

QUESTIONS & ANSWERS

BTR8-Webinar July 5 & 6, 2022



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

OVERVIEW

- **Canadian Bank Note Company >**
- **CCL Secure >**
- **Crane Currency >**
- **De La Rue >**
- **Hueck Folien >**
- **Hunkeler Systeme >**
- **Koenig & Bauer Banknote Solutions >**
- **Komori >**
- **Landqart >**
- **Leonhard KURZ Stiftung >**
- **Meta Material >**
- **Note Printing Australia >**
- **Oberthur Fiduciaire >**
- **Portals >**
- **PWPW >**
- **SICPA >**





CANADIAN BANK NOTE COMPANY, LIMITED

"Challenging Convention: The Bahamas CRISP Evolution \$50 and \$100"

Q: What was the experience like printing on Durasafe®?

A: At CBN, we're used to printing on different substrates across our product range for Currency, Excise, and ID. Printing on Durasafe® required only minor adjustments on press, just as when we print on paper, polymer, or polycarbonate. It worked really well in the production environment and we're so pleased with the final result.

Q: Were any special adaptations required to apply MOTION® SURFACE?

A: Yes, there were. While MOTION® SURFACE is applied using the OptiNota-H application machine, and so uses a very familiar process, the construction of the optical stripe is different than holographic foils or patches. It uses an adhesive that requires UV light to promote strong adhesion. We therefore made an adaptation to integrate this capability onto the OptiNota with the end result being strong and durable adhesion of the MOTION® SURFACE optical stripe to the Durasafe® surface.

Q: The \$50 was launched nearly 3 years ago. What has the circulation experience been like, especially with thread durability?

A: After the note was launched in October 2019, the Central Bank of The Bahamas was delighted with the public response, receiving positive and enthusiastic feedback on the banknote design. That was very encouraging though we also wanted to know how the durability would be over time. Compared to the paper note it replaced, the new \$50 on Durasafe® has exceeded expectations and is lasting approximately 3 times longer in circulation. Overall note fitness remains very good and, of course, the fully integrated RAPID® thread remains fully functional and well protected



CCL SECURE

"SPARTAN: The engineering behind a new banknote "

Q: What security features are available for Spartan?

A: When developing Spartan we reviewed a wide range of banknote across the world that sit at the coin/note boundary and found that they tend to contain a core range of public and machine readable security features. Typically the notes we looked at did not face a counterfeit threat so did not have complex or expensive security features. Taking this as a reference we developed an initial range of security features for Spartan including colour changing inks, metallic inks, iridescence, fluorescence, magnetics and IR readability. With this range of features we are able to match many of the existing banknotes at the coin/note boundary. If you have banknote that does face a counterfeit threat then we would recommend a traditional banknote printed on Guardian polymer substrate.

Q: How is Spartan different to Guardian, are you now offering to print finished banknotes on Guardian?

A: Guardian is a substrate that is supplied to state and commercial printers who apply offset, intaglio, letterpress and varnish to produce a finished banknote. Spartan is a fully finished banknote produced via a unique single pass production process entirely within CCL Secure. The single pass production route is highly efficient and cost effective and uses a polymer film and inks designed to lock and key together to give enhanced durability. Spartan is ideally suited for banknotes and the coin/note boundary that face harsh conditions and circulate for long periods of time.

CCL Secure does not print finished banknotes on Guardian substrate. CCL Secure continues to work closely with state and commercial printers globally supplying Guardian polymer substrate and supporting them to print on Guardian.

Q: Has SPARTAN already been issued with a Central Bank customer?

A: Currently there are no circulating banknotes on Spartan. We are actively working with a number of central banks who are interested in issuing low denomination banknotes on Spartan. We are optimistic that the first Spartan banknotes will be issued in circulation in the 12 months



CRANE

"Modern Banknote Security Software – Meet the 3D Animation Developers Creating Next Generation Banknotes"

Q: What is the minimum width of this security thread to keep it in the „safe zone“?

A: RAPID® security thread has a minimum width of 3 mm. Crane Currency's BREEZE™ security thread is available in both 2 mm and 3 mm widths.

Q: Any news on a MOTION Patch?

A: STAY TUNED!

Q: Can MOTION have more than one colour?

A: MOTION® security thread is a monochromatic micro-optic security thread with exceptional color stability that is to verify in nearly every lighting condition!

Q: Is there a difference in the micro-optic technology used for currency and authentication for example labels?

A: Yes, the line of micro-optic features supplied to the product authentication market differ in a number of aspects from those used with banknotes to meet the unique requirements of the secure packaging and product licensing markets.

