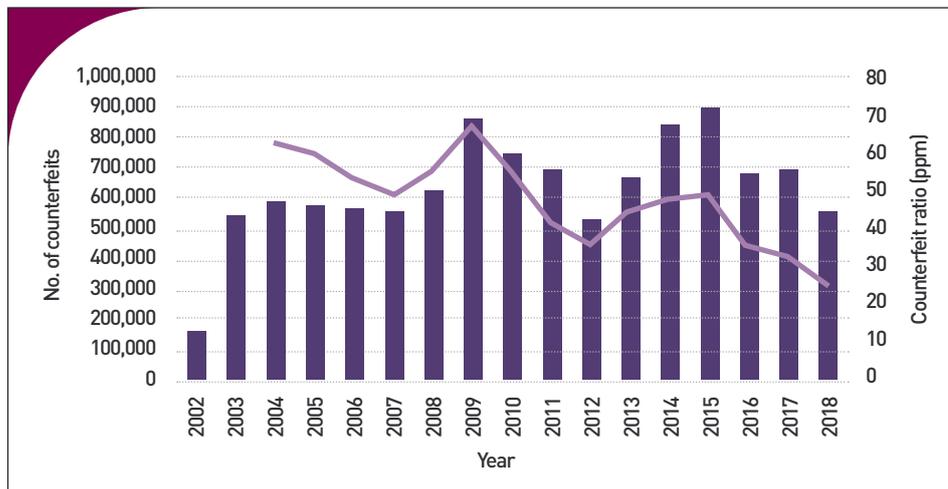


CURRENCY NEWS™

VOLUME 17 – NO 2 / FEBRUARY 2019

New Euro Series Security Pays Off as Counterfeits Continue to Fall



Annual euro counterfeiting statistics and ratio - 2002-2018.

The European Central Bank (ECB) has released its banknote counterfeiting figures for the second half of 2018, which show a substantial fall compared to the previous period and the second half of 2017.

A total of 263,000 counterfeit notes were withdrawn during the second half of 2018, a decrease of 13% compared with the first half of the year. When compared with the same period during 2017, the total number of counterfeits fell by nearly 28%. For the year as whole, therefore, 563,000 counterfeits were withdrawn – compared with 694,000 in 2017, a drop of nearly 19%.

The number of notes in circulation increased in 2017 by nearly 5.6%, and with over 22 billion notes now issued, the counterfeit figure represents a ratio of 25 ppm, the lowest yet since the euro was introduced. The actual number of counterfeits is now on a par with those seized in 2003, the year after the euro was introduced.

As ever, the majority of counterfeit notes, some 80%, were denominations of €20 and €50. Most of the notes, 96.7%, were identified in countries using the euro, with the remainder – 3.3% – found in other EU member states and other parts of the world. There has been a small swing to the latter.

This continuing downward trend, following a peak in 2015 of almost 900,000 counterfeits withdrawn, has coincided with the phased release of the new Europa series. The new €5 was released in 2013, the €10 in 2014, the €20 in 2015 and the €50 in 2017.

The ECB does not provide a breakdown of which series the counterfeits are drawn from. However, with ever decreasing numbers of the first series remaining in circulation, it can be safely assumed that the reduction is due to the increased security of the Europa series. And that the number will continue to fall as the old notes are progressively phased out.

Continued on page 16 >

Loomis Continues Expansion in Germany

Swedish-based cash handling specialist Loomis is continuing its expansion in Europe with the acquisition of Ziemann Sicherheit Holding, a domestic provider of cash handling services in Germany. Ziemann also provides security services, as well as trading activities within the wholesale and retail markets for currencies and precious metals.

The enterprise value – ie. purchase price plus acquired net debt – is approximately €160 million. Ziemann has around 2,700 employees and its annual net revenue in 2018 was €175 million, more than 90% of which related to cash handling. The current operating margin (EBITA1) is c. 7%.

The acquisition comes a year after the company's first foray into the German market, with the acquisition of KÖTTER Geld – und Wertdienste (KGW). KGW has around 800 employees and sales in 2017 of €45 million. Loomis has also recently concluded the acquisition of the French company CPoR Devises which, like Ziemann, is a provider of wholesale and retail currency services, as well as foreign exchange.

According to Patrik Andersson, President and CEO of Loomis, 'the German cash market is large and cash in circulation is growing. We also see that outsourcing of cash management services from the bank system to cash specialists, like Loomis and Ziemann, has been accelerating in recent years.'

Continued on page 6 >

The Changing Role of Cash

It has become evident in recent years in many countries – those with advanced economies at least – that there is a disconnect between the increase in cash in circulation on the one hand, and decreasing levels of cash transactions on the other.

Inside this Issue

- 1 New Euro Series Security Pays Off
- 1 Loomis Continues Expansion in Germany
- 2 The Changing Role of Cash
- 3 G+D Expands Cash Digitalisation
- 3 Northern Ireland Loses 1 of 4 Note Issuers
- 4 News in Brief
- 5 People in the News
- 5 New Law Limits Coins in Singapore
- 6 Ups and Downs for Cash Cycle Leaders
- 6 Nanotech Revenues Up
- 7 From Fintech to Finntech
- 8 A Novel Euro Coin Mixing Study
- 9 From Hybrid to Hybrid ADDvance
- 9 BPS C6 Sets New Standards
- 10 Coin Recycling
- 10 The Snowfish Experience
- 11 Ghana's New Cash Centre Major Attraction
- 11 From Bibles to Banknotes
- 12 HSP EMEA Programme
- 12 2019 IACA Excellence in Currency Awards
- 13 Whither Banknotes in the Digital Age?
- 13 2020 MDC
- 14 Banknote of the Month
- 15 Note and Coin News

The latter is easy to explain (the growth of electronic payments); the former less so. Which is why many central banks are now undertaking detailed research to understand more about how the cash they are issuing is actually being used.

This was the theme of the recent Future of Cash conference, and the Cash Essentials seminar that preceded it (titled Understanding Cash Usage), with several central banks presenting the results of their research into how cash is used in their economies. And while the circumstances in each country differ markedly, one distinct trend common to many is that cash is being increasingly used as a store of value or wealth.

This function of cash is nothing new – particularly for high denominations. Indeed, there is a commonly-used term for it – ‘hoarding’ (although the term has negative connotations. Hence, one former central banker – Anti Heinonnen – stated that the preferred term should be ‘precautionary saving’).

But what is now becoming apparent is how much cash is being used this way. For example, in the eurozone, only 25% is actually being used for transaction purposes. Of the rest, approximately 45% is ‘hoarded’ and 30% held overseas.

So are we now seeing a fundamental shift in the way that cash is being used? The answer, in advanced economies at least, is yes. And the reasons are twofold – both owing much to the financial crash of the last decade.

First is a general distrust of banks and financial institutions.

Second are the low interest rates that were one of the tools for economic stimulus deployed by governments in the wake of the financial crash. More than ten years on, these are still at very low levels in most advanced economies – in some cases even zero (the European Central Bank) or below zero (the Bank of Japan).

It is this combination of low, zero or negative interest rates, low inflation and general mistrust of banks that is the driver for wealth being stored in non-interest bearing assets, ie. cash (whether you call it hoarding or precautionary saving). And while this cash may not be circulating in the cash cycle, it is still issued and therefore technically in circulation.

Should interest rates return to higher, and some would argue more normal, levels, then the rationale for holding wealth in cash becomes very much weaker. And there was an assumption that, once economic growth returned, interest rates would indeed rise.

Many believe, however, that we are now heading for another global recession. The scars of the last one are still fresh but,

this time round, central banks won't have the luxury of reducing interest rates to stimulate growth because they are already at a record low. Or rather they could (and indeed a couple of countries already have), resulting in negative interest rates.

This effectively means that banks will be paid by investors to hold their wealth. This is completely at odds with the fundamental banking principles of interest-bearing deposits which serve as an inducement for people to save, thereby generating funds that banks lend. That aside, the trouble with utilising negative interest rates as a lever for growth is that it will only work as long as there is no alternative on hand to store wealth, ie. cash.

Which is why the IMF suggested just last week that central banks create two separate currencies – e-money and cash – as a way to enable the negative interest rates that will likely be needed to combat future recessions. According to the IMF, without cash ‘depositors would have to pay the negative interest rate to keep their money with the bank, making consumption and investment more attractive. This would jolt lending, boost demand, and stimulate the economy.’

Since getting rid of cash in its entirety is not going to happen (even in Sweden), the IMF suggests that central banks could split the monetary base into two separate local currencies – cash and e-money. The latter would pay the policy rate of interest and cash would have an exchange rate against e-money. When setting a negative interest rate on e-money, the central bank would let the conversion rate of cash in terms of e-money depreciate at the same rate as the negative interest rate on e-money. The value of cash would thereby fall in terms of e-money and would lose value both in terms of goods and e-money, meaning that there would be no benefit to holding cash relative to bank deposits.

