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The New Europa €5 Makes its Debut

Mario Draghi, President of the European Central Bank, unveiled the new *Europa* series €5 banknote at the opening of the 'New Face of the Euro' exhibition at the Archaeological Museum in Frankfurt on January 11. This architecturally-endowed museum, which displays items from classical antiquity among other treasures, was a fitting place for the launch, given the series has been named after, and features a portrait of, the Greek goddess Europa, who gave her name to the continent. The actual ancient vase from the Louvre Museum in Paris, from which the illustration of Europa used for the banknote was taken, forms part of the exhibition.

In his speech, the ECB president referred proudly to the moment on January 1, 2002 when for 300 million citizens in (then) twelve euro area countries, the euro finally became real, this being 'one of the



The front and reverse of the new Europa €5

milestones laid down by the founding fathers of the Economic and Monetary Union in the Treaty of Maastricht more than 20 years ago'. 'Euro banknotes', he claimed, 'have become the most visible

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Bank of England Floats £1 Billion Tender

The Bank of England, through the European Journal of Public Procurement, is asking up to five operators to bid for the production of its banknotes. The contract could be worth up to £1 billion and could last for up to 14 years, involving the supply of around 1 billion notes per year.

The current printer is De La Rue. It took over the Bank's printing operations in March 2003 for a cash consideration, including acquisition expenses, of £10m. It also signed a supply contract for seven years (which was extended, in 2009, for a further five years). The Bank, however retained the overall ownership of the Debden site, with DLR leasing the premises at which the banknote printing takes

place.

The new contract must be fulfilled in Debden and, if DLR fails to win, then the new supplier will take on the 200 staff at the plant. It will also be responsible for the maintenance of the printing machinery, with the payment of any capital costs for refurbishment or replacement coming, in part, from the Bank.

The chosen supplier will be required to accommodate changes in the features or substrates in line with security reviews by the Bank. In particular, the chosen supplier must be prepared to print on paper or polymer should the Bank specify either substrate at any time during the life of the

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The Next Ten Years

This month is Currency News' 10th anniversary. We commented on the major developments of the last decade in the December issue and now, to mark ten years of publication, we are making our predictions on what the next decade may bring.

Early announcements: There is an increasing trend for central banks to announce plans for a new series prior to widespread circulation – partly a consequence of more openness generally, and partly to engage the public's interest at an early stage in new note planning. This strategy backfired for the US\$100 and the new Swiss and euro series. All were announced pre-issue, only to fall victim to production problems with the new security features. CN predicts that central banks will be more cautious about public pronouncements until their selected technologies are proven.

Test circulation: Related to this, more innovative features will make their appearance in commemorative circulating notes before transitioning to circulating notes. Central banks want innovative features, but they also want these features to be proven in a manufacturing and circulation environment. One way of achieving this is to trial such features in circulating commemorative notes. There is nothing new in this; Thailand, for example, frequently uses commemorative notes for this purpose (for example, the first use of OVI was in 1988 on the commemorative 60 Baht), as does Kazakhstan. But CN foresees more central banks, not accustomed to issuing commemorative notes, following their example - Argentina and Morocco being two recent cases in point.

Keeping it simple: The watchword for new security features is now 'simplicity', exhibiting clear and unambiguous effects easily explained and understood by the general public. Optically variable effects such as those provided by holograms and colour shift ink or threads led the way, and still have an important role to play. But the past few years have seen two Level 1 overt security features emerge - *Motion* and *SPARK®* – where the simplicity of the visual effects belies the complexity of the underlying technology. We can expect both more of these, and a number of similar technologies, to become commonplace in banknotes in the years to come.

Integration: Another watchword is integration. The high cost of security features is now such that they need to be optimised both for security and for aesthetic reasons. The new European *Europa* series will display this trend if the new €5, launched in January 2013, is followed by the other denominations in the Euro series II, while the latest display of 'house notes' at *Banknote 2012* gives an idea of what can be achieved by imaginative use of intricate design coupled with the latest security features.

Coin innovation: It is likely that there will be more innovation in coins, which are now under threat from two sides. One is the evolution of low denomination durable banknote substrates, and high value coins need to be more secure if they are to maintain their position at the coin/note boundary. The other challenge is from cashless alternatives that now threaten to impact micro-transactions. The advent and proliferation of

technologies such as NFC and m-payments means that the coin industry will have to make coins more cost-effective, functional and attractive to use.

Public verification: Variations of the 'feel/look/tilt' message will remain key to public recognition of security features. However, the smartphone will start to make a significant impact – not just as an additional means of providing information to users about their notes, but also as a verification tool. The first to address this opportunity are Orell Füssli with *StarPerf*, and Giesecke & Devrient with *MAGnite*. Others will follow.

Sector rationalisation: Global banknote demand exceeds 160 billion notes per year and the total supply in both the private and state-owned sectors is probably 200 billion notes per year. CN expects that more state-sector suppliers – print works and paper mills – will try to enter the commercial banknote supply market. State sector assets may be subject to privatisation and closure, and others may enter into cooperative ventures where the costs of investment and market development are shared between the state and commercial sectors.

Self sufficiency: One of the characteristics of the past decade has been moves towards self-sufficiency in production in countries with rapidly-developing economies and demand for cash. India, the Philippines, Chile and Indonesia are all examples of countries following this trend. It is likely that banknote production will be set up in the Middle East while China, already very largely self-sufficient in paper and print, will continue to power growing demand for currency.

Automation: Cash circulation processes are still disjointed and manual, despite advances in hardware and software, electronics, robotics, and communications technology, and CN predicts much greater automation – at the branch or retail outlet, cash centre vault.

The key is not only technology (there are already numerous examples of major advances in, for example, cash recycling – which will become the norm – or central bank vaults that run almost entirely with robots). What is key is that companies work with one another to provide standardised solutions that enable a seamless transition from the moment cash is deposited to its redistribution (or destruction).

All of the above predictions are for incremental changes. The biggest potential game-change is, of course, the impact of alternative methods of payment, such as e-commerce or the next generation of cashless payments driven by NFC and mobile technology. Our prediction as to the impact of this is simple – who knows? No-one does.

There is little the industry can do about e-commerce, but the best way of minimising the impact of the next generation of cashless payment technologies is to ensure that notes and coins become even more efficient and cost-effective, retain public confidence and are easy and attractive for the public to use.

Therein lies the challenge for the next ten years, and CN looks forward to a further decade in covering how the market is meeting this challenge.

'Call to Arms' Over Banque de France Plans to Spin-off Paper Mill

According to a recent news bulletin from one of France's trade unions, the Banque de France (BdF) dropped a bombshell when it announced the impending spin-off of its paper mill in Vic-le-Comte. Although the union had been aware for several years that BdF was considering measures that would lead to such an eventuality, it did not think it would happen so soon.

The paper mill has reportedly become a financial handicap to BdF's banknote-producing division, a situation that led BdF to consider three possible courses of action.

First is a 'quick death' scenario, i.e. close the mill at the end of 2015, and absorb all redundancy costs, with total closure costs of €54m.

Second is 'slow death', by gradually winding down operations until the complete cessation of activities in 2030, with the number of employees naturally dwindling as a result of retirement. This would involve an €86m loss to BdF, spread over 15 years.

And third is 'new life away from BdF' involving the investment of €70m in the paper mill to increase production capacity, including a wide-width papermaking machine, a new building to house the machine, and a new cutter.

Not surprisingly, BdF has opted for the third course of action.

'Public Centre'

BdF's current papermaking technology was installed at a time – pre-euro – when its

printing plant was equipped with web fed technology only, and is at a disadvantage in a market where production in multiple super-size sheet format is becoming the norm. A modern machine, with a capacity of around 7,000 tonnes per year, would be far in excess of the BdF's own needs, either for the euro or for its export work (which is primarily for countries that were former French colonies).