Q: Are there any colors that are stronger or more preferred?

A: Crane Currency supplies to interested central banks, banknote designers and issuing authorities a catalog of over forty bright and high contrast colors. Crane is also experienced in feature color customization.



CRANE

"Modern Banknote Security Software – Meet the 3D Animation Developers Creating Next Generation Banknotes"

[Q: Is this security thread machine readable / detectable?](#)

A: Yes, RAPID HD Detect and MOTION Detect security threads use a secure IR material ("Detect") that allows for their detection and verification in most types of banknote processing equipment from point of sale validators and acceptors to high-speed banknote sorters used by central banks.

[Q: They are only windowed threads? Only with Crane banknote paper or can your security threads also being used with banknote paper from other substrate manufacturers?](#)

A: RAPID and MOTION security threads are designed for windowing in banknote paper. All leading banknote paper mills have experience in using Crane's micro-optic security threads which have seen use in approximately fifty countries and in over 150 denominations of banknotes globally.

[Q: What software does the team use to design micro-optics?](#)

A: Crane Currency has developed proprietary software for the design and rendering of its micro-optics security threads and stripes. More can be read about this software suite and how banknote designers use it in the Banknote Technology Report No. 8. See also www.cranecurrency.com

[Q: How many designers are involved with micro-optic design?](#)

A: Crane Currency always uses an approach of combining expertise in traditional banknote design with micro-optic design to customize its micro-optic features and integrate these into the overall design of the banknote. This approach is used both for new banknotes and series of banknotes as well as for upgrading banknotes. The size of these teams will vary depending on the size and needs of the program.



DE LA RUE

"The Truth About Intuitive Security"

Q: How does ASSURE compare to other covert features in the market?

A: SAFEGUARD® Assure is designed to be detected in a similar manner to covert level 3 features we know today in paper, via the cash sorting at central banks. What is specific or different for this product is that it is designed specifically for polymer and therefore is completely embedded in the substrate itself, not applied or printed to the surface. Giving the maximum protection during the complete lifecycle of the banknote

Q: The different substrate suppliers all seem to make different claims about lifetime improvements when moving to a more durable substrate – how do you explain the different claims out there?

A: I think this is more a question of data validation. It is very easy pick certain data or studies to support a claim. What needs to be understood is how the data behind the claim is sourced, is it a fair comparison? Does it take into consideration the other factors effecting the data? For example the new note effect, where the note first enters circulation and disrupts the data. Therefore has it been recorded over a sufficient period of time, sometimes this data needs years to settle and be truly accurate.

As mentioned in the presentation a real benefit of polymer is that the data is representative of a larger mix of regions, conditions and denominations over a sufficient period of time

Q: Do you have an average replacement rate for polymer notes in UK?

A: If central banks want to subscribe to the free DLR Analytics service and contribute some simple data (that they often already have in the public domain) they will be able to access more granular splits and understand replacement rates and other metrics



DE LA RUE

"The Truth About Intuitive Security"

Q: What does your data show about alternative substrates to paper or polymer?

A: The reality is that these alternative substrates have been circulating for less time on fewer banknotes so our data for this is not statistically robust and could give an unfair representation so we choose not to use it. It would be very easy to use snapshots or lesser data to talk down on competitor products but we choose not to.

Q: Have you produced any more carbon neutral notes since the 2019 for Samoa?

A: There has not been a carbon neutral banknote release since Samoa. However the significant milestone in this was introduction of our environmental analysis tool and software which enables us to support Central Banks in understanding the impact of their banknote and specification decisions. Although there has not been another carbon neutral banknote to date there have been many assessments and decisions made using the software.

Q: What is the rate of counterfeited polymer banknote according to the De La Rue statistics?

A: The counterfeit rates for banknotes are specific to the country, therefore do not hold a blanket statistic for polymer banknotes. However what can be stated is that generally when polymer has been introduced in a country the counterfeit rate has significantly dropped, but importantly has then remained low (lower than previous paper rates).

As an example Canada were recording counterfeit rates on average from 1005-2011 at 120ppm per year, which 2004 had peaked as high as 470ppm. However following the introduction of polymer 2012-2022 have seen 17ppm on average per year



DE LA RUE

"The Truth About Intuitive Security"

Q: Having longer life on polymer notes, are we not giving more time to counterfeiters to counterfeit currencies?

A: Strictly speaking the amount of time a counterfeiter has depends on the length of time the banknote series is in circulation (e.g. how often between new designs). Whether the notes are being replaced more or less during the lifetime of that banknote series is not really linked to this and becomes irrelevant to counterfeiters.

