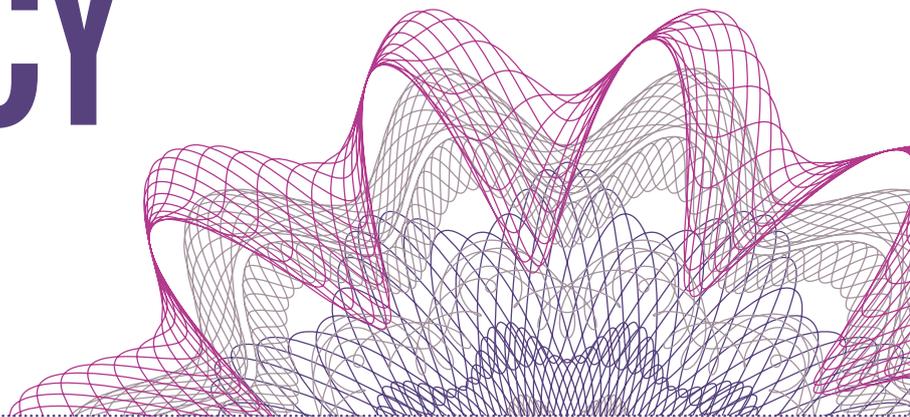


# CURRENCY NEWS™

VOLUME 16 – NO 7 / JULY 2018



## Remembering Madiba with Banknotes



From left to right at the presentation of the new banknotes and coin are Nidileka Mandela (granddaughter of Madiba), Minister of Finance Nhlanhla Nene, SARB Governor Lesetja Kganyago, Deputy Governor Daniel Mmimele and Eldrid Buckley of SARB.

**The South African Reserve Bank (SARB) has launched its first ever commemorative banknote series, in celebration of the centenary of the birth of Nelson Mandela. The notes are in denominations of R10, R20, R50, R100 and R200. As part of the celebrations, the South African Mint has also issued a commemorative R5 circulation coin.**

The new notes and coin were launched at a special ceremony at the historic Freedom Park in Pretoria, hosted by SARB Governor Lesetja Kganyago, and attended by members of the Mandela family, Minister of Finance Nhlanhla Nene and other government officials. Also in attendance were members of the country's cash management industry, representatives from central banks in the Southern African Development Community region, the Nelson Mandela Foundation and other special-interest groups.

Five days later, on 18 July (Mandela's birthday), the notes went into circulation.

The front of the commemorative notes is the same as the existing series, with Nelson Mandela's portrait and watermark, colour shifting thread and a large denomination numeral in either OVI or SPARK depending on the denomination.

On the reverse, however, the images of the iconic 'Big 5' animals have been replaced with different scenes and accompanying themes telling the story of Mandela's life from young boy to president, marking key passages and historic milestones.

The R10, for example features the village where he was born (Birth), and the R20 the home in Soweto where he began both his career and his campaign against apartheid (Life). The background to the R50 is the place where he was taken prisoner (Capture), and the R100 Robben Island, where he was incarcerated for 18 of the 27 years he spent in captivity (Struggle). The highest denomination R200 depicts the Union Building where he was inaugurated as President in 1994 (Destiny).

Continued on page 11 >

## The Answer to the Cost of the Nickel?

**The cost of low denomination coins in the US outstrips their face value, as has been extensively reported in *Currency News*™. A new study has come up with a potential solution that could cut their costs by 40%.**

The nickel (5 cents) is the second lowest value US circulating coin. The US Mint produced 1.37 billion of the coins in 2017, at a cost of 6.6 cents per coin, resulting in a loss for the 12th year in a row.

In response to increasing costs, the Coin Modernization, Oversight and Continuity Act of 2010 tasked the Secretary of the Treasury to submit a biennial report to Congress analysing production costs for each coin, cost trends, and possible new materials and technologies.

Since then, the US Mint has produced three biennial reports, the most recent of which was issued last June and concluded that, after six years of study, none of the options under scrutiny have been adopted and that additional studies and tests are needed.

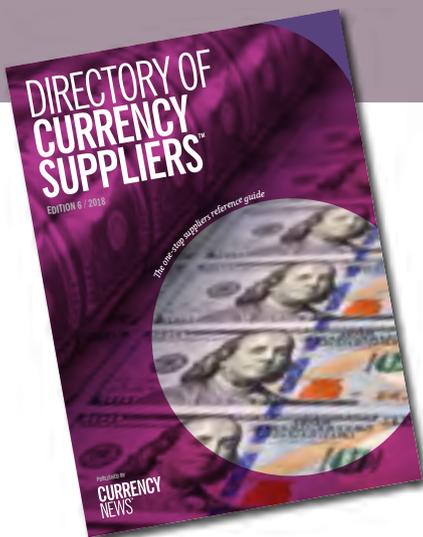
One such study by the National Institute of Standards and Technology (NIST) could provide the answer. Working with the US Mint, it has identified an alternative approach that would reduce the cost of materials for the nickel by as much as 40%.

The NIST Materials Genome Initiative (MGI) was started in 2011 with the goal of decreasing the time it takes a new material to reach market by at least half while keeping costs low. Since then, it has been building the computational and IT tools needed for the development of all kinds of new materials for use in a wide variety of manufacturing applications.

Continued on page 16 >

## Inside this Issue

- 1 Remembering Madiba with Banknotes
- 1 The Answer to the Cost of the Nickel?
- 2 A New Newsletter – How Cash is Used
- 3 People in the News
- 3 Crane and Ukraine Cooperate
- 4 News in Brief
- 5 Improving Cash Logistics Efficiency through GSI Standards
- 6 30 Years On – Reflections on Polymer
- 8 Thought Leader in Cash Processing
- 10 Packing a Punch in Africa
- 10 Value of Embedded Security
- 10 New Inks, Colours, Security for Safeguard
- 11 A Smart Factory Solution for Banknote Printers
- 12 ACF – Something for All
- 12 Sammel Offset Provides New Features in Minimum Space
- 13 HSP Latin America – Where Exotic Met Informative
- 13 5th IBDC Almost Full to Capacity
- 14 Coin of the Month
- 15 Note and Coin News



# A New Newsletter – How Cash is Used

Enclosed with this issue of *Currency News*™ is your complimentary copy of its new sister publication – *Cash & Payment News*™, which will be now be published monthly. It both replaces and greatly expands the scope and timeliness of *Payments News Quarterly*™.

Currency News is now into its 16th year, having been launched in January 2003. During this time, it has become the de facto voice for banknotes and coins, with a global reach and a global readership. So why, you may ask, are we launching an additional publication now? And how will Cash & Payment News differ from Currency News?

Currency News is first and foremost about how currency is **made**, as well as how it is **handled** and **managed**. In this sense, it is industry-orientated – looking at the main players, processes, advances and technologies involved in design and specification, features and substrates, anti-counterfeiting, production and processing, distribution and management in circulation. All the while, analysing how banknotes and coins can be more secure on the one hand, and produced and managed more efficiently on the other.

But feedback from our readers and others in the industry have indicated a clear need for a publication that goes beyond physical currency itself and takes a more strategic ‘helicopter’ view, examining its place in society, and makes the case for cash from this viewpoint.

So, Cash & Payment News, by contrast, will cover how currency is **used** – both in and of itself, and in the context of the broader payments landscape. Cash does not circulate in a vacuum – it has its place alongside a multitude of alternatives, and where it sits among these alternatives – the trends, the strategies, the interface with the public, the facilitators and the disruptors – will all form the core content. So will separating the hype of alternative payments versus the reality.

Following on from both the above, there is also the practical issue of space. One of the key attributes of Currency News is its brevity. There is no shortage of news out there – quite the opposite, in fact. So in addition to in-depth analysis and information that cannot be gleaned merely from the internet, Currency News also serves as an aggregation service that filters the relevant from the irrelevant, the important versus the tangential or trivial, and the real news from the ‘fake’ news.

The sheer volume of news and information relating to cash in the broader payments eco-system could not be accommodated in Currency News without in all likelihood doubling its size, and causing it to lose its focus. Hence the decision to create a sister publication – with each focusing on its area of speciality in the most concise and appropriate way.

So what will go into Cash & Payment News? Its focus will be policy, regulation and legislation, research and trends in cash usage and payment trends, consumer payment habits and the interface between cash and the public.