In order to drum up enough orders to fill the increased capacity, therefore, BdF intends to create a 'public centre', together with the central banks of Italy and Austria, in the form of an integrated subsidiary. As these two banks do not have paper mills of their own, the subsidiary would allow them to buy paper from BdF, therefore bypassing the tender procedure. BdF would own at least 51% – but more likely 90-95% – of the subsidiary.

Next Steps

The trade union reports that BdF has identified specific action steps, with a view to starting up production under the new organisation by mid-2016:

- Send a formal communication to the Banks of Italy and Austria, with an answer expected within three to four months;
- Launch call for tender mid-2013 for new papermaking machine;
- Create subsidiary late 2013;
- Launch call for tender late 2013 for construction of the new building, choose builder mid-2014, complete building end

2015;

- Construct new papermaking machine in 2014/2015, install and test machine at Vic-le-Comte end 2015/beginning 2016, start up production six months later.

Union's Position

Although the union is happy about the foreseen investments in the paper mill, as well as the creation of a 'public manufacturing centre', it is sceptical about whether the new subsidiary will remain public, even if it is set up with other central banks. The union's ideal vision of a 'Banque de France' lies firmly in the public sector, as a 'servant' to the community, and an indivisible whole that combines headquarters, manufacturing and administrative centres.

The union is also convinced that the measures envisaged for the Vic-le-Comte paper mill will quickly spread to the Banque de France printworks at Chamalières, and states in its bulletin that these fears were recently confirmed by the head of the banknote division, George Peiffer, when he said that if the 'public centre' mechanism proves successful for the paper mill, it could provide a trampoline for the same kind of structure at the printworks.

With this in mind, all union employees have been called to a 24-hour strike in Paris on 22 January, to voice their position with regard to the paper mill, the printworks, the banknote division, and the Banque de France as a whole.

Modernisation at Casa de Moneda de Chile on Course

Preparations for the installation of a new Superline at the Casa de Moneda de Chile (CdM) are running according to plan. The \$90m investment involves not only the purchase of a new line but also the reconfiguration of the existing premises, with 6,000 sq m being remodelled to house both the new line and the existing line, along with pre-press and ancillary services.

The existing line stopped production in September and is currently being moved. It will be restarted this month in the new building, the foundations of which have

been laid for a flat platform on which the two lines, old and new, will run side by side.

The new equipment (offset, intaglio, screen, CutPak, SuperNumerota etc) will be arriving at the end of February. Following installation and commissioning, CdM will start production on the new line at the end of June. Initially, this will be for export orders (eg. the continuation of its supply contract for Argentina).

The next milestone, however, and one of the principal reasons behind the investment in the first place, is the forthcoming tender

for Chile's banknotes. This will be held in 2013, with delivery for the following year. The Central Bank of Chile upgraded its notes in 2009 but CdM was unable to print them as it had neither the capacity nor the necessary technology.

According to CdM's Francisco Mandiola, 'after an absence of five years, it is one of our main goals to be able to supply Chile again, now that we are – or soon will be – technically able to do so.'

Brinks Partners with Wincor Nixdorf as CashEDI Becomes Compulsory

Wincor Nixdorf and Brinks Deutschland are to expand their cooperation in order to increase the efficiencies of cash handling processes for banks and retailers.

The cooperation involves setting up joint processes for Wincor Nixdorf's *Cash Cycle Management Solutions (CCMS)*, including the deployment of standardised cash cassettes that can be exchanged between all the terminals in its *CINEO* range. As the CIT company, Brinks will be able to exchange the cassettes between the dispensers, recycling systems and ATM safes of the bank branches and stores that it regularly

services, thus helping these to achieve an optimal balance of cash and reducing the amount transported per branch or store.

According to Wincor Nixdorf, the cooperation also means that bank and retail customers will in future enjoy the benefits of a compliant and transparent cash order management system with standardised interfaces and processes supplied by *CashEDI*.

CashEDI (Cash Electronic Data Interchange) was developed by the Bundesbank some five years ago (see CN Vol 6, No 8) as a standardised elec-

tronic data exchange system to improve the transparency, security and efficiency of cash payment operations in Germany. It enables cash lodgements to be settled and cash-related data exchanged electronically by professional cash handlers (ie. banks and CIT companies) among themselves as well as with the Bundesbank in real-time.

As of January 2013, its use is now compulsory for settling cash payment transactions. Wincor Nixdorf was one of the first certified partners for CashEDI, enabling it to offer cash replenishment and pick-up services to its customers.

People in the News

Gerry Gaetz, the Bank of Canada's Chief of Currency, is to join the Canadian Payments Association, the operator of Canada's national clearing and settlement systems, as President and CEO with effect from March 31. He has held various senior positions during his career with the Bank including, in 1996, leading a major initiative to re-engineer and consolidate the Bank's currency operations across the country. In his current role, to which he was appointed in 2008, he has implemented a new strategy for the currency function and overseen the launch of Canada's new banknote series, as well as the development of a new banking system to support Canada's payment system functions.

Crane & Co has announced the appointment of **Iván Montoya** to the company's Board of Directors. He was formerly Treasurer of the Central Bank of Chile, during which time he reformed the cash management function and led the development and introduction of the country's first new series of banknotes in 30 years.

Authentix has appointed **Bernard C Bailey** as Chairman and Chief Executive Officer, replacing **David Moxam**. He

was formerly President and CEO of Viisage Technology, Inc, a provider of advanced technology identity solutions, and has served on the Authentix Board of Directors since 2011. The company has also announced the appointment of **Kevin McKenna** as President, Currency and Secure Documents. He joins the company from HID Global, where he served as a Vice President of Sales delivering secure document solutions to governments worldwide.



Dr Alfred Kraxenberger has joined Louisenthal as Managing Director for Technology and Innovation. His responsibilities in this newly-created position include R&D, technology, project management relating to industrialisation, and strategic technology marketing. Dr Kraxenberger started his career in 1996 as a software engineer at G&D. In 2006 he became Head of Product Management and Support for banknote processing systems and has also been in charge of the division's secu-

rity features business for the last two years.

In a tribute to his retirement after 46 years in banknote and security printing,



Brian Flutter with Banknote 2012's Lifetime Achievement Award

the organisers of Banknote 2012 gave **Brian Flutter** of Komori Currency Technology this year's Lifetime Achievement Award for his services to the industry. Brian retired as

Managing Director at the end of 2012 after a career that has taken in both Komori and, before then, Bradbury Wilkinson.

The Brink's Company has named **Mel Parker** as President of Brink's North America, with responsibility for the company's commercial and operational business of Brink's in the US and Canada. The company has also appointed **Patty Watson** to the position of Chief Information Officer, with responsibility for implementing information technology and process improvements.

US Study on Alternative Coin Metals Needs More Work

Low denomination coins can cost more than twice their face value to make and distribute - at least as far as the US penny (one cent) and nickel (five cents) are concerned. And given the rising cost of the metals used to make these coins - mainly copper and nickel - the challenge of how to make them more cheaply, while maintaining their quality, durability, size and appearance, becomes more pressing.

It is for this reason that the US Mint commissioned a study to find out which alternative, cheaper metals could replace the copper and nickel of pennies, nickels, dimes (ten cents) and quarter-dollars. (The current penny is composed of copper-plated zinc, the nickel of monolithic cupronickel, and the two higher denominations of cupronickel-clad copper.).

The three objectives of the study were to (1) reduce the costs to produce circulating coins, (2) consider key stakeholders and, to the greatest extent possible, minimize conversion costs that would be necessary to accommodate significant changes to all circulating coins simultaneously, and (3) address critical performance attributes including physical, electromagnetic, mechanical and chemical properties.

The 400-page study, which has now been published, was undertaken by Pennsylvania-based Concurrent Technologies Corporation (CTC), and involved two years of trials conducted at the Philadelphia Mint, where a variety of metal recipes were put through their paces. It also included an environmental impact study of each 'recipe', as well as an external opinion poll to ascertain which coin changes would - and would not - be well-received.

