

Going Beyond November 2020



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introduction

As we enter a period of lockdown in the UK we are reflecting on a busy month. We were delighted to announce the extension of our contract with the Bank of England. It is a huge testament to the fantastic amount of high-quality work carried out by the team at Debden and others within De La Rue. We are very proud of our partnership here and I wanted to take this opportunity to thank everybody involved.

The conversion of central banks and banknote issuing authorities to polymer banknotes continued with five more banknotes entering circulation this month. The polymer commemorative \$50 from the Reserve Bank of Fiji, celebrating Fiji's 50th anniversary of independence. The £20 from Ulster Bank completed the trio of polymer £20 banknotes in Northern Ireland and reminded us of the importance of culture and music via a stunning scene of



street musicians and appropriately timed ultra-violet Halloween scenes. The \$5, \$10 and \$20 denominations from the Central Bank of Trinidad and Tobago also entered circulation, continuing their transition towards a fully polymer banknote family. These notes featured beautiful GEMINI™ and iridescent imagery, with tactile embossed features to support the visually impaired.

We have started a series of webinars about why so many central banks and banknote issuing authorities are converting to polymer banknotes. A series of webinars will take place on the theme of 'sustainable confidence', starting with 'why' this transition is happening and moving onto 'how' to make the transition. The first webinar took place on 28th October and was a welcome opportunity for many of the De La Rue team to interact with many of you all at the same time and to hear group discussions. It also reminded us how much we have missed the spontaneous discussions, the chance meetings, the interesting questions and the overall sense of occasion we used to have when we travelled more and when conferences took place.

If you joined the webinar we hope that you found it useful and informative. We are interested in your feedback and welcome suggestions about other topics you would like to explore in the future. We look forward to hosting the next one on the 2nd December.

If you'd like any more information about anything in this newsletter or you would like to register for the next webinar please contact us at currency@delarue.com or sign up from the webinar page in the newsletter.

Ruth Euling, Managing Director

Why do central banks convert to polymer?

In the first of our "Sustainable Confidence" series of webinars we asked three issuing authorities to share their experiences of converting to polymer banknotes.

De La Rue launched the "Sustainable Confidence" webinar series in October. The intention was to invite representatives of banknote issuing authorities, state printing works and other stakeholders in the cash industry where they could share their experiences of adopting and working with polymer. We wanted to share these experiences to show how this substrate functions and the benefit it offers.

Over 250 participants and representatives from more than 90 central banks participated and saw interviews given by Governor Antoine of the Eastern Caribbean Central Bank; Andrew Bailey of the Bank of England and Susan Kumar from the Reserve Bank of Fiji. De La Rue would like to thank each speaker for giving us their time and sharing their experiences with us.

During the first webinar Governor Antoine described the importance of the environment in making the decision to transition to polymer banknotes and highlighted why this reduced environmental impact meant that they were 'all in' converting their entire series simultaneously. Many of us were also moved as he described the positive impact that their new tactile feature had on visually impaired members of their country.

Andrew Bailey talked about the rigorous process undertaken by the Bank of England in evaluating all options, with the ultimate decision to transition to polymer being heavily impacted by the conclusion that polymer banknotes were more secure. Having a holographic foil in a window of a banknote was highlighted as a key driver of security. He also echoed the common thread of the session about the importance of engaging with the public, representatives of the cash cycle and of public education.

The recently launched Fiji \$50 commemorative note was on prominent display behind Susan Kumar as she talked about the Reserve Bank of Fiji deciding to create their own experience by transitioning to polymer. The Fiji \$5 was launched in 2013 so Susan was able to describe the cost savings from the transition. For many of us listening to Susan the extremely positive public reaction to polymer banknotes and the recent commemorative notw was the stand out take-away memory from her interview.

During the Q&A session the panellists answered questions on polymer disposal, the financial savings, the ease of introducing polymer into the cash cycle and why banknotes are not spreading COVID-19. Several questions also arose about printing on polymer and these will be addressed in our next webinar.

During the webinar De La Rue polled the participants asking them about their intentions regarding polymer, responses can be seen on the opposite page.