The technologies and alliances behind cashless alternatives will also be covered – but only in the context of their impact on cash. There are, after all, already many news sources on payments – some would argue too many! Where Cash & Payment News will be unique in that it will observe and analyse developments in payments through the prism of cash and their impact on it – for good or bad.

As with Currency News, Cash & Payment News will be published monthly and will be subscription-based. More information about subscription rates (which will be heavily discounted for Currency News subscribers) are included in the new newsletter.

We hope you enjoy reading the inaugural issue. And, as with Currency News, we welcome your contributions and opinions.

## Directory of Currency Suppliers

The sixth edition of the *Directory of Currency Suppliers*™ has now been published, and subscribers should by now have received their complimentary copy.

First published in 2004, the Directory has proved enduringly popular, even in this digital, so-called paperless age. The latest edition has been expanded and now includes 600 companies divided into six

categories on currency components and features, producers (mints and printers), production equipment and systems, cash processing and handling, cash circulation and management, and support services.

Additional copies of the Directory are available to subscribers for the discounted price of £75, either print or pdf.

Please contact [info@currency-news.com](mailto:info@currency-news.com) to place your order.

# People in the News

**Nathaniel Patray** has been named Executive Governor of the Central Bank of Liberia, replacing **Milton Weeks**. He has previously served as Deputy Governor of the National Bank of Liberia (as the central bank was then known) as well as Executive Director for Administration.

The replacement as Head of Note Issue at the Reserve Bank of Australia for **Michael Anderson** (whom, as reported last month, has moved to Human Resources) is **Melissa Hope**, herself previously Head of Human Resources.

G4S Group CEO **Ashley Almanza** is the new Chairman of the International Security Ligue, an association of private security organisations founded in 1934 which is responsible for defining, establishing and maintaining ethical and professional standards for the private security industry worldwide. He replaces **Alf Göransson** and has stated that his objectives in this role are promoting the highest standards, health and safety within the industry, and the value of cash in society.

Landqart has appointed two new Directors to its four-member Board.

**Mark Jeffery** has been appointed Chairman, replacing **Prof Thomas Wiedmer**, who has also resigned from the Swiss National Bank. Mark is well known in the industry with many years of experience in paper, print and printing press manufacture (latterly as Managing Director of Komori Currency Technology). Joining him is **Philippe Barreau**, also well known in the industry as former Managing Director of SICPA, and now Group Executive Vice President at IDEMIA.

**Axel Wappler** has stepped down from the Board to focus on his role as CEO. The other two Board members represent Landqart's new owners – **Dr Martin Plenio** of the Swiss National Bank and **Dr Anton Bleikolm** of Orell Füssli Holding.

**Karin Mörck-Hamilton** has been promoted to the position of Director, Global Design for Crane Currency. She has more than 30 years of experience within the field of banknote design, beginning her career as watermark and intaglio engraver. She holds a Masters in Fine Art from the Swedish Art and Graphic at School of Design and Crafts and Engraver School at Royal Swedish Academy of Fine Arts, and is a founding member of the International Banknote Designers Association. As Director, Global Design, Karin will lead Crane Currency's team responsible for design and origination in the company's Tumba and Malta locations.



Karin Mörck-Hamilton.

FireKing Security Group – provider of cash management security solutions, as well as cash recyclers and note handling products – has appointed **Jim Poteet** as its new CEO. He joined Fireking in 2016 as Executive Vice President of Sales and Marketing, and was more recently Executive Vice President of the Commercial Solutions business. He has more than 25 years of experience in the payments business, including nearly ten years in the intelligent safe industry, and replaces **Mark Essig**, who will continue to serve on the Board.



Jim Poteet.

**Gitta Künker** has been appointed as Managing Director of the World Money Fair. She replaces **Jens Heisse-Engelschalk**, who has run the last two annual events.

# Crane and Ukraine Cooperate

**The National Bank of Ukraine (NBU) and Crane Currency have signed an Agreement of Cooperation in the field of currency production, a step towards NBU's ambition of becoming an exporter of banknotes and coins.**

'Our banknote printing and minting works has everything necessary for the complete cycle of cash production: from design to security paper production and banknote printing. In cooperation with Crane Currency we are ready to offer all our expertise and production facilities for production of currency to the order of other countries,' NBU Governor Yakiv Smolii stated.

The agreement will regulate business relations between the NBU and Crane Currency, in particular the placement of production of foreign currencies at the Ukrainian Banknote Printing

The Banknote Printing and Minting Works was commissioned in 1994. The paper mill went into operation in 1997 and the mint a year later. The enterprise has an annual production capacity of 1.8 billion banknotes, 1.2 billion circulating coins, and 3,500 tonnes of banknote and security paper. In addition to notes and coins, it also produces state security documents, excise and postal stamps. One of the priorities of its Director General, Serhii Ivaniuta, who was appointed in 2016, was to devise a strategy for entering the international market for both banknotes and coins, given that the capacity exceeds domestic demand.

NBU and Crane have enjoyed a close relationship since the 1990s. According to both companies, the relationship has only strengthened over the years. In March 2017, a delegation from Crane visited Kiev to discuss cooperation between the two organisations, with the then Governor expressing the hope that visit would be a stepping-stone for a future long-term partnership.

Commenting on this partnership, Crane's President Annemarie Watson said: 'last year during my visit, I was impressed by the modern infrastructure, state of the art equipment and qualified personnel of the Banknote Printing and Minting Works. I hope that the agreement will lay the foundation for extension of our joint long-term projects.'

# News in Brief

## 1st African Member of BnEI

The Banknote Ethics Initiative (BnEI) has welcomed the South African Bank Note Company (SABN) as a new member, the first to be accredited from the African continent. This brings the membership to 12.

The BnEI was established in 2013 to provide guidance on ethical business practice, with a focus on the prevention of corruption and compliance with anti-trust legislation within the banknote industry.

'The SABN and our sole shareholder, the South African Reserve Bank (SARB), are pleased to have obtained BnEI accreditation,' said Francois Groepe, a SARB Deputy Governor and Chair of the SABN Board of Directors. 'This highlights our commitment to effectively administering and cultivating corporate governance and ethical behaviour in the workplace and within our supply chain.'

Antti Heinonen, Chair of the BnEI, added: 'I am delighted that the SABN has successfully completed the BnEI audit. In addition to the 12 accredited BnEI members, 38 central banks from all the continents, including the SARB, have expressed their support for the overall objectives of the BnEI.'

The other 11 BnEI members are Canadian Bank Note Company, CCL Secure, Crane Currency, De La Rue, G+D Currency Technology, KBA-NotaSys, Note Printing Australia, Orell Füssli Security Printing, Portals, SICPA and SURYS, all of which had been accredited after completing the rigorous audits by GoodCorporation and KPMG Brussels.

## Loomis Buys 2nd Company in Chile

Cash management specialist Loomis has acquired 100% of the share of Compañía Chilena de Valores, a Chilean provider of domestic cash handling services, for approximately \$28 million.

CCV has around 1,000 employees and sales in 2017 of some \$10 million.

Late last year, Loomis acquired Santiago-based Wagner Seguridad Custodia y Transporte de Valores (Wagner) in Chile, with 940 employees and sales of \$23 million, for \$31 million.

Commenting on this latest acquisition, Loomis' CEO and President Patrik Andersson noted that the company continues to expand into Latin America and it gives the company a market share in Chile in excess of 30%.

'CV brings in a new set of customers and the Latin American region is growing and shows further potential for the future', he said. 'We are happy to welcome all new employees and customers to the Loomis Group'.

## Costa Rica to Switch to Polymer

Marvin Alvarado, Treasurer of the Central Bank of Costa Rica (BCCR), announced at last month's High Security Printing Latin America conference in the Dominican Republic that the country will be changing all its denominations from paper to polymer.

In his presentation, he said that the Bank's decision was based on 'the high counterfeiting rate of the current cotton paper banknotes, versus the null counterfeiting rate of the 1,000 colones notes printed on *Guardian*<sup>™</sup> polymer, which have been in circulation since 2011.'

With many central bankers acknowledging that counterfeiting is a serious problem and the negative impact it has on the bank's reputation, as well as the public's confidence in their own currency, it was the next logical step for BCCR, he said.

The country's relatively humid climate and the conservation of the environment are other factors why BCCR supports polymer substrate. According to its own experience, BCCR estimates that its polymer notes last at least '400% more than those printed on cotton paper. By switching the 1,000 colones banknote to polymer in 2011, the bank and the country have saved around \$15 million since then'.

