WEBINAR

Automating color measurement in digital textile printing

Hosted by WTiN with
Viktor Lazzeri, Business Development Manager
at Barbieri electronic

WTiN

barbieri

Agenda

1. Who is Barbieri Electronic

2. Color in Digital Textile Printing

3. What are the challenges to obtain true colors in Digital Textile Printing?

4. The different applications with color measurement devices

5. How Barbieri automated color measurement solutions help

6. Summary and Q & A

Speaker's bio

Viktor Lazzeri

- Business Development Manager for Barbieri Electronic

- Started at Barbieri in 2011, initially working as Supply Chain Manager. Later he took the role of the VP of Product and Innovation and managed the operations of Barbieri North America Inc.

- His focus is expanding Barbieri's international business into new markets, applications, and industries.

1. Who is Barbieri Electronic

1. Who is Barbieri Electronic

Intelligent color measurement technology
for top performance in professional digital printing

Barbieri Electronic builds spectrophotometers for color measurement in professional digital printing and is the color measurement market leader for large format, flatbed and industrial printing.

1. Who is Barbieri Electronic

1983 — Foundation in Brixen/Italy; densitometers

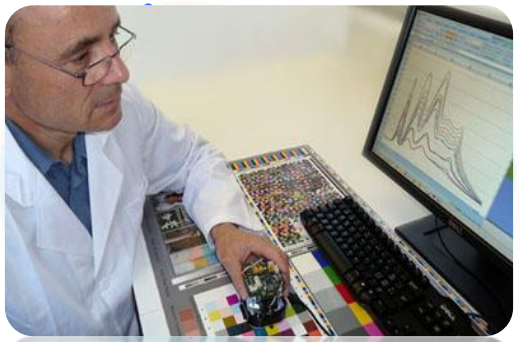
1997 — First Spectrophotometer shift to digital printing