Approximately 80% of banknote denominations issued annually are on paper and this was reflected in the poll; 82% of respondents reported that their country did not issue any paper banknotes at all. This ratio looks set to change in the future though, with 68% of registered entities saying they were 'likely' or 'very likely' to move to polymer.

Overall the reasons for moving to polymer reflected the discussions throughout the webinar – for many respondents multiple factors played a role. Durability (and presumably the associated cost savings that come from more durable banknotes) stood out as the dominant factor where respondents picked a single answer. Cleanliness scored at a similar level to security, possibly reflecting the growing importance of a clean note policy during the COVID19 pandemic. Overall the responses to the poll reflected the discussions we have had with banknote issuing authorities over recent months and years.

In 2020, De La Rue announced their intention to invest in their polymer capacity, bringing new and improved polymer security features to market. This investment is driven by customer demand, with SAFEGUARD® being De La Rue's fastest growing product. Since 2013, 83% of all banknote issuing authorities who issued new banknotes on polymer chose SAFEGUARD®.

De La Rue are planning on holding the second webinar of the series "Printing on Polymer" on the 2nd December at 07:00 and 16:00 GMT. Details and links to the registration page can be found in this issue of Going Beyond. We hope you can join us.



"Custodians of currency"

Paul Dunworth, Commercial Director for De La Rue Currency discusses the relationship between De La Rue and the Bank of England and the recent announcement to extend their banknote printing contract.



Hi Paul, for the benefit of our readers who don't know you, would you be able to give us a brief bio? I began my De La Rue career in finance, working as a Management Accountant and Financial Analyst for the Currency division, before moving into the then Sales team as Pricing and Estimating Manager. My time in finance gave me a great grounding and insight into the Currency business. I then became Commercial Operations Manager in the newly formed Currency Commercial team, where we set up the first ever professional bid team in Currency before I moved on to lead the Customer Delivery team.

I took an opportunity to move into Design and had an enjoyable and educational 3 years managing the studio and proofing teams before taking on the wider design department for over a year. I was then fortunate enough to become Account Director for the Bank of England before taking the job as Commercial Director last year. Outside of work I enjoy most sports particularly football and cricket and am in my final year of studying an MBA with the Open University.

De La Rue has had the privilege of printing for the Bank of England since 2003. Since you joined, how have you seen the Bank's requirements evolve? The Bank take their role as custodians of currency extremely seriously and "Confidence in Banknotes" remains the core mantra of our relationship. The Bank set exacting standards for quality, counterfeit resilience, durability and technical competence that we must deliver against.

Perhaps the biggest evolution I have seen is the drive for value for money and sustainability. We work with the Bank to deliver continuous efficiency improvements and reductions in waste throughout our Polymer and Print operations which has the added benefit of reducing our carbon footprint and meeting our mutual carbon reduction targets. The Bank demand the highest sustainability and ethical standards from our SAFEGUARD® product and throughout our end to end operation meaning we work closer than ever with our supply chain partners to drive sustainability improvements and transparency.

De La Rue believes that the relationship between us and the Bank of England is more than just supplying banknotes. How else do we work with the Bank?

We have a 'Joint Charter' with the Bank which strives

towards building the world's best Currency partnership. The Joint charter framework governs and sets mutual objectives for the key elements of our relationship including People and Culture, Innovation, Health, Safety and Security, Sustainability and Quality.

Efficiency and sustainability is a key focus and that starts as early as the Design and product engineering process, where we work closely with the Bank to create designs and products that are efficient for manufacture as well as resilient and aesthetically brilliant.

We also work closely with the Bank to understand the UK cash cycle, communicating regularly on Sterling note demand, information and trends regarding the future of cash and UK consumer payment preferences.

The announcement last week of the banknote printing contract extension was great news. What does this mean for De La Rue, following the implementation of the turnaround plan in 2019? It was fantastic news! It is a testament to everyone across the business who has worked incredibly hard to meet the expectations of the Bank and has performed exceptionally against our contractual obligations, including delivering a factory transformation and Polymer conversion programme. It was a huge milestone for us, giving us the certainty and confidence to deliver on one of the cornerstones of our growth strategy - the development of Debden into a global centre of excellence for Banknote printing, security and sustainability.