Whether or not this would happen is a discussion for another day. In the meantime, it simply underscores the point that cash is growing in importance as a store of wealth – a trend that is likely to continue, in the short term at least, as the global economy heads back into recession.

Whilst more work needs to be done, and is being done, by central banks to identify more accurately the cash that is in circulation but not circulating, the rise of its use other than as a transaction tool needs to join the narrative of the importance of cash.

In other words, cash is not only a convenient, secure, reliable and private means of conducting transactions, it is also a means of securing savings and wealth for the future.

G+D Expands Cash Digitalisation with Purchase of Transtrack



Wolfram Seidemann, CEO of G+D Currency Technology (left), Wolfgang Kneilmann, Head of Currency Solutions at G+D (centre) and Ronald van Vliet, CEO of Transtrack International (right).

G+D Currency Technology and Amsterdam-based Transtrack International have signed a contract whereby G+D will acquire all of Transtrack's shares. Terms of the transaction have not been disclosed.

Privately-owned Transtrack International was founded in 1990 and is a market leader in standard software solutions that address the control, efficiency and management of the end-to-end cash supply chain. It numbers central banks, commercial banks and CIT companies as its customers, and its software is currently deployed at 59 cash centres in 14 countries, and at 138 transport sites around the world. It employs a core team of 50, with a flexible overall workforce of around 300. Revenues are understood to be in the region of €8 million.

According to G+D, Transtrack International's business is complementary to its existing software and service portfolio and, by acquiring the company, it will expand its software and solutions offering and strengthen its position as a global partner for the digitalisation of the cash cycle.

Transtrack's portfolio includes software solutions for ATM management, transport automation, cash centre automation, forecasts and optimisation, long-term forecasting, call management and retail cash management. These are deployed through its CashWebCommunity web portal, which integrates the different modules into one operation and enables real-time visibility, traceability, transparency and security, as well as seamless supply chain cooperation between partners.

'Efficiency in the cash cycle is one of the main factors for keeping cash attractive, and digital solutions are a key driver for efficiency', stated Wolfram Seidemann, CEO of G+D Currency Technology. 'We are a key player in the digitalisation of the cash cycle. Our software solutions allow central and commercial banks to optimise and delegate tasks in the currency cycle while retaining full control. Transtrack International's innovative and modular web-based cash management software solutions are a perfect match with our portfolio, strengthening our offering for CITs, service companies and commercial banks. Together, Transtrack and G+D Currency Technology will offer the most complete cash management software suite for both commercial customers and central banks.'

'We are delighted about the unique opportunity to contribute to G+D Currency Technology's software and solutions portfolio,' commented Ronald van Vliet, CEO of Transtrack International. 'Together we can serve our customers' needs for digital end-to-end cash supply chain even better, by increasing efficiency, traceability, security and visibility in the cash cycle. Joining a family-owned company with a long-term vision is a great fit with our culture at Transtrack. G+D Currency Technology's global presence will help us to grow faster; together we will be the go-to software company in cash management solutions.'

Northern Ireland Loses 1 of 4 Note Issuers

First Trust Bank, one of the four note issuing banks in Northern Ireland, has announced plans to gradually stop issuing its own banknotes next year, instead dispensing Bank of England notes from its ATM network.

According to the bank, the decision is a 'commercial' one that has taken into account the increasing use of digital payment methods and mobile technology.

First Trust Bank is a subsidiary of AIB (Allied Irish Banks) and, along with the three other note issuing banks, has been issuing its own notes since 1929. Its banknotes will remain legal currency until 30 June 2022 and can be spent or lodged into bank accounts as normal. After that date, anyone still holding First Trust Bank banknotes can exchange these for Bank of England banknotes, or other sterling banknotes of equivalent value, in person at any First Trust Bank branch at no cost. There is no time limit on this.

According to Adrian Moynihan, Head of First Trust Bank, 'our decision is solely in respect of our own banknote issuance, and we will continue to handle Bank of England banknotes or sterling banknotes issued by any of the other authorised note issuing banks in Northern Ireland and Scotland as normal.'

Commercial banks in Northern Ireland are required by law to ring-fence assets that are at least equal in value to the banknotes they have in circulation (as they are in Scotland). The amount set aside for the Northern Irish banks came to £2.76 billion at the end of February 2018, according to the Bank of England. Of this, £300 million is accounted for by First Trust Bank, based on its 11% share of the notes in circulation. The release of those assets will therefore boost AIB's capital position, say financial commentators (albeit at the expense of the 'promotional' benefits that commercial banks gain from issuing their own notes).

The other three note issuing banks in Northern Ireland – Ulster Bank, Bank of Ireland and Danske Bank – are all in the process of issuing new notes on polymer. The Bank of Ireland's new £5 and £10 notes, and Danske Bank's new £10 (it isn't issuing a new £5 note) go into circulation at the end of this month. Ulster Bank's new £5 and £10 notes are expected to be issued shortly as well.

News in Brief

ATMIA and ASA Join Forces

The ATM Security Association (ASA) and the ATM Industry Association (ATMIA) have finalised an agreement to join together on a permanent basis.

ASA, which was founded in 2014 by Wincor Nixdorf and Diebold and has 13 members, will retain its name and logo, but will now fall under the governance and ownership of ATMIA. The agreement is the culmination of aligned work completed under a March 2018 memorandum of understanding.

'After just over a year of fruitful discussions, negotiations and transitional arrangements, managed by a joint governance committee, ATMIA and ASA are now officially one,' ATMIA CEO Mike Lee said. 'I'm delighted and excited that we have joined forces to fight together the threats of globally operative criminal groups and fraudsters. One cannot just focus on one region anymore. Those days are over. The fight is global and that is why we will build a global security platform in the coming months and years.'

Digital Banknotes for Marshall Islands

Tangem, a Swiss producer of blockchain smart card wallets, has announced that it will issue physical banknotes of the Sovereign (SOV) digital currency in the Marshall Islands.

The SOV was issued by the Marshall Islands, which are located in the Pacific Ocean, last February under the Sovereign Currency Act of 2018. It is considered to be the world's first decentralised digital national currency, and is pegged with the US dollar which is also legal tender in the Marshall Islands.

Each unique digital Smart Banknote, or rather NFC enabled card, has a blockchain-enabled microprocessor inside and, says Tangem, combines the familiar advantages of paper banknotes with the security of blockchain technology. The notes are 'fully transparent, 100% secure, decentralised, and represent a controllable mechanism of currency issuance and circulation for the state.'

Tangem first launched its digital banknotes in Singapore during 2018 (see CN May 2018).

US Quest for Smart Currency

The Bureau of Engraving and Printing put out a request for information seeking 'never-before-seen' ideas for incorporating technology into bills that can then be read by special machines, verifying their authenticity.

The solution can either be incorporated into the banknote or applied to the note, but must meet four requirements. It must be difficult to discover on a banknote even by subject matter experts; difficult to explain the functionality or detection mechanism of the feature; readable by a highly discriminating standalone detection system; and resistant to simulation or duplication, both in terms of material and response.

The request gives little guidance on the sort of technologies that are being sought, other than to state that proposed solutions must be 'novel and not commercially available', but also must be lab tested, with prototypes available for evaluation.

The BEP clearly is not in a hurry, as the deadline for the RFI isn't until January next year.

New £1 to Go Global

The new 12-sided £1 coin is 'going global', according to the UK Treasury, which has announced that British overseas territories and Crown dependencies will be able to design and mint their own versions of it.

The coin was introduced in 2017 and boasts a number of features to thwart counterfeiters. In addition to its unusual shape, it is bimetallic with intermittent milled edges, microtext and a forensic feature and is, according to the UK government, the most secure of its kind in the world.

Currently, many of the UK's territories and dependencies use their own versions of the pound, which are pegged against sterling, and most have coins based on older versions of UK currency.

According to Robert Jenrick, Exchequer Secretary to the Treasury, 'the Great British pound is internationally recognised and as we extend the new £1 coin to our territories and dependencies, we will see new designs emerge that together symbolise our shared history.'

New Banknotes for North Macedonia

The newly-named Republic of North Macedonia will issue new banknotes in 2020 to reflect its change of name.

Formerly known as Macedonia, or by its official name of the Former Yugoslav Republic of Macedonia, the change is the result of a landmark agreement with its neighbour Greece, who claimed that the name Macedonia implied a territorial claim on a northern Greek province of the same name.

There is a phased roll-out of the new name under the provisions of the agreement with Athens, with the National Bank of the Republic of North Macedonia, as it is now known, starting the issue of new banknotes by the beginning of 2020.

Goznak and Voith Cerate New Paper Benchmark

The celebrations late last year of Goznak's 200th anniversary included the inauguration of the new PM 7 new paper production facility at its paper mill in Krasnokamsk in central Russia, which was developed and project-managed by Voith.

The guests at the official opening ceremony included Alexej Moiseev, Deputy Russian Finance Minister and Chairman of the Board of Goznak, and Alexej Chibisov, Minister of Industry, Economic Affairs and Trade for the Perm region. In his address, Arkady Trachuk, General Director of Goznak, said that 'we worked with the designers, equipment suppliers and contractors to create a production complex that is one of the best in the world.'