2004 — Spectro LFP

2010 — Spectro LFP S3

2017 — Spectro LFP qb

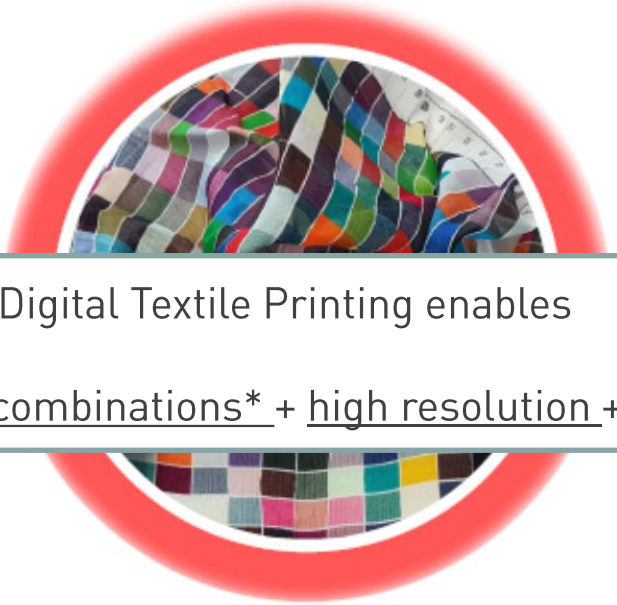
2019 — Spectro LFP qb textile edition



2. Color in Digital Textile Printing

2. Color in Digital Textile Printing

interior



Industrial/automotive

Digital Textile Printing enables

unlimited color combinations* + high resolution + fine patterns

fashion

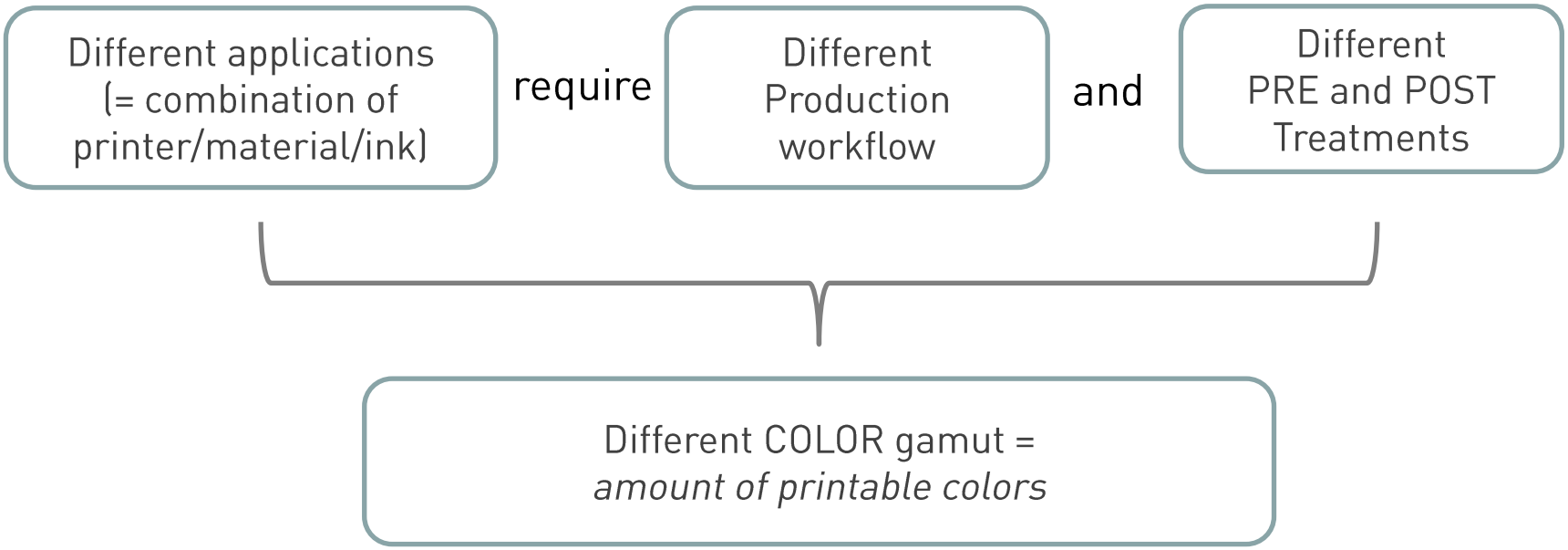
Digital Textile Printing
=
any inkjet-based method of
printing colorants onto fabric