What do you think the future holds for the Bank of England and De La Rue?

We no doubt have an exciting future together. We will continue striving to build the world's best currency partnership, including designing and building the factory of the future at Debden, allowing us to meet the cash needs of both the UK and some of our global customer base. We can also work together to continue to innovate, not just in the traditional product development sense but also in more economical, efficient and sustainable ways of working and building a world-class supply chain eco-system.

New banknote releases

Reserve Bank of Fiji

On the 7th October, the Reserve Bank of Fiji launched a commemorative banknote to celebrate Fiji's 50th anniversary of independence from Great Britain. This is the second SAFEGUARD® polymer note for Fiji, following the \$5 released in 2013 (the very first banknote printed on our SAFEGUARD® polymer).

The banknote celebrates Fiji's past capturing the historic first raising of the Fijian flag at Albeit Park, Suva on 10 October 1970 depicting the birth of Fiji as an independent nation; and Fiji's future leaders, the children of Fiji moving joyously together waving their national flag. This brilliantly echoes the Bank's desire to have something transcending their 50 year journey i.e. their past and the future ahead.

The note also includes a tactile feature to assist the visually impaired as well as enhanced GEMINI™ and iridescence around the clear window on the front. There is also an image of the children printed in UV ink on the reverse.



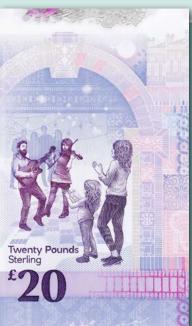
Ulster Bank

Ulster Bank's new £20 entered circulation on the 14th October, completing the transition of the £20 in Northern Ireland following Danske Bank and Bank of Ireland's polymer £20 issues earlier in the year. This follows the launch of polymer £5 and £10 notes launched in 2019.

Like the Bank of England and the three Scottish Commercial Banks, the Northern Irish Banks transitioned to polymer to ensure that their banknotes are cleaner, greener, and more durable.

Terry Robb, Head of Personal Banking in Northern Ireland, added: "We've received really positive feedback on our unique designs. Bank notes continue to be an important part of the way that people interact with us, and we're proud to introduce these bold new designs which celebrate our cities and commitment to enjoying ourselves."

The notes include enhanced security features, including Spark Orbital, GEMINI™ and a tactile emboss feature, enabling physical identification for the visually impaired.



Central Bank of Trinidad & Tobago

New \$5, \$10 and \$20 denominations on SAFEGUARD® polymer substrate entered circulation on the 2nd November.

Dr Alvin Hilaire, Governor and Chairman of the Board of Directors at the Central Bank of Trinidad and Tobago said "These new polymer banknotes represent an upgrade for security and durability, lowering the long term cost of banknote issuance and reducing the Central Bank of Trinidad and Tobago's environmental impact in this area. They will enable those with visual impairments to more confidently use our currency. We are delighted with our new banknote series and thank our partner De La Rue for their invaluable support and expertise during this transition."

The banknotes contain a range of security features including a secure transparent window and shimmering iridescent inks. The notes use Enhanced GEMINI™ for UV protection and MASK™, an effective hide and reveal feature that appears as a printed pattern in the design, which shows the denomination when the note is held up to the light.





Jan Kercher, Design Realisation Manager, Currency



A Dwelling Place

How the design of the new Ulster Bank £20 polymer banknote was brought to life.

esigning a banknote is demanding, highly skilled and hugely satisfying. When a banknote that De La Rue's design department have contributed toward enters circulation, the shared sense of achievement is a great feeling to be a part of.

Ulster Bank set a clear brief for this project: Create a set of designs that celebrated Northern Ireland's peoples, culture and landscape.

The design journey was a collaboration led by Ulster Bank who formed a team consisting of an external design studio, cultural experts from Northern Ireland and De La Rue Design to oversee the technical aspects and 'banknotise' the selected artwork.

