The Idealliance Print Properties Council has established a new certification process for G7 Press Control Systems.
In accordance with this process, the G7 Press Control System Certification Program evaluates the ability of a candidate press control system to drive a press towards ideal G7 conditions, with special focus on the system’s ability to:
- Calculate the ideal G7 “target values” or “aim-points” for tonality (expressed in L* or neutral density) and gray balance (expressed in CIE a* and b*). These target values are what should be measured on a good print that perfectly complies with the G7 specification.
- Suggest ink quantity adjustment trends (i.e. increased or decreased ink densities) likely to help the press meet those G7 target values.

Full details of the G7 Press Control System Certification process are given in the companion document, *G7 Press Control System Certification Process*.

At the time of testing, the manufacturer must supply an Application Data Sheet.

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Product/Technology
*INSTRUMENT FLIGHT®*
Test Operation
The test files supplied from Idealliance represent one set of spectral data with 18 color patches for a specific ink key. That means, for the test we are just looking to one ink key and not over all the ink keys of a press.

The Instrument Flight Software is prepared to load a number of different test data sets. The data first has to be adapted to the data structure the Instrument Flight software is able to read as it would be a real measurement from a spectral scan measuring device.

Once the test data is set up, the Instrument Flight Software can be launched.

Launch the Instrument Flight Software application with double-click on the Hexagon Icon in the Toolbar.
The Edit Job Screen appears

Color Bar:
Select the color bar with the 18 patches for the G7 Test

Color Control:
Set color control strategy to “Color Balance” (Instrument Flight allows two different control strategies: Individual Solid Density or Solid Lab control and Color/Gray Balance control)

Control Priority:
Set the Control Priority to “G7 Extreme” for the certification test (5 different Balance Control Priorities may be selected)

Print Standard:
Select a certain Print Condition, e.g. with the name “Globalstandard 16% PremCoated GRACol 2013”.
Loading test measurement files into the software:

Select: Tools / Simulation / Simulate measurement.

As soon as the box is selected, the complete measurement package with the spectral data of all the patches is loaded into the application.

The Instrument Flight Software calculates all measuring data and the press operator immediately get an indication how Gray Balance and Neutral Density compares to the G7 aim values and how each process ink need to be increased or decreased.
Select the “Recommendations” Tab to display color control recommendations which lead to improved CMY-Gray Balance and tonality according to G7. Only one ink key (12) is shown because of the test measurement.

Select “Hexagon Diagram” to display Process Diagnostics with Gray Balance, TVI, SID and recommended color adjustments, based on G7 targets.
The actual test data shows a nearly perfect match with G7 Gray Balance and tonality as well as the Global standard PremCoated GRACoL Reference Print Conditions.

The System Brunner 5-Star rating confirms at a glance the nearly perfect match with the target and the system does not indicate an increase/decrease to adjust the ink keys.

Detailed Report including Gray Balance and ND values
Operating instructions:

In real production, the operator just opens the job from the menu “Open Job”. If the optional Preset Software (based on CIP-3/JDF data) is active, then Ink Key Preset is done automatically. The operator selects e.g. the G7 color control priority. Then the first sheets are printed and measured with the Scanning Spectral device.

**Different Balance Control Priorities™:**

Based on more than 20 years of experience with “Color/Gray Balance measurement and control in print production, System Brunner is aware that controlling only Gray Balance and Tonality may not be the optimal solution for print production. For this reason, Instrument Flight Technology measures and includes more than 30 printing attributes to calculate and control the color adjustments. Apart from Gray Balance and Tonality, it includes single ink TVI, Single Color Balance (spread) in Mid Tones and Solid Tones, Solid Densities, 3-C Overprint in mid tones and Solids, L*a*b* of all patches and automatic “Best Match” optimization in the Solids.

5 different Balance Control Priorities may be selected, depending from the image content, the separation method (GCR), the target standard and others.
The spectral data of each patch is sent to the Instrument Flight Software. The unique algorithm of this software includes more than 30 measuring parameters, which are compared with the reference print conditions and the recommended ink key adjustments are calculated and displayed.

The operator takes the decision to adjust the ink keys automatically by pressing the button “Adjust” on the right upper side.

The operator will print the next series of sheets, measure again a sheet, observe the results and repeats the corrections again, if there are still major ink key adjustments visible. If not, he may check how good the match with the target Standard is. Tab “Hexagon Diagram”
Detailed process diagnostics and quality rating with the Hexagon Diagram

Balance Navigator®

This exclusive functionality as a part of the Instrument Flight color control system allows the operator to make color/gray balance shifts or tonality changes in closed loop. He just moves the Balance square in the direction the visual appearance of the image should be. The software takes the decision, which color should be increased / decreased to achieve the target shift. CMY and Black corrections are independent. See samples below.
Instrument Flight® with Balance Navigator®

Easy Color Balance/Tonality changes, in closed loop

Instrument Flight® with Balance Navigator®

Easy Color Balance changes, in closed loop
Production control according to reference Print condition (e.g. CRPC or Globalstandard® System Brunner)

If a user would like to run his production according to the target CRPC reference Print condition, including the gray balance and tonality according to G7, then he may select in the job edit section:

**Color Control:**
Set to “Color Balance” (Color Control strategy according to Color/Gray Balance)

**Control Priority:**
Select “Gray Balance Priority” (5 different Balance related control priorities may be selected)

**Print Standard:**
Select the target Print Conditions, e.g. Globalstandard 16% Premium coated CRPC-6 2013.
In this case, the software calculates the ink adjustments including Gray Balance, Tonality, TVI, Overprints, Solid Densities and L*a*b* related solid density optimization (Best Match)

Gray Balance/Tonality prioritized ink adjustments per Ink Key
Hexagon-Graphic: Process diagnostic and 5-Star quality rating in relation to the defined Standard.

If an OK-Sheet is defined, the actual printing result including all printing attributes are defined as the new target and the color correction of the next measurements are judged to this sheet. The Hexagon Diagrams show the Color Balance in the center of the Hexagon, no more ink adjustments are visible from the ok-Sheet.
Instrument Flight Control Bar, optimal compliance for G7

6-C Instrument Flight control bar

This color bar includes in each ink key a CMY Gray Balance patch in mid tone and solid tone (50/40/40% and 3x100%). Also the “non process color patches” 5/6 are in each ink key available. Always within 2 ink keys there are single C/M/Y/K 100% and 50% halftone patches. Further patches are: CMY Gray Balance Patch 75/66/66, 25/19/19, 10/06/06. Additional halftone patches in CMYK: 10/25/75/90%. R/G/B 100% patches (2-C overprint).

4-C Instrument Flight control bar sample

5-C Instrument Flight control bar sample