sportswear

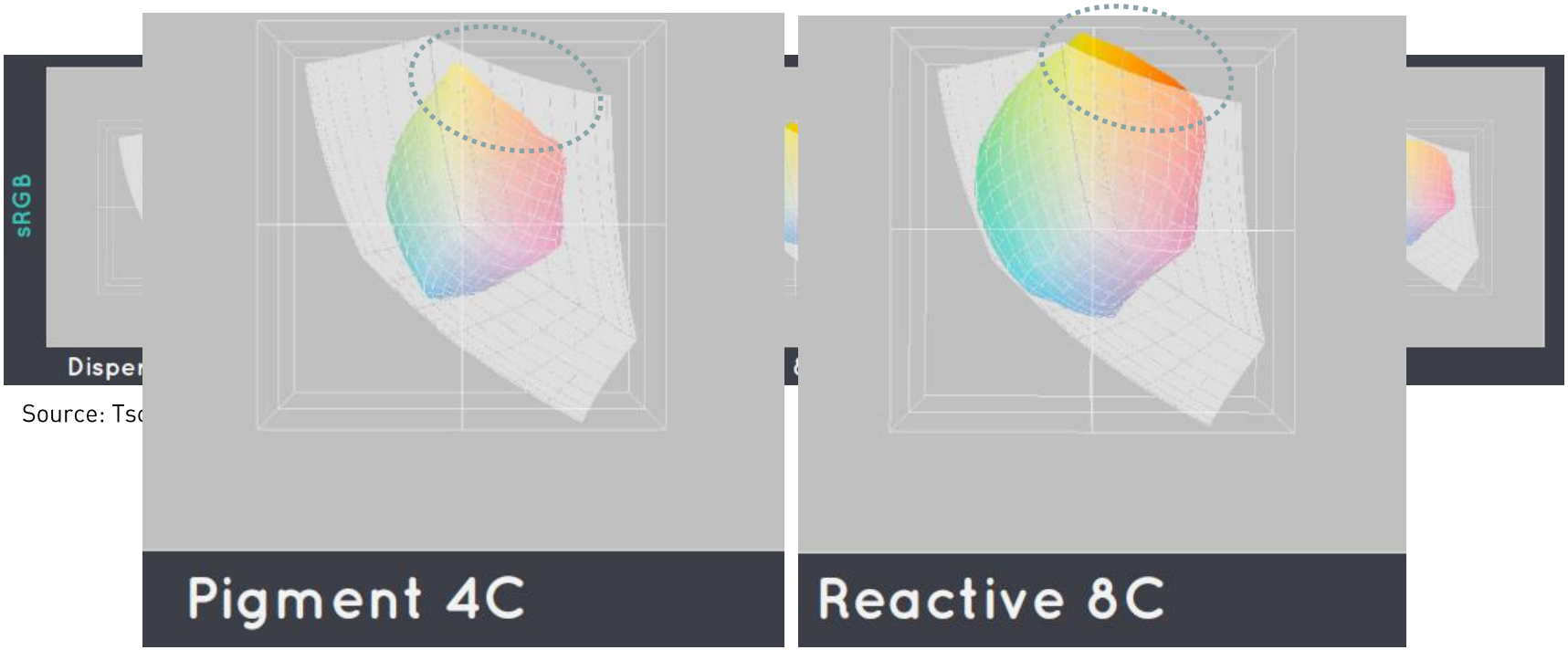
*Source: https://www.textiletoday.com.bd/global-digital-printing-market-witnessing-explosive-progress/

2. Color in Digital Textile Printing

Why do color results vary in Digital Textile Printing?



Different gamut sizes in Digital Textile Printing



Source: Tsc

2. Color in Digital Textile Printing

How to obtain the color gamut graph ?

