

ISO/IEC 30116

Establishment of unique global reference facility for machine readable passports

Facility report by Johannes Bartl.

Passports containing an electronic chip allow the rapid and unambiguous identification of international travellers by making it possible to compare the biometric data stored on the chip with the holder of the document.

tity check. The new ISO/IEC 30116 standard focuses on precisely this by laying down minimum standards for the optical readability of travel documents so that a traveller can be identified at any border crossing anywhere in the world.

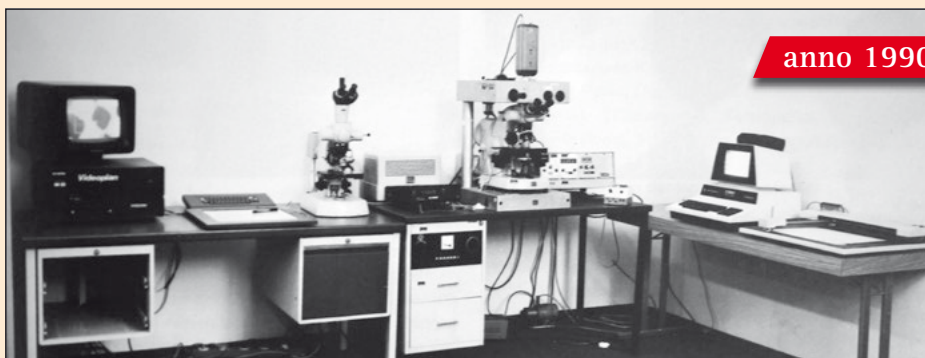


Fig. 1. Photo from the early 1990s of Fogra's then facility for checking optical readability.

However, to do this the machine readable section (the two lines at the bottom of the personal data page) must first be optically scanned. The data that is extracted, such as date of birth, expiry date, etc., is used to generate a unique key that is required for the secure exchange of data between the passport and the reading device.

This ensures that sensitive data cannot be accessed without the traveller's consent but it also means that the error-free scanning of the machine readable section forms a very important part of the iden-

As the airports of more and more countries start to use automated passport control systems such as Germany's EasyPass or the USA's GlobalEntry, error-free scanning becomes even more important. In the past, it was only border protection officers or airline employees who used reading devices to scan the machine readable section. If there was a problem, these trained individuals knew what to do and, if necessary, how to enter the data from the machine readable section into the system by hand. However, this option is no longer

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If you are interested, you can work with us on current research projects and help to produce the results.

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» available with modern passport control systems.

Modern passport control systems

Today's systems identify travellers without any staff intervention. In the first step, the traveller places the data page of his or her passport on the reading device positioned at the entrance to the control gate. This first scans the data in the machine readable section and then the passport's electronically stored data, and checks that it is genuine. The traveller then steps into the gate and his or her face is scanned and compared with the photograph in

ard describes a measurement process for checking optical readability that has been completely revised. In addition, the kind of facility that existed at Fogra up to the early 1990s (Fig. 1) no longer exists anywhere in the world.

Fogra measurement facilities in the 1990s and today

In the 1990s the system fundamentally consisted of a scanning microscope and photometer, which converted the light reflected from the specimen into an electrical signal. This could then be read as a density value on a display device.

infrared. As in ISO 1831, the contrast between the type and the background and the extent to which the characters differ from the corresponding OCR-B model are determined. The uniformity of the background also continues to be monitored. These various measurements now need to satisfy the minimum requirements specified by ISO/IEC 30116 in order to ensure that the machine readable section can be read by any passport control system.

Minimum requirements for the machine readable section

The reality is that up until now these minimum requirements have not been checked—and a Fogra research project is addressing precisely this point. It involves the machine readable sections of various travel documents from all over the world being scanned in the dedicated measurement facility and evaluated against the standard. At the same time, these passports are also scanned by reading devices that are currently in use at airports in order to be able to relate the measured values to optical readability. This allows the practical relevance of the specified minimum requirements to be checked and, if necessary, adjusted. Furthermore, this research project has also involved the development of a process for the production of model letterpress characters, since two different types of OCR-B font—Constant Stroke Width and Letterpress—are defined in ISO 1073-2, and the present ISO/IEC 30116 only specifies a process for producing *Constant Stroke Width* characters.

The results of this project will therefore help to ensure that the identity of travellers can be checked rapidly and reliably as automated passport control systems continue to spread. There is also considerable public interest in the implementation of ISO/IEC 30116 and so this research project is being funded by the German Interior Ministry and Germany's national criminal investigation force is participating in it.