## E-Beam Expansion for Nanotech

Vancouver-based Nanotech Security Corp – a specialist in optical security features such as its *KolourOptik*<sup>®</sup> technology – recently announced a significant investment in the acquisition of an advanced electron beam lithography system (EBL) from Jeol. Valued at over \$4.4 million, Nanotech was able to acquire the system at a significant discount by being the first private sector company in Canada to make such an investment.

Using Nanotech's proprietary algorithms, the Jeol EBL system will enable the company to fabricate more advanced nano-structures with even higher resolution and contrast. It has the potential to generate image sizes up to nine times larger, with production estimated to be up to ten times faster than the company's current capabilities. This latest equipment can write information down to 8nm or less.

According to Nanotech's CEO Doug Blakeway, this latest investment represents the progression and execution of Nanotech's growth strategy, and will enable the company to enhance its product offering and expand development capabilities with its existing banknote customers, as well as open up a considerable range of offerings in other markets.

Nanotech plans to house the EBL equipment within a 7,500 sq ft state-of-the-art class 100 clean room facility at Simon Fraser University.

## An Industry First for Oberthur

Oberthur Fiduciaire has announced its accreditation for ISO 37001, the first company in the banknote industry to have achieved this important ISO benchmark.

ISO 37001 is granted to those companies who have incorporated systems and processes into their management to prevent bribery by the accredited organisation, its personnel acting on its behalf or for its benefit, and business associates acting on its behalf or for its benefit, as well as bribery of the organisation's personnel or business associates in relation to its activities.

Commenting on the accreditation, Thomas Savare, CEO of Oberthur Fiduciaire, said: 'we are delighted to be the first banknote company to have achieved ISO37001, which demonstrates Oberthur Fiduciaire's determination to adhere to the highest standards of corporate behaviour. I believe it is essential that the banknote industry looks 'outward' and measures itself against the high standards set by other industries in this area – not just our own industry. Securing ISO 37001 enables the banknote industry to do this.'

'We also believe that our customers can use ISO37001 throughout their whole supply chain – not just their banknote printers,' he added, 'as they can mandate that all their suppliers, in whatever field, secure this accreditation. From the feedback we have already received, our customers recognise the benefits that ISO37001 will bring to them in this context.'

# Improving Cash Logistics Efficiency through GS1 Standards

**Demand for cash continues to grow in the majority of European countries despite the increasing use of cashless payment methods. That means that millions of banknotes and coins are moving every year, which cause a major logistical challenge to each of the participants in the cash cycle and a considerable cost, in part due to the lack of common standards or procedures.**

To help address this issue, in 2011 Deutsche Bundesbank, Banque de France, Banca d'Italia and Banco de España agreed to join efforts to bring more efficiency to the cash cycle by modernising their national cash applications and adopting logistical standards. The objectives were to automate and speed manual processes in order to minimise handling errors, increase security, reduce costs and, last but not least, contribute to preserving the environment.

Given the similarities between the cash handling and other logistics and transportation services, the four national central banks (NCBs) decided to adopt the GS1 standard, the most widespread supply chain standards system in the world, which provides information regarding products, actors, services and location.

The GS1 standard as applied to cash handling processes is as follows:

- A** Cash packaging units are identified through a global unique code called the Serial Shipping Container Code (SSCC). The SSCC can be encoded in a barcode or EPC/RFID tag, ensuring the complete traceability of banknotes and coins since the packaging is created in the printing works or mints.
- B** The legal actors involved in the cash cycle – credit institutions (CIs), cash in transit companies (CITs), retail organisations – as well as the cash points and physical locations, are identified through Global Location Numbers (GLNs).
- C** The different status of banknotes and coins (denomination, series, condition...) are tracked by Global Trade Identification Number (GTINs) which are assigned by the European Central Bank (ECB) or NCBs.
- D** The Global Shipment Identification Number (GSIN) is a number assigned by a seller and shipper of goods to identify a shipment comprising one or more logistic units that are intended to be delivered together.

**E** Finally, the Global Returnable Asset Identifier (GRAI) is another GS1 key for asset identification. This GS1 key is especially suitable for the management of reusable transport items, transport equipment and tools. It can identify these returnable assets by type and, if needed, also individually for tracking and sorting purposes.

In this area of cooperation, the four NCBs created the Central Bank GS1 User Group (CB GS1 UG) to support further harmonisation in European cash services and provide best practices for the banking industries. Banka Slovenije joined the group in 2015. Currently, GS1 is the most broadly communication format used in the Eurosystem, at national level and between NCBs for cross-border transactions.

The following goals have been achieved since the formation of the CB GS1 UG:

- 1. Harmonisation of exchanged messages between NCBs and cash actors:** CIs perform their request of withdrawals and lodgements of cash through electronic messages (GS1 XML) and they are informed when the physical deliveries can be done in the same way. This is an STP, which improves transparency and speed and minimises errors in communications. At the same time, electronic records bring eco benefits in reducing or eliminating paper records.
- 2. Harmonisation of cash processing machines messages:** focused on the interfaces between cash processing workstations/machines and the IT back office systems in a cash centre, a comprehensive solution for cash processing results notification and statistics reporting has been developed using GS1 EDI XML standards. It reduces costs in modifications in these messages.
- 3. Traceability of every cash package from the printing works/mint until delivery to the CI:** SSCC labels on the cash packaging and electronic communication allow full traceability of banknotes and coins, from the printing works or until they are delivered by NCBs to the CI. It improves security, control and service quality.

**4. Creation of a platform for NCB collaboration and resource sharing:** the CB GS1 UG provides, free of charge, support to other NCBs interested in the knowledge and use of the GS1 standards and informs them regarding their implementation process.

That is the case with Oesterreichische Nationalbank, Banco de Portugal, Národná Banka Slovenska, Lietuvos Bankas, National Bank of Kazakhstan, Narodowy Bank Polski and the Federal Reserve System, who attended, together with the ECB, the latest meeting in June in Madrid. The Federal Reserve System has also chosen the GS1 standards in its Cash Visibility project, running since 2017 (see CN September 2017).

The CB GS1 UG has, among its next challenges, the promotion of the use of the GS1 standards throughout the whole national cash cycles to reduce the cost of cash.

Currently CIs and CITs typically use the GS1 standards in their transactions with their NCBs. However they use own barcodes to identify each logistic unit internally, which entails relabeling, costs and time handling. Therefore, the full benefits of standardisation will only be reached when the whole cash industry (NCBs, printworks, mints, CIs, CITs, retailers) adopts GS1 in their internal processes and throughout the cash cycle.



Attendees of the latest CB GS1 UG meeting in Madrid last month.

Further information can be obtained from the CB GS1 UG webpage at [https://www.bundesbank.de/Redaktion/EN/Documentation/CBUSERGROUP/HtmlDoc/index\\_node.html](https://www.bundesbank.de/Redaktion/EN/Documentation/CBUSERGROUP/HtmlDoc/index_node.html).

# 30 Years On – Reflections on Polymer Then and Now

It was 30 years ago this year that the first polymer banknote was issued in Australia – a note that was invented, trialled, and issued by Note Printing Australia (NPA) and its predecessor organisation, Note Printing Branch. Coinciding with Australia's bicentennial celebrations, the new note made an enormous statement about the nation and has been a point of national pride ever since.

NPA nurtured the commercial origins of the polymer banknote business which is today known as CCL Secure. Since the early 1990s, polymer substrate has steadily worked its way into the banknote market, with the entry of De La Rue also giving a major push to the adoption of polymer worldwide. *Currency News*<sup>™</sup> spoke to NPA's CEO, Malcolm McDowell, about the tumultuous early years, the polymer 'revolution', and the future of the organisation.

**Q:** Can you share some insights into the 20-year development period for polymer substrate and how it came to be issued?

**A:** When Australia moved to decimal currency in 1966, counterfeiters had an unprecedented opportunity to forge high quality banknotes while the public was getting used to the new currency. As a result, Australia had a 400ppm+ counterfeit rate on the \$10.

In 1967, Herbert 'Nugget' Coombes, the first Governor of the Reserve Bank of Australia (which was formed in 1960) assembled a think-tank at a well-known alpine retreat called Mt Thredbo, and it was there during a brainstorming session that plastic notes were first suggested.