One of the key components of the fully-automated system is the forming section, containing a MasterVat, an optimized unifold vat in which the watermark is created at the same time as the banknote paper, and the ShortFormer for the first ply of the two-ply papers.

'Through their very close collaboration based on a spirit of trust and partnership, Voith and Goznak have created a benchmark for future plants' said Wolfgang Neuss, Director Sales and Technology Banknote and Security Paper Machines at Voith.



From left to right: Wolfgang Neuss of Voith, Goznak Purchase Manager Mr Kozlov and Günther Meuser, Senior Project Manager for Voith Paper, standing in front of the mastervat and shortformer which are the centrepiece of the new papermaking facility in Krasnokamsk.

People in the News

Nestor Espenilla, Governor of Sentral Bangko ng Pilipinas, has died of cancer aged 60, just 18 months after being appointed. He was a three-decade veteran of the central bank, having joined as a debt analyst in 1981. He became a Deputy Governor in 2005, and was appointed Governor in July 2017. Deputy Governor **Cyd Tuano-Amador** has taken interim charge pending the appointment of a successor.

The Governor of the Bank of Ghana, **Ernest Addison**, will become the next Chairman of the Committee of Governors of the Economic Community of West African States (ECOWAS). He replaces **Godwin Emefiele**, Governor of the Central Bank of Nigeria. ECOWAS is a regional economic union of 15 states and is currently working towards a monetary union and common currency.

The Bank of Estonia (Eesti Pank) has selected **Madis Müller** as its new Governor to replace **Ardo Hansson** when his term expires in June.

Deputy Prime Minister **Yerbolat Dosayev** is replacing replaces **Daniyar Akishev** as Governor of the National Bank of Kazakhstan.

The Bank of Laos (Lao PDR) has appointed **Sonexay Sitphaxay** as the new Governor. He replaces **Somphao Phaysith**, who has been appointed as a government minister.

The Argentinean government has appointed **Fernando Pereyro** as President of the state printer and mint Casa de Moneda. He replaces **Marcelo Pose**, who resigned last November.

Sam Keayes has joined Crane Currency as Vice President and General Manager of the International Currency business. He joins from Thales, a multi-national engineering and integrated solutions provider, where he held senior operational roles in the UK and Australia. Earlier in his career, Sam worked for the British government where he held a variety of senior roles in security, defence and international relations. He has an MBA from Cranfield University and a Master's Degree in Social and Political Sciences from Cambridge University.



Sam Keayes.

The International Currency Association (ICA) has appointed **Dr Susanne Maise** as Director General. She brings 18 years of experience working with European and international associations, most recently as Executive Director of Operations at CropLife International, an international association based in Brussels, where she was in charge of meetings and events, advocacy, strategy, finance, HR, legal, trademark management and compliance questions. Prior to that, she worked at Syngenta AG and at a research laboratory in Switzerland. She holds a doctorate from the TU Munich and an Executive MBA from Georgetown University, Washington DC.



Susanne Maise.

Commenting on her appointment, Susanne said: 'I feel honoured to work with the ICA and look forward to contributing to its success. Societal developments have significantly changed the work of associations in the past decade, and the ICA will benefit from including these aspects in their approach. Together, we will make the ICA's Global Currency Forum 2020 conference in Barcelona a success and ensure that cash remains an integral part of the payment landscape now and in future.'

Guillaume Lepecq, the former Director General of the ICA, is the new Chairman of Cash Essentials, the independent platform for debate about the payments and monetary ecosystems, and for fostering high quality research on cash and its future.

New Law Limits Coins in Singapore

The number of coins in Singapore that a buyer can use in a single transaction is to be streamlined and standardised to 20 coins per denomination, following the passing of the Currency (Amendment) Bill.

This means a total of 100 coins across all five coin denominations capped for each payment, with the S\$1 coin coming under the legal tender limit for the first time.

The legal tender limits are designed to minimise inconvenience to business and customers. They replace the current system whereby five cent, 10 cent and 20 cent coins are pegged to a limit of S\$2 each, 50 cent coins have a S\$10 cap and there are no limits for payment using S\$1 coins.

These varying pegs can be confusing, according to Ong Ye Kung, a board member of the Monetary Authority of Singapore. Moreover, the use of a value limit is less relevant given that the processing time and effort for coin payments depends on the number of coins used, rather than their value.

The amended Bill will also have new rules to support the use of Intelligent Banknote Neutralisation Systems (IBNS). Under these rules, IBNS-damaged notes will no longer be legal tender. At the same time, providers of IBNS system will be exempted from the offence of mutilation of banknotes.

The Ministry of Home Affairs is now looking to licence companies that sell IBNS or offer services using the system under the Private Security Industry Act. It is hoped that the use of such systems will reduce the reliance of armed auxiliary police officers during the transportation of cash, freeing them up for more critical operations.



Nanotech Revenues Up

Vancouver-based Nanotech Security Corp (Nanotech) – a specialist in the design and production of advanced banknote and commercial branding authentication products – has released its financial results for the ended September 2018.

Annual revenue of C\$9.2 million was 25% higher than 2017. *KolourOptik*® and optical thin film (OTF) development contracts for customised banknote security features continue to drive year-over-year revenue growth. Annual adjusted EBITDA reached C\$2 million, an increase from C\$1.2 million in 2017.

Nanotech has also announced the adoption of a succession plan under which CEO Doug Blakeway will transition his responsibilities to current President and CFO Troy Bullock from this month. Blakeway will remain as Chairman.

Monika Russell, the company's current Vice President Finance, will assume the role of acting CFO.

Loomis Continues Expansion

(Continued)

'Ziemann is a large and operationally very solid cash handling business with a competent and innovative leadership team', he added. 'These factors combined with our know-how in cash handling, cash recycling and value added solutions make us believe that time is right to invest further in Germany and lead the transformation of the German cash eco system.'

Loomis now operates in 15 European countries, and is positioning itself to be one of the two leading cash services provider in Europe, as well as branching out into other cash-related services such as foreign exchange and, through its partnership with Sonect, digital payments as well.

Ups and Downs for Cash Cycle Leaders

January and February are when four of the leading companies in the cash cycle report their annual results for the previous year. As per this time last year, the two cash management/CIT companies – Loomis and Brinks – are weathering the vicissitudes of the market rather better than the two financial self-service leaders – NCR and Diebold Nixdorf.

Loomis has reported an improvement over the previous year. Revenue for the year increased by 11.3% to SEK 19.168 billion – real growth was 8% and organic growth 3%. The acquisitions made in Finland, Chile and Germany during the year had a positive effect on real growth and, as in 2017, sustained good growth in the USA, Spain, Turkey and Argentina contributed to the organic growth.

The operating income (EBITA) for 2018 of SEK 2.2 billion exceeded that of the previous year by 5.1%. However, the operating margin fell from 12.1% to 11.5%. The company noted that, at comparable exchange rates, the operating income improvement was around SEK 41 million or 2%. The reason given for the fall in margins was the cost of restructuring programmes in France and Sweden to meet new market conditions, combined with the acquisition of the German CIT company KGW in January 2018.

Brinks' results for 2018 were positively influenced by a strong 4th quarter. The company's GAAP results (Generally Accepted Accounting Principles) showed a 4% increase in revenue to \$3.489 billion but operating profit (EBITA) remained static at \$275 million, reducing the company's operating margin from 8.2% to 7.9%. Net income for the year was a loss of \$33 million.

However, the company's non-GAAP results paint a somewhat different picture.

According to Doug Pertz, President and CEO of Brinks, 'Brinks delivered strong 4th quarter and year-end results despite persistent currency impacts. Non-GAAP operating profit rose 15% in the fourth quarter, more than offsetting a \$27 million negative currency impact. On a constant currency basis, 4th-quarter non-GAAP operating profit rose 44%, reflecting a margin rate increase of 90 basis points (0.9%) to 11.4%. Our full-year non-GAAP margin rate increased from 8.8% to 10.1%.'

He also looked to the future, saying that 'we are particularly pleased with the accelerated profit growth in our core US operations, which was supplemented by our Dunbar

operations (the fourth largest US CIT company, acquired by Brinks last year). Our goal in 2019 is to generate total US revenue of at least \$1.2 billion and exit the year at a 10% margin rate. In 2021, when we achieve full synergies related to the Dunbar acquisition, we expect to generate a US margin rate approaching 13%.'

NCR's results for 2018 showed a 2% fall in revenue to \$6.4 billion. Operating profit fell by 72% to \$191 million, reducing its operating margin from 10.6% to 3%. The company's income before taxes and discontinued operations was \$39 million compared with \$482 million in 2017, with net income in 2018 a loss of \$88 million compared with a profit of \$232 million in 2017.