With any banknote there is a balance that will always remain between a variety of needs such as security, functionality, durability, aesthetics, environmental impact and cost. This is the challenge for all banknote, substrate and security feature providers to be able to offer solutions that can fulfill this balance and continually meet the needs of the issuing authority and the environment it will circulate in. As the only polymer, security feature, design and banknote print provider in the industry De La Rue are well positioned to use our tools, processes and vast experience to support those needs and offer those solutions.

Q: Your data on slide 7 about the polymer banknote life circle – banknote life is also a function of the circulation environment and denomination value. Do you have subsets of durability statistics that defines note life by circulation conditions (e.g., low denomination notes in an informal trade environment as experienced in many African countries)?

A: The DLR Analytics™ database has the ability to access more granular splits of the data sets. If central banks want to subscribe to the free DLR Analytics service and contribute some simple data (that they often already have in the public domain) they will be able to access these data sets



HUECK FOLIEN

"Strategic partner for highest security since 35 years"

Q: The Trilumic feature looks very beautiful, but what is really the new aspect of it compared to common UV printing on banknotes

A: Common UV printing on banknote threads is either full surface, colored blocks (2-4) or rainbow printing. All this is 100% print grid in each color. With TRILUMIC completely novel designs in UV printing are possible, such as concrete motives, forms and overlapping areas. Unique with TRILUMIC is that it is also possible to have positive or negative UV text inside a colored area.

Please contact J.Hofmann@hueck-folien.at to get some samples.

Q: Your new "Austrian Alps" foil stripe shows many moving effects - Can I have these effects also for threads

A: In principle yes, it would be then a metallized "moving thread", but some effects need enough space, so we speak about thread widths of larger than 4 or 5 mm and not all effects would work on a thread.

We would be happy to discuss this with you personally, to make a design proposal if you are looking for a specific effect.

Q: Some Central Banks see UV features today as not very secure, Why do you say TRILUMIC is so secure against counterfeiting?

A: The goal of the development together with Banque de France was to make TRILUMIC more resistant against counterfeiting.

To create TRILUMIC design a special software is used, the motive is separated into 3 colors with different grading.

The dot sizes are very small and work only on PET film not on a paper substrate.



HUECK FOLIEN

"Strategic partner for highest security since 35 years"

Q: Are your security threads heat and chemical resistant during the papermaking process?

A: A very clear Yes! – Of course all our security threads and foils are resistant to heat and chemical influences. Our customers receive a full thread specification with all PCR tests for each thread and most of our threads fulfill the EURO specifications.

Q: Is Trilumic available as a patch? is it also available for polymer substrates?

A: If you think of classical hot stamping patches, we do not offer these, therefore we do not offer a classical patch with TRILUMIC.

But... please contact us, we can offer you a so called "long-patch" which would be a foil stripe with large demetalization, then also with the possibility of TRILUMIC.

TRILUMIC can also be applied on polymer substrate, too. The technology behind TRILUMIC is independent of the substrate.

Q: Does post print varnish effect on your foils?

A: Post print varnish is no problem on our foils – even better, as we use a UV casted foil process, the durability of our foil stripes is much more brilliant than others.



HUNKELER SYSTEME

"THREE TYPES OF DESTRUCTION – Fit for Recycling "

Q: How many systems with mixed substrate function have been installed by Hunkeler?

A: In the recent years we have installed approx. 20 systems for mixed substrate in sequence production and 2 systems have been installed for mixed substrate in parallel production. In addition, the same separation technology is applied in other industry segments as well whereas we have numerous additional installations.

Q: If we have an existing system from Hunkeler that was designed for single substrate, what modifications are required to enable mixed substrate destruction?

In most of the cases, the existing filter/silo is equipped with two outlets. In single substrate systems, normally one of these outlets is not in use or for backup purposes only.

Modification of the second outlet, along with some modifications on the control to adopt the new processes (e.g. material selection, automatic cleaning cycle etc.) will allow us to upgrade existing systems with mixed substrate in sequence production capability.

Q: More and more Central Banks switching to a mixed substrate strategy. In case of adaptation of the respective destruction equipment. Can this be adapted within a short time? What is the lead time?

A: Since there is a large number of different system configurations on the market, a generally valid answer is not possible. For the systems we supply, in most cases only minor modifications are required to upgrade existing systems with the ability to produce mixed substrates in sequence. Other systems require major adjustments. Because polymers have special material characteristics that tend to static charge and melt when heated, special precautions may be required in existing installations. In this case, the lead time will be similar with a new installation.