+

Material with printed color charts

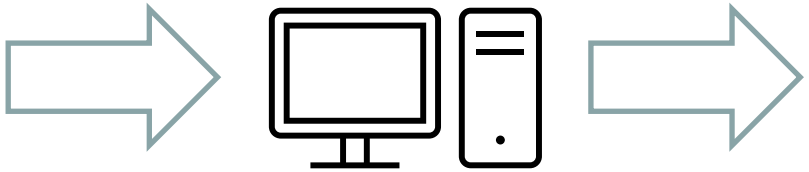
Measurement technology

3. Challenges to obtain true colors in digital textile printing

3. Challenges to obtain true colors

Components involved in color reproduction

Image



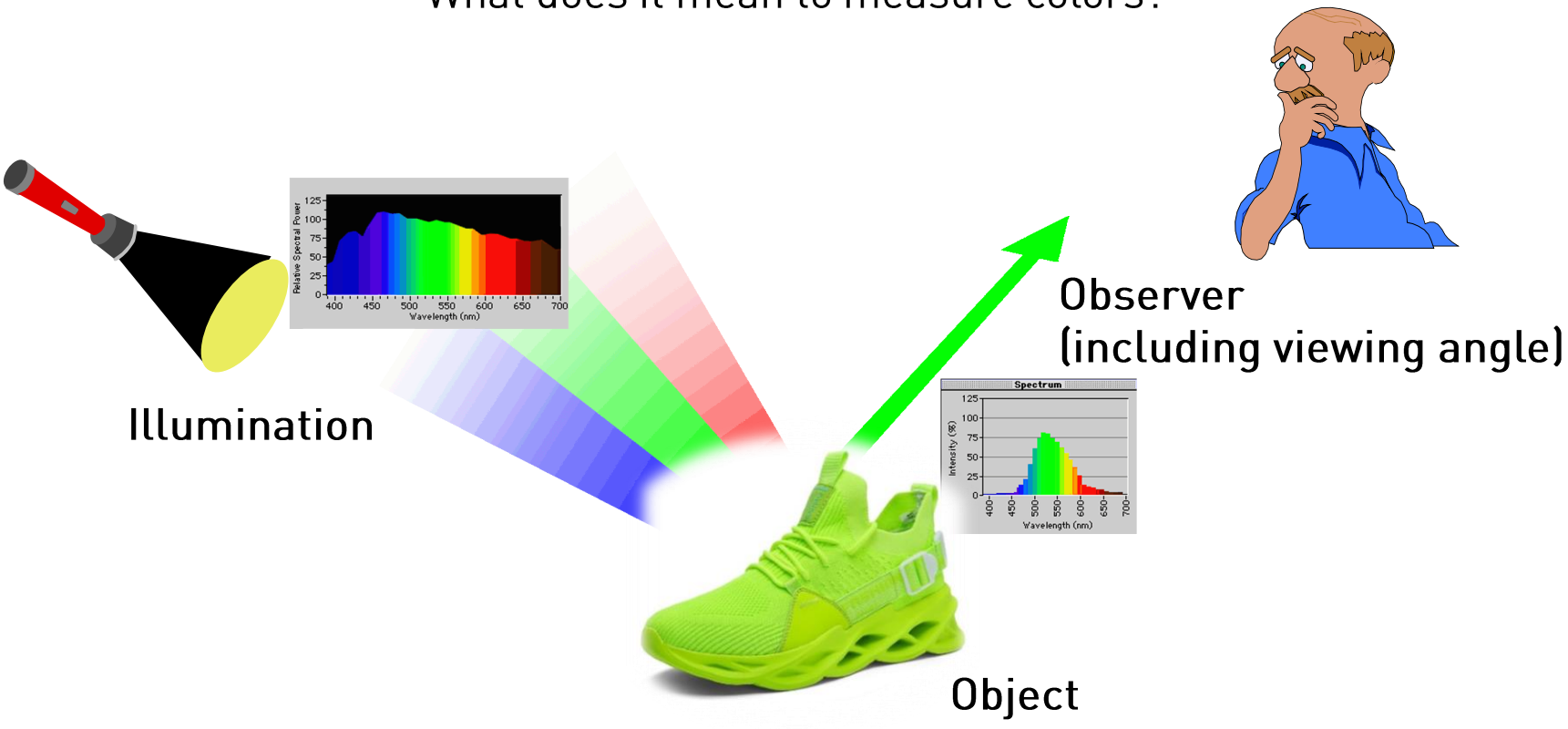
RIP software using ICC Profile

Digital Textile Printers

Spectrophotometers

3. Challenges to obtain true colors

What does it mean to measure colors?



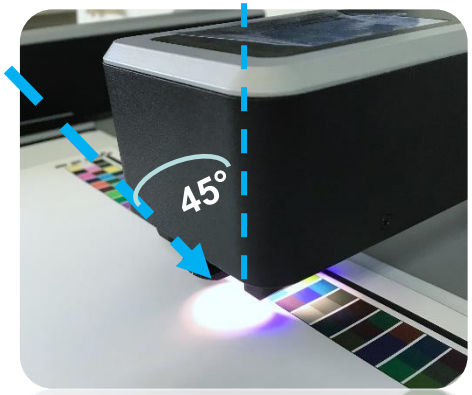
The color corresponds to the spectral product of the three components: illumination, object, observer

3. Challenges to obtain true colors

Illumination
M0, M1, M2, M3

Geometry / angle
45°/0° circumferential

Observer
Spectrophotometer / spectral core

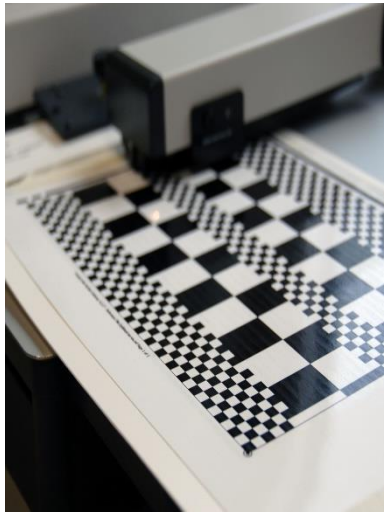


Object (example: printed textile)

