



## **Standardization: Theory or a successful application?**

*Daniel Würgler*

***Everyone's started talking again about standardization in printing and prepress. Color Management is process blind and wrongly assumes that the production processes automatically give standardized results. But the opposite is true.***

Standardization and process control are the prerequisites for effective Color Management. It's a matter of using efficient process control to keep the optimized results within the tightest possible tolerances so that the profile produced is correct. Apart from metrology this requires above all software that provides the user with fast and dependable support. The following report supplements articles about standardization published earlier by System Brunner, and explains which instruments are used to implement standardization in practice.

In recent years research institutes or industry associations, aided by a high amount of public funding (taxpayer's money in other words), have developed so-called official standards, most of which are similar to the EUROSTANDARD concept that System Brunner has been developing for years at its own expense. Measuring instrument manufacturers have profited from this as well, referring to these standards without having done their own process research and taking the credit for what someone else has done, and without later taking responsibility for the results achieved by the customers.

### **Things look different in practice**

Detailed descriptions of specifications and standards in manuals is one thing. Implementing all the instructions in practice is another. Despite all the publications and workshops, etc., standardized working methods are the exception rather than the rule. Why? It's really paradoxical: on the one hand prepress specialists discuss how, when proofing, they can comply with the "official standards" of 2.5 Delta E\*ab in the CMYK solid when the various measuring devices all show widely differing deviations. On the other hand visual color matching at the press is still widely practiced and is often the only possibility to achieve an acceptable visual compromise with the proof. How shall the printer on a web press or a 5/5-color sheetfed press comply with all the conditions of standardization without using up additional time and materials? How can one, without taking a lot of time and trouble, manage to get job logs which confirm that the run was printed in compliance with the standard?



### **From theory to successful application**

This is where System Brunner goes the important step further. Apart from defining the Eurostandard, System Brunner has for years been developing software that is modularly structured for the widest range of applications, combined with suitable measuring devices or measuring systems.

The Eurostandard reference values for the various printing conditions are contained in the software but the user has sufficient flexibility to define reference values for special printing conditions. The instrumentation for monitoring the Eurostandard is based on

### **INSTRUMENT FLIGHT\* technology**

INSTRUMENT FLIGHT\* is a computer-supported quality assurance system for professional offset printing which enhances process mastery and monitors, evaluates, controls and regulates all worksteps from digital prepress through to printing. INSTRUMENT FLIGHT\* secures and evaluates the conformity of print results based on the defined color locus EUROSTANDARD/GLOBALSTANDARD SYSTEM BRUNNER\*. As a result INSTRUMENT FLIGHT\* provides the basis for properly-functioning Color Management.

INSTRUMENT FLIGHT\* is more than just a measuring device or a color control system, it is a complete **standardization process** that provides the user with many advantages. INSTRUMENT FLIGHT\* is based on System Brunner's many years of process research.

### **Control strategy with the priority on color balance**

With a screened picture, the behavior and control of the color balance and tonal value increases is primarily decisive for the picture impression – and not the solid ink densities.

However, checking the color balance in the mid-tones e.g. on a three-color gray patch, is not sufficient. With INSTRUMENT FLIGHT\* technology, more than 30 variables are recorded and weighted in every ink slide zone and used to calculate the optimal regulation recommendation for the picture. At the press, Instrument Flight\* automates the decision a printer has to make to comply with the standard, and optimally controls the color balances, tonal value increases, gradation, and solid tone inking in accordance with Eurostandard, a defined house standard, or the "visual OK".

### **Quality evaluation with the exclusive star rating system ★★★★★**

System Brunner was very early to recognize that colorimetric evaluation using Delta E\*ab as a gauge for perceived color differences in illustration printing is obsolete. This is why the exclusive star rating system was developed. With the aid of stars, all influencing variables are grouped together and visualized. One can see at a glance how well the Eurostandard definitions are being complied with.



### **Process diagnosis**

INSTRUMENT FLIGHT\* users are also supported by a comprehensive diagnostics tool that, with every sheet measured, provides a detailed insight into the weaknesses of their printing process, or verifies that their printing process is in order.

### **Balance Navigator\***

The print does not always automatically match the proof. Sometimes the customer wants to make some last-minute color corrections... "a bit more red" or "a bit brighter overall", and so on. But with which color is it best to make the correction?

