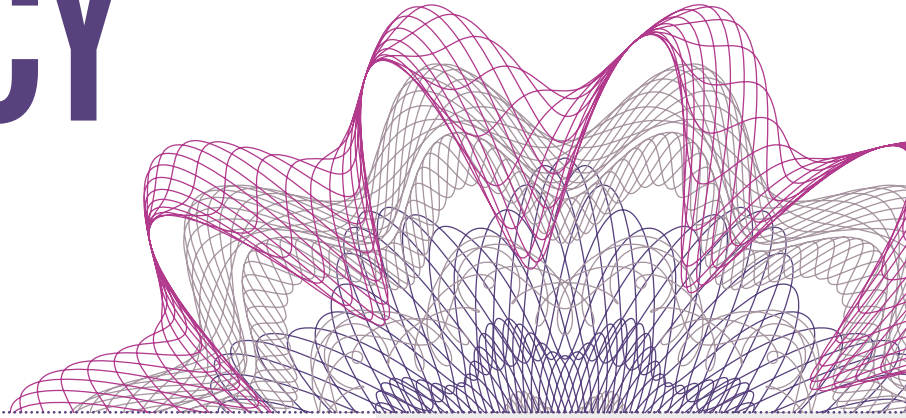


CURRENCY NEWS™

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COVID-19 and Cash: a Not-so-Brave New World



On 11 March 2020 the World Health Organisation (WHO) declared COVID-19 to be a pandemic. At around the same time, they also managed to convey an impression of cash in the context of the virus that could have long-lasting and damaging effects.

Is cash safe to use?

While the general advice from WHO about protecting yourself from COVID-19 is clear (eg. wash your hand, keep your distance, avoid touching your face etc), their advice about cash is not. Reports that they advised against using physical banknotes and coins due to the coronavirus surviving on these were quickly picked up by the media and themselves went 'viral'.

WHO subsequently issued a statement saying that they have not advocated avoiding cash ('we did NOT say that cash was transmitting COVID-19'), but rather suggested that contactless payments may be 'a good idea', and the risk posed by handling a banknote is no greater than touching any other common surface. Even so, the original story has done its damage.

Both the WHO and the US Center for Disease Control and Prevention state that the main way that the COVID-19 spreads is by people-to-people contact and through droplets that are produced when an infected person coughs or sneezes.

The head of Germany's Robert Koch Institute for infectious diseases, agrees that banknotes DO NOT play a significant role in the spread of the coronavirus. The risk of banknotes spreading the coronavirus is small 'unless someone is using a banknote to sneeze in' says Dr Christine Tait-Burkard, an expert in infection and immunity at the Roslin Institute at the University of Edinburgh.

The US Center for Disease Control said, 'it may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes, but this is not thought to be the main way the virus spreads.'

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Oberthur to Share Anti-Viral Technology

Oberthur Fiduciaire has announced that it has developed an effective anti-viral treatment to counter coronaviruses on the surface of banknotes, and that it is making the treatment available to all accredited banknote paper makers and banknote printers.

The treatment, *Bioguard Enhance™*, is applied within the post print varnish and as a paper treatment. It is an extension of the *Bioguard™* anti-fungal and anti-bacterial technology paper treatment that is already protecting billions of banknotes in circulation.

In the past few weeks, tests conducted in an independent laboratory in the US have shown that when Bioguard Enhance is applied to a banknote in both the paper and the post print varnish, a coronavirus-type virus sample was effectively wiped out.

In the tests the Bioguard Enhance was evaluated against coronavirus OC43, from the coronavirus family that affects humans. The initial findings from the laboratory showed that, under standard test conditions, samples treated with Bioguard Enhance showed 99.9 % of the coronavirus OC43 were eliminated. The protocol used is comparable to the ASTM E1053-97 – Standard Test Method for Efficacy of Virucidal Agents Intended for Inanimate Surfaces.

The science behind this discovery results from Oberthur Fiduciaire's long term collaboration with the USA-based laboratory Biological Consulting Services (BCS). BCS has for many years been one of the leading experts in the field of pathogen analysis.

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COVID-19 – Truth and Lies

'A lie gets halfway around the world before the truth has a chance to get its pants on.'