Methodology

Using the metal prices defined on the London Metal Exchange, CTC identified iron (and steels), zinc and aluminium alloys as leading potential replacements.

The metals were evaluated in three distinct forms: rolled strip, ready-to-strike planchets, and struck pieces. Parallel tests were performed on both incumbent coinage materials and alternative material candidates.

The test programme consisted of:

- Measuring basic material properties of hardness, tensile strength, steam corrosion,

grain size and electro-magnetic signature (EMS);

- Evaluating edge thickness, diameter and tonnage of the struck alternative material candidates, and their ability to fill the fine details of the coin die;
- Testing corrosion resistance and wear of the struck pieces, and the ability of existing coin-acceptance equipment to discriminate and accept them without having to undergo significant upgrades.

For the striking trials, the Mint struck one-cent, five-cent and quarter-dollar coins with 'nonsense dies' - images that don't exist on legal tender (Martha Washington, the first First Lady of the US, is a favourite subject) but which are similar in depth and design to real currency. A total of 25 unique material-denomination combinations were struck with these dies.

Some of the combinations were seamless candidates - with about the same EMS and weight as the incumbent coin - whereas the others were non-seamless, with a different EMS and/or weight.

CTC Recommendations

Based on the study findings, CTC made some detailed recommendations to the US Mint:

- Maintain coin dimensions (thickness and diameter) for all future coins, regardless of composition, since the conversion costs for coin-processing equipment would be too large to justify any changes.
- Maintain the current composition for the penny. Copper-plated steel pennies would offer no cost savings over the current copper-plated zinc. And the low density of aluminium alloys would jam or destroy coin-handling equipment, removing this composition from consideration.
- Further develop copper-based alloys for the nickel (five cents). These would have a yellow or golden colour, which would mean an important colour change for the nickel but which, according to the opinion poll, would be readily accepted by the public. Although these alloys would not bring costs to parity with face value, they would produce material cost savings of up to \$17m, with conversion costs for coin-acceptance equipment of up to \$56m.
- Consider copper-based alloys for the dime, quarter-dollar, and half-dollar coins.

The Mint would save approximately \$2m annually for the quarter and \$4m for the dime. Coin-acceptor conversion costs would be around \$9m for the quarter and \$7m for the dime.

- Continue long-range research of surface engineering of zinc or steel for the penny as a useful technology to reduce costs associated with copper-plating. The report mentions the example of inexpensive paints or coloured particles on bare zinc covered with a wear-resistant coating.

- Continue research on stainless steel as a potential alternative for lower denominations. Also continue development of stainless steel alloys clad to copper alloy for higher denomination coins to mimic the current EMS of the dime, quarter, and half-dollar.

Mint's Conclusions

All in all, valuations of the 29 different combinations revealed that none fully met the ideal list of attributes and that more tests were therefore needed.

'We want to let the data take us where it takes us', said Richard Peterson, the Mint's acting director.

According to Mr Peterson, 'a slight reduction in the nickel content of our quarters, dimes and nickels would bring some cost savings while keeping the magnetic characteristics the same. Making more substantial changes, like switching to steel or other alloys with different magnetic properties, could mean big savings to the government but at a big cost to coin-op businesses.

'With the price of steel, aluminium and zinc being pretty close to each other, there are promising alternatives for the nickel, dime and quarter', he continued. 'There wouldn't be any advantage to shift the composition of the penny, so we offset that cost with savings from other denominations'.

Two areas in particular were identified for additional work. One is to conduct production-scale tests with multiple lots of proposed coin materials to verify the potential and the results from the preliminary tests. The other is further research into estimated stakeholder costs associated with change to the EMS. As a result, the Department of the Treasury has recommended that the Mint continues to study the issue before endorsing any changes to compositions.

Bank of England Floats £1 Billion Tender...cont

management contract. This prompted a flurry of media speculation in the UK that the Bank is planning to introduce polymer notes, although it is, in fact, simply giving the Bank – which is considering various options to improve the durability of the £5 note in particular – flexibility in future planning.

Bidding operators must have at least three years of experience in commercial banknote printing and have printed at

least 500 million banknotes over a 12-month period at one site in the past three years.

The deadline for parties to submit their interest is the end of this month. The new contract will take effect in April 2015, following a six to twelve month transition period if the supplier changes, and will include the option for a three year extension.

This is only the second time in its history that the Bank has put production out to tender. The decision to do so ten years

ago followed a review in early 2002 which concluded that, in light of falling volumes, the best way to secure the future of the staff was to privatise the operation. Public concerns that production could move into foreign hands were overcome by the award of the contract to a British printer, but will be revived again should one of the other bidders be successful.

DLR has commented, meantime, that is has a good relationship with the Bank and is very keen to win the new tender.

New €5 Makes it Debut...cont

symbol of European integration. Despite the challenges facing the euro area, progress was made in 2012, and I am confident that 2013 will bring a deepening of economic and monetary union and will strengthen European integration'.



The original Europa vase that provided the inspiration, and hologram portrait, for the new series

Besides the ECB's core function and mandate to guarantee price stability in the euro area, Mr Draghi maintained it was a key task to develop 'our product', ie the euro banknotes. 'The new series will continue to reflect the unity and diversity of our continent. The word *euro* is now written in the Cyrillic as well as in the Latin and Greek alphabets. Today 332 million people in 17 countries use euro banknotes every day. And worldwide, the value of euro banknotes circulating is roughly the same as that of US dollar bills. Last month that value was almost €913 billion, with around one quarter of that value circulating outside of the euro area, notably in its neighbouring regions. The euro is in fact being increasingly used as a global currency.'

In closing the opening ceremony, Mr Draghi referred to the fact that, with 15.7 billion euro banknotes in circulation, the euro was a success story. The ECB he said,

would 'strive to ensure the banknotes are steadily developed and enhanced and are state-of-the-art in terms of security and technology. The Europa series will be smarter and even more secure than the current series.' He ended by thanking the designer of the series, Mr Gerstetter, who was present, and then signed the first euro note of the Europa series.

The new €5 is intentionally very similar in appearance to the old €5 for continuity. It has the same buildings on the front and back and the colours are very similar.

But there are several notable improvements, such as a much bolder '5' on the front (intaglio) and back; light areas on the front and back for clarity of the watermark; a series of short dark raised lines (intaglio printed) on the left and right edges on the front of the note for feel and to aid the visually impaired; and sparse, reversed-out (demetallised) '€ and '5' indicia instead of 'EURO 5' in the embedded thread.

Then there are the new security features – the portrait hologram, the bold *SPARK®* emerald-coloured '5' which changes to blue on tilting and has a rolling bar effect, and the portrait watermark make it noticeably different. This strategy of 'similar but easily-distinguished' will apply to all banknotes in the series, as will the new security features, as they are easy to check in the 'feel, look and tilt' method.

Issue of the new €5 note will start on May 2, with the other denominations introduced over the next few years in ascending order. The new banknotes will co-circulate with the old, which will gradually be withdrawn and eventually cease to be legal tender.

The public awareness campaign, which began last November with the announcement of the new banknote (see CN Vol 10, No 11), has gained momentum with this

unveiling and exhibition, and through updates on www.new-euro-banknotes.eu. As well as details of the press launches, this new website now features a comparison of the old and new €5 banknotes (visual and security features) and hosts the 'Euro Cash Academy', a comprehensive interactive educational programme.

Euro Counterfeits Fall in 2012

No sooner had the new €5 been launched than the ECB published its biannual information on banknote counterfeiting.

In 2012 a total of 280,000 counterfeits were withdrawn from circulation taking the total for 2012 to 431,000, which was 12.4% lower compared with the figures for 2011. But in the second half, there was an increase of 11.6% compared with the previous six months.

The number of genuine euro banknotes in circulation during the second half of 2012 was 14.9 billion, putting the number of counterfeits at just under 30 per million.