According to Michael Hayford, President and CEO, 'in 2018 we made progress in our efforts to build a stronger and more efficient NCR and our fourth quarter results were indicative of the early success as we continue to improve our execution and stabilise our business. Our work to simplify and streamline NCR is delivering results.'

Looking ahead, he stated that the company is entering 2019 with positive momentum and commitment to return to growth (estimated at 1-2% in revenue terms) by investing in the future while reducing the cost structure.

2018 was even worse for Diebold Nixdorf, where the benefits of the merger with Wincor Nixdorf in 2017 have yet to be realised. Although sales only fell by 0.7% to \$4.57 billion, it recorded an operating loss (EBIT) of \$362.9 million, compared with a loss of \$93.5 million in 2017. The net loss recorded for the year was \$568.7 million compared with a loss of \$241.5 million in 2017.

For 2019, Diebold expects revenue to be in the range of \$4.4-4.5 billion. During last year, its share price slumped by nearly 90%, it had to refinance and there was talk of a takeover. But the share price this year has surged, indicating investor faith in its strengthened management team, its restructuring plans and better than expected savings.

'The company delivered solid 4th quarter results, as we've built momentum globally in executing our DN Now transformation plans,' said Gerrard Schmid, President and CEO. 'I am especially pleased with our ability to generate higher profits as we begin to realise the benefits of our DN Now initiatives'.

From Fintech to Finntech – the Mint of Finland Looks to the Future

Jonne Hankimaa joined the Mint of Finland over two years ago as CEO, having previously worked for private listed companies including Nokia and Cargotec. With challenges ahead for cash, the Mint is actively looking ahead to understand the changing market. Following his presentation on this topic at the recent Future of Cash, Currency News spoke to him about his impressions of the industry and of cash and payments going forward.



Q: What was your background prior to joining the Mint of Finland?

A: I'm an economist by education, and have been in business for the last 25 years. I have been working for listed companies in Finland, and have also spent a ten years working overseas, including in India and Asia.

Then I was approached to see if I would be interested in joining the Mint of Finland. I wasn't aware coins were still made in Finland – production of banknotes and passports had been shut down several years ago and I assumed it was the same with coins. It was a totally new area for me, but I became very interested very quickly. So I joined and have been with the company for two and a half years now.

Q: So what was it that attracted you about the job?

A: Primarily because of the product. It's currency. And that makes it different to anything else – with its own features and characteristics and challenges.

Q: Can you provide a quick overview of the Mint itself?

A: We are 150 years old. We used to be owned by the Bank of Finland, but in 1993 we were set up as private limited company, under the ownership of the State of Finland.

We produce coins and blanks, and our turnover, which fluctuates because this is a project-based business, is in the region of €70-80 million a year. Around 90% of this is from circulating coins and blanks, and the rest in commemorative coins. And we export more than 95% of what we produce.

Q: Having worked for listed companies previously, did you find it a culture shock joining a state-owned organisation?

A: Yes and no.

On a day to day basis, there is no difference between running this and any other company. We are run by a professional board, it's very business-oriented, and there is virtually no involvement by our owners, other than a shareholder meeting once a year.

But on the other hand – and this isn't related to whether the company is state-owned or not, but to what it does – the customer base is very different as virtually all of our sales are to governments. There are different business cycles, drivers and challenges in the B2G (business-to-government) market.

Q: What would you say sets you apart from other mints?

A: First, we are very customer-oriented and have really good relationships with customers all over the world.

Second, we are big enough to be a serious player in this field, but small enough to be agile. Unlike some other mints that serve mainly one domestic market, we have customers all over the world. Having the ability, and agility, to manage multiple projects and customers concurrently is a definite strength.

Q: If we look at the coin market now, there are serious challenges ahead in terms of declining demand and over-capacity. How should the industry be responding?

A: I think the one big challenge is our mentality and thinking in the industry. We all talk about cash versus cashless and say that cash is king. But we need to add 'meat' to this. The world is changing, payments systems are changing, and it may well be that less cash is needed in the future. So the industry should be focusing, together, on how to make cash more competitive, otherwise the future isn't looking so rosy.

Q: You have been doing some work on visualising the future of payments, Can you explain more.

A: We have been working on what we call 'foresight analysis', identifying megatrends that will affect the payments of the future. There are five. Technology development, regulation and societal stability, which is shaking at the moment; the global economy; scarce resources and climate change, which will force us to change how we make things and how we operate; and demographical and social changes, which means urbanisation, ageing populations etc.

One of the reasons that we are doing this, and presenting at conferences, is that we alone cannot change this industry. By sharing our thinking – not only with other suppliers but customers too – we are trying to get more stakeholders on board with this future thinking and orientation.

Q: Going back to your core business, you make coins and blanks. But what about broader support services for coins users?

A: Yes, we do get involved in services, such as consultancy, training, distribution and logistics. The challenge with services, however, is that they tend to be local and are not easily scalable. Which is why we are very much focusing on digitalisation in order to be able to provide digital support, communication and training tools.

This digitalisation doesn't just apply to services. We are moving into a digital world, and it also applies to the way we operate and the products we offer.

Q: Does that mean you could move into the digital currencies or the broader payment arena? In fact, could you add a new meaning to the term fintech (ie. finntech?)

A: Possibly. We are already working in the digital space, and many of our customers are looking into this too, then we can help them. This change is happening, and in Finland there are lot of fintech start-ups, so we are in a position to work with them as well.

Q: Finally, after two and half years in the industry, what have you enjoyed most?

A: I love learning, and also I really like the diversity of payment systems. There is room for cash too, but understanding how it will feature in an unknown future is everything.

A Novel Euro Coin Mixing Study

By Dr Alan Hodgson

A recent paper in the physics press detailed a study conducted in Slovenia on the distribution of different nationalities of euro coins, covering the period directly after the introduction of the euro in Slovenia and then some years later.

It was conducted as a teaching aid to students to illustrate a study in socio-physics – an interdisciplinary field where the tools of statistical physics are applied to modelling social behaviour.

In this case processes and models developed in traditional physics for mixing by diffusion at the molecular level can be used to describe the mixing that occurs in migrating sets of coins in Europe. As the number of coins in circulation from each country and the number of coin carrying citizens are large, the statistical modelling used in socio-physics would appear to be reasonable and legitimate.

Background

The paper reports on a study of coin mixing after the introduction of the euro to Slovenia and revisits this after a period of 10 years. It therefore gives a snapshot of both the initial mixing situation and an equilibrium state some years later. The work develops two theoretical models for the mixing process of euro coins across borders; the initial model valid in the period after introduction of the euro and a longer term model valid several years later, when shares of different national coins became constant.

The study was done at the University of Ljubljana as a project with students to illustrate how to gather relevant data, to construct a physical model of the mixing process, to compare this model to the collected data, to extract information and draw meaningful conclusions from these data.

The coin mixing process they examined is the percentage of Slovenian coinage in citizens' purses compared to other euro coins from other countries and commemorative coins. Because their sampling looks at coins in students' purses, rather than in jars at home, it has an almost exclusive bias to coins in active circulation, as people do not in general keep coins on their person for long periods.

This study did not consider different denominations, just the nationality of the coins – but could easily be scaled to cover this. And although the model was written for the Slovenia case, it could be easily adapted to any country entering a currency bloc in future, and potentially the introduction of a new coin into an existing mix.

Methodology

When conducting social studies such as this it is important to take a statistically significant (large) and representative sample. Typically researchers only have access to a small subset of the whole set, in this case the coins accessible to them in one way or another. The researchers chose to study the contents of purses owned by a larger number of individuals. The first sample taken just after euro introduction took place over a period of two years, once a week during the first year and once a month in the second year. The second study after 10 years was only done over one year as the situation by then was much more stable, and the count was done five times that year.

The sample set accessible to the researchers was trainee physics and primary school teachers within the University of Ljubljana and consisted of just over 100 students. They came from different parts of Slovenia and social strata but were of similar age. Although the age distribution is not representative, they probably presented a good sample of coin distribution, if not of denomination and coin number.

The results

The Slovenian study is not unique and the paper mentions other work done when the euro was first introduced in 2002. The mixing process was followed at some level in Germany, Belgium and France and there is mention of an unpublished study by the European Commission to study coin migration. What would appear to set the Slovenian study apart is the models of coin diffusion, the attention to detail in the analysis and the availability of their additional data on line.

When Slovenia adopted the euro in January 2007 one would expect that the percentage of coins in circulation would start at a high level near to 100% but fall over time due to Slovenian citizens travelling, as well as visitors from abroad carrying coins into the country. As a result over time the nationality of coins would mix.

It was interesting to note that although the initial release of euro coinage in January 2007 consisted of Slovenian coins only, the initial share was high, but not 100%. The study attributed this to the previous travels of citizens, resulting in a significant amount of foreign euros being kept at home and people starting to use them when the euro was introduced in Slovenia. Therefore, at the very moment of the euro's local introduction, coins of other EU member states were already in circulation.