HUNKELER SYSTEME

"THREE TYPES OF DESTRUCTION – Fit for Recycling "

Q: Shreds fit for recycling are only one part in a sustainable solution. What other contributions to a sustainable system can Hunkeler offer?

A: Sustainability is deeply implemented in the Hunkeler Systeme mindset. Therefore we have developed the Greenline Concept. The Greenline Concept is based on four pillars:

Concept and architecture of a suction system

The duct diameter of a suction system is always adjusted for the required air volume flow. Thus, for the required suction performance, a comparatively low air volume is necessary. The relation between energy consumed and suction obtained is optimized.

Automatic switch-off assistant ASA

Basically, a suction system consumes energy at the same level, whether it is transporting material or not. For this reason, Hunkeler Systeme AG developed the automatic switch-off assistant ASA. The ASA has the effect that a suction system is only in operation when suction is required.

Energy saving system ESS

The energy saving system ESS regulates the energy consumption of suction technology according to need. The fan will only transport air according to the requirements of production. Compared to the operation without the ESS the consumption of electrical energy is lowered by as much as 40 per cent.

Recovery of waste heat from a suction and compacting system

A suction system brings with it a valuable resource: thermal energy. The warmed air allows you to heat the production rooms at low cost. In the cooler months of the year, a production plant can largely do without other energy sources.



KOENIG & BAUER BANKNOTE SOLUTIONS

"Bridging the physical and digital worlds"

Q: Did you test ValiCash with real/very good counterfeit?

A: Yes, of course. ValiCash was tested according to Central Bank standards with official counterfeit test decks. This includes very high resolutions replications from original design files and blind embossing afterwards

Q: Are the applications working offline?

A: Yes, ValiCash works purely offline. The "flight mode" can be on, and it will still work.

Q: How does data collection work as no user profile is necessary?

A: Datacollection works on a purely anonymized basis. Data like, phone model, operating system version, location, number of notes authenticated, authentication result, etc. can be collected. None of those data can be linked to a user, as simply no user data is available.

Q: Smartphone app Is also working on worn banknotes?

A: ValiCash works on worn banknotes, even on heavily worn notes. Again this was validated according to central bank standards..

Q: About ValiCash: What if the counterfeited banknotes have Intaglio on it?

A: If a banknotes contains real intaglio other features like OVI or even holograms can be considered to authenticate the note. However if we refer to real intaglio, it must be intaglio printed on a intaglio press like our SOI. Replications like high resolution reproduction with blind embossing will not be detected as authentic.



KOENIG & BAUER BANKNOTE SOLUTIONS

"Bridging the physical and digital worlds"

Q: How do you keep the digital content secure using Smill?

A: The content is protected by the authenticity of the genuine note. Furthermore ValiCash and Smill can be combined to allow access (and writing) only, if the banknote was authenticated at the same time.

Q: The created content is attached to one specific note? Through serial number?

A: Yes, it is attached to one specific note via the serial number. However if, e.g. a central bank wants to use this app to promote a new series or spread sustainability messages for instance, this can be done via the "public layer" of Smill randomly.

Q: If I send a message on a note to my daughter, then she spends it and someone else then scans that note, they will see my personal message, is that correct?

A: No, that's not correct. If you use Smill for personal messages, you select the personal layer before writing something on a note. This message can only be read out by the next person reading out your message (your daughter). Furthermore the storage time can be adjusted, meaning the content will be deleted after a preset period of time.

Q: Is it working only with Banknotes printed on Koenig & Bauer equipment?

A: It works with all Banknotes, if they are produced according to central banks quality control criterias in the qualified printworks.



KOMORI

"Breakthrough concepts driven by KAIZEN IMPROVEMENTS"

Q: What sizes of the cutter can be used?

A: There are several sizes however during our testing and recent demonstrations, we found that 3mm, 4, and 5mm diameters were the most efficient.

Q: With regards to Kaizen activities, are there any modifications or improvements planned for the machine?

A: We have had much feedback from our customers suggesting improvements. We are looking at more advanced extraction of the waste rubber and also being able to load pre-press data directly to the machine to minimise programming of the cutter and patterns.

Q: How many different types of roller cuts can be stored in the memory on the machine?

A: Approx. 2,000 folders can be formed which can accommodate the cutting data for particular banknote jobs



LEONHARD KURZ STIFTUNG

"KINEGRAM DYNAMIC® New Dynamics for
Safer Banknotes "

Q: What about robustness, typical banknote tests?