The €20 and €50 denominations continue to be the most counterfeited and together accounted for 82.5% of the total in the second half of 2012; during this period the share of counterfeit €20 banknotes increased while that of counterfeit €50 banknotes decreased, reversing the pattern of the previous six months. The €100 was the third most counterfeited denomination, accounting for 13% of the total; these three accounted for 95.5% and the other four denominations together only 4.5%.

“Mobile” Breaks New Ground in Optically Variable Threads

Wide windowed security threads have become one of the most successful public features in banknotes, with the security they afford lying not only in the often highly complex technology used to make the thread itself, but also in the manner of its integration into the paper during the cylinder mould paper making process (or into one of the new multi layer substrates).

The best security threads are both very eye catching and to easy to authenticate in a straightforward and unambiguous manner. But, until fairly recently, such threads were limited to holographic and colour-shifting technologies. This changed, however, with the introduction of Crane’s *Motion*™ thread on the Swedish 1,000 Kroner in 2006, with the (apparently) floating, coloured icons moving in a defined manner adding a new dimension.

Trend for Lens-Based Images

The technology is based on moiré interference using micro-optical lenses and ‘printed’ images. Lens-based images now represent a new trend in security threads, as can be seen in a new technology from Goznak.

This new optically variable thread technology, marketed under the name of *Mobile*, was introduced in September 2011 and has now been used on four currencies (two of which have yet to be disclosed). Although it, too, is based on lens technology, it is distinctly different in appearance and technology from *Motion* in that the images are made up of dots and appear to move in specific but different directions depending on the angle of tilt.

The core technology behind *Mobile* resides with Computer Holography Centre of Moscow, a company specialising in electron beam lithography. For well over 15 years the company has produced visually attractive, yet technically complex, highly secure holograms or DOVIDS (diffractive, optically variable, interference devices), but *Mobile* is different.

The feature relies on an array of flat optical elements, commonly known as Fresnel lenses (after French physicist and engineer Augustin-Jean Fresnel). These are



Russian (left) and Belorussian (right) banknotes showing different variations of Mobile image movement.

arranged on a flat, metallised foil base to form a micro-relief in the shape of desired images - such as the denomination value in the case of the Russian 5,000 Ruble banknote, or the Bank’s initials in the case of Belorussian 200,000 Ruble notes. When illuminated with a point source light, the micro-optical lenses synthesise the images from small individual bright dots arranged in a manner to form the desired shape, which appears to move on tilting the substrate.

Appearance of Movement

A Fresnel lens has a thin layer of concentric grooves resulting in a ribbed structure with depth and width that are matched to diffract the incident light. Curved surfaces focus light by refraction and are patterned to reflect it. They work in the same way as mirrors, effectively reflecting the point source light in the form of a spot back to the viewer. As the viewing angle is changed or the position of the point source light is moved, reflected light travels within the individual lens diameter to give the appearance of movement.

On *Mobile*, the lens diameter is typically around 1mm, although this can be varied depending on design and thread width. Each lens is aligned to partially overlap the adjacent lens, which increases image movement amplitude and extends the traveling range of the reflected light. On the Belorussian note, with optical elements overlapping each other by 50% and images sized just less than 3mm, the movement effect achieved is 2mm in each direction.

Two types of Fresnel lens - negative and positive focal length, off-axis lenses - have

been used to further enhance the visual effects. When tilted backwards the former will shift reflected light against the viewer, while the latter will move it towards the viewer. In a similar way, tilting the former to the right will move the reflection to the right while the latter will force it to be dis-



Two off-axis Fresnel lenses: negative focal length (top) and positive focal length (bottom)

placed in the opposite direction - combining the two next to each other results in the simultaneous movement of images in two opposing directions.

Thus, in the 5,000 Ruble note, the first and third numerals will always shift in the opposite direction to the second and fourth numerals. Similarly, on the Belorussian note the first two initials will move in the opposite direction to the following two. All movements are multidirectional.

Low Cost Manufacture

Fresnel lenses have the advantage that they can be manufactured at relatively low cost. The same techniques and equipment are used as those for manufacturing holograms as, like holograms, Fresnel lenses are micro-relief structures but with a depth of 0.1-0.3 of a micron. The end product for banknote applications is either a hot transfer foil or a film for threads or stripes where apertures are present.

Continued on page 8

MAGnite® - a New Mobile Magnetic Response Feature

MAGnite® is a new security feature with a difference – it uses Level 2 security technology to generate a pseudo Level 1 optically variable effect. The rationale behind this latest technical development is based on the premise that conscious authentication of Level 1 features takes place only on rare occasions and typically involves the



The magnetic field causes the pigments in MAGnite to become aligned and hence visible – as seen here by the shape of the speaker in the mobile phone behind the note, which appears in the printed MAGnite patch

feel/tilt/look concept, whereas traditionally optical security features are identified by viewing at different angles, directly and in transmitted light. Giesecke & Devrient reasons that the more sophisticated security features have become, the more first line authentication has shifted to the point of sale, ie the cash handler. And this is where MAGnite® is designed to excel.

MAGnite is a magnetic security feature. But instead of only being detectable and readable by a machine with a sensor, in this case an optically variable effect can be created by magnetism. This is achieved in a completely novel manner using micro-engineered pigments with magnetic properties that are safely enclosed in durable micro-capsules.

The micro-capsules are used to create an ink which is applied to banknotes by silk screen printing. The application technique ensures that the micro-capsules are uniformly distributed across the printed area, with sufficient density to create a homogeneous display area. In addition, the micro-capsules come embedded in a UV curing binder for maximum durability, enabling the feature to last for the full circulation lifetime of the banknote.

Interactive Visual Feature

The specific micro-encapsulation techniques enable full rotational mobility of the pigments so that when a magnetic field is applied, the capsuled magnetic pigments become instantly aligned with the magnetic field. This causes a visible change in appearance with high contrast in the printed area.

This change takes place as the functional ink (with millions of micro capsules) allows an infinite number of switches between two physical states – ie. each individual micro capsule is either affected by the magnetic field or not, and so is either 'on' or 'off'. The topography of the initiating magnetic field becomes directly visible on the printed area, similar to a digital screen, and can immediately, and clearly, be seen.

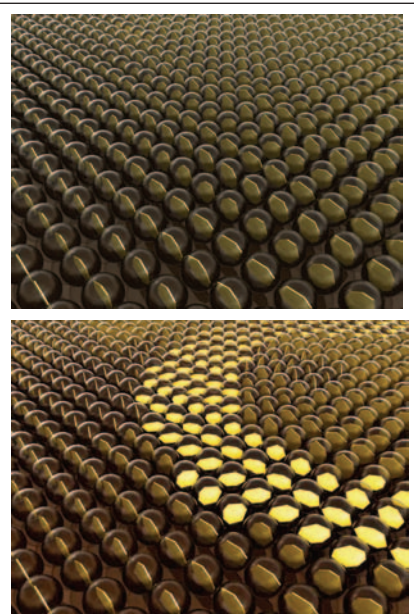
In practise, the phenomenon is very much like the sudden appearance of a window in the banknote, allowing the image on the other side to be seen, especially as the image stays still when the banknote is moved.

A MAGnite patch can be authenticated by the general public via readily available magnets, eg. common cell phone speakers which have small magnets that already deliver a sufficient magnetic field strength,

even when the devices are turned off.

Specifically-designed magnets, eg. a retailer's logo, could be used for POS banknote verification devices – with the logo generated once the printed patch is placed over the magnet.

In all cases, the striking optical effects



Magnetically-orientated micro-capsules (top) and the effects of these when exposed to a magnet (below)

produced are largely immune to ambient conditions at the point of transaction and so can be specifically checked by users.

