



# Color Analyzer

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## Introduction

The Color Analyzer system is an advanced yet easy-to-use tool for analyzing and measuring print results, with a focus on simplicity, accuracy, and rapid operation.

Unlike traditional, complex color control systems, Color Analyzer enables straightforward workflows, allowing both print professionals and everyday operators to enter measurements directly from external devices (such as the X-Rite eXact spectrophotometer) without unnecessary complications or technical barriers.

This approach delivers high measurement accuracy, as the system is designed to work directly with industry-standard instruments while maintaining an intuitive and efficient workflow. As a result, you get fast, objective, and reliable print quality control, ensuring your actual machine performance is directly compared to international standards (Fogra, ISO, G7, Pantone, and more).

## System Structure – The Three Panels

### 1. Left Panel – Dot Gain Analysis

Enter measurement values for an existing and/or new print sample, for each color channel (C, M, Y, K) at different ink coverage percentages (such as 40%, 80%, etc.).

Allows you to see and compare dot gain (growth of halftone dots during printing) between previous and new measurements.

This serves as the basis for further analysis – real field measurement data is entered here.

### 2. Center Panel – Advanced Calculation (Dot Area with Gray Balance Compensation)

The core of the system:

- An advance system for printers who use print standards.
- Calculates Dot Area using the Yule-Nielsen model, a physical model that considers the interaction between light, paper, and ink (for more accurate dot area measurement than classic methods).
- Checks the Gray Balance: Evaluates the neutral gray achieved by mixing C, M, Y, and compares it to ideal values based on industry standards (G7/Fogra).
- Integrated Calculation: The system combines dot area measurement with gray balance deviation, allowing you to identify whether deviations are caused by physical print conditions (true dot gain) or by color or press miscalibration (gray balance).

Output: Clear diagnostic for the operator regarding the source of the issue and precise recommendations for print adjustment.

### 3. Right Panel – Special Colors (Spot Colors, Pantone, etc.)

- Dedicated panel for the analysis, control, and comparison of special colors (spot colors) such as Pantone and others that are not standard CMYK.
- Enables input and comparison of measured values for special colors against their official reference values (e.g., from PantoneDB).
- Displays deviations from the standard, suggestions for correction, graphs, and dedicated comparison tools for special colors.
- Especially relevant for print shops where accurate color matching for brand and customer requirements is critical.

## Applying the Measurement Results

1. Print your test layout: Use the provided test layout format, available in the project folder.
2. Measure using an external device: Use a professional measurement device, such as the X-Rite eXact, to measure the printed output.
3. Choose your panel and enter the values: Select the relevant panel in the Color Analyzer (left, center, or right panel, depending on your measurement type) and enter the measured values.
4. Integrate the results into your DFE workflow: Input the measured and analyzed values into your DFE (Digital Front End), such as Esko Color Pilot, before the RIP (Raster Image Processing) process. This ensures color accuracy is maintained throughout the digital workflow.
5. Review and verify results: After making adjustments, use the Color Analyzer again to verify that your print process is now aligned with your color standards.

## How to Use

1. Enter Measurement Data: In the left panel, enter values for an existing and/or new print sample.
2. Select Standard and Print Parameters: Choose your target standard (e.g., Fogra, G7, Pantone), paper type, ink set, and measurement mode.
3. Run the Analysis: The center panel will provide advanced dot area analysis with gray balance compensation.
4. Check Special Colors: Use the right panel to analyze and compare spot colors (e.g., Pantone) against standards.
5. Review Results: - View the calculated results, deviations, and specific recommendations for calibration and correction.

## System Requirements and How to Run

- Windows PC with a modern web browser (Chrome, Edge, or Firefox).N
- No installation is required; neither a server nor an internet connection is necessary.
- To run the system:
- Launch the start.bat file located in the main project folder.
- The system will automatically open in your default web browser.
- All calculations and data processing are performed locally; no data is sent outside your computer.
- To install Node.js on Windows:
  1. Go to <https://nodejs.org/>
  2. Download the Windows installer (LTS version).
  3. Run the installer and follow the instructions.

## Support and Contact

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