The above quotation is attributed to the legendary British war-time Prime Minister Winston Churchill. While the context is unknown, it is a perfect metaphor for the situation today vis-à-vis perceptions of cash.

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And it is so frustrating. The damage of the World Health Organisation (WHO) announcement linking cash to the spread of COVID-19 is well and truly done. Central banks have been slow to respond and have given mixed messages about the safety of cash (why quarantine it if it is so safe?). At the same time the commercial payment sector has promoted contactless payments as safer for retail staff and the public. The net effect is a significant decline in cash withdrawals. Only time will tell if the reduction is temporary.

In early March, a variety of stories appeared in the media which quoted a WHO spokesman saying 'we know that money changes hands frequently and can pick up all sorts of bacteria and viruses.' He went on to say that 'when possible it would be advisable to use contactless payments to reduce the risk of transmission.'

This was followed up by a statement in the 'myth busters' section of the WHO website that said 'the risk of being infected with the new coronavirus by touching coins, banknotes or credit cards and other objects, is very low.' WHO did not leave that post up but has confirmed subsequently that it did not say cash was spreading COVID-19. By then, however, the story had taken on a life of its own with the media, and social media, in full cry. Words matter and here is a great example of that.

The response by the cash community has been pretty much the same as that of the international community to the emergence of COVID-19 – ie. unprepared, fragmented and slow.

That said, many central banks have now entered the debate, using – as noted on page 1 – science and logic to make clear statements that banknotes are low risk when it comes to spreading COVID-19.

At the same time as saying cash is safe to use, some central banks are also publicising what they are doing to safeguard banknotes against spreading COVID-19 (hence the comment above about mixed messages).

Another central bank response has been to reassure the public that there is sufficient cash in the system to meet any requirements. This is supported by reports from several suppliers that tenders and orders are being brought forward – presumably not only to inject more fresh notes into the system to replace worn notes, but as a contingency.

After all, it not an unreasonable assumption that people would withdraw large amounts to hoard, as they tend to do in times of crisis (albeit that the real story of hoarding in this crisis is toilet rolls, not banknotes. Who could have seen that coming?)

But for all the central banks that have sought to reassure the public about cash, there are as many that are encouraging them to use alternatives. They include the central banks of India, Kenya, Portugal, UAE, Estonia, Russia, Malaysia to name a few. It is not coincidence that some of these are active proponents of digital currencies anyway. Could their stance be opportunistic?

Central banks, and cash, don't work in isolation of course. The pandemic has also seen change in the payments sector which has sought to increase the use of non-cash payments.

A number of countries, such as the Netherlands, UK, Saudi Arabia and Egypt, have raised the payment limit for spending using contactless cards. M-Pesa has waived its fees to discourage cash usage. The Allied Irish Bank reversed a decision to charge a fee for contactless payments using mobile devices. Ant Financial has opened Alipay to third parties to encourage its use. An increasing number of financial institutions have decided to reduce the number of branches open to the public. A number of retail outlets, before their shutdown, moved to only allowing non-cash payments methods.

Even before social distancing became policy, the net effect of COVID-19 and these changes has been a huge reduction in the use of cash. In a matter of just days in mid March in the UK, for example, cash usage halved.

This is not just down to public fears about cash and retailer insistence on cards being used. It is also down to so much of our daily life now having to be conducted online, and to the lockdowns that mean people simply can't spend so much.

And while cash may be one casualty, other payment means are being affected too, with McKinsey claiming that both Mastercard and Visa have been hit by a 25% decline in transactions.

Even so, it is too pessimistic to suggest that the changes that the pandemic is forcing on our payment choices will become permanent once the pandemic is over?

End of Euro 1 and 2 Cent Coins on the Horizon



The European Commission (EC) is considering a proposal to phase out 1 and 2 euro cent coins in a move that could save up to €1.4 billion a year in production and transportation costs.

The measure is included in the EU executive's working programme for this year, released at the end of January and scheduled for the October-December period after an evaluation of the use of the two smallest euro denominations.

Rounding rules would be applied as a first step before any withdrawal. Among the 19 eurozone states, these rules are already used in the Netherlands, Finland, Ireland, Belgium and Italy.