During this initial period the Slovenian coin share was only around 70% and the shares of coins from different nations showed marked variation, suggesting that local stores of other coins were indeed a driver for these results. The average number of coins in purses was found to be 9.5, somewhat skewed by the fact that purses with no coins were not included in the count.

The data analysis reported in this paper showed that the share of Slovenian euro coins in the period after the introduction decreased with a 'characteristic time' (down to around one third ($1/e$) of the initial share) of around 600 days, revised down to 430 days in the 10 year study. The study reported a stable share of Slovenian coins in active circulation at the end of the study as around 28%, much higher than predicted by their initial model but consistent with the long-term model. It was interesting to note that this figure did not vary much in summer when there is a large tourist influx who did not appear to affect coin distribution.

Finally, although the study did not consider the effect of coin value, it did hint that the mixing appeared to be faster for higher denominations and slower for the cent denominations, an observation also known to coin collectors.

This paper presents an interesting model for the collection of data on coin, or indeed banknote, distribution. The use of students is also interesting as, although it has the potential to skew the sample, it illustrates the fact that they represent a trained and potentially low cost route to such a study.

From Hybrid to Hybrid ADDvance

Louisenthal took the opportunity at the HSP Asia conference in Hanoi last December to present its latest substrate – *Hybrid® ADDvance*.

Hybrid® was first launched in 2008 as an alternative to polymer, offering the same levels of durability without sacrificing the security of traditional paper-based features. It comprises a cotton fibre core with a very thin protective film layer (around 6 microns) on each side providing protection against soiling and tearing, while the inner cotton core can incorporate all commonly used substrate-borne security features, such as cylinder-mould watermarks, security threads and fibres. An ink primer applied to film surfaces provides the same printing properties as conventional banknote paper. To date, ten countries have adopted the composite substrate for their banknotes, leading to a lifecycle of around three times that of traditional paper. And no counterfeits have been reported.

Over the past ten years, meantime, Louisenthal has also introduced a range of new security features, notably its *RollingStar®* micro-mirror technology, which can be used for windowed threads, its surface-applied *LEAD®* (stripe) features and also in combination with windows (*Varifeye®*).

Louisenthal emphasises that it is important for the company to be able to offer all banknote substrates with optimal security possibilities, thereby offering customers full scalability. With Hybrid ADDvance, it has been possible to fulfill this value proposition for highly durable substrates.

Such features are typically used for higher value notes and the purpose of Hybrid ADDvance is to protect these features as well – hence the use of an additional polymer level that protects the surface-applied features such as LEAD and Varifeye, as well as the substrate-borne features.

The result, says Louisenthal, is that its composite substrates is now optimised for all denominations in a series – from the low value ‘market’ notes with fewer features to the higher value transaction and savings notes, where additional and optimal security can be incorporated and protected whilst, at the same time, offering added durability and protection against wear and tear.

The Central Bank of Armenia, having chosen Hybrid for its award-winning commemorative 500 dram note in 2017, opted for Hybrid ADDvance for the new circulating series.

The six denominations all feature Louisenthal’s *Galaxy®* security thread (a development of *RollingStar*) with machine-readable *MultiCode™* design elements, along with *SPARK® Live*. They also include a *Lasercut* window, in which the same motif as the SPARK Live feature can be viewed from either side of the note. All of which are protected through the use of Hybrid ADDvance.

BPS C6 Sets New Standards for Medium Volume Cash Centres

G+D Currency Technology has added the *BPS C6* to its portfolio of banknote processing systems. It has been designed as a sturdy desktop banknote processing system for heavy-duty use, especially in medium-volume cash processing centres of commercial cash handlers, such as commercial banks, cash-in-transit companies (CITs) and casinos. And, says G+D, it sets new standards in its combination of productivity, durability, and connectivity.



The BPS C6 is the first result of a new partnership with the Japanese company Hitachi-Omron Terminal Solutions, a global leader in cash handling systems for the banking industry, with whom G+D signed an MOU last December for a global alliance.

‘Demands on cash centres are rising,’ said Wolfgang Kneilmann, Head of the Currency Management Solutions division and Member of the Management Board at G+D Currency Technology. ‘Due to commoditisation there is an increasing pressure on price, while, at the same time, costs are rising because of regulatory requirements, security infrastructure and a growing amount of automation. With the BPS C6 we can meet these demands all at once, as it delivers best-in-class performance, excellent usability and new digital interfaces, allowing a seamless integration into any cash management software.’

The sensors, developed by Hitachi-Omron, comply with banknote processing regulations on a global scale, enabling high-end banknote detection and validation in accordance with demanding regulations and fitness standards.

The system is capable of processing banknotes at a speed of 72,000 banknotes per minute, which – says G+D – makes it the fastest desktop sorting system worldwide. The system can process all substrates (paper, hybrid, and polymer), and the numerous output compartments and operation modes enable maximum flexibility and modularity, so it can be fully tailored to individual customer requirements.

It is one of a suite of cash processing systems from G+D, ranging from the compact BPS C series through to the BPS M series of high speed sorters for central bank cash centres, capable of processing 120,000 notes per hour, and the BPS X for single note inspection system for printworks, which can process up to 150,000 notes per hour.

The BPS C6 was formally launched at the MEA Cash Cycle seminar (see page X), accompanied by its larger cousin the *BPS C5*, which launched last year and has won a coveted IF Design Award 2019. It is based on a flexible modular concept with up to six delivery modules, 25 output stackers and 50 processing modes, and has a throughput of 63,000 notes per hour.

Coin Recycling – a Huge Opportunity

By David de Haas,
London Metals Company

There has been a lot of discussion recently about the advantages and disadvantages of coins compared to paper/plastic money.

But few make the basic point that metal coinage has an intrinsic value and is essentially recyclable, whereas paper and plastic money does and is not.

Metal coinage can be categorised as follows:

- Copper nickel alloys – usually 75% copper, 25% nickel or 84% copper, 16% nickel
- Bronze coins – typically 97% copper, 2.5% zinc and 0.5% tin
- Nickel aluminium bronze coins – typically copper 92%, aluminium 6% and nickel 2%
- Nickel silver coins – typically copper 70%, zinc 24.5%, nickel 5.5%, or copper 79%, zinc 20%, nickel 1%
- Nordic Gold – an alloy of copper, aluminium, zinc and tin
- Copper plated steel coins
- Nickel plated steel coins
- Nickel plated steel coins and nickel copper plated steel coins
- Brass plated coins
- Brass and bronze plated steel coins
- Aluminium alloy coins
- Stainless steel coins, usually an alloy of steel and chrome.

Almost all can be used not only for making new coinage, but also in engineering, electronics and the automotive industry.

I have asked people in the coinage industry how many tonnes of coins they believe are still in circulation. I received only one answer and the quantity was huge, so I treat it with some scepticism.

I have done my own calculation. If there are 7.5 billion people in this world, and each person has 20 coins which weigh an average of 5 grams each (ie. 100 grams), there is something like 750,000 tonnes of coinage available.

This represents a huge quantity of metal resources which can eventually be recycled – a hugely profitable opportunity for the governments who have issued these coins.

The Snowfish Experience

PNO Global was founded in 2014 by a group of industry veterans to offer products and technologies to the banknote industry and central banks that provide an alternative supply route to the ‘normal’ channels.

In the early days, the company’s portfolio comprised eco-varnishes and coin blanks, but within a couple of years it was making a name for itself with its *Snowfish*[®] technology, which has now evolved into a suite of compact desk top products that provide stand-alone analysis of banknote fitness, quality and security – two of them launched in the last year alone.

First of all was *Snowfish SP* (Sorter Process), unveiled at the HSP Latin America conference in Mexico City in 2016. *Snowfish* (which derives its name from Single Note Fitness Inspection System) was developed by Tom Buitelaar of PNO Global (and formerly of the Dutch central bank) as an analytic tool for sorting systems, leading to an improved circulation quality and lower costs for replacement of prematurely destroyed notes.

With *Snowfish SP*, fitness test-decks can be calibrated objectively and used to analyse the actual banknote sorting process. The inspiration for *Snowfish* came from Tom’s time at the Dutch central bank, where a study of the characteristics of dirt detection led to an adjustment of the algorithms in the sorting process. After implementation, the sorting yields improved significantly, resulting in savings valued higher than the sum of his entire DNB salary.

The table-top device can measure a wide range of banknote properties. In addition to reflective and transmissive measurements in IR and standard colours, it measures indigo and violet, which are parts of the colour spectrum that can improve soil recognition. 3D aspects such as intaglio print, crinkles and surface structure form an integral part of its recognition and measurement capabilities, while customer specific analyses can be provided upon request.

The launch of *Snowfish SP* led to a partnership with De La Rue, announced at the Banknote Conference last May. At the time, Nikki Strickland, De La Rue’s Product Marketing Manager, commented that ‘the data-driven philosophy of PNO Global perfectly aligns with that of De La Rue and the *Snowfish SP* brings a new dimension to our DLR Analytics offering. The fitness decks and reports generated by the *Snowfish SP* will provide ways to support central banks in their clean note policies and opens up the possibilities to drive global standardisation of fitness decks in the same way that DLR Analytics has driven standardisation of cash cycle analytics.’

