

QUESTIONS & ANSWERS

Webinar July 22 and 23, 2021



During the webinar, some questions from the chat could not be answered due to time limitations. Please find here the answers, which were provided by the presenting companies after the webinar

BANQUE DE FRANCE (1/4)

'EVERFIT® - Banknote made durable'

Q What is the difference between Everfit and Hybrid?

A Hybrid is a composite substrate, it means that the substrate already comprises the laminated structure, which is then printed. For Hybrid, inks are directly printed on an external polymer layer.

EverFit® is not only a substrate but a combination of different technologies: the substrate is a special banknote paper secured with embedded well known paper security features, which is first fully printed as a regular banknote; Then the banknote is laminated with protective polymer layers on both sides. The EverFit®'s unique structure makes that all the prints and security elements are beneath the polymer layer, hence protected from the circulation environment (i.e. soiling, abrasion...).

Q With which security features is Everfit(r) compatible, and with which it is not?

A Most of the security features of low denominations are compatible with EverFit®. Our house note embeds several of them: Watermark, E-types, windowed thread, SPARK® live, UV features, security fibers, IR and magnetic features. Due to the various number of solutions available on the market, we would recommend to contact the Banque de France at everfit@banque-france.fr for specific compatibility assessments. The protective function of EverFit® may sometimes interfere in the rendering of some optical security features. An optically-enhanced version of EverFit® is under progress to maximize the efficiency of an extremely wide range of optical security features while providing them unmatched durability.

BANQUE DE FRANCE (2/4)

'EVERFIT® - Banknote made durable'

Q How about the benefits of intaglio printing and its tactility - does this still work with Everfit?

A The lamination after intaglio print slightly decreases the tactility of this printing compared to standard paper banknotes. However, thanks to the Everfit® technology protection, there is no relief erosion during the banknote's lifetime, and the tactility of intaglio indeed lasts longer than on a regular banknote. For intaglio engraving, specific guidelines provided by Banque de France will ensure your banknotes a significant durable relief. Feel it by yourself with our house note!

Q With which security features is Everfit(r) compatible, and with which it is not? / How does the laminated works with the relief of intaglio printing? / How about the effectiveness of the tactile features like intaglio?

A See above answer.

Q Did you say laminating is different from varnishing? Would you accept notes from other printers for laminating?

A Lamination is totally different from varnishing, using different technology/raw materials and offering a definitely higher level of protection against all kinds of aggression a banknote may have to face during its lifetime in circulation.

The first banknote using EverFit® technology was issued by the Central Bank of Madagascar and was based on an existing banknote design, for which the required technical adjustments were inconspicuous to the public. We stand ready to assess the compatibility of any existing banknote with the EverFit® technology, and to organize lamination trials. We remind that the EverFit® technology is partly based on a specific paper (i.e. gsm/thickness and paper formula) and that the protective polymer layers cannot be applied on a standard banknote paper.

BANQUE DE FRANCE (3/4)

'EVERFIT® - Banknote made durable'

Q What about intaglio printing and its tactile feature?

A See above answer.

Q How resistant is the technology to delamination?

A Experience showed that the benefit of varnish in some very harsh circulation environments is limited to an increase of about only 3 months of lifetime compared to a non varnished banknote. EverFit® has been assessed on the field in such conditions and showed an lifetime increase by a factor 4, with very minor and limited delamination phenomenon.

Q What impact does the laminate film have on banknotes that are protected using IBNS /Ink staining technology? Is the security dye able to penetrate the laminate film?

A IBNS inks usually use very thin pigments and dyes which are prone to stain any substrate. For EverFit®, as for any other long-lasting solution, an obvious tradeoff has to be taken into account between banknotes anti-soiling properties and staining with IBNS. We made trials and reported that the staining inks can still penetrate into the core paper layer.

Q Does the lamination layer influence somehow the emission (spectrum) of the UV inks when illuminated by a UV light?

A The lamination layer is UV transparent, and no influence on the emission of the UV inks has been observed so far. It is also the case in the IR range.

Q What is the thickness of the polymer?