A: KINEGRAM DYNAMIC® has passed the typical industry tests for banknote durability in circulation.

Q: Are there limitations in colours?

A: We do not offer exact colour matching, but in principle any colours, mixed colours or colour combinations are possible with KINEGRAM DYNAMIC®.

Q: What is preferable: Patch or stripe?

A: This is entirely a matter for the customer. Both formats have their advantages in terms of design and application possibilities.

Q: Are you expecting that this type of feature movement to be machine readable by a print works single note inspection machine or circulated note processing systems?

A: Machine readability is possible subject to technical discussion.



LANDQART

"A different perspective"

Q: How large can windows be on Durasafe?

A: We have made fully see-through windows as large as 55mm x 35mm, and half windows can be made to similar sizes – the ones on the Hydro house note we made with Crane to showcase their Breeze thread are close to 70mm long. However, rather than size, we feel the important thing is that the design be creative and integrate well with the overall design of the note.

Q: Durasafe has polymer inside, paper from outside. Isn't it counterintuitive? I would expect polymer from outside as a protective layer for a long life of a banknote.?

A: Durasafe was not created to be an anti-soiling solution. Its purpose was to enable the incorporation of see-through windows into a note that maintained the tactility and printability of paper, along with the capability of using security threads and watermarks. The polymer core provides vastly increased mechanical strength to the note, so the increased note-life we have found is a happy by-product. In some cases we have seen note-life increase by some three times compared to the traditional cotton version

Q: May I ask whether paper-polymer-paper composite has any significant advantage compared to full polymer banknote?

A: We find that the public and professional cash handlers appreciate things like watermarks and security threads, which are used to great effect in Durasafe, but are incompatible with full polymer notes. The tactility of Durasafe banknotes, both from the material itself and from the intaglio printing, is also something that can be immediately sensed by most people; it has the same familiarity as traditional cotton banknotes. The benefit of the public (the first line of defence against counterfeits being passed) being able to quickly tell whether a note needs further inspection is invaluable.

The cotton surface has further advantages in that it greatly increases the resistance to internal tears, so it's more resistant to repeated folding and holes made from staplers. It also provides the necessary strength for used notes to be processed on high speed banknote sorting equipment with little or no deterioration of performance when compared to traditional cotton; there is also less adaptation needed to move from cotton to Durasafe than to polymer.



META MATERIAL

"Investing in Innovation – Bringing
KolourOptik® Technology to Market"

Q: How many plasmonic colours will be offered at first and how many do you think you can make eventually?

A: 9 colour palette covering cyan, magenta and yellow colour space. We can originate over 200 unique plasmonic colours, however manufacturing has not been tested for all of these yet.

Q: Where in the industrialization process are you currently?

A: We are currently scaling manufacturing to high volumes, developing QC and Durability testing for our stripes. We hope to run large scale print trials this Fall.

Q: Is this compatible with polymer notes?

A: The current KOS stripe formulation for paper banknotes. However, the technology is very compatible with polymer notes, and polymer notes may take advantage of plasmonic transmission and colours on both sides of the stripe! KOS has a very thin profile and can be directly applied to the polymer notes like a standard holographic foil.

Q: How does durability on crumpling compare with other optical effects such as holograms and lens type of features?

A: Durability testing of our foil is on par with the best-in-class foils offered today. Regarding crumpling, compared to holographic/diffractive features, KOS performs very well, clearly retaining its 3D colour effects; compared to lens type features, KOS has the advantage offering very thin and we do not observe any delimitation from the paper like we see in some micro-lens features due to their thickness.



META MATERIAL

"Investing in Innovation – Bringing
KolourOptik® Technology to Market"

Q: Is this Nanotech compatible with both polymer and paper substrates?

A: Yes, however the current foil formulation has been developed for paper, and will launch on paper first.

Q: Great technology Clint - could the KolorOptic feature be used as a patch or a window feature?

A: We are working on a patch version. It can work very well as a window feature - either on a polymer or hybrid / die-cut note or as a windowed thread.

Q: Hi Clint. Thanks for this presentation. This seems to be an open structure. How does varnish and soiling affect it?

A: It is not an open structure. The structure is completely embedded into a UV resin. Varnishing and soiling is not an issue.

Q: Do you have a limitation in graphics or images on stripe cause your samples are showing simple vector lines only?

A: No specific limitations. We can make complex imagery such as portraits, landscape scenes etc.

Q: Does this technology work on polymer and can be applied to a window? Is it a two sided feature that can be seen on both sides in a window?