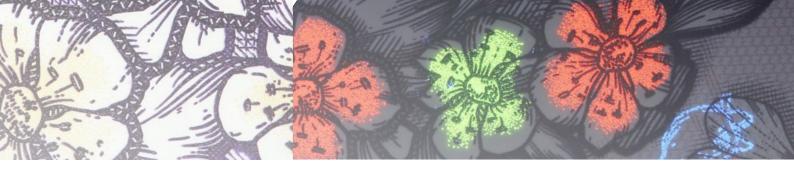
DLR Design use a cross functional approach; the Realisation team are responsible for print, substrate, feature, pattern and graphics, the Integration team for origination, engraving, proofing and Engineering to ensure the design meets manufacturing requirements. Each team works closely with Ulster Bank and the external design agencies to deliver the final design.

The new Ulster banknote series is called 'Living in Nature' with each denomination depicting different aspects of Northern Irish life. The £20 has the title of 'Dwelling Place' and relates to the social side of the Northern Irish people. The front of the note features a hawthorn bush in the intaglio with an emphasis on the blossom, supported by hawthorn leaves and European Eels, which visit the Irish lough's (lochs) as part of their breeding cycle.

The back of the note celebrates the Irish 'Craic'; the love for life, humour and music, supported by more European Eels, and the iconic red brick buildings of Belfast. The clear window features a stylised map of Lough Neagh chosen as one of the four largest loughs in Northern Ireland, with loughs featuring as the clear window shape on other denominations.

Depending on the needs of the banknote issuing authority, DLR Design works independently or forms a strong team with the banknote issuing authority, cultural experts and external designers. In this instance we particpated in various discussions on design concepts to ensure that the transition from artwork to a manufacturable product balanced aesthetics with the functional requirements of a banknote.

Once the 'baton' was passed from the design agency, we deconstructed the artwork in order to rebuild it for our production process. Time was taken to figure out





Design concepts provided by O'Street and Nile. Final designs provided by DLR Design

which elements should be in intaglio, litho, screen, letterpress etc. Using our bespoke software we enabled the creation of a fully layered banknote design.

Specialists in pattern design, polymer substrate design, security feature design, technical design and engraving then overlay their expertise to enhance the security and functionality of the note, whilst ensuring every layer will come together to form a fully finished banknote upon manufacturing. Every banknote design is a highly engineered product.

DLR engravers worked on the Craic scene, the flora on the front of the note and other smaller elements. The eels on both the front and back of the note were produced by a combination of stipple and line work, producing a stylised effect. Consistency of style throughout the series notes and bringing to life the drawings supplied was imperative. The engraving team worked closely with the designer to ensure the feeling of movement and anatomically correct figures. The DLR Technical Design team created many of the individual elements, knitting together the patterns, graphics and

"Consistency of style throughout the notes and bringing to life the drawings supplied was imperative."

engraving to build up to 10,000 dpi origination. This team of experts perform technical checks down to the micron to ensure perfect cohesion between workings and that the banknote's print security features will perform accurately and are visually pleasing.

Throughout the process the Design Engineering Team prepare for the banknote launch ensuring a smooth transition from the design phase into manufacturing. All details are technically reviewed during the design journey, monitoring every aspect for production. They liaise closely with all teams in the department offering feedback and optimisation to ensure a product that is both beautiful and designed for manufacture.

This was a successful project designed with imagination, working in collaboration with external designers and implementing a final product with intelligence; enabling a smooth transition from design agency concept to a finished banknote design.

Commercial Printers, helping State Print Works



Michael Wilson, Country Director, Currency

Exploring the relationship between state manufacturing and commercial printers.

Historically, the printing of most national currency was carried out by an agency of the national government. State banknote manufacturing is responsible for producing around 87 percent of notes globally with commercial printers accounting for the remainder.

While there are several reasons for the dominance of state print works, the most important one is national security. Recent global events have underscored the need for domestic capability to be able to meet increased demand and maintain business continuity. Around 3% of global banknote demand is met by outsourcing by state printers to the commercial sector. This helps ensure adequate supply to meet rising or unexpected levels of demand.