Hands-on Security and Machine Processing

MAGnite allows an immediate and unambiguous response initiated by means of a generally-available device. Furthermore, the presence of the feature and the signal level can also be automatically identified with the aid of magnetic sensors in processing machines. As a result, only (fit) genuine banknotes with a functioning MAGnite security feature will be returned to circulation.

Mobile...cont

Finished threads with Fresnel micro-optical systems are around 25 microns thick, allowing easy integration into the paper in various shapes and sizes using existing production processes. The feature

is not affected by varnishing, so notes can be coated for enhanced durability.

Mobile images are extremely difficult to imitate, not least because e-beam systems are not readily available and cost several million euros. Also, the ability to use such devices is known only to very few peo-

ple. Mobile images cannot be replicated using laser or dot-matrix origination techniques – a charge commonly laid against holograms – and, according to Goznak, are durable so will retain their properties throughout the banknote's circulation life.

StarPerf – First Feature for Smartphone Verification

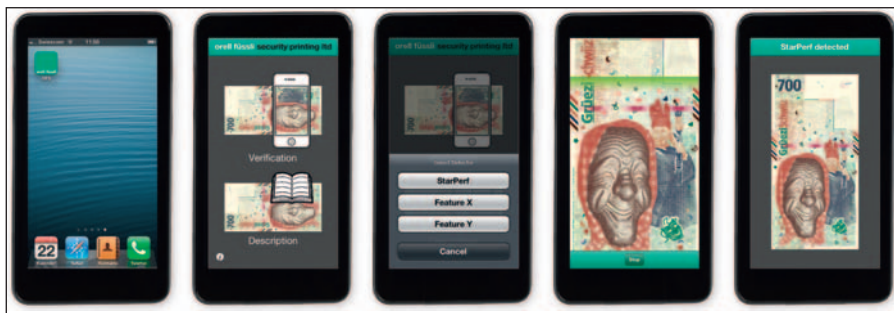
StarPerf® from Orell Füssli, which was presented at Banknote 2012, is more than just an innovative security feature. It is also, in what is a first for the banknote industry, a feature that can be verified by smartphones.

StarPerf is an arrangement of high-precision microperforations that can vary in size and shape, and that can be generated in specific patterns. These perforations are resistant to soiling, wear and tear, and provide long-lasting security to the banknote, even under harsh conditions.

They are also completely invisible in reflected light, but become clearly visible in transmitted light. By arranging the perforations in determined patterns, it is possible to incorporate additional note-specific information like, for example, the denomination or year of production.

StarPerf can easily be detected and verified by the naked eye. But it can also be verified by smartphones – thereby uniting the properties of Level 1 and 2 security features.

The feature is verified thanks to an app developed by Orell Füssli. The note



From left to right, (1) the user starts the app, (2) the user can choose between two modes - verification or description, (3) the user selects the StarPerf option, (4) the smartphone scans the banknote for the StarPerf pattern, and (5) a confirmation is displayed that the StarPerf pattern has been successfully detected

is held against a light source and scanned with the smartphone's camera from a short distance. In the space of 2-3 seconds, the app will verify the presence and specific pattern of the StarPerf feature, and hence that the note is genuine. The app has been developed so that it can identify the feature from both sides of the note, and regardless of the orientation of the note relative to the phone.

Banknote apps already exist in the market – but thus far these have been for 'educational' purposes – ie. to deliver information on banknotes and their features (or, in the case of the BEP, as a

device to enable the blind and visually-impaired to verify the denomination).

So Orell Füssli's feature/app combination is the first that performs a verification function. It does, however, also serve as an education platform by displaying text, pictures and animations. Users are offered a choice by the app - verification or information.

According to Orell Füssli, while the verification function works only with StarPerf at the moment, other new developments that can similarly be detected and authenticated via smartphones are in the pipeline.

New Generation of Cloud-Based, Cardless ATMs from Diebold

Diebold has unveiled its vision of a new generation of 'millenia-inspired' ATMs that will bridge the gap between its technology and that of mobile communications.

Key to the new generation is a conceptual ATM interface that borrows from the touch screen, navigation and controls that are now familiar on smartphones.

It also provides a platform for cardless transactions, whereby pre-registered bank customers scan a QR code on the ATM using their phones. When the device 'syncs' with the cloud, a transaction screen appears on the handset, on which the customer selects the amount

to be withdrawn. The cloud server then sends a one-time code to the phone, which the customer enters onto the ATM screen to authenticate the transaction and receive the cash.

According to Diebold, its system reduces risks associated with lost or stolen cards and skimming, while privacy is boosted because details are entered onto the private phone rather than the public ATM. The authentication code relates to each transaction only, and immediately expires on completion.

Furthermore, says the company, by using cloud-based services, the features do not require onboard computers, which

means reduced power requirements. And hardware costs are cut because no card readers or receipt printers are needed. Transaction receipts are delivered via text or e-mail.

The company plans to launch pilot-testing of the ATM later this year.

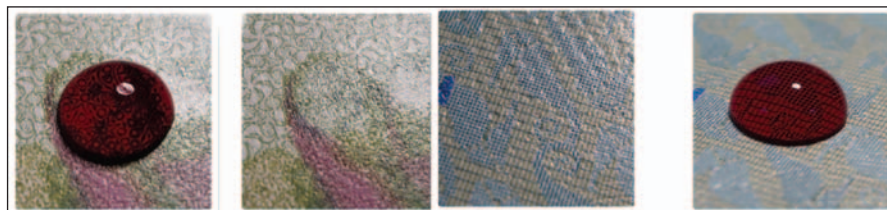
Commenting on the conceptual ATM, Frank Natoli, Diebold's Chief Innovation Officer, said: 'mobile devices are driving user experience expectations in all facets of commerce. It was only a matter of time before the familiar multi-touch interface style made its way to the ATM'.

Ultra Durability from Oberthur Fiduciaire

During the last Banknote conference, in 2011, Oberthur Fiduciaire launched its new security feature *Securicoat*® to protect banknotes from soiling and increase life span. Securicoat is a first level security feature consisting of two UV printed varnishes, matt and glossy, with intaglio embossing. Since its release, the feature has already been included in over 770 million banknotes.

According to Oberthur, requests by central banks to further improve banknote performance have led it to enhance the water and oil repellence of the feature. *Securicoat*® ULTRA is the result.

In his presentation at Banknote 2012, Dr Florian Demaimay, Production



Director at Oberthur Fiduciaire, introduced this 'Ultimate Durability' solution which enhances durability and cleanliness to extend the lifecycle of banknotes. It is, he said, an ideal choice for its extra lipophobic and hydrophobic properties.

As a varnish-based Level 1 security solution, Securicoat ULTRA protects the whole note, including printed and applied features. Additionally, it allows for easy design integration into the banknote and

is fully compatible with all substrates.

It offers full resistance to water, a unique oleophobic property, and has excellent soiling resistance. As such, it is particularly suited for tropical climates, and for low and middle denominations, which are more exposed to wear and accelerated ageing.

The cost, however, is notably lower than most complex durability solutions on the market today.

Arjowiggins Launches Diamone®Xtra

Initially, the growth in the use of durable paper was slow, accounting for only 2 billion banknotes by 2005, but as evidence of improved circulation life became apparent, the growth rate increased; by 2012 around 16 billion banknotes were produced using durable paper, a compound annual growth rate of around 30%. However, given that the amount of paper-based banknotes produced globally in 2012 was around 150 billion, only around 10.7% used durable paper, so there is still huge potential for growth.

Arjowiggins has played a leading role in the development of durable substrates, launching *Diamone*® in 2002, followed by *Diamone*®Composite (cotton with polymer fibres) in 2005 and now *Diamone*®Xtra in 2012.

Arjowiggins regards durable substrates as falling into two categories: those having high durability (coated papers, reinforced papers and composites), where a banknote's lifetime increases up to two times, or very high durability where the lifetime is around three times or above that of standard banknote paper. *Guardian*® polymer substrate falls into the very high durability category, as should De La Rue's new *Flexycoin* (also 100% polymer), and it is likely that composites (*Durasafe*®, *Hybrid*® etc), where polymer forms one of the layers, will also achieve this status.