The BALANCE NAVIGATOR\* relieves the printer of this decision. The color balance is simply shifted in the desired direction, or the contrast is slightly increased, on the display screen and the BALANCE NAVIGATOR\* software module takes care of the rest automatically – safer and faster than the printer can normally do this.

**System Brunner cooperates with partners such as global market leaders Quad Tech, Du Pont or MAN-Roland who equip their products with INSTRUMENT FLIGHT\* and thus make the technology and know-how available to their users.**

The various system solutions are described below:

### **INSTRUMENT FLIGHT\* inline**

is used on **web offset presses**. Thanks to the cooperation between **Quad Tech and System Brunner**, users can enjoy the benefits of INSTRUMENT FLIGHT\* technology. The Quad Tech CCS inline measuring unit records data from a control strip only 1.8mm high while the web is running at maximum speed. The INSTRUMENT FLIGHT\* software processes the measured data, calculates the optimal regulation recommendation for every inking zone with the priority on gray balance (a System Brunner patent), and CCS then regulates accordingly – fully automatically.

INSTRUMENT FLIGHT\* inline is more than just a color control system. With INSTRUMENT FLIGHT\* inline the user receives a comprehensive system which offers many advantages: integrated process diagnosis, Eurostandard/Globalstandard reference values, BALANCE NAVIGATOR\*, the star rating system, and statistical production run logs.

There is a fundamental difference between INSTRUMENT FLIGHT\* and competitor systems. INSTRUMENT FLIGHT\* measures and regulates in accordance with all influencing variables that are important for the picture in offset printing, while others indeed make many measurements but cannot regulate after that.

With this technology even the most difficult picture joins e.g. with advertisements spread over two pages, or multiple-up printing of jobs such as covers, are automatically matched after only a few regulation steps and color is held constant during the entire production run.



*CCS-INSTRUMENT FLIGHT\* inline for web presses automatically controls color according to EUROSTANDARD and keeps it constant during production.*

### **INSTRUMENT FLIGHT\* online**

is currently an optional upgrade for all MAN Roland **sheetfed presses**. The basis system is the MAN Roland CCI or ColorPilot measuring unit. Retrofits to existing systems are possible and very useful. The new Windows software with a Touchscreen is extremely easy to operate.

The INSTRUMENT FLIGHT\* software processes the measured data, calculates the optimal regulation recommendation for every inking zone with the priority on gray balance, and then the commands are carried out at the press of a button. Otherwise the system has the same functions and features as INSTRUMENT FLIGHT\* inline.

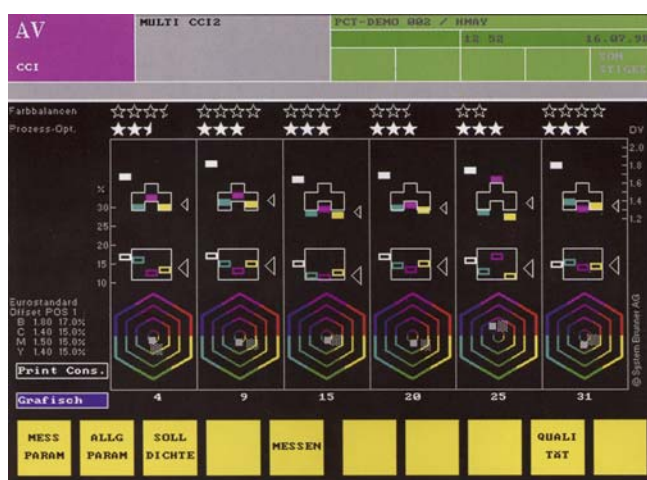


*INSTRUMENT FLIGHT\* online with Touchscreen operation from the MAN Roland control console: Color consistency even with the most difficult subjects.*



## PRINT CONSULT\*

This software module has been a standard feature in every MAN Roland CCI/ColorPilot color control system since 1999 and there are currently more than 700 systems in use all over the world. System Brunner's printing process diagnostics is based on the System Brunner INSTRUMENT FLIGHT\*/ EUROSTANDARD\* technology and has been specially and exclusively designed and built for use with MAN Roland CCI units. With CCI, color is controlled according to solid ink density. With every measurement the software works in the background to rate how the print result conforms to EUROSTANDARD System Brunner\* and the printer has access to the ratings at any time. Process diagnosis in plain text can also be called up which contains a list of recommended action that permit the printing process to be optimized in accordance with EUROSTANDARD.