A: Yes, yes, and yes - see above answers.



META MATERIAL

"Investing in Innovation – Bringing
KolourOptik® Technology to Market"

Q: Can you overprint with litho and intaglio?

A: Yes, it should be.

Q: How does the technology behave during the intaglio print?

A: We will be running print trials later this year. However we expect it will survive well.

Q: How does it perform to Acetone test?

A: Very well, our stripe formulations are best in class

Q: Can KolorOptic be used as a patch?

A: We are launching as a stripe first. We are developing a patch option.

Q: How about plastic card?...and its Lamination process?

A: Lamination into PC cards may work. The UV resin that the structures are cast into is very robust. However, we have not tested this, it would be interesting to try!

Q: Are there any IR or magnetic effect on this product?

A: KOS is compatible with magnetic and IR inks if desired.

Q: Are there any IR or magnetic effect on this product?

A: KOS is compatible with magnetic and IR inks if desired.

Q: Is this Nanotech compatible with both polymer and paper substrates?

A: Yes - see above answers.



NOTE PRINTING AUSTRALIA

"Mitigating risk in the transition from paper to polymer banknote printing"

Q: If I was a State Print Works thinking about printing on polymer, would all these issues emerge if I tried to start printing on polymer without assistance?

A: Inevitably, for any new process there is always a learning curve. In manufacturing, that learning curve can be an expensive one if the print works is learning by doing. Indeed, many of the issues mentioned, and many more, would certainly surface in the polymer banknote printing process for an uninitiated print works. Given NPA's experience in this area, our goal is to help other SPW's mitigate this risk in making the transition from paper to polymer banknote printing, so that they start production with an acceptable level of spoilage.

Q: You mention this polymer technology transfer program – what should a State Print Works expect from such a partnership? And what's in it for NPA?

A: The polymer technology transfer program is a program of work in which State Printworks (in NPA's case) work together in a range of different ways. This is not just about the provision of banknotes and security printer training during production. There are a wide range of value-adding opportunities stretching from design, pre-production and quality through to finishing, maintenance and trade waste. From NPA's perspective, we have a long track record of working with other state print works to help them mitigate risks around polymer banknote printing and to see them become strong, capable and independent printers of polymer banknotes.



NOTE PRINTING AUSTRALIA

"Mitigating risk in the transition from paper to polymer banknote printing"

Q: Which polymer process yields the highest spoilage? How does NPA manage this?

A: Set off (the type which occurs during curing after the intaglio process) is a major focal point. We are managing this by looking at ink formulations, plate engraving depths, sheet stacking numbers, and manual handling techniques.

Q: May I ask whether transition from paper to polymer banknote has any advantage in term of production cost? Do polymer banknotes have lower production cost compared to paper ones?

A: On a one-to-one basis, polymer banknotes cost more than paper banknotes to produce, however due to polymer banknotes lasting 3 to 5 times longer than paper banknotes on average, central banks save significant amounts of money in production costs over time because less banknotes have to be produced. The cost savings are quite significant, and for economies with a large number of circulating banknotes this cost saving over a 10-year period can extend into the hundreds of millions of dollars.

Q: What is the difference between embossing with the third printing unit of the numbering machine (before varnishing) compared to using a special embossing machine after varnishing from your point of view?

A: The dedicated NotaEmboss machine delivers much greater throughput than can be achieved through the Numerota. As such, developing this purpose-built machine prevented the Numerota from becoming a bottleneck in NPA's production process by mitigating failure modes at this stage of the process. Where it is used on a denomination, the NotaEmboss is always the final Print Hall process.



NOTE PRINTING AUSTRALIA

"Mitigating risk in the transition from paper to polymer banknote printing"

Q: Is animal fat being used in the polymer banknotes or for printing on polymer notes?

A: Let me answer your question this way - it is wrong to say there is animal fat in polymer. This creates the impression that there are animal cells in the material which there is not. What is being referred to here is the stearate molecule that is derived from animal fat as a by-product of the meat industry. The stearate molecule gives polymer its flexibility. This molecule can also be derived from palm oil – a study revealed that it is more sustainable to use the stearate molecule as a by-product from the meat industry rather than growing a dedicated Palm Oil plantation for this purpose. This study was conducted in 2017 to inform decision-making on the matter at the Bank of England.



OBERTHUR FIDUCIAIRE

"RELIEF™ : 3D solutions for the future"

Q: Is Relief™ an environmentally-friendly feature?

A: Oberthur Fiduciaire is continuously working to reduce its environmental footprint.