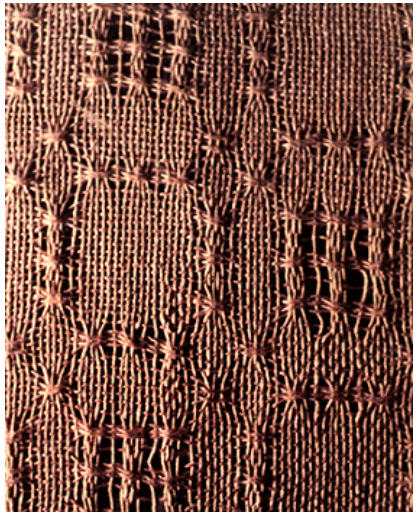
3. Challenges to obtain true colors

Why does material affect the accuracy of measurements?

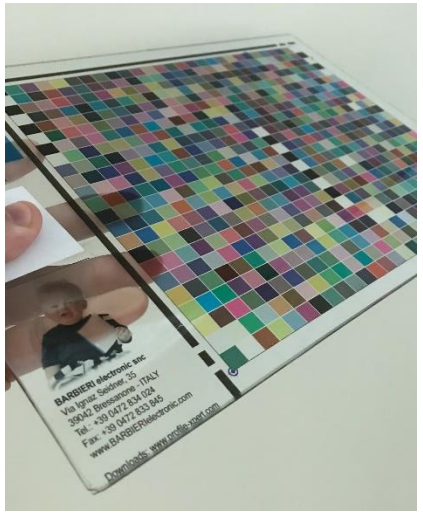
There are many different types of materials with different characteristics



Paperlike material



Structured material
(eg. textiles)



Backlit material
(eg. glass)

3. Challenges to obtain true colors

What measurement challenges come with different textile material?

1. Structure of textile

2. Distortion/ elasticity of textile

3. Mounting of the textile

4. Fibers pollute the measurement device

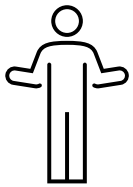
3. Challenges to obtain true colors

What challenges should measurement technology solve?

Time
many color charts to measure

Accuracy
hit the right spot

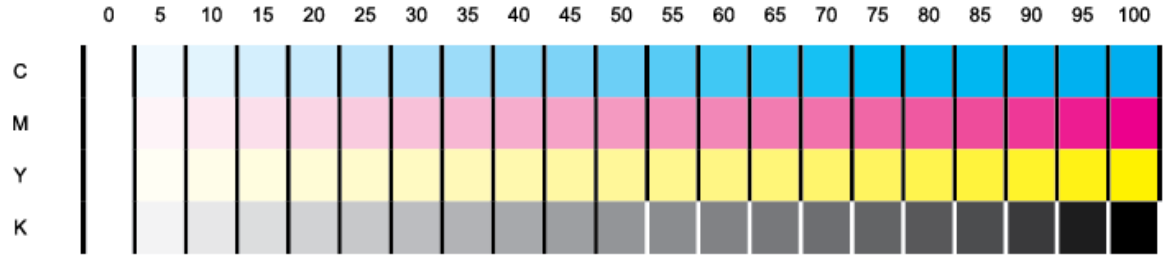
Human factor
Avoid mistakes by user

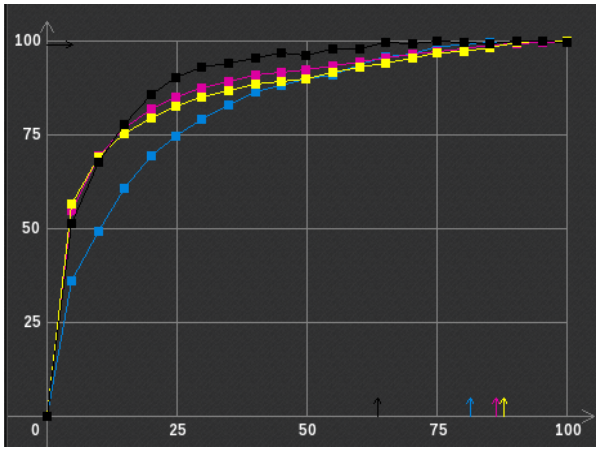


4. The different applications with color measurement devices

1. Linearization

Setting the ink drop for each color channel





4. Applications

1. Linearization

2. ICC Profiling

Describing the color gamut of the digital printer

ICC = International Color Consortium (ICC)