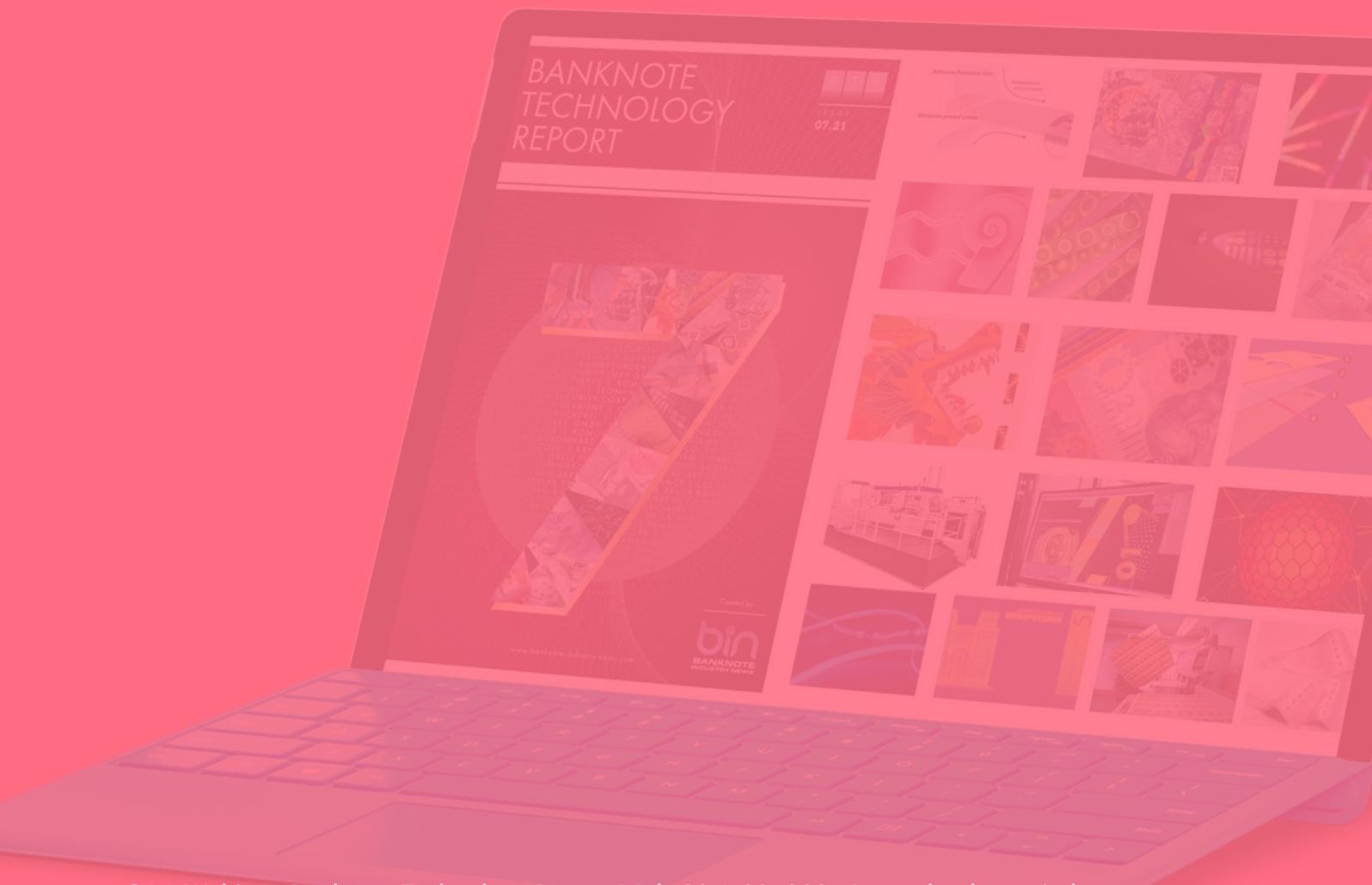
A The thickness of the final laminated banknote is around 115 μm .

BANQUE DE FRANCE (4/4)

'EVERFIT® - Banknote made durable'

- Q** What happens with the application of a hologram? Do you overlaminate the hologram?
- A** See above answer.
- Q** Is there possibility of peeling off of the polymer?
- A** Definitely not under normal conditions of usage and circulation.

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LUMINESCENCE SUN CHEMICAL SECURITY (1/2)

'SHIELD: Anti-Soil coating, improving your cash-cycle'

Q Is the coating applied actually on polymer banknotes?

A Yes.

Q Are there any circulating banknotes coated with SHIELD?

A Yes, banknotes using our SHIELD products have been in circulation for many years now.

Q How many denomination are currently printed with SHIELD?

A Several denominations are in circulation and more qualification trials are ongoing.

Q Is there any circulating trial of SHIELD?

A Customers have undertaken a cost/benefit analysis and deemed the results meet their requirements.

Q Is SHIELD qualified and validated by CCL?

A Due to confidentiality, we can't answer questions about specific customers.

Q Why do you offer both free radical and cationic?

A Both free radical and cationic chemistries are being successfully being used in the market place and we want to be able to offer customers a choice. Both systems have their own advantages and we are happy to discuss this further with interested customers.

LUMINESCENCE SUN CHEMICAL SECURITY (2/2)

'SHIELD: Anti-Soil coating, improving your cash-cycle'

Q Are these products anti-viral?

A We can certainly formulate a coating to have anti-microbial properties. In the Europe the use of biocidal products and the subsequent claims that can be made regarding “treated articles” is covered by the Biocidal Products Regulation (BPR). There are also other regional and national rules that need to be adhered to outside of the EU. Therefore, we have taken a very measured and prudent approach to this field given the pressure throughout the COVID-19 pandemic.

Q What's the next step for this technology?

A The technology is being further optimised for low energy LED curing systems as these are expected to be more widely used by banknote printers in the future.

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GLEITSMANN SECURITY INKS (1/2)

'World's first traffic light for banknotes - GSI develops innovative security feature for cash & security documents'

Q How lightfast is the mouve feature?

A MouveGSI has similar lightfastness properties as other UV inks.

Q Are BEMs sensors able to read it?

A A conventional UV sensor can read and detect mouveGSI as any other UV ink

Q It seems that it will take many seconds to check this feature. Do you think it'll be useful for banknotes?

A This observation is incorrect. The effects are visible in 1-2 seconds, depending on the environment/light sources applied. The video presented during the seminar showed prolonged times in order to explain the feature during the presentation.

Q Can the ink shown be applied by pad printing?

A No

Q Which is the decay time of this ink when UV lights are switched off?

A This depends on the light source, its intensity and the time of exposure. Usually we observe times between 0.5 and 3 seconds.

GLEITSMANN SECURITY INKS (2/2)

'World's first traffic light for banknotes - GSI develops innovative security feature for cash & security documents'

Q As a L2 feature have you considered sensor-readiness for high speed sorters?

A Yes, UV sensors can detect/read the feature.
How durable is the solution? It is as durable as other standard UV inks.