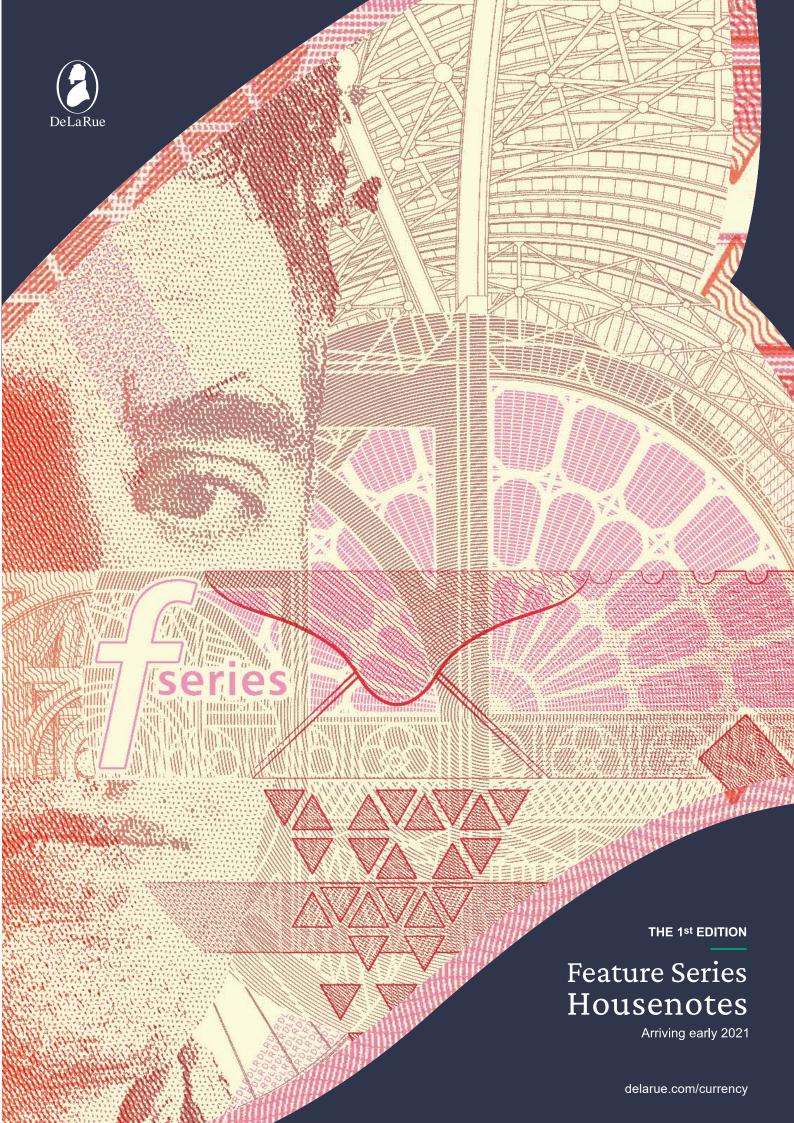
It is more important than ever that state manufacturers have excellent strategic supply relationships with the commercial printers, not only as an outsource partner, but to ensure the supply of upstream components, such as substrate and security features. The supply chain within the banknote industry is highly specific. Consequently, there are limited supply options available. Therefore, it is even more important to be able to work with a broad supply base as each company will have its own unique set of competencies and value to add.

The strategic supply of security features, specialised substrates and inks is fundamental for state manufacturing output. Limited supply options can have serious consequences for meeting demand, so it is important for state printers to maintain a strong network across the industry. Equally important is the need for shared anti-counterfeiting intelligence and technical/ operational knowledge transfer. By its very nature, the commercial printer will have a broader understanding of global counterfeiting trends and, due to the pressures of operating in a competitive market, will be more efficient and cost conscious.

Third party support to the state printer, whether in the form of finished banknote supply or as part of the various supporting functions, can also provide critical support in areas such as business continuity planning and disaster recovery planning.

With the ever-changing scenarios the world is dealing with, the key message is about working together with a trusted supply chain, maintaining options for supply, keeping one step ahead of the counterfeiter and dealing with steady increases or sudden spikes in demand.

De La Rue has unparallel access to world banknote trends, in the areas of forecasting demand with DLR Analytics; operational / supply excellence (OpEx); counterfeiting trends and supply chain strategies. More and more central banks are reaching out to De La Rue and other contractors to work jointly on issues of sustainability, environmental responsibility, operational excellence, risk mitigation, ethics and compliance.