A young scientist working for the CSIRO (the government's R&D division), David Solomon, was intrigued by the idea and took up the challenge with support from management. It took 20 years of development involving material science, the development of new inks, learning how to apply OVDs to plastic, a secret printing plant in Port Melbourne, and the production of \$3 and \$7 test notes.

The organisational breakthrough came in 1982 when David convinced the new RBA governor, Bob Johnston, to participate in a blind feel test of a polymer note versus a paper note. Bob couldn't tell the difference, and in considering the enormous body of the work the CSIRO had put behind the technology, agreed to employ scientists at NPA to begin the technology transfer.



Malcolm McDowell.

In 1987, the RBA paid the CSIRO A\$8 million for the rights and the technology.

**Q:** What was the impact with the Australian public at the time?

**A:** By all reports, it was mixed – a great sense of pride but also if you understand the Australian sense of humour, great enjoyment in finding and making fun of a weak spot.

In this case, there was great fascination with the OVD which was the first to appear on banknote; however, the advent of the scratch-off lottery tickets saw many people, for amusement or curiosity, use coins to scratch away the foil on the new note.

In the short-term, the OVD received extra coats of varnish to better protect it, but the long-term solution was the use of a corona-discharge unit to enhance the surface energy of the polymer film, which led to much higher levels of adhesion.

Of course, this original note is a classic collector's item. The RBA sold 850,000 commemorative packs of this note for A\$14 each, which returned more than half the government's investment from the previous year. So it was a great financial success for the RBA.

The media of the day focused heavily on the design, rather than the world-leading technology, and it is fair to say it turned out to be the most iconic banknote design in Australia's history. Nothing else comes close in my opinion.

**Q:** How and when did NPA begin operations at its current location?

**A:** The Note Printing Branch as it was known then was operating across five floors in a building in the inner-city suburb of Fitzroy. In the 1970s, management realised they needed a purpose-built facility and in 1981 the current high-security site in Craigieburn was completed.

Today, this high security site includes NPA's 40,000m<sup>2</sup> main production building and a 3,000 m<sup>2</sup> staff centre, as well as the RBA's recently completed National Banknote Distribution Centre, and CCL Secure's polymer substrate production facility. Right next door to our site is Innovia Films' production plant that manufactures the polymer film for CCL Secure's *Guardian*<sup>®</sup> polymer substrate – one of only two sites in the world.

Taken in its entirety, with every facet of the polymer banknote printing process accounted for in this one area, the Craigieburn site is the world's most unique banknote precinct.

**Q:** After 30 years, bringing an alternative banknote substrate to the market must have been challenging. How did NPA help that adoption?

**A:** Yes, it was a radical disruption to the market and while the industry took decades to accept polymer was here to stay, there is no doubt in my mind that without the ownership and support of the RBA, and by extension Note Printing Australia, polymer banknote technology would never have been adopted worldwide.

The RBA's patronage, and NPA's technical know-how and printing experience, gave polymer banknote technology the stamp of approval and performance delivery needed to be adopted by other nations. Papua New Guinea, New Zealand, Singapore and Brunei were early adopters of polymer banknotes, all of which were printed by NPA. The Banco de Mexico's commitment to polymer and its ownership stake in a polymer substrate production facility was also a milestone moment.

**Q:** How do you account for the 'revolutionary period', when polymer seemed to break through with adoption of polymer in Canada and the UK?

**A:** In reference to your previous question, this development was a moment of true acceptance for the industry. Over time, I think the facts around polymer banknote performance became irrefutable and, after 20 years in the market led by other influential central banks such as Australia, Mexico and New Zealand, these banks decided the time was right.

Like the RBA, the Bank of Canada and Bank of England are both highly resourced, highly technical, and are looking for products that meet the highest standards and requirements. Both went through a comprehensive process of substrate selection and decided polymer was right for them. Happily, both are now having extremely positive experiences with their new banknotes.

**Q:** With this history, what does NPA now offer the market?

**A:** A great deal! We're an organisation that cares deeply about the well-being of the people and nations that use our banknotes and passports.

As a 100% subsidiary of the Reserve Bank of Australia, NPA has built its policies and normal business processes around exacting G20 government standards that make us well placed to deliver banknotes of any denomination and to any security level to the highest quality.

NPA focuses on creating outstanding customer experiences by understanding and addressing specific challenges and problems to come up with banknote solutions that make our customers' lives easier. Across the last decade, NPA has invested for the future and today has one of the world's most advanced print lines, the capability of which is evident with Australia's NGB series.



The 1988 A\$10 commemorative note (left) and the latest A\$10, issued in 2017.

NPA regularly brings first time technology to polymer banknotes based on our strength in industrialising innovative security technologies. Importantly, NPA's unique history in producing highly complex polymer banknotes has allowed the organisation to develop leading-edge know-how and experience in its design, development and manufacturing processes.

**Q:** How does NPA structure its currency production and management in Australia?

**A:** With a senior management team covering all the usual functions, as CEO I am accountable to NPA's Board of Directors, who represent the interests of the Reserve Bank of Australia.

Under the leadership of a single Head of Operations, banknote and passport production operates as separate business units. From a banknote perspective, NPA offers the full suite of services from design, prepress and plate making through to production, quality assurance, single note inspection and automated packaging. We also have high grade vaults for ongoing secure storage within the secure production facility and overall site.

**Q:** What's next for NPA, particularly after the new Australian series is complete?

**A:** The current Australian banknote series is in full swing and understandably this work accounts for the vast majority of our capacity; however, we are still printing for other central banks.

In the future, NPA plans to maintain a strong presence across the world in bidding for and winning some extremely interesting and exciting banknote series and projects. We have a lot of advice and experience to offer central banks who are looking to create a banknote or banknote series that will remain strongly counterfeit-resistant and highly functional for a minimum 12-15 year period.

We also produce the world-class chip-enabled Australian ePassport for the Department of Foreign Affairs and Trade (DFAT), under a long-term supply agreement. We will be looking to develop an export market for passport booklets and associated service opportunities, particularly in our region.

# Thought Leader in Cash Processing

The UK-based cash management company Vaultex was formed in 2007 as joint venture between two leading high street banks following an acquisition from Loomis (formerly Securitas). Since then Vaultex – which describes itself as a ‘thought leader in cash processing’ – has developed into an efficient and cost effective business, and is expanding its services overseas.



Mark Trevor.

Mark Trevor, its Commercial Director, spoke to *Currency News*™ about the company's background and philosophy, the challenges of cost reduction and new note issues, and how the company is extending its reach and services.

**Q:** Could you provide a summary of your education and career prior to joining Vaultex?

**A:** I have degree in mechanical engineering, a master's degree in war studies and a qualification in accountancy. From university I spent 15 years in the Royal Navy as a Warfare Officer. After leaving the Navy I have spent the last 15 years in financial services, initially in the Lloyds Insurance market for nine years, working in both broking and underwriting businesses, and latterly with Vaultex.

I joined Vaultex about six years ago this summer as Commercial Director. People say that's a varied and interesting career but I like to think of it all as one form of risk management or another!

**Q:** So how did how you came to join Vaultex?

**A:** I was headhunted – the company that had previously placed me in insurance contacted me and said they had a position I might be interested in. After mulling up on the subject of cash, I had several interviews, and then was offered the job.

**Q:** How did Vaultex come to be established?

**A:** The two banks which own Vaultex – HSBC and Barclays – realised that they each had a large real estate of wholesale note and coin processing centres and they had complementary commercial positions in terms of inflow and outflow.

Putting the two real estates together allowed for significant consolidation and also brought balance in terms of cash inflow and outflow, so it seemed like a commercial marriage made in heaven.

**Q:** What were the major challenges faced by the company when you joined and how did you overcome them?

**A:** The company was doing well as a cash processing business. I was brought in to look at how the company could evolve from what could be seen as a commoditised, cash processing service into something that was more value adding and able to reach more parts of the cash supply chain.

So my remit was to develop the proposition in terms of products and services to cement the future of the business in what, even then, was a potentially diminishing cash processing landscape. That included seeing what else we could offer as a product and a service to more of the supply chain.

**Q:** How does Vaultex operate in the UK now? Does it only handle business for its two owners – HSBC and Barclays?

**A:** Most of what we do is for those two customers, but we do handle work for some other customers directly as well.

A good example is the contract we handled for the Royal Mint a couple of years ago to extract the cupro-nickel 5p and 10p coins from circulation and replace these with nickel-plated steel coins. That was on the basis that, as one of the largest cash processors in the UK, our flows of coin were big enough for us to execute the exchange efficiently.