The Print Consult\* quality rating system in the MAN Roland control console

## PRINT EXPERT\* 2000

PRINT EXPERT\*2000 is the generic term for various modularly constructed system solutions that use a hand-held scan measuring device (e.g. RS 700 System Brunner) for monitoring and standardizing all production stages in a digital workflow.

Print Expert\* 2000 is a valuable tool for small, medium, and large printing companies. With only one scan measuring device, software and coordinated control strips, individual sheets or complete production runs, proofs and printing plates can be measured and analyzed, and the processes can be optimized which keeps the entire workflow under control.

PRINT EXPERT\* 2000 forms the basis for standardized and thus industrial-scale production. This results in significant cost savings: faster makereadies, greater transparency and security in the printing process, more consistent print quality during the run, faster problem solving in the entire workflow, the highest level of reproducibility, and is thus the only starting point for properly functioning Color Management.

The different software modules can be used individually or in combination.



## PRODUCTION-CHECKER

The PRODUCTION-CHECKER is used to monitor the production of sheetfed presses up to format 50 x 70 cm. The scanning device measures the freshly printed sheets in a matter of seconds, and a suggested correction for each ink slide is displayed on the screen which is then implemented online or offline.

The entry level for this system can be simple solid ink density measurement and control with EUROSTANDARD System Brunner\* evaluation. Or one can start right away with INSTRUMENT FLIGHT\* technology which controls the printing process with the priority on color balance and has the same functions as the INSTRUMENT FLIGHT\* inline/online measuring units.



*The PRODUCTION-CHECKER is especially suitable for monitoring the production of sheetfed presses up to format 50x70 cm*

## PRINT-CHECKER

The PRINT-CHECKER is used for sequential checking of production on sheetfed or web presses. The scanning device measures at control strips on printed sheets within a few seconds and the evaluation immediately appears on the screen in the form of a Hexagon diagram with regulation recommendations. The PRINT-CHECKER is extremely suitable for quick spot checks during the run or for subsequent quality verification of sample copies or entire runs. Otherwise the system has the same functions and features as PRODUCTION-CHECKER.



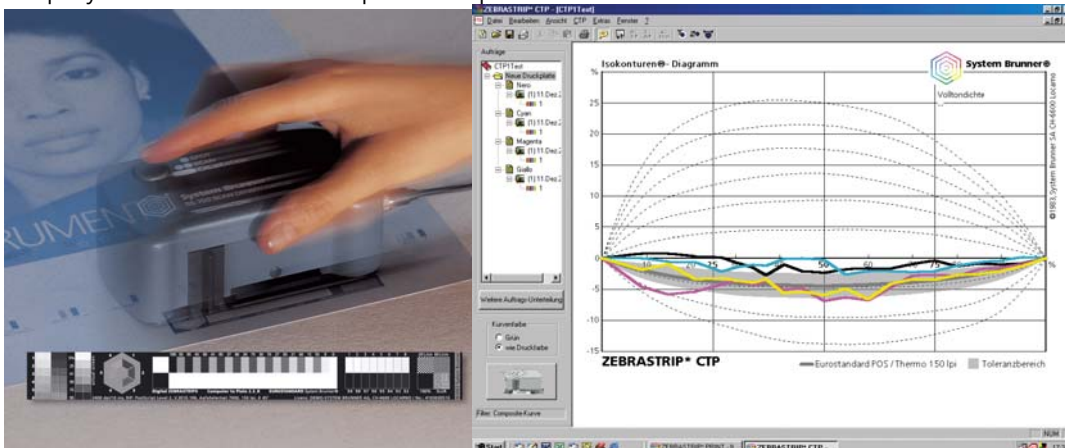
The HEXAGON\* diagrams used for the control methods INSTRUMENT FLIGHT\* inline-online and PRODUCTION-CHECKER online/offline. A maximum of 5 stars rate the degree of conformity to the selected print standard.