With the cost of the 1 and in some cases 2 cent coins mostly exceeding their face value (although these costs depend on where they are minted), their future has been under discussion for some time.

The EC published a report in 2018 giving four scenarios – (1) to maintain the status quo (ie. do nothing); (2) to continue issuance but at a reduced cost (ie. changing to a cheaper composition); (3) to 'fade out' the coins (whereby they would remain legal tender, but progressively disappear from circulation); and (4) to go for a quick withdrawal. The third option is the one that appears likely to be adopted, although the EC's Vice President Maroš Šefčovič has stated that no final decision has yet been taken.

Dr Rüdiger Voss of the European Commission's Directorate General of Economic and Financial Affairs (ECOFIN) has presented on the low value denominations at the past two Coin Conferences, providing figures that put the EC's deliberations into context.

The net issue of euro coins between 2002 – ie. the year the euro was introduced – and 2019 is 132.9 billion with a value of €29.4 billion, equating to 396 coins per eurozone inhabitant.

The average purchasing power of the 1 cent coin in 2019 was 80% of that in 2002. And yet the issue of 1 and 2 cent coins is increasing faster than any of the other denominations. In 2002, 14 billion 1 and 2 cent coins were in circulation out of a total of 40 billion, ie. 35%. By 2017, 61 billion of the coins were in circulation out of a total of 126 billion, ie. 48%.

Seigniorage is also an issue. Production costs in particular vary throughout the eurozone, but there is a presumption that the 1 cent at least has resulted in negative seigniorage since 2010. With production costs routinely 50% higher than the face value, the annual loss of seigniorage is estimated at €16 million.

The disappearance of the coins would be unlikely to be missed in the eurozone. In a Eurobarometer poll in 2018, 64% of the public were in favour of abolishing the coins and rounding prices up and down (up from 60% in 2014), albeit that there were regional variations. Finland was most in favour, at 86% (not surprisingly, since they decided to do without the two coins from the outset). Lithuanians were the least in favour, at 45%.

As above, five countries in the eurozone have already stopped producing and issuing the coins (Finland and the Netherlands first, then Belgium, and more recently Ireland and Italy), albeit that they are still legal tender in those countries. France is reported to be also invoking mandatory rounding, regardless of the EC's decision.

Germany, on the other hand is understood to be resisting the withdrawal of the coins due to their heavy use in circulation and because such a move would prevent the fractional pricing so favoured by retailers. Germany uses more cash than any other eurozone country, but its resistance may also be due to the fact that it is home to five mints. Estonia is also resisting the idea, having recently increased the number of these coins in circulation.

People in the News

The Central Bank of Curaçao and Sint Maarten has nominated **Richard Doornbosch** to take over as Governor later this year. He currently serves as Finance Minister and, if approved, will replace **Jerry Hasselmeyer**, who stepped down in 2017. The position has been vacant since then.

Diego Labat has been appointed interim President of the Central Bank of Uruguay pending a permanent replacement, following the retirement of **Alberto Graña**.

Evaldas Stralkus has been appointed the new CEO of the Lithuanian Mint.



Jutta Buyse.

Jutta Buyse has been appointed Director General of the International Currency Association (ICA), replacing **Dr Susanne Maise** who has stepped down. She brings 18 years of experience in working with Brussels-based associations and public affairs consultancies, as well conference management. Most recently, she was Deputy Secretary General at the European Lotteries Association, where she has executed advocacy campaigns to position the sector in various EU policy dossiers.

According to **Dr Wolfram Seidemann**, Chairman of the ICA Board, 'the role of the ICA as the association of the currency industry will continue to grow. In Jutta Buyse, who brings strong association and advocacy experience, we found the right person to lead the further growth and development of the ICA, with a strong focus on advocacy and outreach.'

A Mixed Bag from the Latest Round of Company Results

Last month we reported the published results of a number of industry leaders in cash, including Loomis, Brinks, Diebold Nixdorf, NCR and Crane Co.

This month it is the turn of Spectra Systems, Prosegur, G4S and Koenig & Bauer, all the figures for which represent operations in 2019 – ie. before the impact of COVID-19.