Holographic technology:

classic and contemporary?



Dr Mark Deakes has worked in the cash and authentication industry, specialising in holographics, for over 20 years. Starting at De La Rue's R&D department, then Reconnaissance International as Director of Optical and Authentication Technologies and serving as the General Secretary of the International Hologram Manufacturers Association (IHMA), before re-joining De La Rue this year.



For the benefit of our readers who don't know you, would you be able to give us a brief background to your role at De La Rue?

My new role as Head of Technology Research reporting to Chief Scientist (Dr Brian Holmes) focusses primarily on authentication (holographic, optical and non-optical) and involves a mixture of different aspects including technology scouting, technology / process development (which is different than new product development), strategic partnering, technology strategy, technology evaluation, technology roadmaps and ensuring De La Rue is well placed in both the immediate and long-term to provide innovative and engaging authentication technologies that can build and enhance our product and solution portfolio.

"They [holograms] are visually striking, which means they catch the eye of the user and encourage closer inspection."

"Their effects are easy to understand and intuitive to view, making the hologram a highly suitable security feature for the public to use to authenticate their notes."

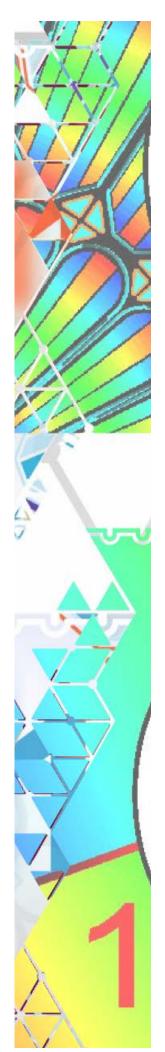
"The complex science required to make a (DOVID) is a significant barrier for counterfeiters and is the reason why many issuing authorities use them."

-Dr Brian Holmes, Chief Scientist

Approximately 30% of banknote denominations issued in the last 3 years have incorporated holographic features. Why do you think this feature has such enduring popularity?

Great question, I think one of the drivers undoubtedly is the growth of polymer as a banknote substrate which provides an ideal surface to show holographic features and effects. However, it is much more than a just a change of substrate.

The 5 vectors of versatility that Dr Brian Holmes identified provides an excellent holistic analysis on why holography has such enduring popularity.



Graphical versatility

Virtually any artwork shape or size can be created in vector or bitmap drawing packages or alternatively rendered as a 3D model or object can be recorded as a holographic image;

Variety of optically variable effects The wide palette of effects at various security levels makes holography uniquely suited to marrying the needs of strong visual or aesthetic appeal with security;

Application and product type Holograms can be incorporated and applied to a wide variety of substrates and in various formats such as: threads, patches, stripes, laminates and labels depending on the final product type;

Reflective and transparent Holograms can be reflective incorporating single or multiple colours e.g. silver and copper but also be transparent so that underlying data or imagery can be viewed, as used in ID.

Cost

The final vector of versatility relates to the low unit costs of holograms (which can be sub 1 US cent) and incorporate various security features at a relatively low cost in high security applications such as currency and other

What is your reaction to assertions that holography is an old-fashioned technology and that security printers should be looking to newer technology platforms? Whilst it is true that holography has been around for a few decades, it has seen steady developments which have enabled it to remain contemporary, relevant and secure. Since the first use of a hologram on a banknote in 1988 as a patch, the holographic industry has continually evolved. From the first instance of demetallisation on a banknote in 1994, to the introduction of portrait window features as seen on the latest Euro series, incorporation of holographics into threads to multi-coloured demetallized stripes on polymer, the list of innovations is long. The adoption of holographic features on banknotes and ID documents has continued to increase over the last ten years and shows no sign of slowing. Perhaps most importantly, holograms remain one of the top features used on banknotes that the public are confident identifying as a security feature.

However, holograms do not exist in isolation and the development of competitive products has also made progress. There are innovations that sometimes compete directly with holograms but also complement the use of holographic features. Ultimately, it is the issuing authority that will determine what they feel is the most appropriate combination of features for their needs. Holographic technology continues to 'punch it's weight' and the development of new innovative features that can be delivered shows no signs of slowing. We have an exciting and innovative roadmap for the future!