## PLATE-CHECKER

Digital plate imaging is influenced by: RIP, laser, focus, resolution, type of printing plate, development process including temperature, screen ruling, and screen dot shape, just to mention the most important. Regular metrological checking of digital plate imaging prevents cost-intensive errors, uncertainties and discussions – problems which often only crop up once the production run has started.

The PLATE-CHECKER is the **fastest measuring system** for checking CtP plates and is extremely suitable for calibration and monitoring of the digital plate imaging process. Within a few seconds, 20 tone value gradations on the ZEBRASTRIP\* CtP control strip are recorded and visualized on the screen in the form of a copyrighted ISOCONTOURS\* diagram. A quality verification certificate is included with the set of plates or this can be called up over the network.

The user can see at a glance whether the nominated standard has been complied with. 3 EUROSTANDARD reference curves including tolerances are included with the software, and special reference values can be produced easily. Statistical evaluations simplify documentation and process optimization.



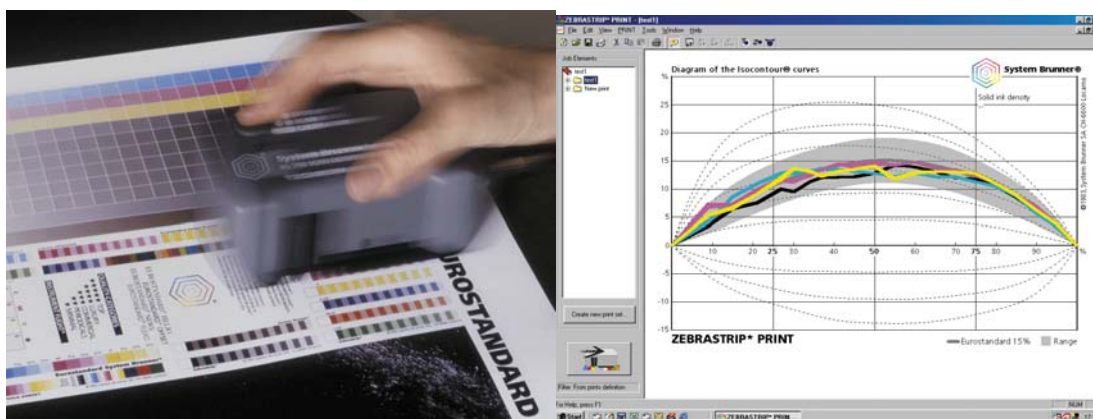
The PLATE-CHECKER brings security to CtP imaging. All types of screens and printing plates are precisely checked and the results are presented in a copyrighted Isocontours\* diagram.



## PRINTCURVE-CHECKER

The PRINTCURVE-CHECKER™ quickly monitors and analyzes entire print characteristic curves. With only one measurement of the printed digital ZEBRASTRIP\*, 20 tone value gradations are monitored and presented on the screen in the form of a copyrighted ISOCONTOURS\* diagram.

One can see immediately whether the nominated standard has been complied with. 5 EUROSTANDARD reference curves including tolerances are included with the software, and special reference values can be produced easily. Statistical evaluations simplify documentation and process optimization.



The PRINTCURVE-CHECKER checks whether the current CtP calibration gives print characteristic curves that conform to EUROSTANDARD. The results can be seen immediately in a copyrighted Isocontours\* diagram.

## PROOF-CHECKER

The PROOF-CHECKER enables the results of digital processes such as digital printing or proofing to be easily measured, analyzed, evaluated and optimized.

By DRUPA 2004 the **NEW** PROOF-CHECKER System Brunner will be introduced which is primarily intended for comprehensive evaluation of whether digital processes such as digital proofing conform to EUROSTANDARD System Brunner. Data from more than 130 measuring patches is recorded within a few seconds, evaluated picture-relevant, and the results are clearly visualized.

## System Brunner digital (analog) control elements and test forms

The various system solutions available from System Brunner are supplemented by measuring elements and test forms in all customary press formats for metrological and visual checking, and for supporting process optimization in prepress and printing. In most cases the measuring elements and test forms are already included in the relevant packages.



*The digital test form EUROSTANDARD System Brunner, 10-C, is used for press acceptance and materials tests*

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