre-Press

Ink kitchen

Printing process

Color data

Ink / Ink correction

Printing machine

with inline Color Measurement

XML
Roll report

Converting

PDF
Quality report

continuous Process Improvement

IMPRESSIVE EQUIPMENT LEADING TO FIRST-CLASS RESULTS

The system features of iPQ-Spectral were perfectly engineered to the web-processing industry requirements:

High-resolution spectral photometer

- spectral measuring range: 380 to 730 nm
- resolution of result: 10 nm
- minimum measuring field size 5x5 mm (0.019" x 0.019") at any position in the print
- maximum measuring frequency: 30 measurements/sec.
- solid and half-tone colors can be measured
- maximum web speed: 1,000 m/min (3,280 fpm)
- real-time measurements as basis for fast and exact correction of color deviations

Highest possible data compatibility with off-line measuring devices

- development partnership with X-Rite®, the market leader in off-line measuring systems
- perfect comparability with hand-held off-line devices thanks to XRGA standard
- worldwide exclusive inline spectral measurement system working within XRGA standard

Stable measuring conditions for reliable analyses

- compliant with ISO 13655:2009
- absolute color measurement regarding 45°/0° measurement geometry
- standard-compliant measurement on rolls specially coated in white or black
- optional: standard-compliant measurement on ceramic-coated traversing backing wheel, where measurement can be performed on black and/or white as needed (possibility of opacity measurement)
- cyclic calibration to a white standard to maintain the highest possible measurement accuracy
- automatic compensation for temperature impacts of the sensors
- in-line analysis of the measuring site for homogeneity and correctness of position
- image analysis and spectral verification of the optional backing wheel behind the web

At a glance:

iPQ-Spectral – your benefits:

- You can detect color deviations early . This enables you to quickly remedy the cause.
- You document the color quality for your customers.
- The logs are used to avoid waste and optimize your process.
- You reduce material waste at set-up and avoid delivery of defective goods.
- The color measurement values of the in-line process are immediately available to your color management and quality assurance personel.

IMPRESSIVELY VERSATILE: IPQ-SPECTRAL STANDARD FUNCTIONS.

The basic version of the iPQ-Spectral system offers an impressive variety of functions that prove themselves in practice every day:

Intuitive menu design
- user-friendly operation
- easy to learn to use
- optimized access to functions for short reaction times

Definition of measuring targets
- manual input of color target values by adopting measurements or by reading CxF3 files
- communication via a ColorCert or CGATS.17 interface
- measurement areas using color bars or color fields within the print

Interface with X-Rite color management systems
- communication via CxF3 or ColorCert interface
- transfer of current color values
- support with error analysis and recommended actions
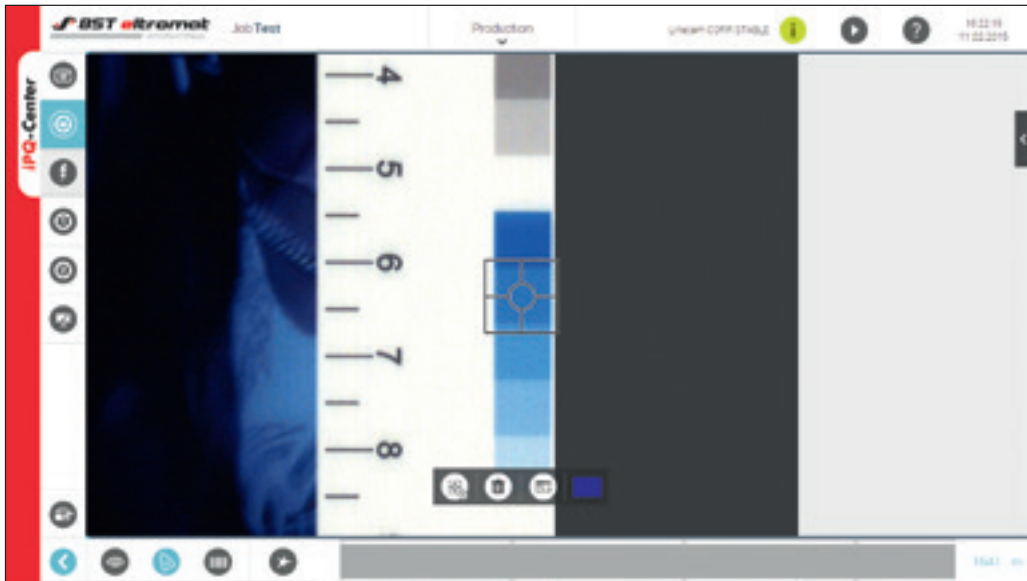
Output formats of color information
- CIE L*a*b* and all relevant color values formats such as the color system according to Munsell [L, C, h]
- output results of both spectral data and color values regarding all common normal light types [D50, D65, A, C etc.] and standard observer types [2°, 10°]
- density, color difference formulas ΔEab, ΔE2000, ΔEcmc