Banknote holograms today look very different from ten years ago, how has the technology developed?

Holograms have evolved significantly in the last decade. Today we are seeing an increasing use of high resolution demetallisation features and an increasing use of combinational origination technologies. There is also more integration of the holographic designs within the overall design of the banknote. This higher resolution and design integration aids identification and recognition. The trend of using larger holographic stripe features with windows, (Euro, Bank of England, New Zealand, Canada and Australia) when combined with the increasing use of polymer substrate has led to advancements in adhesives, foils and application equipment technology. The current rise in popularity for large security features with a high visual impact, has seen stripes become more favoured than classic patches. There are still significant developments in patches with the use of colours, vivid imagery and effects and other combinational technology features, making this features brighter, sharper and more secure than ever.

What features of holographics do you consider most relevant for banknote security today? Engaging intuitive features, demetallisation, windows, integrated designs, anything else? I consider all of the above as relevant to banknote security but I lean towards the overt demetallised window features that are now available for polymer, paper and composite substrates. With this feature, it is now possible to include different colours and holographic designs (and technologies) on both sides of the banknote that are easy to recognise and understand. This engages the public, are difficult to simulate or counterfeit, and of course are easy to authenticate. Alongside these overt publicly recognisable features, banknote holograms also need to include both covert and forensic features to

ensure a multi-layered approach to security.

"Exceptionally flat"

De La Rue's new paper security feature enters production



Alan Newman, Currency Product Director

NEXUSTM - How innovation has overcome conventional wisdom

In paper banknotes there is a concern that wide security threads can cause 'ream shape' problems. Such conventional wisdom has been proven wrong via multiple trials and production runs of our new security feature, NEXUS™.

NEXUS™ is the width of an applied stripe but is embedded in the substrate at the paper making stage. It is more of an 'embedded stripe' than a thread because it is visible from the very top of the banknote to the very bottom of the banknote. The width of NEXUS™ far exceeds that of any standard banknote security thread.

Despite its extensive width, NEXUS™ is continuously generating paper substrate with exceptionally flat ream profiles. In fact the ream profiles have been consistently superior to those associated with standard windowed threads. One example is visible in the photo below.

NEXUS[™] is currently in the pre-launch phase and is available for selective demonstrations. It will officially launch in the new housenote series in early 2021.

Please contact <u>currency@delarue.com</u> for more information.

SUSTAINABLE CONFIDENCE

Printing on polymer





Supported by



Wednesday 2 December

07:00 or 15:00 GMT

Email <u>currency@delarue.com</u> to register your interest

De La Rue is pleased to invite you to the second of three webinars exploring the theme of sustainable confidence in polymer. These webinars aim to cover the topics that are most helpful to central banks, banknote issuing authorities and state printing works who are considering a transition to polymer.

Our second webinar, "Printing on Polymer" shares learned best practices and experiences of printing on polymer substrate.

For this webinar we will be joined by Malcolm McDowell, Chief Executive Officer, Note Printing Australia and Peter Viney, Plant Manager, De La Rue Debden who will share their experiences on printing on polymer. The webinar will vary between pre-recorded interviews and panel discussions.

Guest Speakers



Malcolm McDowell **Chief Executive Officer, Note Printing Australia**

Malcolm McDowell is the Chief Executive Officer and responsible for ensuring the NPA delivers sustainable value to its owner, the Reserve Bank of Australia. He joined NPA in March 2009 as Head of Financial Services to build a stronger relationship between the finance and operations functions and develop manufacturing specific reporting systems. He was appointed to the role of Chief Financial Officer in July 2012 with a particular focus on business strategy. Malcolm was then appointed as CEO in February 2015.



Peter Viney Plant Manager, De La Rue Currency

Peter joined joined De la Rue in 2003. He has led Operations at the De La Rue Debden site and was responsible for the installation of two new banknote lines, and the successful launch of the Bank of England's polymer series of banknotes. Peter is now leading Debden to 24/7 operations and continues to develop a world class banknote manufacturing facility and support De La Rue's strategic goals.