Also last year, at the HSP Latin America Conference in the Dominican Republic, PNO Global showcased *Snowfish QC* (Quality Control), which was developed to analyse samples of new banknotes, allocate minor and major defects and classify the control output in ‘Quality Acceptance Levels’ data, all in one tool. And, says PNO Global, as a tool that is independent of printers, it helps avoid any disputes over what is and isn’t in specification.

Then, a few months later at the ACCE event in Las Vegas last November, the new *Snowfish CA* was unveiled. *CA* stands for ‘Counterfeit Analysis’ – and the system enables detailed analysis of counterfeits, with a unique database for statistical analysis. *Snowfish CA* provides results with specific detailed information of origin and production methods, which contributes to the tracing of counterfeiters. Moreover, says PNO Global, its practical size and ease of operation make it possible to use the *Snowfish CA* at regional locations such as police stations.

To finish off the year, last December at HSP Asia in Hanoi, PNO Global brought it altogether with the *Snowfish Experience Centre* – a suite of tools to demonstrate to potential customers the range and benefits of the different technologies, made possible by their compact size. There is now a permanent *Snowfish Experience Center* at the offices of IGT Testing Systems in the Netherlands for demonstrations and training.

More recently, this month PNO Global announced the foundation of *Snowfish BV*, a joint venture with IGT Testing Systems into which all *Snowfish* activities will be incorporated.

IGT Testing was appointed as PNO Global’s production partner back in 2016, and is responsible for the manufacture of the systems, servicing and warranties. According to Jan-Dirk Enschedé of PNO Global, following the launch of its various *Snowfish* products, many central banks and printing works now recognise the value that these can add to their processes and systems. The time is therefore right, he said, to bring together product development, sales and after sales support and services under one legal entity.

The logo for Snowfish, featuring the word 'SNOWFISH' in a bold, blue, sans-serif font. The letter 'O' is replaced by a colorful, multi-dot graphic consisting of small circles in red, yellow, green, and blue, arranged in a circular pattern.

Ghana's New Cash Centre Major Attraction at MEA Cash Cycle Seminar



The MEA Cash Cycle Seminar (ICCOS) – held in Accra, Ghana from 11-13 February – was the fourth such event to be organised by Currency Research (CR) – and the second to be held in Africa. The first was held in Nairobi, Kenya in 2017. The inaugural MEA event took place in Beirut in 2015 with the third being held in Abu Dhabi in February 2018.

This year some 63 organisations attended, with central and commercial bank delegates accounting for around 65% of the total number of around 185 attendees.

The Central Bank Summit, specifically for central bank delegates, was held on the day prior to CCS, divided into sessions on substrates and durability (convened by CR) and ethical practices at central banks, moderated by Antti Heinonen, Chairman of the Banknote Ethics Initiative (BnEI).

The following day, delegates to the main conference were officially welcomed by Dr Ernest Kwamina Yedu Addison, Governor of the Bank of Ghana.

His overview of developments in Ghana led nicely to the first plenary session on the evolution of the cash cycle in the MEA region in which John Gyamfi, Bank of Ghana, described their cash cycle, Paul van der Knapp of G4S focused on the findings for the MEA region in the G4S Cash Report

2018, and Nathan Best of Travelex gave a paper entitled 'Consumers Refuse to go Cashless' based on their recent research study. This session set the scene for the rest of the seminar, where the future for cash was either directly or indirectly being considered or debated.

Topics for the plenary sessions throughout the event included The Evolution of the Cash Cycle in the MEA, the Life Cycle of Banknotes in Circulation, the Future of Cash and Money (including crypto currencies) and Cash Management in an Evolving Cash Cycle. There were also two panel discussions – on Big Data Relative to the MEA, and Can Cash and Digital Payments Co-Exist. The final session featured a symposium on the status of currency.

Those who took advantage of the post-conference tour of the Bank's new cash centre in Accra – opened in 2015 and the largest in the region – were treated to the unique experience of viewing, first hand, this state-of-the art facility. All those involved – the Bank of Ghana, designers, engineers, software and machinery suppliers – are to be congratulated on their achievement. It remains a work in progress as changes to improve efficiency further are still being considered.

The 2020 MEA Cash Cycle Seminar will be held in Muscat, Oman, in February 2020.

From Bibles to Banknotes

Orell Füssli, which began producing bibles in the 16th century, is celebrating its 500th anniversary this year. And to mark the milestone, it has introduced a new house note, the design of which will be revealed piece by piece until the formal unveiling of the full note at the Intergraf security printing conference in Copenhagen this October.

Planning for the 500th anniversary events began in 2015, leading to the idea of an anniversary note. To this end, a design competition was launched in 2016. Out of a group of five Swiss graphic artists, Christophe Métroz secured the mandate in 2017.

The Anniversary Note is a joint collaboration between Orell Füssli Security Printing and its project partners KURZ, SICPA, KBA-NotaSys and Landqart. According to the company, the special nature of the note rests not only on its design, but the fact that it is being printed on three different substrates – *Durasafe*[®], standard cotton-based paper and *Guardian*[™]. This, says Orell Füssli, demonstrates that it has the capability of applying complex printing processes separately on each of the highlighted substrates, while simultaneously integrating the latest security features.

30,000 banknote sheets will be issued on each of the different substrates.

While the note will be on display for the first time in Copenhagen later this year, a foretaste can be obtained via the company website (www.ofs.ch), on which will be revealed a jigsaw puzzle piece of the design each month.

Accompanying the new note is a film depicting how it was produced, with selected printing and application processes shown; a microsite and associated booklet, and a detailed presentation describing the note from its genesis to its release.



HSP EMEA Programme Announced

Organisers of the *High Security Printing™* (HSP) conferences, **Reconnaissance International**, have announced the programme for the upcoming HSP EMEA event taking place in Malta on 25-27 March.

The conference programme will be split into two parallel tracks – one focusing on currency and the other on travel and identity documents – allowing attendees to concentrate on the topics and issues that interest them most. A total of 45 presentations will be delivered over the two days to an audience of 300-plus, with six sessions covering regional currency developments; design, security and public perception; production and print; cash management and processing; data for banknote management; and technology and innovation.

The event will open with pre-conference seminars on 25 March, one of which will be dedicated to currency. 'Security Threads and Diffractive Foil Features for Banknotes', presented by Drs David Tidmarsh and Mark Deakes of Reconnaissance, will cover all aspects – including the history, application, production, types, material science,

technologies, design and features – of security threads and diffractive foil features on banknotes. The recently-published special report on diffractive features and the soon-to-be-published equivalent on security threads will form the basis of the seminar, with preliminary findings from the latter revealed for the first time.

The opening session of the conference on the following day will lead off with a welcome address from Julia Farrugia Portelli, Malta's Parliamentary Secretary for Reforms, Citizenship and Simplification of Administrative Procedures, followed by presentations from the central banks of Switzerland and Hungary.

The following session on regional currency developments will hear from the central banks of Russia, Bulgaria, Moldova and Egypt.

Five papers will then explore developments in currency design, security and public perception, including designing for the user, the latest in security fibres, and a transformation case study on switching from paper to polymer.

The next day will lead off with a session on Production and Print, including presentations on production planning in a modern printworks, innovation through evolution and sustainable management.

This will be followed by a session on cash management and then on data management and analytics.

The final session, to formally close the event, will be dedicated to innovation and technology.

A specialised exhibition of some 35 companies will be held as part of the event, and, as usual, it will play host to the prestigious Regional Banknote and Regional ID Document of the Year awards.

Prior to HSP EMEA, Crane Currency will be welcoming central banks to the formal opening of its new printworks in Malta. A tour of the new facility is also available to selected delegates, as is a tour of De La Rue's new product authentication facility at its Malta factory.

Immediately after the event, meanwhile, will be the popular and highly competitive HSP Football Match.

www.hsp-emea.com

2019 IACA Excellence in Currency Awards

The finalists for the 14th round of the IACA Excellence in Currency Awards, sponsored by *Currency News™*, have been announced, and voting by International Association of Currency Affairs member has now concluded. Over 55 nominations were received. The finalists were chosen by a panel of seven industry experts including four former central bankers.

The finalists are as follows:

Best New Banknote or Series

- **Central Bank of Armenia** – new series of Armenian banknotes issued in commemoration of the 25th anniversary of the Armenian currency;
- **Reserve Bank of Australia** – next generation \$50 banknote;
- **Bank of Canada** – new vertical \$10 banknote, the introduction of which marks a shift towards a staggered approach to note issuance;
- **Bank of Mexico** – new 500 peso banknote – the first in a new family of banknotes that pay homage to the historical and natural heritage of Mexico;

- **Norges Bank** – new banknote series, for which the sea was selected as the overall theme because of its importance for Norway's business sector and economic prosperity.