Also, we have a consultancy side to our business – we provide advice around cash management to central banks, commercial banks and retailers. In that regard we serve these clients on a direct basis both in the UK and abroad.

So in the beginning we were solely serving our two customer banks, but we now have a broader customer base.

**Q:** What percentage of the cash handling market does Vaultex now have in the UK, and who are your main competitors?

**A:** We think we probably have just over one third of the wholesale cash processing business.

I would say our competitors are the CIT companies who offer both cash in transit and cash processing to customers and, to some extent, other banks who still offer cash processing, the obvious example being RBS/Natwest. Historically, the Post Office also offered such services beyond their own branch network, but they now concentrate solely on their own network.

You might also have to include some independent ATM deployers (IADs) as they offer cash management services to those who operate ATM estates.

That said, the market is complicated – one day we can be working with other suppliers and the next day we find ourselves in competition with them! We are currently working in collaborative contracts with certain CITs, IADs and OEMs but recognise that we could well be bidding against them for that next tender.

We believe that we work best when we are acting as an ‘integrator’ for cash management services – offering the customer one point of contact and an end-to-end service which invariably delivers best value for money for the customer.

**Q:** At the Cash Cycle Seminar in Miami last autumn, you gave a presentation describing the ‘Vaultex approach’. What do you mean by this?

**A:** A focus on people, process and technology within Vaultex and all underpinned by data. We are obsessive about measuring stuff to give a true picture of our performance – people performance, process performance and harnessing technology to bring high service levels to our customers.

We are also very honest in our approach – we are not in the business of selling customers something they do not need. In fact, we often find ourselves in situations where we are reducing the volume we might provide of, say cash processing, to a customer because we have found a smarter way of doing things – which will mean our bill goes down!

This might seem unusual, but for us it's a USP (unique selling point), in that our customers appreciate the fact that they are getting best value for money, and ultimately this results in more business for us.

**Q:** *Given the apparent interest in this approach, do you think Vaultex could be successful if it set up in the US?*

**A:** Yes, I think so. Our view of the US is that it is a CIT-dominated market and our experience, from what we've seen globally through our consultancy, is that quite often that dominance leads to inefficiencies and unnecessary costs in the supply chain.

Because we don't own cash in transit, we have no interest in over-selling it. As the US market is dominated by large CIT companies, it seems to me there is the potential for someone to come in and take a different approach.

**Q:** *Going back to Vaultex UK, what have been the most significant changes or improvements since you joined five years ago?*

**A:** Teamwork! People are at the heart of everything we do as a business.

Coming back to the point about measuring what we do, we measure the engagement of our people like a lot of businesses.

When we started, engagement scores were quite low. When the new management team was formed several years ago, led by our chief executive, we set about engaging our people more effectively so that they were happier in their work place. That had a knock-on effect – it improved our performance and the service to our customers.

So our belief is, rather than focusing on hard financials, a happy engaged workforce will deliver the financial performance through their positive attitude and efforts.

**Q:** *How did you manage the recent change to polymer banknotes in the UK? Did polymer reduce efficiency and if so why?*

**A:** It was a challenging thing to achieve for the industry. The fact that we were going to end up with the wholesaler processing mixed notes – paper and polymer – presented the main challenge. We are still processing mixed notes and the volumes will increase substantially again when the £20 note (the largest volume note) is replaced in 2019.

There was a similar challenge for retailers who were using devices such as ATMs and self-service checkouts. How were these machines going to be made ready for polymer in a seamless way?

There was also the issue of capacity in the CIT industry – removing millions of £5 paper notes and swapping them for polymer notes posed a significant challenge!

Additionally, the Bank of England had the challenge of engaging the public, particularly to hand in their old notes and use the new ones.

So there was quite a challenge across the industry. I think the Bank of England was smart in forming a cross-industry working group – the Vaultex Operations Director chaired the wholesale part of that. The cross-industry approach worked well and I think we have to regard the changeover of the £5 and £10 notes as a success. It did come at a cost, but that was inevitable.

**Q:** *During the change, did you process a mixture of paper and polymer notes or did you separate them?*

**A:** When we upgraded our high speed sorters a few years earlier, we stipulated to the supplier that we had to be able to process mixed notes with little or no detriment to the speed of sorting and reject rates.

This was important as we wanted to offer our customers a seamless transition and to not have to ask them to separate the notes into paper and polymer.

**Q:** *Did the difference in size of the notes affect the processing speed and output?*

**A:** That's an interesting question because one of the things we did as part of our planning was to visit other countries – we chose Australia and Canada where they had introduced polymer at scale – but they had not changed the size of their notes, so it remained somewhat of an unknown.

Actually, from the wholesale perspective, that didn't create a big problem for us. That was more of a challenge when we were packing ATM cassettes as we could not mix the different sized paper and polymer notes – we had to manually adjust all of our cassettes and we supply something like 500,000 a year.

Additionally, the ATM machines had to be adjusted for paper or polymer cassettes, so this was quite a lot of extra work.

**Q:** *So did you also have to re-process the mixed sorted notes to separate them into polymer and paper?*

**A:** Yes, but we always separate sorted notes into denominations, so in this case we also separated polymer from paper. As the paper notes are withdrawn this problem will disappear.

**Q:** *You are now actively promoting Vaultex Consultancy. What is the thinking behind that expansion and what is the scope of your work?*

**A:** We decided to establish the Vaultex consultancy business about 18 months ago.

Because we are one of the largest cash management companies in the world with advanced equipment and processes, we got a lot of reference visits from suppliers with potential central and commercial bank customers and others looking at buying new sorting machinery.

As these visits progressed we were continually asked questions not only about how we used high speed note sorters, but also how we managed our shift patterns, how we let operators go to lunch etc., as well as how we use technology in the business and many others. So we thought, actually there is an opportunity here for us to sell that knowledge in the form of a consultancy type business.

The way we have structured it is to offer consultancy advice to central banks, commercial banks, retailers and businesses that are high users of cash, on how they can optimise the management of cash within their supply chain and therefore reduce costs.

We have found quite a lot of interest to date, initially from the UK banking and retail sector. But more recently we have interest from overseas too, especially where they are starting the journey the UK went on many years ago of consolidation and outsourcing. And there we have a lot of experience and can offer advice and assistance.

**Q:** *The current focus globally is the extent to which digital payments will replace cash payments. The focus for cash is greater efficiency to reduce costs. Is there an opportunity to reduce cash cycle costs significantly?*

**A:** Taking the whole cash cycle into consideration, there is certainly an opportunity for cost reduction. If you buy services in a fragmented way, as many banks and retailers currently do, then moving to a more integrated purchase of services can drive out costs.

And then there is consolidation and outsourcing, which can significantly reduce the high fixed costs associated with cash management. Through our consultancy business we are getting a lot of requests for help in this area.

## Packing a Punch in Africa

Hunkeler Systeme has announced that it has secured an order for 25 compact banknote destruction systems for a central bank in Africa, which will be installed in several of its branches this summer.



There are a number of reasons why banknotes are destroyed, some on a daily basis and others intermittently, because they are unfit, or when a new series is introduced and, co-circulation is not chosen. Needless to say, waste is generated during the process, which then requires disposal.

Whatever the reason, says Hunkeler, banknotes determined as waste need to be securely, safely and professionally disposed of and there are many different methods used for this. The most common involves the incineration of the notes or production waste and although that method remains today in some countries, the modern approach is the prior use of sophisticated systems involving machinery that shreds or granulates the notes or production waste prior to incineration, landfill or recycling.

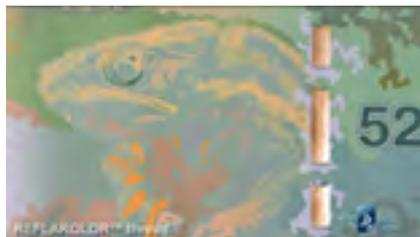
Banknote waste systems must be able to guarantee product quality, production safety and continuous transparency during the entire process; every step has to be monitored and managed. No one size fits all – secure disposal systems require custom designed solutions invariably involving engineering and software development – but their common requirement is that they are totally secure.

The solutions can consist of inline or offline components or the combination of both. For decentralised systems, secure solutions such as banknote punching devices can be provided and it is in this sphere that Hunkeler, which is based in Wikon in Switzerland, has recently been successful – as evidenced by its latest contract in Africa.