Dialog window for storing a color position in the image

MORE IPQ-SPECTRAL FUNCTIONS

Dialog window for storing a color position in the image

Measurements in solid color fields
- provide all information for color formulation
- allows for perfect adjustment with reference colors and reduce the number of machine stops
- allows for precise measurement of color density
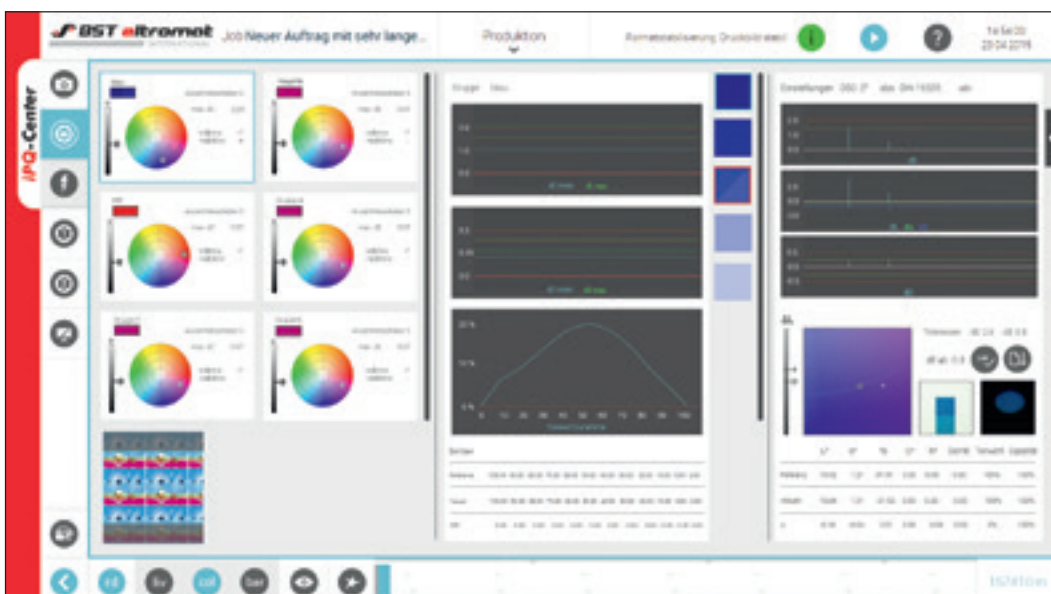
Measurement of half-tone fields
- for objective assessment of further machine parameters such as print provisioning, doctor blade condition etc.
- allows for measurement of dot gains

Measurement of overprints
- provides information on the interaction of different colors

Clearly arranged error displays
- ensures fast assessment of color quality. Real time operator data presentation is made in the L*a*b* space and displays the reference value as well as the sequence of measurements.
- a measurement history at one or several measuring points provides quick and precise information so that waste can be avoided and quality understood

Complete display of detailed view for color measurement incl. group selection and summary, group assessment, assessment of individual positions

CAN BE FLEXIBLY EXTENDED:
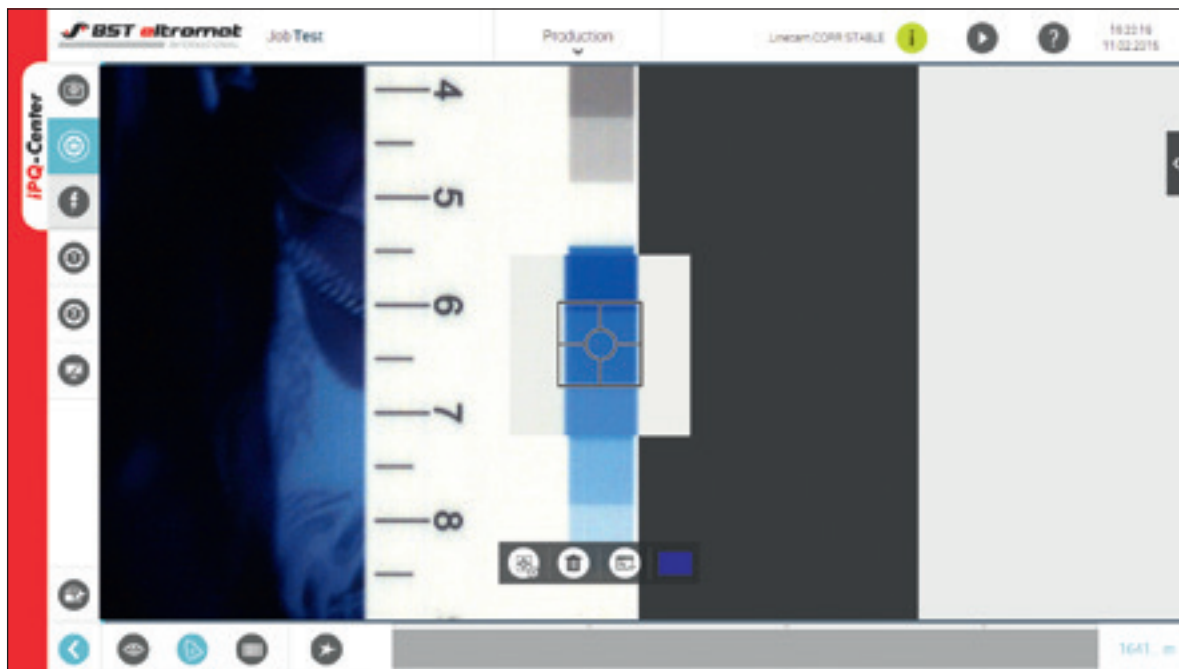# IPQ-SPECTRAL WITH CUSTOMIZED OPTIONS.