Q Durability and how resistable they are to sunlight the luminescence?

A Again, mouveGSI has the same durability/resistance against sunlight as standard UV inks.

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CCL SECURE (1/5)

'SPARTAN™: A new generation of banknotes for the note/coin boundary is born'

Q How do you calculate the life span of the banknotes?

A We work closely with an issuing authority to review data they have on the lifetime of existing denominations. Using this data in conjunction with the knowledge CCL Secure has gained from over 30 years of experience of polymer banknotes, we can model expected note lifetimes for GUARDIAN™ and SPARTAN™ banknotes.

We can also use this modelling data to provide a comparative cost analysis to show potential cost benefits. We will gladly work with you to provide some comparative cost analysis to show the potential SPARTAN can provide.

Q Durability and how resistible is SPARTAN against sunlight?

A SPARTAN has been subjected to the standard banknote chemical and physical hazard testing, alongside a range of other extended tests. This testing includes UV and climatic exposure. In all of these tests SPARTAN ink performs as well as, or better than conventional offset and intaglio ink.

Q Do you have any circulation life data for SPARTAN?

A At this moment we do not have a circulating SPARTAN banknote and therefore cannot provide SPARTAN banknotes until they have been issued into circulation. We have conducted extensive testing and this in conjunction with our experience with GUARDIAN has made us confident in the performance of SPARTAN.

CCL SECURE (2/5)

'SPARTAN™: A new generation of banknotes for the note/coin boundary is born'

Q Are window features not available for SPARTAN?

A There are no windows for SPARTAN as it uses a new highly durable opaque white film. SPARTAN has been engineered for durability in order to meet the demands for a denomination at the note coin boundary

Q Do you use offset and also intaglio to print SPARTAN?

A SPARTAN is a fully finished banknote and as such does not go through traditional banknote printing processes. The SPARTAN banknote is printed in one complete printing process by CCL Secure, including individual serial numbers.

Q Are you concerned that counterfeiters will use this substrate to counterfeit higher denominations?

A Leucopp™ film is a unique opaque film that is used solely for SPARTAN and is focused on the note coin boundary. Its manufacture is strictly controlled by our sister company Innovia Films and is not available for use in other applications. For higher denomination banknotes we recommend GUARDIAN substrate, which features large, complex windows. Any counterfeit of a higher denomination GUARDIAN banknote using a SPARTAN substrate would be easy to recognise due to the lack of window.

CCL SECURE (3/5)

'SPARTAN™: A new generation of banknotes for the note/coin boundary is born'

Q How to measure life circulation for durable banknote? Is SPARTAN durable on ink printing?

A We work closely with an issuing authority to review data they have on the lifetime of existing denominations. Using this data in conjunction with the knowledge CCL Secure has gained from over 30 years of experience of polymer banknotes, we can model expected note lifetimes for GUARDIAN and SPARTAN banknotes. We can also use this modelling data to provide a comparative cost analysis to show potential cost benefits. We will gladly work with you to provide some comparative cost analysis to show the potential SPARTAN can provide.

The inks that are used to manufacture SPARTAN have been engineered to work specifically with the unique Leucopp film. They have exceptional durability characteristics

Q Why would the ink wear on a SPARTAN note be better than on a GUARDIAN banknote?

A The Leucopp films and SPARTAN inks have been specifically developed to work together to maximise adhesion of the inks to the film. The inks are then further protected with a proprietary varnish to further enhance durability. The combination of an opaque film, specialist inks and proprietary varnish means that SPARTAN banknotes are highly resistant to abrasion.

CCL SECURE (4/5)

'SPARTAN™: A new generation of banknotes for the note/coin boundary is born'

Q What about heat stability of SPARTAN vs other polymeric notes?

A As with GUARDIAN substrate, SPARTAN banknotes are highly tolerant of the extremes of temperature that a banknote will experience. GUARDIAN banknotes successfully circulate in some of the hottest, coldest, driest and wettest climates in the world.

Q I saw this solution in 2018 at the AABSDP conference. How many denominations are in circulation?

A At this time there are no circulating SPARTAN banknotes

Q Can you fold and be able to straighten up SPARTAN easily without affecting its quality?

A SPARTAN has been engineered for durability and this includes crumpling. The Leucopp films and SPARTAN inks have been specifically developed to work together to maximise adhesion of the inks to the film so SPARTAN notes can be crumpled with no impact on their quality.

Q Who can print those notes?

A SPARTAN is a fully finished banknote and as such no further ink is applied after completion by CCL Secure's printing process. The SPARTAN banknote is printed in one complete printing process by CCL Secure, including individual serial numbers

CCL Secure (5/5)

'SPARTAN™: A new generation of banknotes for the note/coin boundary is born'

Q Is SPARTAN in circulation in any countries?

A At this time there are no circulating SPARTAN banknotes

Q How many hours for the offset to intaglio handling (drying time) or intaglio to intaglio?

A SPARTAN is a fully finished banknote and as such no further ink is applied after completion by CCL Secure's printing process. The SPARTAN banknote is printed in one complete printing process by CCL Secure, including individual serial numbers.

What's the difference in thickness?

Q The thickness of the finished banknote will be similar to existing

A banknotes.

What tactility is possible on SPARTAN?

Q The level and distribution of tactile elements can be tailored to the requirements of the issuing authority.

Q How many hours for the offset to intaglio handling (drying time) or intaglio to intaglio?

A SPARTAN is a fully finished banknote and as such no further ink is applied after completion by CCL Secure's printing process. The SPARTAN banknote is printed in one complete printing process by CCL Secure, including individual serial numbers.