Hunkeler's systems can deal with all types of substrates including cotton, polymer and hybrids. The company expects to expand its current central bank and commercial customer base as recycling gains in importance with security.

## Value of Composite Substrate and Embedded Security

Arjowiggins Security, as one of the leading producers of banknote paper, has always promoted the value of embedded security. Given the challenges presented by the durability of polymer and the demand by central banks for cost savings, the company set about upgrading its offerings to meet the challenge.



The introduction of synthetic fibres into the traditional cotton substrate led to a range of papers under the *Diamone*™ brand. These include Diamone Composite, a paper with enhanced mechanical strength that also has synthetic fibres, but without the surface coating, leaving users free to decide whether or not to use a post print varnish.

Arjowiggins has also enhanced the best known Level 1 security feature in banknote paper, the watermark. As well as offering traditional mould-made watermarks, it has developed brighter

more secure versions in the form of *Pixel*™ and *Vision*™ watermarks. These provide higher definition and clarity; they can even be used to greater effect in combination. Some 30 billion banknotes in ten countries have so far benefitted from these developments.

Launched at the Banknote Conference in Dallas, meanwhile, is *Reflakolor*™, a new pigmented colour changing thread, which is robust in harsh environments.

What is novel about this thread is that it allows authentication from either side of the banknote. From the front, like other colour-shift threads, it provides a distinctive colour change when tilted. The thread can include text and a range of colour shift pairs is available.

On the reverse of the note the thread displays a customised black text, which in transmitted light becomes transparent and shows as white text, much in the manner of the well-known clear text threads. Fluorescence and magnetism can also be included.

In Arjowiggins' view, the combination of mechanical durability provided by Diamone Composite, the high definition of Vision watermark technology and the novel optical properties of Reflakolor threads combine to create a highly secure and durable note.

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## New Inks, New Colours, New Security for Safeguard

**It is well understood that polymer extends the lifetime of a banknote, says De La Rue. But security remains key too, and – according to the company – the remarkable versatility of its Safeguard® polymer enables various security elements to be embedded within the actual layers of the substrate print, as it is being created, while ensuring that it remains fit for manufacture and purpose.**

The outcome is a wide range of bespoke prints, elaborate designs and vibrant colour effects that are built into the substrate.

They include *Illuminate*, which uses a combination of inks, including matte and iridescent inks, to inject vivid colour and unique texture into the polymer window.

*Rotate* is a design technique that creates a fully registered image on both sides of the polymer note. The two images' outlines are aligned front and back; however within the design itself there are

some notable distinctions. It's not until you rotate the note that you discover that the design on each side is not identical.

*Integrate*, meanwhile, is described as the next generation of watermarking for polymer. Integrate injects colour directly into the different print layers of the substrate itself, which allows different depths of colour and shade to emerge through the note, depending on where the colour has been applied within it, and to which layer of the substrate.



Iridescent inks used on Safeguard®

# A Smart Factory Solution for Banknote Printers

**Mühlbauer – a supplier of smart factory solutions for the production of smart cards, ePassports, RRID labels and microchips – is moving into the banknote industry with the launch of Palamax®. Targeted at banknote printers, Palamax will, the company claims, enable automaton of the entire manufacturing process.**

Established in 1981, Mühlbauer is an international public company headquartered in Germany with 30 years experience in manufacturing system solutions for the global security printing industry. It employs around 2,800 people, with technology centres in Germany, Malaysia, China, Slovakia, the US and Serbia supporting a global sales and service network. Overall, it has 35 production and service facilities and a worldwide spare parts service.

According to Mühlbauer, the miniaturisation of sensors as well as the increased power for the processing of massive data makes it possible to generate a huge amount of information which can be processed, analysed and, ultimately, also monetised.

PalaMax is a software solution that allows production and quality data to be collected, analysed, edited and provided from each manufacturing operation, ie. first to last. This enables the monitoring, control and optimisation of the banknote printing process to make it more cost-efficient.

Mühlbauer offers a variety of dedicated PalaMax modules for banknote printers, including:

**Track and Trace** – tracking of each sheet (using barcode scanning) through the entire production process, enabling aggregated production and quality data to the individual sheet;

**Production Statistics** – involving data generation, collection and analysis – providing real time production information for detecting critical production periods and the potential for improvements;

**Maintenance** – predictive scheduling to optimise machine utilisation and minimise maintenance, as well as gathering latest data through machine learning;

**Material Management** – for cost and quality control, selection of materials and suppliers, as well as for optimising machine utilisation.

Mühlbauer's approach for the implementation of a Smart Factory ecosystem involves three stages; 1) consulting – analysis, cost estimation and break-even analysis; 2) full implementation service – project preparation, implementation, training of production and IT personnel and monitoring, and 3) post service – optimisation support through software updates and further training.

The Smart Factory approach and technology is not new, says Muhlbauer. It is an holistic approach that has already been successfully implemented in 21 countries in a wide range of situations all connected with ID, such as ePassports, national ID, military ID, drivers licences and eGate system, with other ongoing.

What is new, however, is the deployment of PalaMax for banknote production, with the company claiming that it can improve productivity by as much as 50%, and efficiency and speed up to 30%, while reducing costs by up to 20%.

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## Remembering Madiba *(continued)*

The notes were designed by De La Rue and printed by the South African Banknote Company. 400 million notes have been produced. The two lowest denominations – the R10 and R20 – are printed on Louisenthal's *Hybrid*® paper/polymer composite substrate, while the others are on varnished cotton paper.

According to De La Rue's Creative Design Director Julian Payne, 'It was such an honour to create the artwork for this commemorative note celebrating such a respected global icon. Inspired by the life and legacy of Nelson Mandela we wanted to follow his journey through the five denominations. The designs tell a story of hope and reconciliation triumphing over division and persecution; the prisoner becoming president is a truly inspirational story'.

Commenting on behalf of SARB, meanwhile, Pradeep Maharaj said: 'Nelson Mandela is a unifying figure, with whom all South Africans can identify, and the telling of his life through the banknotes will resonate throughout the country. We are proud to honour him in this way and would like to thank those involved in the project and for their part in supporting our centenary celebrations'.



Accompanying the new notes is a commemorative R5 coin – the third such coin celebrating Madiba (the first was issued in 2000 after his presidential term and the second in 2008 for his 90th birthday). The 2018 bimetallic coin incorporates a latent image (the first for a South African coin) and a weaving pattern inspired by the shirts that Madiba used to wear.

The commemorative notes will co-circulate with the current Mandela series banknotes until they no longer meet the circulation quality standards of the SARB.

Once SARB has issued all the banknotes of the commemorative banknote production order, it will return to issuing the current series.

SARB has undertaken an extensive publicity campaign ('The Madiba in Me – remembering the values that live within us all') to familiarise the public with the new notes and coin and engender national pride in Mandela's achievements. As part of this, it has launched a special app demonstrating the features and explaining the designs and their symbolic significance.

# ACF – Something for All

One of the prime objectives of the upcoming African Currency Forum – which takes place 2-5 September in Victoria Falls, Zimbabwe – is to expand industry knowledge, especially for those in Africa involved in the specification and procurement of banknotes and coins, and their management in circulation.

A total of 12 sessions will take place over the three business days – including three 90-minute workshops and a panel discussion.

Session 1 features five keynote presentations, including a welcome from the Reserve Bank of Zimbabwe, one from the Peoples Bank of China on cash developments in China and Asia, another on the future of Cash in Africa by the International Currency Association based on a research programme taking place now, and a new take on seigniorage from Genie Foster of the International Association of Currency Affairs.

In Sessions 2 and 3, suppliers of various substrates and their security features discuss their products, with Session 4 offering a choice of three seminars – one on testing and specifying substrates, another on security features and the third by the US Secret Service on counterfeit US banknotes.

Day 2 opens with Session 5 covering banknote design, QC and production, followed by Session 6 on increasing efficiency in currency production in Africa and, after lunch, key aspects of the cash cycle.

Session 8, on coins, launches day 3; Session 9 is on developments in design and public perception. The final afternoon offers another chance in Session 10 to choose from the three seminars, followed in Session 11 by a series of presentations and a panel discussion on new banknotes in Africa, chaired by Currency News.

There are five social events for all delegates over the four days of the Forum with an optional Safari to Botswana the day after. Capacity is restricted to 300 people, and only a few places now remain.