An update on the performance of the listed companies in our sector post the COVID-19 outbreak can be found on pages 7-8 in this month's Industry Watch.

Record year for Spectra

Spectra Systems Corporation reported another year of growth. Revenue of \$13.23 billion was 5.9% higher than the previous year, the increase being largely due to early-stage research funding for future sensor technology development for a G7 central bank and equipment sales to a major banknote printer.

Adjusted EBITDA (before stock compensation expenses) increased by 8% to \$5.5 million, representing an operating margin of 41.54%. Net income for the year increased by 7% to \$4.3 million, a net profit margin of 32.75%.

Most of the company's sales and profit are derived from the Authentication Systems business, which generated revenue of \$11.83 million, and achieved an adjusted EBITDA of \$5.06 million, a 9.5% increase over the previous year.

Sound performance from Prosegur

Prosegur's revenue in 2019 was €4.2 billion, a 6.6% increase over the previous year, and it achieved an operating profit (EBITDA) of €536 million compared with €456 million in 2018, an increase of 17.6%. Its operating margin increased from 11.6% to 12.8%.

Operating profit, excluding depreciation (EBITA), was €358 million, an increase of 9.7%, and profit before interest and tax (EBIT) was up 9.7% at €330 million. Net profit at €160 million was 11% lower than in 2018.

Revenue in Latin America increased by 2.2% to €2.08 billion (but by 19.7% in local currency). Revenue in Europe increased by 1.7% to €1.77 billion and in the rest of the world by 116% to €342 million.

Prosegur Cash is one of three divisions, accounting for €1.8 billion in sales (up nearly 4%) – 42.85% of the total sales revenue. In local currency the sales growth was approximately 17% of which 16.2%

came from new products, these having now achieved a 42% year-on-year sales growth. The division's profit margin improved by 13.7% to 16.9% in 2019.

G4S demerges cash business

G4S produces two sets of results, the Statutory Results and Underlying Results, claiming the latter, presented at constant exchange rates other than the operating cash flow, provide a better indication of the performance of the group's on-going business for the year. For brevity we use those results here.

Revenue in 2019 at £7.67 billion was 4.7% higher than in 2018 and the adjusted operating profit (PBITA) at £501 million remained the same. The operating margin in 2019 was 0.3% lower at 6.5%. Net profit for 2019 was £263 million compared with £261 million in 2018.

The most notable feature of 2019 was the demerger preparations for the Cash Solutions business which culminated, on 26 February this year, in the sale of the majority of the conventional side of the business to the Brink's Company, the Board having determined that this sale was superior to the demerger and in the best interests of shareholders. 35% of this business is being retained, including the company's cash operations in the UK. Together, the retained businesses had sales of £297 million in 2019 and PBITA of £27 million. The sale will see the transfer of c. 25,000 employees to Brinks, and a reduction of £15-20 million per year in overheads for G4S.

According to G4S, the disposal of these capital-intensive businesses will enable G4S to focus on the growth of other aspects of the business. These include its rapidly growing Retail Technology Solutions business, which includes Cash360, Deposita and G4SPay – all described as industry-leading solutions which transform customers' payment and cash management processes. This business grew by 18% in 2019 and is expected to continue growing strongly, at 14-16% per annum and generate margins of c.15%. The operations of Retail Technology and the retained cash business will account for 8% of group turnover going forward.

Uncertain outlook for Koenig & Bauer

Koenig and Bauer is the parent company of KBA-NotaSys, which has recently been renamed Koenig and Bauer Banknote Solutions.

Revenue for the year fell slightly from €1.22 billion to €1.21 billion, but costs also increased, resulting in gross profit falling by 12% to €312.9 million. Profit before interest and taxes (EBIT) was also lower at €56 million compared with €87.4 million in 2018. Net profit at €38.4 million was 30.5% lower than in the previous year.

The revenue share from banknote and security printing of €463.9 million was 5.6% lower than in 2018, which had been boosted by a major order. The order intake was also 19.5% lower at €406.7 million than the previous year. Operating profit fell by 8.9% to €43.9 million. The division has an order backlog of €287.3 million.