Relief™ thread is a good example of this state of mind for several reasons:

- Relief™ is a printed feature so that no demetallisation is involved.
- Relief™ is produced at Chantepie, where 100% of the energy is sustainable; 80% of the waste is recycled and the mill is disposing of all the VOC generated by the manufacturing process.
- In the near future, Relief™ will be produced using a recycled PET film as a carrier.

Q: Are there limitations in the design choice?

A: One of the key-benefit of Relief™ thread is the wide choice of designs available for the client. It starts with the Colorshift colours and the widths. Then, a lot of different patterns can be implemented in Relief™ feature. Among them, there are animals, plants, geometric patterns, denominations, characters,...

The main limitation is coming from the width of the thread because of a possible limited display area.

Despite this limited area, with the help of OF design team and through Relief™ design platform, it is possible to create a great Relief™ thread that will be easy to integrate in the banknote design.

Q: What about Relief™ on Polymer substrates?

A: At the moment, Relief™ technology is dedicated to security threads for Paper.

R&D is working hard to complete the development of a Relief™ foil application that will be



OBERTHUR FIDUCIAIRE

"RELIEF™ : 3D solutions for the future"

Q: Can you combine RELIEF™ with Level 2 or Level 3 security feature? Magnetism – Conductivity?

A: Relief™ thread is a Level 1 feature easy to recognize. Within the structure of the thread, some magnetism and/or conductivity can be implemented. It brings machine readability to this thread.

Q: Can it be over-varnished?

A: Yes, the technology implemented in Relief™ thread is compatible with varnishing.

Q: What is the ideal width of the RELIEF™ security thread ?

A: The industrialisation process of Relief™ thread was the opportunity to validate different widths and designs.

Relief™ thread is thus available from 3mm width where the visual aspect is already eye-catching and easy to authenticate.

Of course, a wider thread is an opportunity to display a more complex design and will take full advantage of the 3D effect and dynamic effect of Relief™.

As a consequence, 5mm and 6mm Relief™ threads appear to be the most impressive visually.



PORTALS

"Security can be agile"

Q: Congratulations on the launch of Motus. Have you had much interest from Central Banks following your launch in Barcelona?

A: We've had a great response to Motus since the launch in Barcelona and have several projects under way – including some at a more advanced stage in the procurement process. If you would like to discuss how we can work with you, arrange a webinar or start a project then please do get in touch with us.

Q: How many colour are available with Motus, and what widths can you do?

A: From launch the product is available in four (4) colours - Moss Green, Atlantic Blue, Bordeaux Red and Deep Purple. Shade variation from those four are also possible and we are working on further colours that meet our standards considering the need for high contrast to produce a successful feature and they'll be released in due course. In terms of widths – Motus is available from 3mm to 6mm. As you can imagine – the 5mm and 6mm threads offer a greater canvass for our designers to work on so the effects of Motus are most powerful in the wider widths.

Q: You mentioned that the thread could have moving and switching elements - are you able to do this all on one thread ie can I combine effects?

A: Yes – we recommend this approach to our customers during the design process – the three (3) general design rules – a moving background, a moving foreground and switching foreground within the thread gives greater visual impact and increases complexity – it's this combination of effects within the thread design that make it instantly recognisable and much harder for counterfeiters to replicate. The switching effect is not mandatory - so moving background effects like rolling bars can be designed with counter intuitive moving foregrounds that still creates an effective feature



PORTALS

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Q: Will Motus be available as a stripe?

A: Before asking about the availability of a stripe, we'd strongly recommend seeing the already available 6mm thread. We're confident it provides significant drama to a banknote and as mentioned previously – the complexity of three different effects in one co-ordinated thread design increases the security significantly. What we want to do is provide suitable products considering the voice and actions of the customer so customer feedback will always drive our behavior. We'd welcome your thoughts on what you need for your future series so that this can form part of our strategy.

Q: Can you guarantee a certain thread durability (lifetime)?...at normal condition it can be 5 years?

A: Customer insight has told us that when they've previously chosen a switching thread – durability has been an issue so we made this a key metric in the design of Motus. The overcoating on Motus met the standards we were looking for and we're confident it provides strong durability.

Q: What is the difference to Motus and Rapid?

A: Motus is a durable micro-optic thread that includes the capability to add a switching effect – the clear movement of the thread and it's switching effect that makes the difference.

Q: Micro-optic security features is a very IP centric area how did Portals 'get around' existing IP from competitors?