[www.africancurrencyforum.com](http://www.africancurrencyforum.com)

# Sammel Offset Provides New Features in Minimum Space



Above image showing perfect registration. Below is an example of immediate colour change.

**At the Banknote Conference in Dallas, Komori Corporation introduced the concept of the Komori Sammel Offset security printing machine, designed to enable a new dimension of counterfeiting measures to be added during the printing of banknotes and other high security documents such as passports.**

The machine incorporates much of its technology from across the Komori range of banknote presses. Komori decided some time back to use the technologies available throughout the organisation to further enhance their banknote and security press line up, thereby combining synergies that have been enjoyed by other market sectors.

The design incorporates a unique Sammel printing feature which permits the banknote designer to include a combination of permutations and features such as irregular but precisely defined areas and shapes of colour in exact juxtaposition to each other.

These areas or patterns are printed using separate plates via compilation blankets and the main image plate, with the guarantee that the finest lines or colour separations will be in perfect register. As a result, the printed document shows sharp colour changes across the image itself, whether it is a guilloche, line or part of a duplex pattern.

In the example presented, three Sammel plates directly ink the Sammel blanket – which in turn inks up the main image engraved plate. The plate then transfers the image to the other blanket. The two direct dry offset plates are in direct contact with the blanket.

All this results in a creating an excellent quality image and allows perfect registration, says the company.

During his presentation, Phil Holland, Sales Director for Komori Corporation's Currency Division, commented: 'Sammel offset designs are incorporated into the 10,000 Japanese yen note and also the Japanese passport, printing in perfect register and showing an immediate colour change. Using Komori's philosophy of parallel design and modular construction there are very many designs where Sammel offset can be incorporated.'

'In another example presented, we have added the Sammel units to the end of our LC32 offset press. If the press was a five-over-five specification with two Sammel units on the end, it turns the press into a 14-colour offset – with just a small increase in floor space.'

Space is at a premium in printworks, he noted, and many of the factories were built many years ago. Yet few central banks can obtain the budgets to build new factories, but still need to add increasingly sophisticated technology to their banknotes.

'So the more choice of printing methods and technologies that can be offered in the minimum of floor space the better', he concluded.

# HSP Latin America – Where Exotic Met Informative

240 delegates from 131 organisations and 40 countries took part in the latest *High Security Printing™* (HSP) Latin America conference in the picturesque Caribbean surroundings of Punta Cana in the Dominican Republic. And, despite the exotic location, the seminars, plenary sessions and exhibition hall were busier throughout the whole event than they ever been in the event's six-year history.

The first day was taken up with two pre-conference seminars on currency and ID respectively. The first – See Your Banknotes Like a Machine – by Robert Morrow of Crane Payment Innovations (CPI) took participants on a deep dive into Level 2 features for banknotes.

CPI systems are used in half of all ATMs, vending machines and other devices that allow consumers to use cash for payments and make deposits without human intervention. As improving banknote security requires ever more sophisticated approaches and technologies to identify their authenticity, the corollary is ever more devices for machine recognition. Robert explained such tools in great detail, from the perspective of how their systems recognise banknotes and their features versus humans, and also the major commercial impact when changes to banknotes are made.

The conference itself was formally opened by Frank Montano, Head of Currency at the Central Bank of the Dominican Republic, who welcomed delegates to the country and gave a detailed insight into the evolution of currency and cash management in the country. Following presentations from the country's Central Electoral Board and Chile's CONASET, the programme then divided into two tracks covering currency and ID/secure documents respectively – with a packed agenda comprising over 40 speakers.

## Know your money

Among the central bank speakers was Gloria Marina Ortiz from the Central Bank of El Salvador, who shared the experience of the El Salvador educational program 'Know Your Money'. This was based on an initiative first implemented in Slovakia back in 2002, which aims to educate secondary school children on the culture of money management, and tells the history of money in the world, money circulation in the country, services by banks, loans and credit, plastic cards, electronic payments, and interaction of the state, society and business. This programme has spread quickly to other parts of the world including, now, El Salvador.

Another interesting presentation from of the Central Bank of Costa Rica not only announced that the country will be switching to polymer for its next series (see page 4) but also the impact of rapidly-growing electronic payments and, simultaneously, the Bank's efforts to pass the cost of cash entirely onto the commercial sector within the next year. This is expected to have a major impact on the volume of cash required (not at topic, needless to say, that everyone wanted to hear!)

Delegates heard from the central banks of the Bahamas and Bolivia on their new series, both of which are in the process of being issued, as well as a progress report from the Bank of Mexico on its new printworks in Guadalajara, which is nearing completion. The Reserve Central Bank of Peru, meanwhile, spoke in depth about banknote protection and anti-counterfeiting in Peru.

In addition, there were a number of presentations covering design, substrates, new features and innovation in production and cash management, including a paper from FNMT on the progress of its new state-of-the-art paper mill in Spain which, like the Mexican printworks, is all but complete.

## Digital/mobile theme

A clear theme that emerged in both the currency and ID tracks was the growing importance of digital and mobile technology – in production, protection and authentication. And in some cases, as a potential disruptor too. This is a theme that will be developed for future HSP events, as well as Reconnaissance's new *Digital Document Security™* conference, which will be launched next year.

Other highlights of the event included the conference dinner on the beach and the post conference beach volleyball tournament (in place of the more customary football match). The day after the conference, meanwhile, many delegates took advantage of the visit to the Central Bank of the Dominican Republic's cash centre and museum, followed by a sightseeing tour of Santa Domingo.

Delegates were invited this time to vote on where the next event should be held. The favourite was Costa Rica – so this is where Reconnaissance will be heading next, with the dates already confirmed of 3-5 June 2019, in San José.

## 5th IBDC Almost Full to Capacity

The 5th International Banknote Designers Conference (IBDC) – the only dedicated event and meeting place for the world's banknote design community and which takes place from 10-13 September in Lisbon, Portugal – is nearly sold out.

According to IBDA President Mark Stevenson, the conference is shaping up to be the best ever, with registration levels already exceeding 90% of conference capacity. He stated that; 'it appears that the unique opportunity afforded to us by the world's banknote designer community via the World Banknote Project, to catch a glimpse of what banknotes will look like in the future, is generating enormous interest.'

More than 50 designers have participated in the World Banknote Project (WBP) and have developed their interpretation of what will be the Banknote of The Future. All IBDC delegates will be afforded the opportunity to visit and browse the WBP Exhibition Area during the conference. The WBP is the world's largest ever banknote design project and, says the IBDA, aims to provoke, stimulate and inspire.

The IBDA has also organised a second exhibition on the theme of combining Banknotes of the World with contemporary photography, by the French photographer Philippe Assalit. This art exhibition will be in permanent display during the conference, and Mr Assalit will also make a series of short presentations on his artwork.

Based on previous events, the IBDC is likely to attract delegates from around 70 countries. Attendance is limited to 180 participants so only a handful of places now remain.

[www.banknotedesignersconference.com](http://www.banknotedesignersconference.com)

# Ukraine Converts Notes to ZincSecure Coins as Part of Note/Coin Boundary Shift

The National Bank of Ukraine (NBU) is in the midst of a currency reform that will see the removal of its lowest value coins, and the replacement of its four lowest value banknotes with coins. This is not just a shifting of the note/coin boundary, but a shift of the whole currency structure to reflect current prices and the needs of the Ukrainian economy.

The first two low denomination banknotes to be replaced are the 5 and 10 Ukrainian hryvnia (UAH 5 and UAH), with zinc-based coins made from ZincSecure™ entering circulation in 2019. Out of the current nine banknotes, the NBU plans to replace the two lowest denomination notes – the UAH 1 and UAH 2 – with coins as well in 2019 and 2020, leaving the UAH 20 as the lowest denomination note (see page 15). It has also stopped issuing 1, 2, 5 and 25 kopika coins.

## \$38 million savings

According to the NBU, the replacement of notes with coins is due to the devaluation of the hryvnia, the development of cashless payments and the note replacement costs. It removes from circulation 800 million worn out paper notes every year – 40% percent of them being bills of low denominations. It has estimated that it will be able to save around UAH 1 billion (\$38 million) per year due to the measure.

The new silver-coloured coins will be from 18-24mm in diameter. The reverse of each coin features portraits of prominent figures in Ukrainian history, as currently depicted on the notes of the same value. They include the Rus Princes Yaroslav the Wise and Vladimir the Great on the UAH 1 and UAH 2 respectively, Bohdan Khmelnytsky on the UAH 5 and Ivan Mazepa on the UAH 10.

