

AUTOMATIC CLOSED LOOP COLOR SYSTEM FOR COMMERCIAL AND NEWSPAPER WEB-OFFSET PRESSES



Today more than ever, with shorter runs and ever smaller margins, printers face the challenge of producing high quality print with minimum waste, both at start-up and during the run. There is therefore the need to equip the presses with an automatic control that guarantees color consistency within the required specifications in order to satisfy the expectations of printers and consequently of the brand owners. For this reason, Grafikolor has introduced the newest "Grafikolor" system for the automatic closed-loop color control dedicated to any type of web-offset press.

Grafikolor is constantly dedicated to the development of innovative hardware and software and this has allowed the creation of the new Grafikolor system equipped with the latest generation of technologies to achieve maximum performance. By improving the accuracy in color measurement and the speed in scanning the entire printed web, Grafikolor is a system that guarantees a return on investment in a very short time.

The equipment is composed of two motorized cameras, one for the top and one for the bottom side of the web.

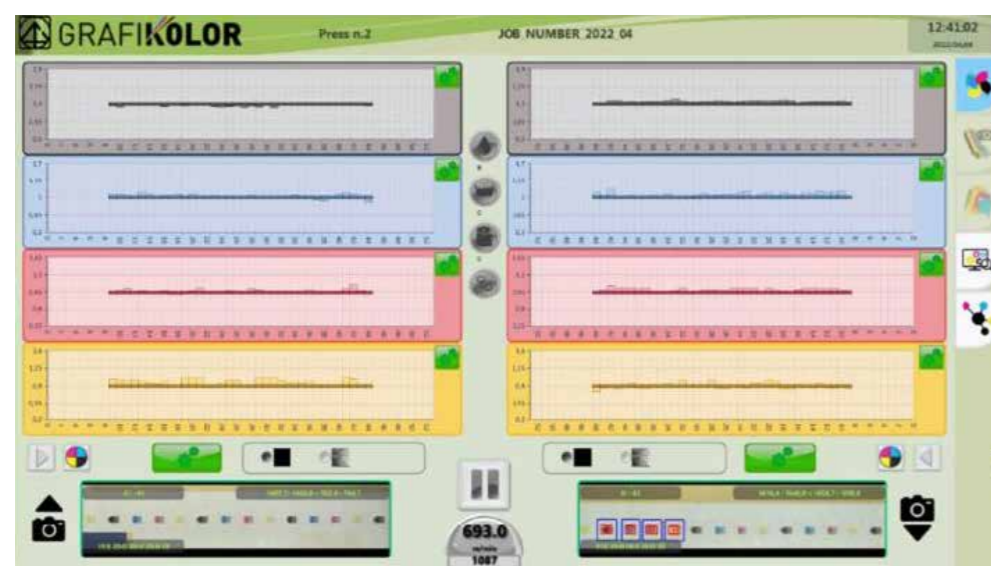
Commercial printing: Color measurement is performed on a dedicated color bar. The system automatically corrects and maintains the densities by adjusting the ink keys and, when possible, the speed of the inking rollers.

Newspaper printing: Color measurement can be performed on micro-dots with a diameter of 0.25mm or on micro printed areas, both inserted in each ink key line. In the second case, using the TIFF ONE BIT pre-print files of each plate (CMYK), the system recognizes and identifies the most suitable areas for taking the measurements. The system automatically corrects and maintains the density by adjusting the ink keys, the dampening and, if available, the speed of the inking rollers.

Quick and accurate density measurements combined with an easy-to-use operator interface make Grafikolor the best control to guarantee the quality of the printed product, at any printing speed (from 50 to 1000 m / min) and for the entire production.

A special image processing software makes sure the cameras find and lock onto the color bar as quick as possible so the system starts immediately measuring the print parameters and correcting any color deviation.

The camera has been designed to simultaneously measure all color parameters of three ink keys, greatly reducing the scan time of the entire web width. This translates into fast make readies and reduction in waste.



DENSITY MAIN SCREEN



BASIC FEATURES

The basic features of the equipment are:

- Continuous and real-time measurements of the printed colors.
- Absence of measurement error.
- Ease of use: the operator often carries out a purely visual check of the color, as verification by manual densitometry is laborious. With Grafikolor it is therefore easy to keep the print quality under control by having a simultaneous view of the densitometric measurements.
- Intuitive graphic interface using multi-touch monitor.
- Densitometric parameters for each ink key obtained from the color bar:
 - Optical density
 - Optically effective surface coverage (Dot Gain)



PRESS CONFIGURATION AND NEW JOB SETUP



DOT GAIN SCREEN

TECHNICAL CHARACTERISTICS

- Repeatability and maximum oscillation of the measurement:
 - 2 density points compared to the average value when reading on a color bar
 - 3 density points compared to the average value when reading on micro-dots or micro-areas
- Adjustment sensitivity: 0.01.
- Operating speed: 50-1,000 m/min.
- Single-phase power supply: 230 V (± 10%), 50/60 Hz.
- Densitometric scale: for each ink key the system reads a dedicated mark sequence of the four process colors. Each color patch contains the 100% and 50% screen for cyan, magenta, yellow, key black. The 50% screen is used for dot gain but the value can be modified on request. The screens on the monitor show the values of the color parameters for each ink key and their deviation from the set-point values.
- Color bar requirements (color bar):
 - Height: minimum 2 mm
 - White space before and after the color bar: minimum 1 mm
- Fully automatic synchronization on the color bar (commercial printing) or on printed micro-dots or micro-areas (newspaper printing) using dedicated algorithms.
- Illuminator: stroboscopic light consisting of arrays of high brightness white LEDs. LED technology guarantees high efficiency and stability over time with low operating voltages.
- Camera positioning: tolerance ± 1 mm.
- Resistance to the industrial environment: low sensitivity to dust build-up on the optics; since each color measurement is adjusted to the white of the paper, the optical densities provided are relative.
- Interfacing: ability to connect to most of the ink fountains currently available and to implement software for new interfaces.

- Closed-loop operation.

The color parameters used for the adjustment are:

- Optical density measured on the 100% screen
- Dot gain measured on the 50% screen

The inking, and eventually the dampening (newspaper printing), are adjusted in real-time to reach and maintain the density set by the operator. The density and coverage values that determine the color strength are maintained regardless of the environmental conditions and the type of paper.

- Control of the inking roller speed, both in the pre-inking and in the correction phase during the cycle.
- A dedicated software compensates the measurements when the presence of dust on the camera lens changes (within settable limits), if a critical value is reached, an alarm warns the operator.
- Simultaneous display of the densities for FRONT and BACK side of the web.
- Optimization of production and reduction of ink consumption: variation of the set point and tolerance values in manual or automatic mode through the "GOOD COPIES" contact (values can be set from 0 to 10%).
- The system is configured for remote connection to provide customer support at any time after installation. To use this service, the system must be connected to an Internet connection point.



CAMERA PHASING SCREEN

➤ OPTIONS

- Reading of pre-printing files: the system can be supplied with software for reading files in CIP3 format to be able to preset the ink keys and adapt the pre-inking profiles.
- Dedicated software for managing production data. When installed on an external PC linked to the network, this programme allows for managing the data provided by Grafikolor in an easy and effective way. All jobs completed are archived and can be consulted at any time. The density and dot gain data can be summarised – at the discretion of the operator – through a series of graphs for each color printed. It is also possible to highlight the measurements relative to single sectors of the ink duct. Any events occurring on the rotary press during printing are recorded and highlighted in a specific graph. A summary page shows the average data relative to good copies of the production.

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