Arjowiggins maintains this is where *Diamone*Xtra represents a major breakthrough, as it is the first substrate to fall in the very high durability category that does not contain a polymer film and is made of 100% cotton.

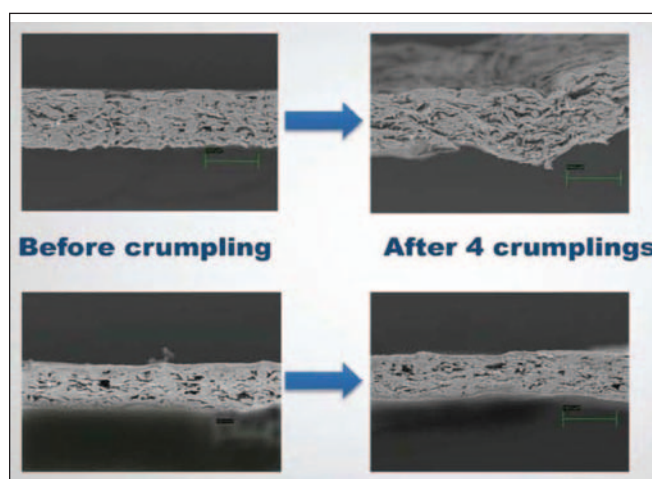
The durability of *Diamone*Xtra is achieved through special coatings – first a base coat and second a top coat. The base coat provides protection against soiling and the top coat ensures high ink adhesion.

The coatings are integral to the substrate and there is no risk of delamination, and in combination they provide a very high level of protection against dirt, grease and water.

While the product has yet to be proven in the field in a live circulation situation, a very convincing demonstration of *Diamone*Xtra's anti-soiling capability compared it with a standard cotton substrate after immersion in a bath of dirty motor oil. The standard paper, as would be expected, became very dirty and dis-

coloured whereas *Diamone*Xtra showed minimal effect.

One of the major attractions of *Diamone*Xtra is that it processes just like a normal cotton substrate and acts and



Standard paper (top) and *Diamone*Xtra (below), showing no observable destruction

feels like one. No special inks are required, the drying time is not extended, ink adhesion is excellent, abrasion resistance is increased and all the normal substrate and print security features can be embedded or applied respectively without modification.

Another advantage, because it handles like standard cotton paper, is that there is no need to adjust banknote finishing and inspection systems.

New Dates for the Coin Conference

The dates for the 2nd Coin Conference, originally scheduled to take place March 12-13 in Berlin, have been changed to October 28-30.

According to the organisers Currency Publications (publishers of Currency News), the success of the inaugural Coin Conference in London in 2011 generated a very high level of interest and support for the second conference. However, due to a heavily-congested industry conference calendar in the first part of 2013, a number of central banks, mints and suppliers suggested that the event be moved to later in the year, when there will be fewer scheduling conflicts.

The decision to move the dates was also prompted by feedback that the programme would benefit by being expanded to incorporate break-out sessions or workshops, with a more in-depth focus, in addition to the presentations.

The conference will take place at the

same venue - the Palace Hotel in Berlin - but will now be over three, rather than two, days. Other than the inclusion of the additional day for workshops, however, the format and programme will be the same as previously advertised. And the conference will still provide the location for the presentation of the Best New Coin or Coin Series Award, part of IACA's Excellence in Currency Awards for 2013.

The topics of the workshop are currently being finalised, but one will relate to the coin/note boundary and the other will focus on coin materials. An optional tour for central banks and coin issuers will take place on October 31 of the facilities of platinum sponsor Saxonia Mint of Finland in Halsbrücke.

The Coin Conference is the only specialist event for circulation coins, focusing on design, security and cost-effective production, as well as handling, distribution and management in circulation. It is aimed

at the government bodies responsible for coin issue - central banks and treasury departments - as well as mints and suppliers of materials and equipment for production, handling, processing, verification, counting, distribution and reclamation.

Commenting on the decision, the conference chairman Richard Haycock said: 'We apologise for any inconvenience caused by the changes. But we are also delighted both by the positive response to the Coin Conference, and to the even more positive reaction to moving the event to a less-crowded time of the year for coin professionals. Furthermore, expanding the programme was a particular request of those from further afield than Europe, and moving the dates has enabled us to meet their requirements. The result will be a larger and more comprehensive event for the benefit of all'.

More information can be found at www.thecoinconference.com.

Banknote 2012 Breaks All Records – Again

In spite of the ongoing difficulties in the global economy, last month's Banknote Conference in Washington DC managed, again, to break all records for attendance. With some 675 delegates, sponsors and speakers taking part, it was the largest yet in the event's 15-year history and an increase of 13% over the last event, in July 2011.

The first event was held in 1998 and had just under 140 participants. Since then, however, not only have the numbers grown, but so has the scope of the conference - which originally focused on substrates and features - to all aspects of currency production and its circulation.

The proportion of delegates from end users (ie. central banks, issuing authorities and other government bodies) has also grown - from 17% (33 of the 140) in 1998 to 37% (244 out of the 675) in 2012. Overall, the delegates came from 94 different organisations and 56 countries (not including the US).

In terms of geography, the largest

regional representation of attendees was from Europe (51%), with North America at 25%, Asia Pacific at 11%, Latin America and the Caribbean at 6%, Africa at 5% and the Middle and Near East at 2%.

According to conference director Tony Poole, 'we were delighted with the attendance at this year's Banknote. It has continued to grow and grow, which we see as an affirmation of our focus on a high quality venue

and programme, which makes for an exceptionally positive networking, sharing and learning experience for all involved'.

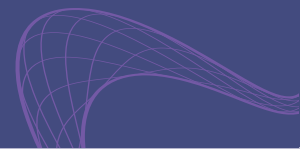
The programme included over 30 presentations covering a wide range of innovations, trends and issues relating to design, security, production, issue and circulation.



Conference organizers John Hanley (left) and Tony Poole (right) with keynote speaker Michael A Cook, Senior Vice President and Assistant Treasurer of retail giant Walmart

Many of these will be covered in this and subsequent issues of Currency News, which was the media partner for the event.

The next Banknote Conference will be held in Washington DC from April 7-10, 2014.



That Was the Year That Was

January

US resolves the issue of \$1 Presidential coins; foundations laid for new paper mill in India; cash management companies on the acquisition trail include Loomis, Brinks and CMS; Slovenia papermaker files for insolvency; the Dutch public responds to study on what constitutes a fit banknote; security features for coins take their cue from banknotes; Banqit sign strategic cooperation agreement with Wincor Nixdorf.

February

Counterfeiting of euro notes and coins both fall in 2011; G4S restructures cash operations; allegations of illegal payments to agents by Austrian banknote printer spread to the central bank; setback to plans for joint venture for banknote production between De La Rue and the Kenyan government; India's Central Vigilance Committee gets involved in investigation into supply of out-of-specification paper; rejuvenation of fluorescence for security printing; Prosegur expands in Latin America and Europe.

March

Glory announces the acquisition of Talaris; new South African banknote series will honour Nelson Mandela; Armat challenges decision to give Chilean coin blank contract to South Korean supplier; Bank of England conducts durability-in-circulation trials for the £5; IBDA sets up new Intaglio Engravers Academy.

April

Canada announces that the penny is to be scrapped; CIT companies target Latin America for growth; Pakistan upgrades security ink production; new symbol for the Turkish lira; two reports shed further light on the US\$100 production delays.

May

Federal Reserve outlines plans for the future of its cash operations; all change for Canada's currency as the latest polymer note is unveiled, production of the penny ends and new coins are introduced; Philippines pushes ahead with plans for a second new *Superline*; Saxonia rebrands and celebrates its 400th anniversary; new technologies based on RFID, secure QR codes and printed electronics offer opportunities for tracking banknotes; India investigates how to increase the production of notes and coins; Radece declares bankruptcy.