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SECURITY FIBRES (1/2)

'SPECTRUM: The future of fibre - now'

Q Is it possible to have fibers visible under uv a & c?

A Yes, we can and do make fibres with different colours in 365nm and 254nm(UVC 100-280 nm) This is a highly effective security feature that is very hard or impossible for the counterfeiter to replicate. Please visit our website www.securityfubres.com where you will find our 'fibre designer app' which allows you to design your own bespoke fibre with long wave and short wave (UVC) colour combinations.

Q Will there ever be uv fibres for polymer substrate?

A Our fibres can be added to certain polymers (extruded) and polycarbonates. However, it is not thought feasible to add any type of security feature to 'blown' polymer film which is why we continue to advocate the advantages of paper which can contain very sophisticated security features.

Q When talking about machine detectable, is it suitable for level 2.3 type of detection by note sorters?

A Yes, but many of the taggants used for this purpose are highly specific for each Central Bank. In the event that a Central Bank wanted their specific taggants to be applied to our fibres, they could be detected by the sensors. However, we find that 'machine detectable' fibres are more interesting to our customers since they can be detected using small, handheld inexpensive devices that can be tuned to a very specific signal. They are a very secure feature that compliments a Central Bank taggant.

SECURITY FIBRES (2/2)

'SPECTRUM: The future of fibre - now'

- Q** In Indonesia rupiah, the last time uv fibres used in 1998. after that no more. one common reason cited by the printer is due to quality control sensor calibration that is rather complex, is that true?
- A** Perhaps that may have been an issue in the 90's, but the inspection equipment on printing machines nowadays can easily be calibrated to 'ignore' the fibres so that this is a 'non-issue'! The fact that the fibres in all of the Euro denominations, which are printed by several different printers, doesn't cause any issues is proof of this. Plus all of the many other currencies that use our multi-coloured fibres or indeed, nearly every other bank note in circulation that uses single coloured fibres.

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LEONHARD KURZ STIFTUNG (1/2)

'Pulling the strings with KURZ THREADS and KINEGRAM'

Q Why did you choose to enter the thread market at the moment, given that you are more well known as a supplier of surface-applied features?

A Our KINEGRAM® optical technology is well known as the brightest and most obvious of the naked-eye features available for banknotes. We decided to offer the technology in thread format as an alternative for a number of reasons. Firstly, people in some countries are accustomed to a thread as a principal authentication device, so we wanted to be able to go with the flow of local cultures when proposing a KINEGRAM® as an upgrade to banknote security. Secondly, a KINEGRAM® as a thread allows designers additional flexibility. Thirdly, the KINEGRAM COLORS® with Flux Effect variant of our technology is ideal for maximum recognisability in the relatively small area available with a windowed thread; the unlimited palette of colours means the threads can match or indeed contrast with the print design, and provide the most obvious possible differentiation between denominations. As with our surface foil stripes, the threads can increase in width for higher-value notes. Fourthly, we have strong relationships with all the major papermakers dating back several decades; KURZ is already a well-known partner for them, especially the papermills involved with the Euro. Finally, our status as a feature supplier independent of the papermakers and printers offers the same advantage to central banks with threads as with our surface foils: the KURZ feature leaves a central bank free to purchase paper or finished banknotes on the international market with no technical or commercial restrictions.

LEONHARD KURZ STIFTUNG (2/2)

'Pulling the strings with KURZ THREADS and KINEGRAM'

Q What are the minimum and maximum widths of KURZ threads?

A We recommend minimum 3mm for meaningful verification. Regarding maximum width, in principle there is no maximum as far as our production at KURZ is concerned. The restriction is rather in the papermaking machinery. Experience with our partners in the paper sector leads us to propose a maximum practical width of 6.3mm.

Q Can your threads be used for authentication by smartphone, maybe in combination with the serial number?

A We certainly offer smartphone authentication in other sectors of the security products market, for eg tax stamps and ID documents. Smartphone authentication of banknote features including threads is part of our current R&D. We are very interested in a discussion with central banks on this question.

Q Can magnetics be embedded in your threads?

A Yes. We can include HiCo or LoCo magnetism according to the individual central bank's requirement. We are a leading supplier of magnetic components for eg credit cards so this is well within our capabilities and experience.

Q How long does it take to provide a prototype sample for a customized design?

A This is always a tricky question as it depends on when we say the prototyping process starts. Once the concept is agreed with the customer, following a process of design from a customer's raw artwork, we can supply technically- correct thread samples within about eight weeks.

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NANOTECH SECURITY

'KolorOptik Technology - stunning multicoloured combinations of depth and movement'

Q Can KolorOptik be made into a Patch?

A Yes

Q How effective this features are under a very low light source?

A KolorOptik's "Always on" capability is light condition agnostic, hence it is easy to authenticate features in low light sources.

Q What colour palette is available for this product?

A NTS is working on a plasmonic colour palette that covers the whole spectrum, and the final colour selection will be announced along with the KO product roll outs. We may reserve some colours for specific applications such as banknotes.

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CRANE CURRENCY

'Increased need for intuitive authentication'

Q MOTION® micro-optics as a 'patchQ'

A Yes, we are planning for this. The project is an exciting one, as the engaging visual effects that have become synonymous with features like RAPID® and MOTION SURFACE®, including especially strong 3D visual cues, are finding a nice home in a feature with a smaller, easier to integrate footprint. Stay tuned to 'BIN' for more on this in the not too distant future.

Q Does Crane use any ISO standards for counterfeit resistance /adversarial analysis?