4. Applications

1. Linearization

2. ICC Profiling

3. Spot color measurement

Checking the value of the spot color (L*a*b*)

L*a*b* is a color space defined by the International Commission on Illumination (CIE)

4. Applications

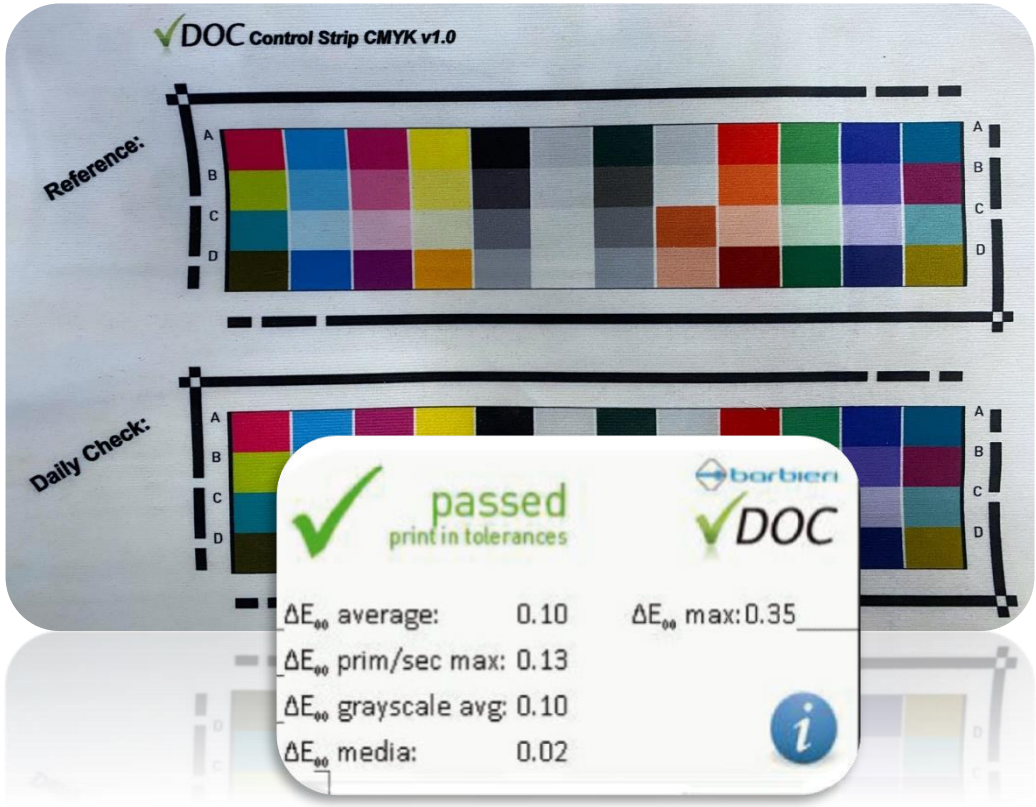
1. Linearization

2. ICC Profiling

3. Spot color measurement

4. Process control

Verification if process prints within tolerances



5. How Barbieri automated color measurement solutions help?

5. Barbieri solutions

Spectro LFP qb **Textile Edition** is the worldwide unique solution for automatic color measuring in digital **dye-sublimation** and **direct-to-garment** printing.