The front of each coin will contain a frame of an ancient Kiev Rus ornament, Ukraine's small coat of arms and the denomination. The edges of all four coins will be reeded.

The coins are being minted on plated zinc blanks supplied by US-based Jarden Zinc Products, who comment that coins having a longer life compared to banknotes is advantageous to producer mints and central banks alike.

The typical life of a banknote is 1-1.5 years, whereas coins will last for 20 years or more. This significant difference in lifetimes means that coins require far fewer replacements and will cost the central banks much less compared to banknotes.



According to a comparative estimate by Jarden Zinc, over a 20-year lifetime, a single currency coin in ZincSecure could save as much as \$370 million, compared with a banknote of the same currency (assuming one billion coins/banknotes, with each coin weighing 5g). In essence, the central bank would need to produce just one ZincSecure coin instead of 15 banknotes over the same period.

Volodymyr Bahlai, General Director of the Banknote Printing and Minting Works of Ukraine, gave a presentation at the Banknote conference in Dallas in late May, in which he announced the choice of ZincSecure, commenting that '(we) were excited to find a more cost effective and secure currency to replace some of our banknotes. We evaluated and tested Jarden Zinc's new ZincSecure product. Not only did it provide the security needed for higher denominations, we also found that our minting operations were much more efficient with this material and that we could increase the complexity and relief height of our coin images.'

## Distinct EMS

Jarden Zinc states that ZincSecure offers a distinct electromagnetic signature (EMS), a critically important security feature, from other coin materials. An added advantage is that different zinc alloy combinations can be manufactured, each with its own unique EMS. As a result, countries can avoid any risk of similar coins being substituted across borders, since existing vending and coin-sorting equipment sensors can recognize the ZincSecure EMS. Additionally, ZincSecure is a non-magnetic material, which means it would not interfere with the machines involved in coining and sorting.

Moreover, ZincSecure blanks – which are available as single piece and bi-metal blanks – require lower tonnage during the coining process in comparison to other coinage materials (the NBU observed that it required at least 35% less tonnage than high-cost solid alloy). The softer nature of base zinc alloy also allows sophisticated coin image designs, further enhancing security (the intricate designs on the limited-edition circulation ZincSecure coins made by the NBU is cited as evidence to this fact).

For plated ZincSecure, the base zinc drives the EMS, whereas for plated steel, the plating layers largely drive the signal. The EMS for plated steel coins varies as the plating layer wears due to usage, while the EMS for ZincSecure coins remains consistent over its life.

This is a point of concern for the central banks or mints using plated steel coins as they must maintain a wide EMS window to ensure coins with different degrees of wear can pass, leaving them vulnerable to counterfeit coins. ZincSecure does not pose this concern for the mints and central banks, says Jarden Zinc.

While the NBU will cease producing the paper equivalents of the coins, these will remain valid tender until they are finally taken out of circulation.

And because there will no longer be 1, 2, 5 and 25 kopika coins, the NBU has set rounding rules for cash payments: a sum that ends in 1-4 kopikas is rounded down to the nearest 10 kopikas, and a sum ending with 5-9 kopikas is rounded up to the nearest 10 kopikas. The rules came into force this month.

# 40 Year Celebration for Solomon Islands

**A limited edition of 100,000 commemorative \$40 note has been launched by the Central Bank of Solomon Islands to celebrate the country's 40th anniversary of independence.**

Designed by De La Rue and printed on its *Safeguard™* polymer substrate, the theme of the note is a celebration of independence with the phrase 'A call to the nation to come together as one and move forward'. It is the fifth note in the new family, following on from the launches of the \$10, \$20, \$50 and \$100. A new \$5 will go into circulation next year.



The \$40 note is unusual because it has a vertical front design and more conventional horizontal back. On the vertical front is an image of a man blowing a conch shell (which is used as an instrument to summon people to gather and signals the start of important events).

A stylised map of all the islands as a symbol of nationhood and inclusion is also depicted. On the back of the note the national flag can be seen in the background, overlaid with images of traditional fishing and canoe travel, diving and marine fauna.

The Bank has also issued 100,000 commemorative \$2 coins, which were produced by the Royal Australian Mint.

## In other news...

- The Central Bank of Uzbekistan has replaced its 50, 100 and 500 som coins, and has introduced a new 200 som. The silver-coloured coins are all made of nickel-plated steel and, on the reverse, feature the country's coat of arms and the wording 'O'ZBEKISTON MARKAZIY BANKI (Central Bank of Uzbekistan) along the outer edge, as well as the year of minting. The front of each features the denomination and a local cultural icon.

The move is part of a currency optimisation plan that will see banknotes of the same denominations withdrawn by 2020, leaving four notes in circulation – the 1,000, 5,000, 10,000 and 50,000 soms (the latter two were introduced last year).



- The Central Bank of the Democratic Republic of Congo will put into circulation new banknotes in denominations of 500, 1,000 and 5,000 Congolese francs (CDFs) in August. The other notes in the series, which dates back to 2005/2006 but was last upgraded in 2013, will follow in 2019. According to a statement by the Bank, the new notes are in line with the practice of more frequent upgrades to designs and to thwart counterfeiting.

- Following the launch of a new 10 boliviano in April, the Central Bank of Bolivia has now issued the second note in the series – the 20 boliviano. The remaining notes in the new series will follow at three-monthly intervals.



- The Magyar Nemzeti Bank's banknote redesign programme, launched in 2014, will be completed with the new 500 forint note (and not, as previously reported in *Currency News*, the 1,000 forint, which was issued in March). The new note will be introduced in two stages. First, it will become legal tender this month. Second, the notes themselves will be issued in February 2019, enabling time for all the participants in the cash cycle to prepare themselves.

- The National Bank of Ukraine is introducing new 20 hryvnia banknotes with renewed design and enhanced security features this September, part of a progressive upgrade that saw newly designed 100 and 500 hryvnia notes issued in 2014 and 2015 respectively. Around 5 million new notes will be issued initially. The 20 hryvnia will shortly become the lowest denomination in the series, following the replacement of lower value notes with coins (see page 14).

- The National Bank of Poland is issuing a new commemorative 20 zloty banknote in August to mark the 100th anniversary of Polish independence. 50,000 of the notes, which have been designed and printed by PWPW, will be issued. The Bank issued its first commemorative note in 2006, and since then has issued a further eight (excluding this latest one), with the 20 zloty being the denomination of choice.

The new note will feature a portrait of Józef Piłsudski, Poland's leading statesman in the run-up to and following independence from Russia, who is regarded as the 'father' of the 2nd Polish republic.



# The Answer to the Cost of the Nickel? *(continued)*

The NIST team worked backward, first identifying the desired qualities for the new nickel piece and then figuring out what alloys and procedures might be needed to make it a reality. The US Mint also outlined some site-specific constraints – namely, that the coin has to be produced using the existing manufacturing facilities in Denver and Philadelphia, both of which use a specific type of slow-cooling procedure. Colour proved particularly challenging – not only for the demanding collectors market (who will reject off-tone colours), but also the general public, who may not trust a coin that is too orange or yellow. But colour is often a subjective criterion, says the NIST, and one that can be hard to quantify or reproduce with any kind of reliable standard.

In this case, starting with the set of parameters for resilience, conductivity and colour, the team was able to produce a new mix of copper, nickel and zinc that is 40% less expensive than the current metal mix (75% copper and 25% nickel).

The team relied heavily on a type of materials design system known as an Integrated Computational Materials Engineering (ICME) framework. The method uses a large amount of computer modelling to discover how different components will react when mixed together. In this case, those components were metal alloys.

Experimental work is costly and time-consuming, whereas running a model on a computer is pretty fast and cheap, said NIST. The idea is to use more computational resources and tools to do the legwork in the design stage to cut down on the time and the cost required to go from idea to reality.

'Within a year, we were able to put together a framework for designing an alloy, identifying and using our model to get the correct alloy, and then moving forward and actually making the prototype, testing it out and finding out that we did meet all of our goals,' said NIST project leader and materials engineer Eric Lass. In the past, such work would have taken several years.

## CURRENCY NEWS™

**Publisher:** Currency Publications Ltd  
(a Reconnaissance / Currency Research company)

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ISSN 2516-6336

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