A No, we do not use the ISO standard for the evaluation of features or the adversarial analysis that is part of it. We have of course developed a process to standardize our ratings so we can compare these over time and across a variety of features. And, as we often remind, our scores are just that, ours! We encourage others to perform their own analysis.

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NOTE PRINTING AUSTRALIA (1/2)

'SUSI FLIP™': Offset printing hits a stretch target'

Q Is that obtained under UV-A? Do you have samples which work with UV-B and UV-C too?

A Conventional UV absorbing inks are used, based on proven ink and press capabilities. No other UV frequencies have been explored at Note Printing Australia.

Q What can you tell us about machine readability of SUSI Flip?

A SUSI FLIP for the Solomon Islands \$5 was not designed as a machine readable feature. Theoretically the technical specifications and appropriate latency ink could allow for a machine readable patch, as the combined plates could generate enough readable surface area.

Q How many combinations of colors are available?

A As far as I am aware, there are limited combinations available based on visual efficacy. Koenig & Bauer will have more information in this regard. For the Solomon Islands \$5 banknote, Yellow and Red was the most optically responsive and comparable inks based on the overt shade.

Q Is it printable on every substrate?

A Yes, if the artwork specifications are adapted to the relevant substrate.

It is the high fidelity of wet offset printing and plate registration on the smooth surface of polymer that combines to achieve a very precise outcome. Along with ink specifications and registration, the management of line fidelity and line gain is the next most critical control. Generally speaking, the more absorbent or rough the surface, the lower the line fidelity.

NOTE PRINTING AUSTRALIA (2/2)

'SUSI FLIP™': Offset printing hits a stretch target'

Q Do you need to respect specific criteria for the choice of inks ?

A Yes, some line compensation will be required based on the UV loading of the visible inks and their relationship to one another.

Also, covert and overt pigmentations should be complimentary for optimal results.

Q Is it involving 3rd level security features?

A No, SUSIFLIP for the Solomon Islands \$5 banknote was not designed to be machine readable. Theoretically, design and ink specifications could be adapted to create a discreet machine readable region. This would need to be anticipated from the start.

Q Was it printed with wet offset or dry?

A Wet Offset

Q Is it applicable for Hybrid substrates?

A Note Printing Australia has only produced this on Guardian and SafeGuard Polymer substrate, but yes, there is no reason why the feature cannot be resolved on a hybrid substrate.

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GIESECKE+DEVRIENT (1/4)

'Tell your country's story. With unmatched security form within.'

Q What color palette is available for RollingStar i+?

- A**
- Green / Azure
 - Magenta / Green
 - Gold / Jade
 - Green / Magenta
 - Violet / Bronze
 - Lightblue / Violet

Q Could you use partially demetallized thread as well?

A RollingStar i+ security threads can incorporate demetallized text for authentication in transmission and a full variety of machine-readable magnetic properties from simple 'Yes/No' recognition of the magnetic thread to encoding systems such as Multicode, all within one thread.

Q Is it possible to have UV feature on this Rolling Star? already in circulation?

A RollingStar i+ security threads can incorporate UV fluorescence for commercial authentication and a full variety of machine-readable magnetic properties from simple 'Yes/No' recognition of the magnetic thread to encoding systems such as MultiCode, all within one thread.

GIESECKE+DEVRIENT (2/4)

'Tell your country's story. With unmatched security form within.'

Q What is the difference between RollingStar and RollingStar i+?

A Almost 100 denominations were already produced featuring our micromirror thread technology. RollingStar security threads combine micro mirror technology with ColourShift technology, the combination of the two creating a dynamic movement effect with a colour change. Micro mirrors take the centre stage for this technology. To maintain their dynamism and brilliance in circulation, they are protected by a laminated foil covering, ensuring that the optical effect is not sensitive to soiling. The arrays of tiny microscopic mirrors are created using an innovative origination technique steered by a highly complex algorithm. On a surface area of just one square centimetre there can be several million facets of these mirrors, which are precisely aligned. The light is reflected in a specific manner defined by the size and orientation of the mirrors.

RollingStar® i+ has been developed after intensive research and development to reach a new level in micro mirror technology for security threads. This is achieved by an even more sophisticated way of aligning and shaping the micromirrors that reduces the angle of the mirrors by fifty percent. Consequently, this doubles the speed of movement of the light reflection that is travelling, or 'rolling', along the thread. The new origination technique also supports the creation of sub-texture effects to create a unique combination of dynamic movement, colour change and sub-texture, in an easy to authenticate design that is impossible for counterfeiters to reproduce.

GIESECKE+DEVRIENT (3/4)

'Tell your country's story. With unmatched security form within.'

Q What is the difference between Hybrid and Hybrid ADDvance?

A Hybrid banknotes have been in circulation since 2010. Hybrid is a banknote substrate that combines the security advantages of substrate embedded security features in cotton-based substrates with the durability advantages of polymer. Hybrid is an innovative combination of protective polyester film around a cotton fibre core. This core can be exclusively customised to embed watermarks, security threads and machine-readable elements to ensure the banknote substrate is secure against counterfeiting. A very thin polyester film is then laminated onto both sides. This film forms a 100% barrier against moisture and dirt and is approx. 6 μm thick. Due to its polyester film, Hybrid is durable, staying clean and stiff in extreme circulation conditions. Security printing on Hybrid enables the full potential of innovative print features and intaglio printing to provide the recognised touch and feel of banknotes.