June

Production of the new US\$100 finally gets back on track following resolution of problems with creasing; political controversy fails to derail contract for Argentinean currency; US Federal Reserve takes a long-term view of the cash supply chain; Banque du Liban gives details of strategy to build confidence in currency.

July

ESTA reports a 10-year low for European CIT attacks; a possible third option for polymer substrates - *Talisman* - does the rounds; administrators confirm that Oberthur is in talks to acquire the assets of bankrupt Slovenian papermaker Radece; breakthrough

for Australian police as former Securrency executive becomes star witness for the prosecution; the cost to retailers for handling cash is up to 24% cheaper than alternatives, says new report.

August

Evita note finally sees the light of day in Argentina, 50 years later; economic shift revives the euro note/coin boundary debate; De La Rue celebrates 300 years of papermaking; Glory concludes purchase of Talaris; Olympics guarding contract fiasco slashes value of G4S; melting polymer notes in Canada exposed as urban myth; Japan Mint targets new markets in Asia and the Middle East; euro counterfeiting at lowest levels in seven years.

September

Future of CVS assured as Argentina Casa de Moneda announces its takeover; Nigeria announces *Project Cure*, a currency restructuring programme for the Naira; Swiss suppliers caught up in further delays to the new Swiss series; Komori's development and expansion strategy starts paying off; Diebold and NCR both caught up in alleged transgressions of the US FCPA (Foreign Corrupt Practices Act); India release details of banknote and coin demand; BEP celebrates 150 years; G&D launches the *BPS M5*, the latest in its next generation of banknote processing systems; Philippines announces that it will be self-sufficient in banknote production by 2014.

October

Cash distribution is disrupted in Sweden as one of the main CIT companies, Panaxia, goes bust amid huge losses and allegations of fraud; ECB puts cost of EU retail payment at €130 billion; NCR buys cash management optimisation software firm Transoft; Garda announces privatisation plan; a group of development organisations form the 'Better than Cash Alliance' to push for electronic payments in developing countries; *Project CURE* in Nigeria put on hold; Mexico introduces low-cost banknote denominator for the visually-impaired.

November

ECB unveils details of the second euro series; South Africa's new series of 'Randelas' go into circulation; Reserve Bank of Australia announces that next series is now on the drawing board; new cash management association formed for Asia; Diebold scraps plans for a new HQ; Garda privatisation deal gets the go-ahead; Komori's new presses start rolling in the Philippines; Banqit's *Q-Cash Router* proves its cash recycling concept; Royal Canadian Mint announces winner of the *MintChip Challenge*; *Future of Cash* study paints rosy picture for cash.

December

Banknote and coin production in Denmark merges; Israel unveils details of new note series; Wincor Nixdorf restructures to arrest decline; Komori wins second contract to supply Bangko Sentral ng Pilipinas; Japan Mint wins first export order; Latvia plans to join the euro; Brinks sells operations in France and Poland; Innovia launches new readers for its polymer base film; courts rule in favour of Casa de Moneda de Chile in dispute with Armat.

Durasafe Debuts in Morocco

Morocco's central bank, Bank Al Maghrib, has become the first in the world to issue a banknote printed on Landqart's new composite substrate *Durasafe*®. The banknote, the 25



Dirhams, commemorates 25 years of banknote printing at the Moroccan State Printing Works, Dar As Sikkah.

The front of the banknote features an intaglio portrait of King Mohammed VI, and a magenta/green colour shift security thread developed by Landqart's sister company Fortress Optical Features. Both are embedded inside the note yet visible behind a one-sided polymer window. The note also has a fully transparent polymer window embossed with the royal crest.

The new commemorative note is the first time a 25 Dirham denomination has been issued, and precedes Morocco's new series of circulation notes, which itself will include a number of 'world firsts'. More details will be provided in the February issue of Currency News.

- The Reserve Bank of Fiji has now issued the country's new flora and fauna family of banknotes and coins, the designs for which were officially

launched by His Excellency the President of Fiji, Ratu Epeli Nailatikau, at a special ceremony in Suva in December.

The new series celebrates Fiji's endemic plants and animals, some of which are believed to be extinct as they have not been sighted in recent years. The images replace the portrait of HM Queen Elizabeth II across all denominations.

The notes, in denominations of \$5, \$10, \$20, \$50 and \$100, were printed by De La Rue and replace the 2007 series. The lowest denomination is the first banknote in the world to be produced on De La Rue's new polymer substrate. In addition to the new substrate, a range of new security features have been incorporated into the banknotes.

The new notes have now all been put into circulation with the exception of the \$5, which will not be issued until April. According to the Bank, this is to avoid confusion between the old green \$2 (which has been replaced by a coin) and the new green polymer \$5 note. The old \$2 will be withdrawn by March 31, after which the Bank will proceed with the issue of the new green \$5.

In addition to the new \$2 coin, the other denominations include 5, 10, 20 and 50 cents, and a \$1 coin. A new smaller, lighter series was introduced in 2009, albeit with the same designs as the previous series. The new coins,



produced by the Royal Canadian Mint, also feature images of native fauna, replacing the image of the Queen.

- Norges Bank has announced that work has started on a new banknote series, which will be the eighth for the Norwegian Krone. The project is likely to take several years, beginning with decisions on a theme, colours and range of denominations. No changes are planned for the country's coins, although the replacement of the 50 Krone by a coin may be considered.

According to the Bank, although there are currently few counterfeits in circulation in Norway, the project needs to begin now to ensure that the level of security will be sufficient to reduce the risk of counterfeiting in the future. Specific reference has been made to the recent or forthcoming upgrades of currencies in neighbouring or nearby countries - eg the euro, Switzerland, Denmark, and Sweden - and the need to ensure that the security of Norway's notes is not inferior.

- President Cristina Fernández de Kirchner of Argentina has announced that the commemorative 100 Peso banknote - which was issued last year to mark the 60th anniversary of the death of María Eva Duarte de Perón (Evita) - is to become the new 100 Peso circulating note. It will replace the current note carrying the portrait of the 19th century president Julio Argentino Roca. The circulating version will feature the numeral 100 in *SPARK*® with a green to blue colour shift and rolling-bar effect, see-through register, watermark and 5mm wide *Picture Thread*™ with Eva Peron's image.

- Bank Indonesia is proposing to redenominate the Rupiah in 2014 by removing three zeroes. Under the plans, there will be a three-year transitional period, with the existing series phased out by the end of 2016. The largest note in the current series - the 100,000 Rupiah (worth just over US\$10) is the highest denomination in Asia after Vietnam's 500,000 Dong banknote.

Zambia Drops Zeroes, Brings Back Coins

1 January, 2013 marked a fitting conclusion to five years of single-digit inflation, when the Bank of Zambia (BoZ) put into circulation a new, rebased currency, with three zeros dropped from each denomination.

Other changes to the currency include two new highest and lowest note denominations, enhanced security features on the higher value notes, and the transformation of the four lowest denominations into coins - which are making their comeback after 20 years' of being 'exiled' by high inflation rates that rendered them worthless.

BoZ says that rebasing is necessary for a number of reasons: it will facilitate business transactions by using smaller units of money; it will reduce the customisation costs of standard accounting packages usually developed in countries where maximum values are in millions - and not in the billions and trillions experienced in Zambia; it will inspire greater confidence, as currencies with too many zeros are perceived as weak; and it will reintroduce a culture of using coins, which are more durable than notes.

Mixing Old with New

Rebasing will not come without its challenges though, one of which is that old and new notes and coins with the same face value but entirely different exchange values will be circulating together until the end of June. This is particularly risky in the case of the K100 note, which now exists in two versions: a low denomination note from the previous series with a rebased value of 0.1 Kwacha (\$0.02) - and which has become a coin in the new currency - and a new K100 note - the highest denomination of the rebased series - which is worth K100,000 in the previous series.