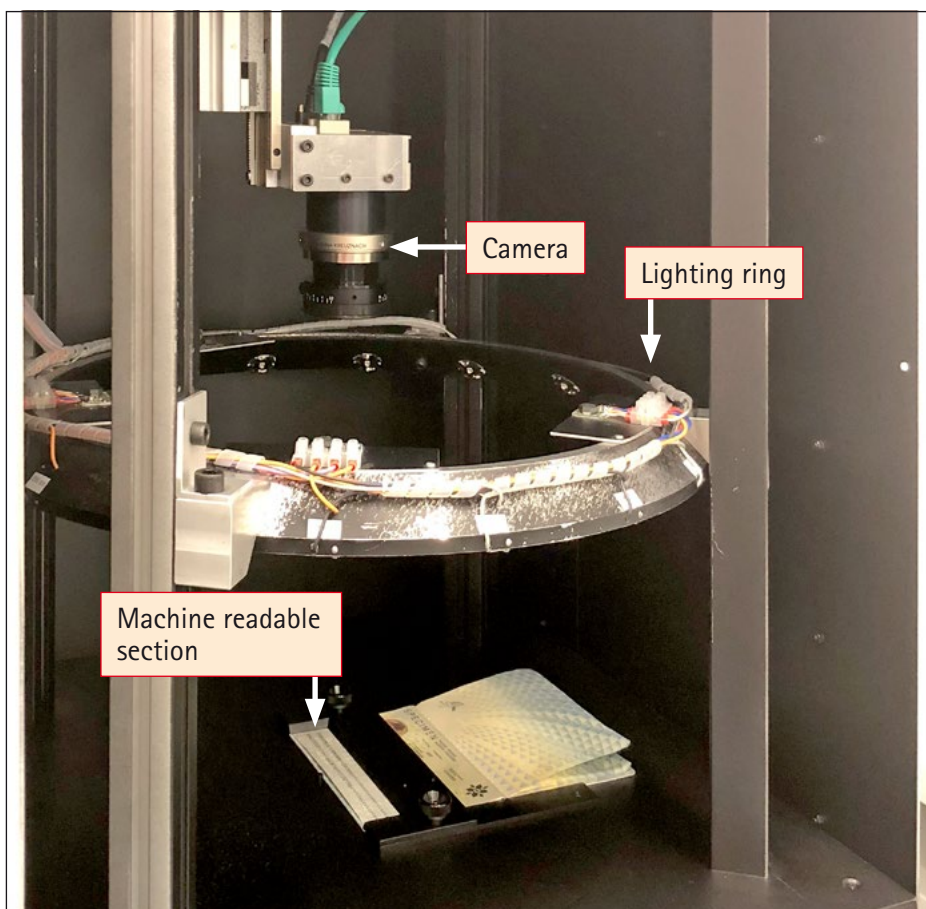


Fig. 2. Current Fogra measurement facility for checking the optical readability of passports in accordance with ISO/IEC 30116.

the passport. If the biometric check that is carried out is successful, the gate's exit opens and the passport check is complete.

For such systems to be accepted they need to be able to work fast and to be error-free. It was this that was the original reason for developing a new standard, ISO/IEC 30116, since its predecessor, ISO 1831, dates from 1980 and is no longer fit for purpose. Consequently, the new stand-

The measurement facility specified by ISO/IEC 30116 is considerably simpler than its predecessor, as figure 2 shows. Essentially, it consists of a near infrared lighting ring to illuminate the machine readable section, coupled with a sufficiently sensitive, high resolution camera.

This arrangement is based on the scanners used in airports, which also scan items using non-standardized lighting in the near

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Multicolor Forum

Multicolor printing on the verge of a breakthrough?

Multicolor printing, that is the use of 5, 6 or 7 process colours, is becoming increasingly popular. Fogra is taking a detailed look at this expansion in printing techniques and assessing its pros and cons.

A position statement by Dr Andreas Kraushaar.

The use of multicolor printing to improve the quality of printed images is far from new and was investigated in a Fogra offset printing research report¹ as far back as 1994. High licensing and certification costs for the existing systems, complicated and demanding data preparation, excessively high print tolerances and poor ink properties (e.g. lightfastness, coating as-

label printers who have been the first to turn to it, helped too by substrates that are now largely standardized.

Challenges do, however, remain to be overcome if multicolor printing is to become a success both commercially and in terms of quality. What, for example, can be done when a spot colour that cannot

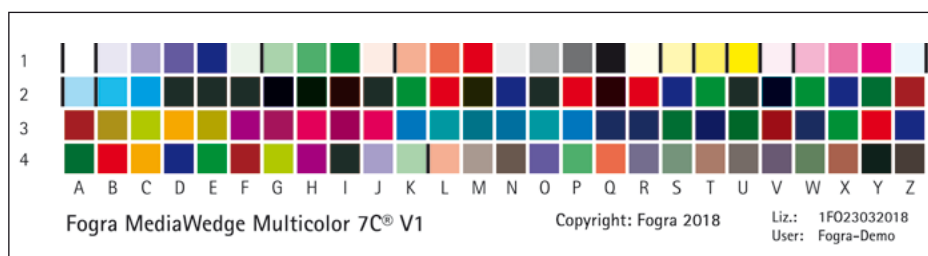


Image. The new Fogra MediaWedge Multicolor 7C, as it is used on proofs for multicolor printing (reduced image size).