Best New Commemorative or Limited Circulation Banknote

- **Bank of Canada** – \$10 banknote issued in celebration of the 150th anniversary of Confederation;
- **Bank of Papua New Guinea** – 100 Kina APEC commemorative banknote issued as part of the Asia Pacific Economic Cooperation (APEC) Summit held in Port Moresby;
- **Central Bank of Uruguay** – 50 peso banknote celebrating 50 years since the establishment of the Bank.

Best Banknote Processing Innovation

- **CDI2 (Common Detector Interface 2)** – an open standard for high speed banknote sorting machines created by the Federal Reserve System and the European Central Bank;

- **CPS' SmartFeed™ X10** – a new automatic feeder designed for large cash processing operations;
- **Giesecke + Devrient's NotaTracc®** – improves the handling of banknotes throughout the cash cycle and complements G+D's high-speed processing systems.

Best Banknote Public Education Program, Website, or App

- **Bank of Canada** – digital storytelling and online engagement to provide an interactive story of the new \$10 banknote;
- **Reserve Bank of Australia** – a suite of special communication activities tailored to meet the information needs of priority audience groups for the new series \$10 and \$50 banknotes;
- **South African Reserve Bank** – currency app to drive awareness and education on the various features of the new commemorative South African banknote series.

The winners in all the award categories will be announced at the Currency Conference Gala Dinner to be held on 10 April in Dubai.

Whither Banknotes in the Digital Age?

Reconnaissance's new Digital Document Security conference (DDS) in Berlin, 13-15 May 2019, will help to answer that question. This conference examines the relationship between the physical and digital domains in document security at a time when smartphones and other devices are taking a growing role in financial transactions and identity confirmation.

This conference has evolved out of the well-established Optical Document Security Conference (ODS), and like ODS, the programme of papers has been selected by a committee of specialists in the field, co-Chaired by Dr Alan Hodgson, Visiting Academic at the University of Manchester, and Ian Lancaster, Associate at Reconnaissance.

The result is a conference of four sessions covering the key issues around this emerging field. The sessions are: The Physical/Digital Interface; Print in a Digital World; Smartphone Applications and Digital ID.

Again like ODS, the two-day conference is preceded by a half-day Short Course, this titled *Digital and Physical: Does One Plus One Equal Three?* In this three-part course, Ian Lancaster will guide participants through the established and innovative methods for physical document security, then Alan Hodgson does the same for digital document security.

The third part of this course is a panel, chaired by Dr Mark Deakes, Director of Optical and Authentication Technologies at Reconnaissance, examining the contention that physical and digital together provide more than the sum of the parts.

A timely conference

There are centuries of experience in physical document security – including banknote security – while the digital secured document field is barely two decades old. Papers in the conference examine how significant this is, while also giving information on specific technologies and systems to achieve secured document security.

Organisations span the spectrum from banknote producers to new companies providing digital transaction or ID systems. The former include De La Rue (Keeping Your Banknotes Secure in an Increasingly Digital World), Bundesdruckerei (Building Blocks for Digital Transformation of Security Documents) and Banknote Paper Mill India (The Role and Limitations of Smartphones).

Among the organisations offering digital systems are INPI Asia (NDCode: Securing the Link Between Physical Documents and their Digital Data), YPB Group (Motif Micro: Secure, Smartphone-Readable Codes to Bridge the Physical / Digital Divide) and Vesdo (Authentication of Serial Codes).

Physical/digital interface

There will also be papers covering the interface of physical and digital, particularly the impact of digital on management or examination of physical documents. So Clause and Thinfilm Electronics give a paper titled 'Smart Contracts – Digitization of Documents through NFC', and U-NICA Solutions combines with the University of Geneva for a paper on 'Multilevel Digital Security for Physical Documents'.

Similarly, ScanTrust and Lake Image Systems give a joint paper on a secure code technology for printed graphics while the University of South Dakota and the South Dakota School of Mines report their work on NIR-to NIR up conversion reader systems.

The papers mentioned here are just a sample of the full two-day programme, which will be supported by a 'show-and-tell' table-top exhibition, where presenters and others can allow conference participants to see, handle and learn more about their digital and physical products or systems.

Digital Document Security is targeted at business and product development, R&D and technical staff within central banks, national identity authorities, banknote producers and digital systems developers and suppliers.

More information can be found at digitaldocumentsecurity.com

2020 MDC Goes to South Africa

The next Mint Directors Conference (MDC) – the 31st – will be held in Cape Town and Pretoria from 26-29 April 2020, hosted by the South African Mint.

The MDC was created in 1962 in Lausanne for mint directors, manufacturers of coins, retailers and other stakeholders to discuss matters of common interest regarding technology, markets, social contribution, and global finance affecting the currency industry. MDC 2020 is expected to attract over 300 delegates.

The baton for 2020 was passed to the South African Mint by the state-run coin and banknote manufacturer, Korea Minting and Security Printing & ID Card Operating Corporation (KOMSCO), which hosted the conference last year in Seoul.

'The conference is a fantastic opportunity for the South African Mint to showcase its innovation and manufacturing capabilities and promote the country. MDC 2020 will add further to our reputation as a world class producer of circulation and commemorative coins. It is the premier event for attracting international interest,' said Tumi Tsehlo, South African Mint's Managing Director.

'South Africa has an impressive track record in hosting global events. We first hosted MDC 20 years ago, in 1998, and since then South Africa has built a reputation for itself as a destination for global events and conferences including the spectacular World Cup 2010', he added. 'We are confident that in 2020, the minting industry will have a similarly enjoyable experience and we look forward to showcasing the developments of our young democracy.'

MDC 2020 in South Africa has pledged to be the most environmentally-friendly MDC conference yet. The South African Mint has appointed Reconnaissance International, to manage the event, which will be paperless, using digital technology at every touchpoint.

More information can be found at www.mdc2020southafrica.com



40 Years of Celebration for Solomon Islands

A limited edition of 100,000 commemorative \$40 notes was issued in 2018 by the Central Bank of Solomon Islands (CBSI) to celebrate the country's 40th anniversary of independence. Not only is this a somewhat unusual denomination, but it was produced in record time by De La Rue, as Brooke Banks explained on behalf of the CBSI at the HSP Asia conference in Hanoi last December.



Solomon Islands is a Pacific nation located to the east of Papua New Guinea. There are six main islands and around 900 smaller islands covering an area of 28,400 km². The population numbers 667,000.

Currency in circulation has been growing gradually – as of October 2018 notes to the value of around \$877 million dollars were in circulation, and \$31 million worth of coins.

Solomon Islands was formerly a British colony, securing its independence in 1978. The previous year the Solomon Islands dollar was introduced, replacing the Australian dollar. The same design themes were used in subsequent versions of the notes, until the current series, which saw a complete redesign with strong images and bold colours intended to reflect the vibrancy of the islands, with themes based on culture, heritage and wildlife.

The first note in this series, the \$50 was introduced in 2013, followed two years later by the \$100. Both featured De La Rue's super-wide *Optiks*[®] thread with a transparent window. In 2017, the new \$20 and \$10 notes were issued, both with *StarChrome*[®] thread. The new \$5 is expected to follow this year.

In addition to those notes, however, is the \$40 note, chosen as a means by the CBSI to celebrate the 40th anniversary of independence and, at the same time, celebrate the culture and traditions of the island nation whilst looking to the future.

It took the decision to issue the note in August 2017, just 11 months before the issue date in early July 2018. And it worked closely with De La Rue, who has designed and produced its banknotes for the last 40 years, to produce a note themed on 'a call to the Nation to come together as one and move forward.'

Some critical decision were made early on. The objective was to ensure that this note was demonstrably different from the circulating notes, and one of the first decisions was the substrate – polymer (De La Rue's *Safeguard*[®]). This is not only different to the circulating notes (all produced on paper), but was also chosen to help reinforce the notion that the nation is moving forward.

The second was to go for a vertical format on the front of the note – again, to provide a clear visual clue that this note would be different.

Collaborative Effort

In terms of the design theme, the work was a truly collaborative effort, said De La Rue, with a wide variety of options sketched out, debated and, in most cases, discarded. For example, the nation's flag and images of past leaders were proposed but then ruled out in order to avoid any perception of political bias in what was an election year.

Similarly, a number of different areas of economic activity – both those that brought Solomon Islands to where it is and those that will take it forward – were considered, such as mining, logging, fishing and even honey farming (although the proposed image of the beekeeper in the early concepts was discarded on the grounds that he looked like an astronaut).

Ultimately, however, with tourism such a potentially important part of the economy, and sustainable development also going forward, themes celebrating the beauty of Solomon Islands were chosen.

The principle image on the front of the note is a man blowing a conch shell (which is used as an instrument to summon people to gather and signals the start of important events, and was chosen to visualise the overall note theme). Although the note is predominantly blue, a series of waves printed in gold iridescent ink can be seen when the note is tilted, radiating out from the conch to denote its sound. A stylised map of all the islands as a symbol of nationhood and inclusion is also depicted.

