

**PMMC Digitaldruck**

→ **Production Mode Multi Colour Digitaldruck**



Times they are a changin'

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**ipac**

# → ACMS™ The Process Tool

The Advanced Colour Measurement System (ACMS™) is a scanner suitable for industrial applications. It is used for spatially resolved colour measurement on decorative surfaces. Hyperspectral image processing ensures that the system is able to recreate, on a surface of 8x22 mm, the optical colour impression perceived by a well-trained and healthy human eye, and to subject it to a comprehensive objective assessment. This assessment is not affected by optical illusions or other influences. What is more, the ACMS™ complies with the CIE, ASTM and ISO provisions.



The ACMS™ consists of a control cabinet with roof-mounted cooling unit, a measuring device and a user interface.

The basic module allows the user to set different types of lighting (A, C, D50, D55, D65, D75, F11 (TL 84), F2 and F7), the observer (CIE 1964 and CIE 1931) and the scan length for the respective scan.

## Specifications

Hyperspectral push – broom Scanner  
Xenon light source  
Complies with ASTM/CIE/ISO provisions  
Geometry 45°/0°  
Measuring area 80x220 mm  
Spatial resolution 125 µm  
Spectral range 380 – 780 nm  
Spectral resolution 5 nm

## Possible Applications of the ACMS™

"How similar is the current colour matching level to the master sample to be reproduced?"

"Does the present similarity meet the quality requirements defined?"

"Which deviations are to be corrected in order to achieve the objective defined?"

# → PMMC Digital Printing

The ACMS™ PMMC Digital Printing module serves to support the colour matching process in digital printing. After having defined a standard, this standard is reproduced by means of the PMMC Digital Printing module. The release occurs on the basis of a defined similarity index.



The similarity index has been developed and patented by IPAC. It describes the similarity of two samples (in percent).

Based on  $L^*$ ,  $C^*$  and  $h^\circ$  values (brightness, saturation and hue), PMMC Digital Printing provides correction proposals for the substrate (paper, film, primer, ...) and the decor's colour impression. Up to 24 individual colours are analysed, which supports colour matching with image processing programmes such as Photoshop.

URMUSTER		PROBE	
PROBE	L* a* b*	PROBE	L* a* b*
Farbe 1	88.88 -0.01 -0.88	Farbe 1	88.88 0.1 -0.86 -0.36 0.11 0.88
Farbe 2	81.47 -0.87 -0.34	Farbe 2	78.36 -1.81 -0 -0.11 -0.74 -0.66 1.82
Farbe 3	88.78 -0.87 -0.81	Farbe 3	87.71 -0.88 -0.86 -1.07 -0.1 -0.75 2.22
Farbe 4	86.44 -0.87 -0.81	Farbe 4	85.62 -7.14 -0.28 -1.82 -0.27 -0.64 3.68
Farbe 5	39.02 -7.24 -0.83	Farbe 5	38.2 -8.27 -0.88 0.18 -1.03 -1.72 1.88
Farbe 6	24.88 -8.35 -0.28	Farbe 6	23.9 -7.45 -0.27 -0.94 0.91 1.22 1.45
Farbe 7	33.25 -0.71 -0.13	Farbe 7	33.6 0.34 -0.25 0.35 1.05 0.88 1.07
Farbe 8	42.97 -0.21 0.89	Farbe 8	44.28 -0.28 1.27 1.21 1.81 4.29 2.72
Farbe 9	45.97 43.64 20.87	Farbe 9	47.18 42.82 20.98 1.81 -1.11 0.21 1.65
Farbe 10	72.81 3.63 64.59	Farbe 10	71.88 4.84 71.81 -0.82 1.21 7.87 2.88
Farbe 11	86.29 26.46 0.81	Farbe 11	85.93 26.38 -0.37 -0.48 1.54 0.44 0.76
Farbe 12	45.46 -24.46 -24.82	Farbe 12	43.34 -22.07 -25.48 2.88 2.35 -0.65 2.93
Farbe 13	87.02 28.82 41.78	Farbe 13	87.8 27.88 44.47 0.47 -0.34 2.87 1.66
Farbe 14	39.09 -1.88 -0.83	Farbe 14	40.82 -3.47 -0.63 1.72 -0.58 0.9 1.8
Farbe 15	53.64 34.34 15.01	Farbe 15	53.84 35.89 15.17 0.3 1.25 0.16 0.88
Farbe 16	40 11.27 -0.25	Farbe 16	39.74 10.82 -0.77 -0.25 -0.64 -0.21 1.82
Farbe 17	61.77 -27.12 40.88	Farbe 17	59.74 -26.49 43.01 -0.21 -0.37 3.42 2.31
Farbe 18	82.27 18.18 82.21	Farbe 18	82.78 19.77 82.33 -0.48 0.81 2.12 0.74
Farbe 19	83.48 11.18 8.88	Farbe 19	83.28 9.87 8.3 -0.2 -2.11 -0.66 1.88
Farbe 20	86.78 14.81 15.48	Farbe 20	86.63 15.43 14.88 -0.26 0.82 -0.82 0.92
Farbe 21	48.93 -12.82 -28.44	Farbe 21	48.22 -10.87 -28.88 0.89 1.48 1.89 1.38
Farbe 22	42.95 -28.6 0.9	Farbe 22	44.47 -24.37 10.8 1.82 1.23 3.7 2.82
Farbe 23	84.77 3.18 -29.88	Farbe 23	83.85 1.37 -29.84 -1.22 -1.81 -0.29 2.16
Farbe 24	45.81 -28.71 -13.78	Farbe 24	45.99 -27 -18.84 0.38 1.71 -1.88 1.82