BoZ says it is already aware of plans to defraud people by taking advantage of the confusion which can arise from using both notes, and that the public should therefore familiarise itself with the differences between them. These include the size, colour and some of the design elements - although the funda-



mental design is quite similar - as well as the sophistication of security features on the new note. Examples are the holographic *LEAD*® stripe customised with images specific to the Zambian note, and a *PEAK*® pixel optically-variable 3D image with intaglio embossing. They also include, on the reverse, a holographic windowed thread and an iridescent stripe.

More Straightforward with Other Denominations

With regard to denominations that were notes in the old series and that stay as notes in the new, the situation is clearer. This applies to the K5, K10, K20 and K50 notes, which retain the same design and colour as their pre-base counterparts, but minus the extra three zeros. A completely new K2 note has also been introduced - as the lowest note denomination - bringing the total number of notes in the rebased series to six. All of the old family banknotes will have an equivalent in the rebased currency, except the K20, which has been dropped.

The new notes have been produced by Giesecke & Devrient and the main feature on the front remains the African fish eagle - the national bird of Zambia

- which replaced former president Kenneth Kaunda's portrait in 1992, after he was ousted from power.

Also remaining are the national coat of arms, the 'Chainbreaker' Freedom Statue - a tribute to fallen heroes in Zambia's struggle for independence from Britain - and various trees and animals that depict the country's abundant forests and wild life.

The security features increase in sophistication the higher the denomination. All six notes feature the fish eagle's head in the watermark together with an electrotpe of the denomination and the outlined fish eagle's head, double sided intaglio, a see through feature and iridescent stripe.

The K2, K5 and K10 have a demetallised windowed thread, while all the others have a holographic thread. The K10 has the numeral printed on the reverse in *STEP*® colour shifting ink and - like the K20 - has been fortified with a holographic *LEAD* stripe. The K50 and K100 *LEAD* stripes contain additional gold tone elements, and both notes also have the *PEAK* pixel optically variable image.

Continued on page 15

New Glossary for Mints

The *Coin Glossary* is a new initiative that aims to provide a common reference point for the terms used in the industry. It has been compiled by Amera, with input from a number of experts around the world from ministries of finance, central banks and suppliers who work daily with the terminology of the minting industry. The 90 or so defined terms each have brief explanations, which are translated into English, German, French, Spanish and Russian.

According to Amera, the international coin market is dependent upon both the knowledge and understanding of the needs of citizens, the duties of central banks and governments as well

as the capabilities of the mints, blank manufacturers, mint plant engineers, tool manufacturers, transport companies and many other factors. Since the stakeholders operate in different languages and cultural spheres, the *Coin Glossary* aims to provide pragmatic explanations of important terms.

Amera is now inviting feedback from the online version in order to improve, update and add to the glossary. Later in the year, it plans to produce a first written publication incorporating the amendments to accompany the online version.

The glossary can be viewed at www.coin-glossary.info

Banknote of the Month...cont



Coins Nudge Out Polymer

With rebasing has come the opportunity to reintroduce coins, four of which now accompany the six new notes. Two of these - the K1 and 50 Ngwee - replace the old K1,000 and K500 notes (which were the first notes in Africa to be produced on polymer). The other two coins are the 10N and 5N, which replace the old K100 and K50 paper notes.

The coins have been produced by the South African Mint Company and each features a bird or animal. The K1 and 50N have a serrated edge, while the 10N and 5N have a plain edge. The K1 and 5N are nickel-plated steel, the 50N is bronze-plated steel, and the 10N is brass-plated steel.

Five coins remain from previous issues. Although not generally used for transactions, they are still considered legal tender during the six-month transition period, but are not being replaced with rebased coins due to their insignificant value.

Post-Transition Phase

Once the six-month transition phase, running from 1 January 2013 to 30 June 2013 is over, the old currency can no longer be used to purchase goods and services, but can be swapped for new currency at BoZ, commercial banks and designated exchange centres from 1 July 2013 until 30 June 2014. Thereafter, and until the end of 2015, exchange can only be done at BoZ.

Public Sensitisation

In order to educate the public, BoZ deployed a ten-man team during 2012 - one for each province - to disseminate information through radio stations and Zambia News and Information Services. In addition, BoZ ran a TV campaign and set up a web page dedicated to currency rebasing.

Also, in December 2012, vendors were allowed to start displaying both old prices (K) and rebased prices (KR), which gave the public the opportunity to acquaint itself with rebased values. During the six-month transition phase this dual display is mandatory.

Diary – Conferences and Exhibitions

World Money Fair

February 1-3, 2013
Berlin, Germany
www.worldmoneyfair.ch

10th Pan European High Security Printing Conference

February 12-14, 2013
Prague, Czech Republic
www.cross-conference.com/europe

CeBIT 2013

March 5-9, 2013
Hannover, Germany
www.cebit.de

Currency Conference

May 12-15, 2013
Athens, Greece
www.currencyconference.com

TEMAN (Technical Meeting of Mints in ASEAN)

May 26-June 1, 2013
Pattaya, Thailand
www.teman2013.com

ESTA Annual Conference

June 2-4, 2013
Marseilles, France
www.esta-cash.eu

Watermark Conference

June 25-27, 2013
St Petersburg, Russia
www.watermark-conference.com

Executive Leader Workshop

June 16-22, 2013
Montreux, Switzerland
www.currency-research.com

2nd Latin American High Security Printing Conference

July 8-10, 2013
Bogota, Colombia
www.cross-conferences.com/latinamerica

ICCOS Americas

September 16-19, 2013
Miami, FL, USA
www.iccos.net

Future of Cash

September 25-26, 2013
Madrid, Spain
www.efma.com

12th Asian, Middle East and African High Security Printing Conference

October 7-9, 2013
Bangkok, Thailand
www.cross-conferences.com/asia

The 2nd Coin Conference

October 28-30, 2012
Berlin, Germany
www.thecoinconference.com



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New Building ... New Cash Management System

PEC - the leading provider of cash management systems - has announced that it has been selected by the Central Bank of Azerbaijan (CBA) to modernise its cash centre operations. This includes an automated cash centre in Baku - the capital - as well as roll-out to all six regional centres, which operate on a more conventional, manual basis. Completion of the automated cash centre is scheduled for 2015 - coinciding with the completion of the Bank's new space-age administrative building - at which point the CMS will control all conventional and automated cash centres in the country.

PEC provides the hardware and software to manage the entire cash operation cycle, including cash receipts, orders from commercial banks, storage, sorting, bundling, shipping and destruction. The CMS transforms all banknotes that enter the cycle into traceable units that are tracked through the entire process. Dedicated hardware includes automatic vault technology (storage and retrieval systems, racks and security doors), along with automated guided vehicles (AGVs), customised containers and electronic locks for material handling. The only 'hardware' that PEC does not provide is the cash processing machines themselves.

The management system, meanwhile, controls every physical transaction and electronically enforces the bank security

procedures by supporting and integrating all the individual steps from cash receipt to picking/shipping or destruction. This management system works independently from other central bank systems, but can be integrated with these for reconciliation, invoicing and clearance.

PEC will also install a common web portal to give CBA clients, operators, supervisors, management, and other stakeholders a 'window' into the cash centre so that they can - for instance - view the status of an order.

PEC started life in 1984 in Leuven, Belgium as an engineering services company, undertaking complex automation projects that involved mechanics, robotics, electronics and software. In 2004 it moved its expertise to cash management systems, which was to result, two years later, in a first contract for a fully-automated vault and logistics system with a major central bank.

Today, the PEC Cash Management System supports a mix of manual and automated processes. Azerbaijan is the latest central bank to adopt PEC's system. Others include Hungary and Bulgaria.

In a separate development, the CBA is also planning to create a new banknote examination centre, and has announced a tender to purchase and introduce the necessary systems and equipment.

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