On the reverse, eco-tourism is represented by images of traditional fishing and canoe travel, diving and marine fauna. The latter include a bi-fluorescent hawksbill sea turtle, the first ever such reptile discovered and unique to Solomon Islands.

In terms of security features, in addition to intaglio print (including raised dots for the blind and visually-impaired), the note contains a clear window, partially overprinted with an image of a conch shell which, when held up to the light, shows the numeral 40. On the reverse, De La Rue's *Gemini 2*[®] feature has been used to incorporate an invisible image of a turtle beneath the denomination numeral, which fluoresces yellow and green under UV light.

Independence Day

The final designs and specifications were only approved in May last year, leaving less than two months for the production of 100,000 notes and their launch on 7 July 2018 – Independence Day.

According to Daniel Haridi, CBSI's Manager for Currency and Banking Projects, the commemorative note project was all about making things happen. 'It was about bringing change and putting a smile to the faces of mothers and fathers on the occasion marking the country's 40 years of political independence. It was also about the success of collaboration, cooperation and communication between the CBSI and De la Rue', he said.



Kookaburra Gets Look-In on New A\$20

The Reserve Bank of Australia has unveiled the design of the new A\$20 banknote, which will be released into general circulation in October.

As with the existing banknote, the new A\$20 features portraits of Mary Reibey (who arrived in Australia as a convict, but became a successful shipping magnate) and the Rev John Flynn (who pioneered the world's first aerial medical service in 1928, now known as the Royal Flying Doctor Service).

The same security features from the previously released \$5, \$10 and \$50 banknotes have been incorporated. Among these features are a top-to-bottom clear window with a *KINEGRAM ZERO.ZERO*® foil stripe applied on top, which can be

viewed from either side of the banknote and contains dynamic effects, including a flying kookaburra that moves its wings and changes colour, and a reversing number '20'. There is also a clear patch with a *SPARK* feature that demonstrates a rolling colour effect on one side, and a kookaburra on the other. As with the \$5, \$10 and \$50, the new banknote includes representations of a wattle and a native bird – in this case the *Acacia buxifolia* and a Laughing Kookaburra.

The new banknotes also have a 'tactile' feature to help the blind and visually-impaired, in the form of three raised bumps on each of the long edges of the banknote.



In other news...

- The Central Bank of Mauritania has issued a new 2 ouguiya coin. It is the sixth coin in the series, the ½, 1, 5, 10 and 20 ouguiyas having been issued as coins at the start of 2018, along with new banknotes, as part of a revaluation that saw one zero knocked off the currency. According to the Bank, the 2 ouguiya will reduce demand on the 1 and 5 ouguiyas by acting as an intermediary between these two denominations. It measures 24mm and is made of stainless steel.



- The Bank of Guyana has announced that an upgraded \$1,000 banknote will be issued in early March with two security upgrades. One is the replacement of the holographic stripe with a blue 6mm wide *MOTION*® *RAPID* thread featuring the numeral 1000 and the Victoria Regia lily, Guyana's national flower. The other is the replacement of the windowed security thread on the reverse of the note with an embedded thread. The \$1,000 note was last upgraded in 2011.

- Hungary's central bank, Magyar Nemzeti Bank, has issued a new 500 forint banknote with updated security features, the last in the new series that began in 2014. Although the new note has been legal tender since last July, it has only now gone into circulation.

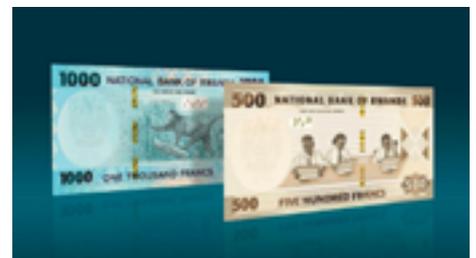
Key security features include a holographic foil stripe on the front of the note, as per all the latest denominations of the Hungary banknote series. Optically variable ink is used to display an image of a horse, also on the front of the note, which changes colour from purple to green as the banknote is tilted.

Other features include a watermark, embedded security thread, see-through register pattern, iridescent ink, latent image, microtext, ultraviolet (UV) features, and tactile intaglio print features including a single horizontal line printed at the lower left hand side of the note – aimed at those with visual impairments to identify the note's denomination.

- The Central Bank of The Bahamas has released the fourth member of the new *CRISP Evolution* series – the \$½, marking the first complete redesign of this particular banknote since 1984. Other notes issued in the new series so far are the \$1, \$10 and \$20.

- The National Bank of Ukraine has issued a 100 hryvnias banknote to commemorate the 100th anniversary of the Ukrainian Revolution of 1917-1921, as well as the introduction of the first Ukrainian paper currency. The design of the non-circulating commemorative banknote is based on the design of the 100 banknote that was circulated in 1918. 100,000 notes have been produced.

- The National Bank of Rwanda has issued new versions of the 500 and 1,000 Rwandan francs with upgraded security features. The colour of the 500 has been changed from predominantly green to brown, and the image on the front of farm animals has been replaced with one of the Nyungwe Canopy, a walkway in the untouched natural rainforest of Nyungwe National Park.



The reverse of the note features a *RollingStar*® windowed security thread. The design and colour of the 1,000 remains similar to its predecessor, but also now features a *RollingStar* thread on the reverse, as well as *SPARK*® *Live* on the front.

New Euro Series *(Continued)*

This is certainly apparent with the €20. As of the end of December 2018, there were 3.2 billion of the new version in circulation, compared with 750,000 of the old. It accounted for 22.7% of all counterfeits, compared with 60% in 2014, the year before the new version was issued.

Proportionally, the counterfeiting of the €50 is correspondingly higher. As of the end of 2018, there were 4.8 billion new versions in circulation, compared with 5.5 billion old notes. It accounted for 62% of all counterfeits in the second half of 2018.

The ECB will be issuing the final two notes in the Europa series – the €100 and €200 – together this May. The €500 is not being reissued.

Production volumes down

The growth in the value of cash in circulation was a topic at the recent Future of Cash conference in Athens. As noted on page 2, the value of cash in circulation has continued to grow in the eurozone. As has the volume of notes.

But this has not translated into higher production volumes – the requirements for 2019 are 3.7 billion, less than half the 8.4 billion notes required in 2012. Since then, there has been a steady decline, but even as recently as 2017, the requirement was 5.7 billion notes.

The discrepancy between the increasing number of notes in circulation and reduced production volumes can be explained, in part, by higher volumes in recent years needed for the new series, which is now tailing off.

But it can also be explained improved durability and hence longer life of the new series (which are varnished), widespread recycling and, of course, the fact that an ever increasing proportion of banknotes are not actually circulating, but are being kept 'under the mattress'.

CURRENCY NEWS™

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

Editor: Astrid Mitchell (right)

Editorial Advisors: Richard Haycock, Martyn White

Advisors: Maarten Brouwer, Mark Crickett, Tom Ferguson, Eugenie Foster, Lahcen Hadouni, James Hussey, Brian Lang, Raul Sierra

Contributors: David de Haas, Alan Hodgson, David Tidmarsh



Annual subscription rate: £1,045 *plus postage*
(also includes *Mint News Quarterly*, the *Currencies of the World* database and *Currency News & Payment Weekly*)

Ask about multiple/corporate subscriptions.

The editorial team welcomes your news, contributions and comments.

Please send these to info@currency-news.com

10 Windmill Business Village, Brooklands Close, Sunbury, TW16 7DY, UK

Tel: +44 (0)1932 267 232; Fax: +44 (0)1932 780 790 www.currency-news.com

Charter Subscribers



No part of this publication may be reproduced, stored in a retrieval system or translated in any form or by any means – electronic, mechanical, photocopying, recording or otherwise – without the prior permission of the publishers.

While every effort has been made to check the information given in this publication, the publishers cannot accept any responsibility for any loss or damage arising out of, or caused by the use of, such information. Opinions expressed in Currency News are those of the individual authors and not necessarily those of the publisher.

COPYRIGHT 2019. ALL RIGHTS RESERVED

ISSN 2516-6336

Events

25–27 MARCH 2019

HIGH SECURITY PRINTING EMEA

St Julian's, Malta

www.hsp-europe.com

7-11 APRIL 2019

THE CURRENCY CONFERENCE

Dubai, UAE

www.currencyconference.com

13–15 MAY 2019

DIGITAL DOCUMENT SECURITY

Berlin, Germany

www.digitaldocumentsecurity.com

13–16 MAY 2019

EUROPE CASH CYCLE SEMINAR

Tbilisi, Georgia

www.europe.iccos.com

3–5 JUNE 2019

HIGH SECURITY PRINTING LATIN AMERICA

San Jose, Costa Rica

www.hsp-latinamerica.com

23-26 SEPTEMBER 2019

ASIA CASH CYCLE SEMINAR

Colombo, Sri Lanka

www.asia.iccos.com

Our printer Colyer Group is ISO:14001 certified for environmental standards, and also FSC Forestry certified – ensuring all our media comes from sustainable sources.