pects) meant that until around 2007 multicolor printing remained a niche activity whatever the printing method. The possibility of a breakthrough for multicolor printing is, in the first instance, down to faster software offering improvements in colour accuracy (proofing possibilities) together with the ability to integrate it into existing workflow systems. Improvements in press technology and especially in register accuracy and inline colour control, coupled with the availability of multicolor ink sets and wide-gamut displays have also contributed.

It has been packaging printers, including folding box makers, drinks packagers and

be printed in 7C with the required colour accuracy needs to be reproduced? Or if the buyer insists on solids rather than half-tones?

New, planned research project

Process standardization for expanded gamuts in multicolor printing

This project will develop the key pre-conditions for a predictable and industrial multicolor workflow. To this end, it will create a test suite that allows current solutions for the preparation and editing of multicolor printed graphic elements to be compared on the basis of documentation and an evaluation matrix. It will also allow

Fogra has applied for grants to finance research (see info box below) that is intended to establish reliable foundations for the standardization of multicolor printing. This project will address the various possible stumbling blocks in the process chain, beginning with the difficulty of forecasting colour for multicolor prepress data

What means

"FOGRA55-beta"?

- a 7C cross-process exchange colour space
- a CMYKOGV ink set (based on CMYK+X)
- based on measuring mode M1
- "CMYK part" matches FOGRA51 (incl. gray balance)
- White reference similar to F51: 95 1.5 -6
- proofable
- Green/Orange/Violet: SCTV linearized
- Green: "Pantone Green C" CIELAB = 57.7 77.2 0.2 [CI name: Green 7]
- Orange: Pantone Orange 021C CIELAB= 60.8 65.7 85.1 [CI name: Orange 34]
- Violet: Pantone Violet C CIELAB=18.8 54.5 -69.5 [CI name: Violet 23]

and continuing with the lack of proofing support (the new Fogra Multicolor MediaWedge should provide assistance on this point) and the lack of standards, which the planned project aims to develop with FOGRA55. Once the project is concluded, the resulting tools and means will allow

NEW

¹ **Research report.** PAUL, A.: Improving the quality of printed images by varying the offset colour space; Munich: Fogra, 1994 (50.026)



Images. Test forms (above) and the partners (below) of the Multicolor Forum 2018.



A 'Multicolor Forum' has already taken place in 2018. Organized by Fogra, this first global comparative test of multicolor printing showed what the current solutions from the relevant manufacturers are able to do. Five aspects have been tested: 7C characterization (profile generation), proof printing (on the basis of a 7C offset print), spectral prediction (of superimposed prints and spot colour tone values on the basis of fewer colours), separation of Adobe RGB images and separation of spot colours. Full details can be found on the project website:

→ <https://www.fogra.org/MulticolorForum/>

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the same degree of predictability to be achieved as when working with CMYK.

However, if this potential 'breakthrough' for multicolor printing is to actually be achieved then it is essential that print buyers demand and print service providers master the approach.

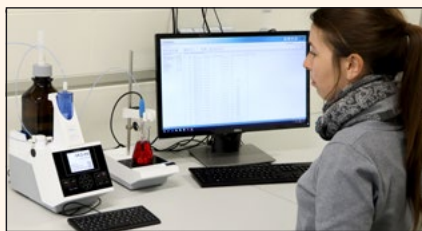
The Materials & Environment department presents:

New testing device

A new titrator allows a range of different measurements at little costs as for example the determination of:

- iodine value of washes
- water hardness
- the dosage of concentrates for fountain solutions in circulation of offset printing machines (by the investigation of the buffer capacity)

The instrument was financed by the AiF (German Federation of Industrial Research Associations) for the research project "Revision of the test standard for the assessment of the corrosiveness of offset printing damping solutions". It will also help us processing expert opinions in the future.



Emil Auster, Canon

TESTIMONIAL

“ Fogra is not only a partner for us when it comes to certifications like the PSD and the PSD-PrintCheck, but it is the only place where we get the indispensable information concerning developments in the graphics market, knowledge to the new initiatives and changes.

The Partnership with Fogra allows us to support our customers in a much more qualified way.”



Sean McMahon, Managing Director Southern Colour Print, New Zealand

TESTIMONIAL

“ Southern Colour Print (New Zealand) started to use Fogra analytical testing services early in 2017.

I have found the service provided to be very accurate and timely. The level of professionalism of the staff at Fogra excellent as is the attention they give to customer service.”

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