During circulation, we noticed that security foil stripe features performed differently on different substrates. For example, a security foil stripe applied onto a cotton substrate is over time attacked on both sides by sweat and other elements during circulation. Whereas a security foil stripe applied onto a Hybrid substrate is over time only attacked from the frontside by sweat and other elements during circulation as the backside of the foil is applied onto the outer protective polyester foil of Hybrid. With Hybrid ADDvance, we now apply security foil stripes and patches, also in combination with windows, directly onto the cotton fibre cotton before then applying the protective polyester foil outer layers onto both sides of the substrate core over the security foil. The security foil stripe or patch is therefore protected on both sides from attack by sweat and other elements and significantly increases the durability of these typically high value security features and therefore the entire note.

The ink receptive layer that is printed onto the protective polyester outer foil layers and which is one of the technological keys of Hybrid ADDvance, ensures that foil features embedded into the substrate retain their brilliance and do not become cloudy due to the layers above. The addition of a varnish to protect the printing, prevent color abrasion, matt the surface and support tactility.

GIESECKE+DEVRIENT (4/4)

'Tell your country's story. With unmatched security form within.'

Q How much longer does Hybrid last than cotton, and in which study is this experience documented?

A Hybrid is very durable, with a comparable circulation lifetime to polymer notes of 3-4 times that of cotton notes. As one reference point, the Bank of Jamaica presented its experience during a study of different substrates in circulation at the Banknote Conference 2014 in Washington. The Bank demonstrated that by changing the substrate of the \$100, which is the second lowest denomination and main ATM note, from cotton to Hybrid, they were able to increase the average circulation lifetime (ACL) from 4.04 months for cotton, to 14.84 months for Hybrid. This increased the ACL of the denomination by 3.7 times. The Bank's annual report publishes updated statistics for each denomination.

Q What other colour change options other than gold to blue are available for varifeye ColourChange?

A Varifeye ColourChange secure window foil patches are currently available in two options:

- Gold to blue
- Violet to green

The four higher denominations of the new Oman banknote series use varifeye Colour Change to great effect with the 5 and 10 Rials featuring a varifeye ColourChange from violet to green whilst the 20 and 50 Rials feature a varifeye ColourChange from gold to blue.

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OBERTHUR FIDUCIAIRE (1/2)

'At the forefront of CSR in the industry'

Q Referring to the slide on decreased carbon footprint, what is the unit of the CO₂ shown on the slides? is it kg CO₂ or tonne CO₂

A The unit is Kg CO₂ / 1000 sheets.

Q What is the best way to disposal polymer banknotes waste materials?

A There is no single solution, for each type of banknote (polymer OR cotton), the overall context must be analyzed. Annual volume, transport mode , conditioning, resources and industrial needs, energy cost.... to set up a solution with a relevant carbon footprint, and we now propose to establish the best way.

Q You said that 10% of electricity consumption of your printing works is due to UV drying power consumption?

A Exactly, it was one of the most impactful knowledge due to the implementation of our ISO 50001 management system.
ð we have been monitoring this consumption since 2017, and the energy consumption, and carbon impact associated with these 12 small pieces of equipment by size is enormous. We have been working on alternatives with our ink and varnish suppliers since 2018 and we have first good results.

Q You mentioned you can assist your clients measure/decrease their banknotes carbon footprint; how does this work ? Can you tell us more?

A Before we launch the product, we seat down with the client and we analyze ways to improve the carbon footprint taking into account their requirement.
We first define the perimeter and the scope of the study, from raw materials until delivery. (answer continues on next page)

OBERTHUR FIDUCIAIRE (2/2)

'At the forefront of CSR in the industry'

- A** (continued answer from previous page)
As I mention we have 347 key factor that we are able to follow. We have been established a monthly monitoring on the same based that for our traceability process.
The carbon footprint monitoring is a join commitment with our costumer.
- Q** Regarding your actions toward the climate plan 2030, did you already launch some of them and which ones?
- A** We continue to improve our energy efficiency working on insulation of our plants, with some simple solution like painting the roof in white, (30% energy save), or technological solutions like compressed air created with compressors with magnetic motors.
Regarding renewable energy we study and test evolution regarding solar panels
And to reduce greenhouse gas emissions by at least 40% (compared to 1990 levels), we started to treat all VOC emissions due to intaglio process, (objective june 2022) and we manage a specific action plan to reduce our carbon footprint, which involves our suppliers and customers.
- Q** What actions have you put in plan to avoid CO2 carbon footprint linked to waste generation?
- A** Since last year, our red line has been to reduce our consumption of plastic, so we first do away with everything possible and now we are developing solutions to recycle them in the factory with low-tech solutions, such as precious plastics. For example with plastic straps we make consumables used in the printing department to wedge the paper. Our objective and action are to reduce transport and develop local synergy.

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ORELL FÜSSLI (1/2)

'Orell Füssli Ltd. Security Printing's COVID-19 story'

Q What kind of new digital processes has Orell Füssli implemented? can you share it to us?

A One example is described below, namely the ongoing development of an approval process that is handled virtually between printer and issuing authority.

Q How does an online / digital approval process work? What technology are you using?

A We are still developing this concept which is work-in-progress, and can outline our approach with the following fundamental principles underlying our work:

- Protocols: At the proposal stage with the customer, the scope of the process is delineated in detail so that a full assessment of its viability can be established, to ensure that is in line with their internal policies. Many issuing authorities will have statutory requirements that need to be adapted to new digital approval processes;
- Security: the exercise is conducted through secure channels to ensure the confidential integrity of the material;
- Matrix of selected criteria: an approval process will vary from project-to-project. Some individual processes may not be suitable for virtual validation, and would be categorized as "out of scope", while others would be deemed perfectly workable. Therefore, a matrix is established for each project, to agree where each print and application stage shall figure within that context.
- Transmissibility of optical imaging: the technology behind the virtual approval process must be sufficiently developed to enable the conveying, to the customer, of an image that allows for an objective assessment that is equivalent to being present beside a printing machine, physically reviewing and approving a print stage.