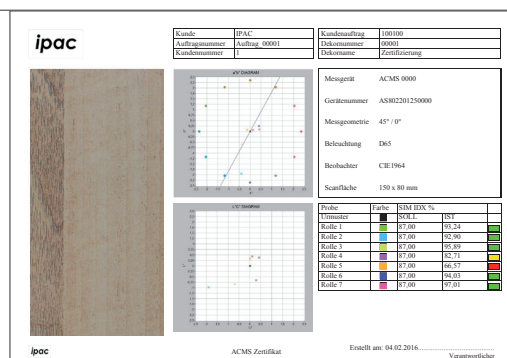
The finished colour matching process is completely documented, which guarantees the detection of differences and continuous traceability of individual corrections.

GLOBALE KORREKTURVORSCHLÄGE			
PROBE	L-	C-	h-
PRIMER	L-	C-	h-

## The Certificat

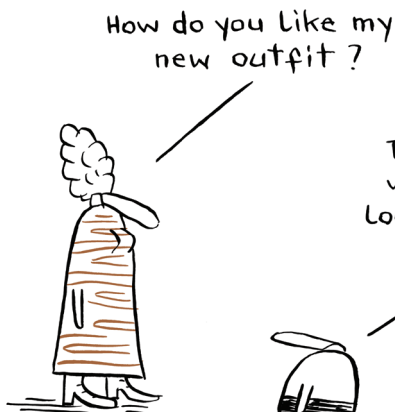
ACMS™ certificates are created directly by the PMMC Digital Printing module. This results in an objective assessment of the colour impression. The physical samples required for visual assessment, which are to be replaced without the use of ACMS™ certificates, are dispensed with.

The replacement and use of the certificate substitute the previous process. Not only does this result in improved quality and efficiency, but also in increasing trust in the cooperation along the entire value chain.



# Advantages of Digital Quality Management with ACMS™

- The visual assessment is substituted by objective measurements
- Physical samples and the related logistics are dispensed with
- Continuous documentation of the production process and final certification
- Earliest possible completion of colour matching results in time and cost savings
- The future communication on the topic of quality occurs on the basis of certificates
- The certificate is replaced digitally immediately after production
- The certificate ensures that the products are within a specified tolerance as regards all parameters required for a release
- The continuous documentation of the process is the basis for future optimisations
- No internal and external colour-related complaints
- Employees are relieved from the physical strain caused by the objective colour impression assessment



The pattern  
would also  
look awesome  
ON WOOD.



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- 1.) Contact us by sending an e-mail to [dqm@ipac.at](mailto:dqm@ipac.at).
- 2.) You will be provided with information on the sample preparation.
- 3.) Prepare 3-5 sets of samples and submit them until 31<sup>st</sup> July 2017 at the latest.
- 4.) We will measure and evaluate your samples and provide you with a detailed analysis on the topic of colour impression.
- 5.) Individual workshop until 31<sup>st</sup> October 2017 at the latest.

# ipac

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