A: Having completed extensive Freedom To Operate (FTO) studies, Motus has been designed to sit outside existing IP so we're comfortable with our IP situation. We were clear in our vision for the product in that we wanted to enable customers to have choice. Now micro-optic technology can become the de-facto choice for customers around the world wanting the best security for their banknotes.



PWWP

"POWER OF THE SUBSTRATE – durable and secure"

Q: Is your Fortis Composite like the US\$1 paper with its fibres?

A: Paper used for US currency is solely produced by one company. As officially stated, it's a mixture of cotton and flax fibres. We prepare our pulp out of cotton and synthetic fibres which increases the durability much more than the other solution.

Q: Is it possible to combine Fortis Composite with Fortis Pro and Fortis ABC?

A: Combining Composite and Pro is possible and has been done in the past. Although, as there was no demand, we focused on separate solutions. ABC in its current form was not combined with other substrates.

Q: Does Fortis ABC bring some antifungal or antiviral properties to the paper?

A: This particular solution is dedicated only to antibacterial properties.

Q: Combining physical and digital worlds are quite a hot topics today. Could you please elaborate on your use case with engravable paper?

A: In 2015, we printed a commemorative note for national bank of Poland on our LEAP paper.

That note had an engraved elements including a static image, a number and a datamatrix code. Usually, when we see a 2d code, those are printed in offset, they have to be static, the same on each note. In our case, as it was digitally engraved, we could have made a different code on each note.

What is more, there was created a web application combined with that code. So, when scanning the note, you would interact with the application describing that particular note.



PWPW

"POWER OF THE SUBSTRATE – durable and secure"

Q: Lots of innovations from PWPW, do you have any innovations / solutions for polymer substrates?

A: Most of our graphic and ink based solution can be used for polymer. Latent images like Mirage™ and Compass™, optically shifting inks ChromAngle® or multitone intaglio work very well on such substrate. Our varnish Coat4Note® polymer has also been approved for production.

Q: How do your paper innovations compare to other banknote substrates when it comes to lifetime?

A: We'd rather compare the substrates by objective parameters (double fold, porosity, soiling, etc) rather than by lifetime which may be misleading in some cases. Unfortunately, it misses couple of key factors that contribute to the topic. Even though, synthetic substrates can increase the lifetime by a factor of 2 while their cost of production and what is more important, cost of recycling also increase.

Q: What is your opinion on antimicrobial paper in relation to COVID-19 pandemic?

A: We have to have in mind, that many research have been done showing that banknotes carry less COVID viruses than any other object. Although I understand that citizens may think different thing because that seems reasonable.

On the other hand, we know that notes can carry bacteria which can make you more suitable for other diseases and that is the problem that we are aiming. Also, using such solutions may bring back faith into banknotes which is also an issue.

Q: Is paper the substrate of the future or the past?

A: From one point of view paper is the oldest substrate in the world. Yet, watermark is the most recognized security feature and one of the most secure ones. So, is there a reason why we should change it?

As for the future, it depends how you define it. I'd say that future equals customization and paper can offer that. Also paper prevents from monopolization of the market.

SICPA

"SPARK Flow®: Stepping into uncharted territory"

Q: Does the new generation of SPARK® require a change on the printing press compared to earlier generations?

A: SPARK Flow® comes in three innovations that can be combined together, i.e. PRIME – DIMENSION or CONFLUENCE. Each requires the installation of specific magnetic modules on the Notascreen press. These modules vary in size and complexity depending on the type of effects envisaged.

Q: Is SPARK Flow® just for banknotes?

A: Indeed, for the time being SPARK Flow® is dedicated to banknote application only.

Q: Is this applicable with polymer banknotes?

A: Yes, as with SPARK Origin® and SPARK Live®, SPARK Flow® is versatile on various absorbent and non-absorbent banknote substrates. Industrial tests have been carried out on different substrates including paper-based and polymer ones with excellent results.

Q: Can you turn SPARK Flow® Modules off to print earlier versions of SPARK®?

A: Yes it is possible to print earlier versions of SPARK by removing the SPARK Flow modules from the press; this is a straightforward operation

Q: Will banknote production throughput decrease or increase with the NOTASCREEN upgrade?

A: The printing of any SPARK® generation (including SPARK Flow®) is within the same range of printing speed.



SICPA

"SPARK Flow®: Stepping into uncharted territory"

Q: How can SPARK Flow® be proofed?

A: Several options are possible:

- SICPA offers design & proofing services for customers on demand.
- Customers already equipped with a SPARK® proofing press can upgrade it with components enabling SPARK Flow® effects.
- A proofing press covering all generations of SPARK® can be ordered from SICPA.