ORELL FÜSSLI (1/2)

'Orell Füssli Ltd. Security Printing's COVID-19 story'

Q You say that because of your successful contingency planning in place, you encountered no delays in deliveries to your central bank customers: what would you say was the main factor that ensured this outcome?

A The main factor that ensured this outcome was the following:

- Establishment of organizational resilience: Through a longstanding process of continually reviewing and implementing risk-mitigation measures, with the aim of securing maximum preparedness, OFS were able to achieve a high level of resilience which reinforced confidence in the robustness of what was in place. As such, when the pandemic struck, management were able to take decisions that were grounded on well-established protocols – although naturally, some events could be anticipated, and so certain decisions had to be made on the basis of entirely new situations.

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DE LA RUE (1/2)

'Expertise, progression and creativity'

Q What measures do you normally take to ensure that you are always ahead of counterfeiter?

A At De La Rue we analyse thousands of global counterfeit banknotes every year, monitor counterfeit statistics and extrapolate trends. We examine commercially available materials, collaborate across the industry, work with law enforcement and work with central banks to understand the latest threats. Every product released by De La Rue has to pass adversarial testing before it is released. Everything we learn feeds into our product development process and banknote designs. We use design, imagery and effects to ensure that De La Rue security features are not similar to anything available commercially. We ensure our security features are bespoke and uniquely identifiable as belonging to a specific banknote. We provide different types of security features to ensure that we're providing central banks with multiple and different barriers to counterfeiting. If you'd like to know more please email currency@delarue.com

Do you have any scientific proof that polymer provides more banknote longevity than paper, apart from the counterfeit benefit?

We have over 12,500 data points in DLR Analytics™ that reveal the range of banknote lifetimes for multiple denominations. We have enough datapoints to categorise into paper, varnished paper and polymer and obtain statistically meaningful average comparisons. Fortunately polymer banknotes and paper banknotes have both been in circulation for many years. This means that we can make meaningful comparisons (as an example, if your polymer banknote lasts for six years, you'll need over six years of circulation data to know this because it needs to be in circulation ... (answer continuous on next page)

DE LA RUE (2/2)

'Expertise, progression and creativity'

- A (continues from previous page)... long enough for the notes to have failed and for you to have confidence that you have a meaningful average value). We have banknote order volumes as well as DLR Analytics™ data (and in a small minority we also have serial number based data). Several central banks have reported the improved banknote lifetimes of their polymer banknotes and this information is readily available in the public domain.

We see central banks where polymer it lasts three times longer and some where it is almost seven times longer. We see enough data points to realise that the experience of different central banks is different. We clean our data to remove the “new series introduction effect” (whereby newly issued banknotes can initially appear to be lasting longer simply because there is a greater proportion of new notes in circulation). Fortunately polymer and paper have been circulating on many denominations, in many circulating environments for many decades so we can very robustly and confidently evidence that polymer notes last 2.5 times longer on average and longer in certain specific circumstances. Central banks should be wary about making conclusions data about substrates that haven't been in circulation for long or that haven't been proven in multiple circulating environments

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HUNKELER SYSTEMS (1/2)

'Top of the peak Swiss engineering: State-of-the art destruction and recycling with a system'

Q What are some of the more creative uses of the shredded paper and polymer materials coming through from your customers?

A This goes into briquetting for cotton based substrates and composite substrates with a plastic coverage <30% (e.g. Hybrid substrate). For the polymer wastage e.g. you can move the shredded particles into a recycling process for further usage with a big bag or compactor/container set-up.

Q Is there a vision system inside which can detect the individual bn number?

A This is currently not being developed, but banknotes for destruction will be captured within the supplied destruction system. With this it is guaranteed that all banknotes for destruction and shredded banknotes will be monitored and compared with each other. As an further option, the batch numbers of the destruction lots are tracked and reported.

Q You talked about the wide product range of Hunkeler in regards to performance. What is the largest system in kg/h you have recently installed?

A We can provide shredding equipment from 50kg/h up to 2000 kg/h on an installed base, and independently which substrate will be used. Largest installation runs with two times 2000kg/h note destruction with direct output into a truck.

HUNKELER SYSTEMS (2/2)

'Top of the peak Swiss engineering: State-of-the art destruction and recycling with a system'

Q What makes the polymer granulating so difficult?

A Anti-Static and especially the heat development within the shredding process need to be observed. Our shredding granulator is fully controlled via temperature sensors to reach a 100% system control and has its root in the industrial polymer application.

Q Regarding the interface and control software. Can you offer as well data export to our customers data base?

A Yes, if the customer grants us access to its EDI Interface then we can connect him to the live data of the shredded quantities, status messages, progress data's and uptime information. We generate ie a csv file, that can be imported to excel or other office products.