iPQ-Spectral can be optimally adapted to your specific needs. In addition to comprehensive standard functions, the system also offers further useful options for flexible extensions of the system performance:

Flexible use
- as a stand-alone system or in combination with other iPQ-Center modules

Integrated spot camera
- allows for automatic plausibility check and fine positioning of the spectral measuring head in case of difficult web conditions and critical materials
- provides a direct response to the machine operator on quality and validity of the measurements
- increases reliability

iPQ-Spectral spot camera dialog window

IPQ-SPECTRAL:
OVERVIEW OF TECHNICAL DATA.

Area of application

Print method	all types of web-fed printing presses
Materials	all types of material (film, paper and metallized surfaces upon request)

System performance

Max. web speed	1,000 m/min (3,280 fpm)
Max. web width	2,500 mm (99 inch), wider webs upon request

Measurement sensor

Sensor type	Spectral photometer
Spectral range	380 -730 nm
Resolution of result	10 nm steps
Light source	xenon flash
Measurement accuracy	typically <1 ΔEab (D50, 2°) to an XRGA-compliant measuring device of X-Rite®
Short-term repeatability accuracy	typ. <0,1 ΔE*CIELAB (Δ50,2°) on white ΔE
Calibration	automatic, calibration to normal white
Measuring field size	min. 5 x 5 mm (0.19" x 0.19"), depending on the material dynamics in the print control strip or on homogeneous surfaces

Measurement conditions

Standards	ISO 13655:2009, ISO 11664-1:2011, ISO 28178, ISO 5-3:2009, DIN 16536:1997
Measurement background	white or black according to ISO 13655:2009
Measuring distance	20 mm (.78 inch)
Measurement geometry	45° / 0°, directional

Measurement results

Output Color values	CIE L*a*b*C*H*
Output Density values	D, optionally relative or absolute, status E/T/A/I
Color differences	ΔEab, ΔEcmc, ΔE2000, ΔE_{94}
Density differences	ΔD
Types of illumination	D50, D65, A, C, D75,F2, F7, F11
Standard observer	2°, 10°
Data export/import	CxF3 and CGATS.17

MODULAR QUALITY ASSURANCE: THE IPQ-CENTER.

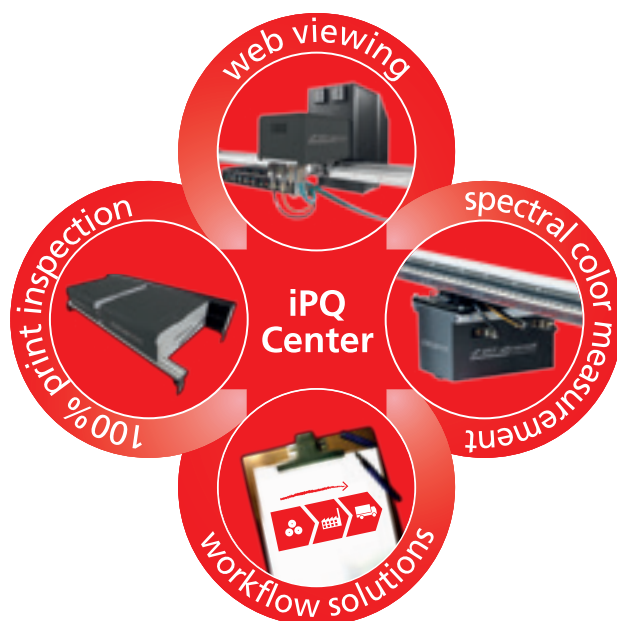**Integrated functions. Intuitive operation.**

The features of the iPQ-Centers are always based on your requirements. Cameras, image analysis functions, error detection, additional illumination, spectral measurement and further components can be integrated as required.

The iPQ-Center does not need to be switched between various control elements: all modules and functions are integrated into a uniform and intuitive multi-touch screen interface.

At a glance:

iPQ-Center– your benefits:

- **numerous quality assurance functions on** a single software platform
- hardware and software modules are **efficiently integrated** into a single system
- intuitive and **uniform operation concept**
- **central access to** various quality management functions
- can be customized based on **your needs and requirements**
- functions and modules can also be **integrated at a later point**

web viewing

spectral color measurement

iPQ Center

100 % print inspection

workflow solutions

Be inspired. Move forward.

Your local contact

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