

# Peter Nussbaum

## Gjøvik University College

Name: Peter Nussbaum  
Age: 40+  
E-mail: peter.nussbaum@hig.no  
Qualification: MSc Digital Colour Imaging,  
Ing.EurEta/Polygraphic Technician TS  
Place of work: Gjøvik University College  
www.colorlab.no,  
Position: Lecturer/PhD student  
Place of residence: Gjøvik, Norway  
Nationality: Swiss



## Research Interests

1. Print quality evaluation and applied colour management in offset print
2. Colour science and digital image reproduction
3. Colour measurement and colour management

## Current Research Topic

Consequences of using a number of different colour measurement instruments in a colour managed printing workflow.

### Introduction

Since the standards [1], [2] have defined colour tolerances for acceptance for the solids of the process colours the accuracy of the color measurements performed by colour measurement devices are determined (Figure 1). It is known that the color measurement devices used in a production workflow (from the customer, designer, prepress, printing house) may show variations in terms of the performances of precision (repeatability and reproducibility) and accuracy. However, what are the consequences for such inter-instrument variations and how can these potential errors be taken into account by considering colour tolerances for acceptance?

**The aim** of the presented work is to evaluate the performance of a number of colour measurement devices in terms of precision (repeatability and reproducibility) and accuracy. Furthermore the consequences of the instrument uncertainty in colour managed workflow (instrument in the printing house and the instruments used at the customer's site for inspection and conformation) will be demonstrated.

According to Berns [3], measurement uncertainty can be divided into two categories, precision and accuracy (Figure 2).

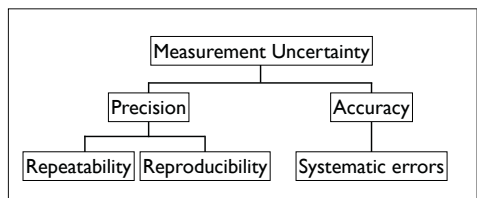


Figure 2, Overview over measurement uncertainty

Precision describes the dispersion of the measurement taken. Accuracy describes the averaging of grouping compared to the centre of the target (Figure 3).

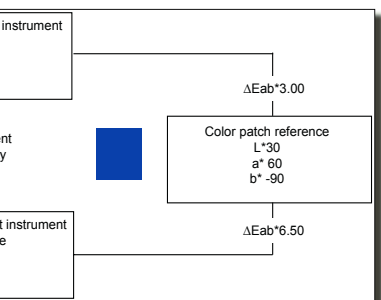


Figure 1, Practical scenario

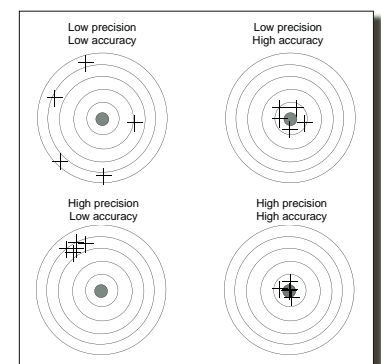


Figure 3, Accuracy versus precision

### References

- [1] ISO (2004) ISO 12647-2:2004 Graphic Technology – Process control for the production of half-tone colour separation, proof and production prints — Part 2: Offset lithographic processes
- [2] ISO (2007) ISO 12647-7:2007 Graphic technology – Process control for the production of half-tone colour separations, proof and production prints — Part 7: Proofing processes working directly from digital data
- [3] Berns R.S., Principle of color technology, Bollmeyer and Saltzman's, Third edition, John Wiley & Sons, INC, 2000

colorlab.no

The Norwegian Color Research Laboratory