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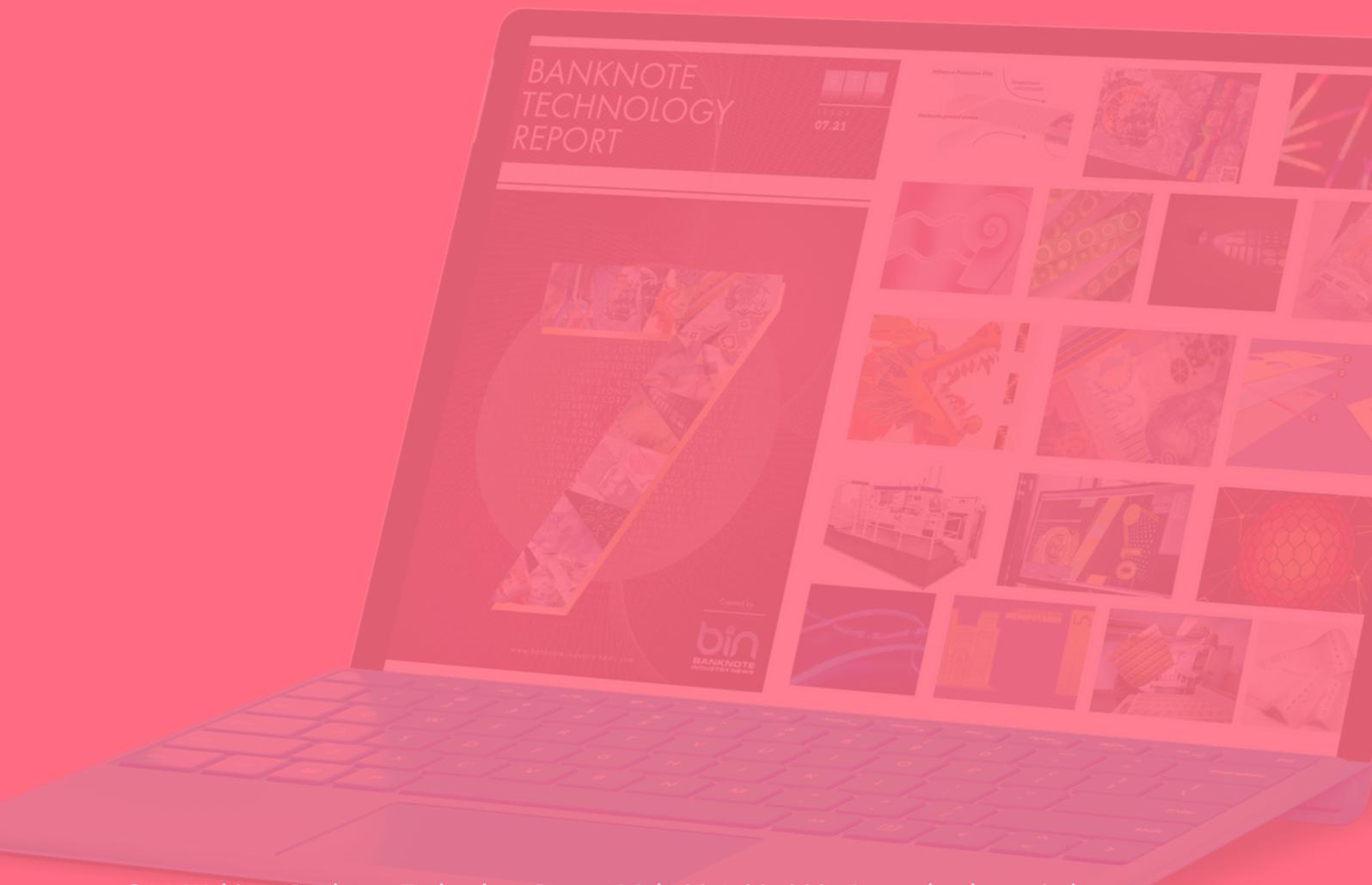
KOENIG & BAUER BANKNOTE SOLUTIONS

'When design becomes engineering'

There were no unanswered questions during the webinar

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KOMORI (1/2)

'Banknoteology: The Harmony or 'Wa' of Manufacturing Processes'

Q You mentioned that many more customers are moving to Komori but what have you doing differently?

A We've had to look at what we offer as a 'package' this means not only the equipment but the installation, service and support packages that we offer to our customers. Installations for example, we aim to ensure vertical start up which basically means we strive to meet the milestones agreed with the customer. We have had to concentrate on providing a superb support network for our customers, improve response times and improve availability and fast supply of affordable spare parts. Quality of design and manufacture is important however how we support the equipment in the field is just as critical. We also strive to ensure the transition from moving from another manufacturer to Komori is as smooth as possible by providing comprehensive training plans for operators and maintenance personnel.

Q You mentioned providing solutions and 'best of breeds'. Can you explain this concept?

A We work with major industry suppliers to ensure the best package is offered to our customers. For example we work with Jura to provide the most comprehensive pre-press solution. I mentioned Gietz during the presentation. We believe they offer the most versatile in hologram and foil application machines. WTG provide the most cost effective and efficient Intaglio waste treatment systems which we have installed in some of our customers. So we offer the best solutions available to our customers so they benefit from having the best technology out there and we are always looking to expand our portfolio.

KOMORI (2/2)

'Banknoteology: The Harmony or 'Wa' of Manufacturing Processes'

Q Komori dare to be different, how?

A We embrace and utilise the technologies available from other facets of the business. For example commercial packaging presses require more substantial feeders to cope with the substrates used which, like banknote paper can be unstable, wavy with peaks and troughs. Therefore the upgraded feeders with additional controls used in packaging can be used in banknote printing. We are designing bespoke equipment for our customers, such as the NV press and also working closely with them to produce equipment for the future. How about and Offset / Intaglio combination press or Offset / Screen press? Combining processes that could streamline the banknote manufacturing process]

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