5. Barbieri solutions

1. Fully automated operation

Color charts can be measured fully automated thanks to the motorized operation

5. Barbieri solutions

1. Fully automated operation

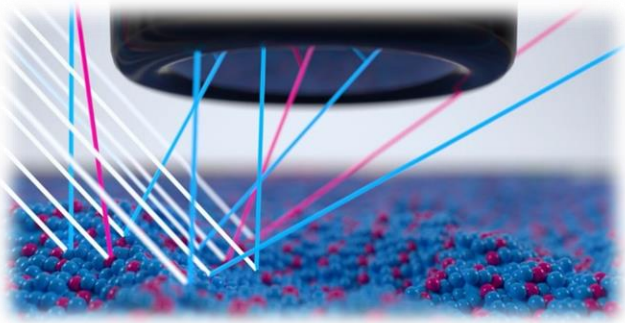
2. Variable measurement aperture

The aperture size can be adapted automatically to 2 – 6 – 8 mm

1. Fully automated operation

2. Variable measurement aperture

The measurement aperture defines how much of a certain patch is seen and measured.



General rule

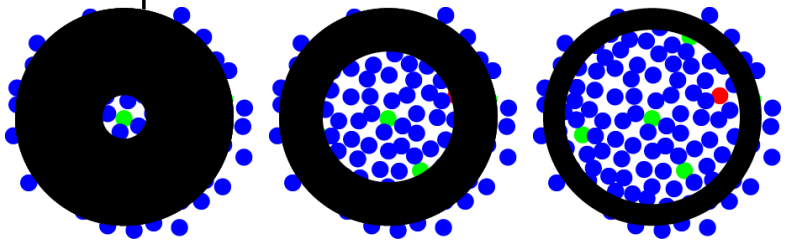
bigger aperture = more accuracy

5. Barbieri solutions

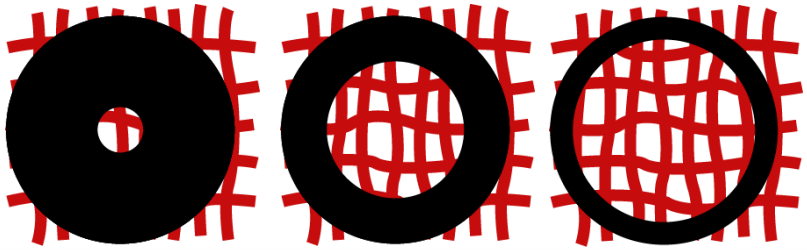
1. Fully automated operation

2. Variable measurement aperture

Low resolution prints:



Textiles, structured media:



Best results on textile and fabrics = 8 mm aperture

5. Barbieri solutions

1. Fully automated operation

2. Variable measurement aperture

https://youtu.be/UP5U3a-okBE

Best results on textile and fabrics = 8 mm aperture

5. Barbieri solutions

1. Fully automated operation

2. Variable measurement aperture

3. Vision technology for distorted targets

https://www.youtube.com/watch?v=7gaQDxJgeRM&t=2s

Integrated vision technology to capture exact measurement spot

Highest accuracy by detecting center of each patch

5. Barbieri solutions

1. Fully automated operation
2. Variable measurement aperture
3. Vision technology for distorted targets
4. Electrostatic textile sample holder

https://www.youtube.com/watch?v=9u523wZxlrw

Textile sample holder allows easy mounting of printed textile charts

5. Barbieri solutions

1. Fully automated operation
2. Variable measurement aperture
3. Vision technology for distorted targets
4. Electrostatic textile sample holder
5. Air blowing system

https://www.youtube.com/watch?v=JO7HfmZIhz0

Build-in solution to avoid dust on optics and keep it clean

6. Summary and Q&A

Color in digital textile printing

- ✓ Color variates on different Digital Textile Printers
- ✓ Spectrophotometer is a key component to obtain the color gamut
- ✓ A dedicated textile color measurement device guarantees accuracy
- ✓ Automation prevents human mistakes
- ✓ Continuous verification of color reproduction is important

www.barbierielectronic.com

Viktor Lazzeri
(Business Development)

phone: +39 329 97 11 870

mail: viktor.lazzeri@barbierielectronic.com