The company has in place a Performance 2024 Efficiency Programme with the intention of reducing costs by €70 million by 2024, improving operating margins, and reducing working capital through lower inventories and receivables in security printing, as well as other initiatives.

In the guidance for 2020 the company stated that, even before the coronavirus, the global economic conditions were demanding, and with the pandemic situation now worsening, the company could not be sure of its performance. Managing the possible consequences of the pandemic is now the company's top priority, with a professional project organisation already established.

Update from De La Rue

De La Rue won't be announcing its results for 2019/20 until May, but issued a trading update at the close of the financial year in which it states that it still expects an adjusted operating profit of between £20-25 million, as previously guided.

The group has operated within its banking covenants for FY 2019/20. Net debt is estimated to be £105 million, down from the £170 million recorded in September.

De La Rue is progressing with its Turnaround Plan, preliminary details of which were announced at the end of February and which include an accelerated cost-cutting programme combined with a sharper focus on its core businesses of currency and authentication.

News in Brief

Nepal Halts Security Printing Press Tender

The Public Accounts Committee (PAC) of the Nepalese Parliament has directed the government to halt the process of setting up a new security printing facility in the country.

In the view of the PAC, the previous process to procure the new facility was 'full of irregularities' and it has recommended that it be scrapped and replaced with a new global competitive tender. It has also directed the Commission for the Investigation of Abuse of Authority to investigate the irregularities rife in the procurement process. These include reports that a government minister resigned from his post after he was heard in a leaked audiotape seeking a 'commission' from a potential supplier.

Two European companies – from France and Germany respectively (neither being the afore-mentioned potential supplier in the leaked tape) – submitted bids last year to build the facility, but neither was followed through on the basis of cost, with calls for global bids instead, rather than the previous so-called G2G (government-to-government) process.

The government's plans involve an in-country security printing facility so that it can produce its own passports, ID documents and, potentially, banknotes as well, with the aim of becoming self-sufficient in five years.

Loomis Expands in Scandinavia

At the start of this year Loomis announced the acquisition of the Swedish arm of the Norwegian cash management company Nokas. It has since announced that it is acquiring 100% of the Finnish ATM operator Automatia Pankkiautomaatit Oy (Automatia) from the present owners Danske Bank, Nordea, and OP Financial Group.

Automatia, established in 1994 as a joint venture of Finland's main commercial banks, operates the largest ATM network in the country under the Otto brand. The business also provides nationwide cash supply services for bank branches and night safes for retailers. In addition, it operates Siirto, an open multi-bank digital platform for real-time mobile payment services.

Automatia employs around 30 people and manages around 1,500 ATMs, which is more than 95% of the total ATM numbers in Finland. Its 2019 annual revenue was around €42 million. The enterprise value, ie. purchase price plus acquired net debt, is also approximately €42 million.

'Automatia offers us know-how and experience in operating ATM services and digital payment systems. This is a great opportunity for us to expand our ATM outsourcing services. As its new owner, Loomis will continue to develop Automatia's businesses and will use Automatia's know-how and payment platform internationally,' said Patrik Andersson, President and CEO of Loomis.

Under the terms of the transaction, the selling banks will commit to long-term agreements to be serviced by Automatia. The transaction is subject to merger control approval by the Finnish Competition and Consumer Authority and approval by other relevant authorities. Closing will take place after approval, which is estimated to take around five months.

Note Issuer to Change Name

The Royal Bank of Scotland (RBS), one of Scotland's three note-issuing banks, is to change its name to NatWest, the subsidiary which represents 80% of its customer base.

According to RBS, the move is designed to align the group name with the brand under which the majority of its business is delivered. But cynics see it as an attempt to shake of its toxic past and the financial crisis of 2008, when it was rescued with £45 billion of taxpayers' money following years of disastrous mismanagement.

It is presumed that the change will not, however, affect RBS banknotes, as the press release announcing the name change explicitly states that 'customers will see no change to products or services as a result of this change and will continue to be served through the brands they recognise today, including NatWest and Royal Bank of Scotland'.

Royal Mint Steps up to Help Health Workers

The Royal Mint is set to produce thousands of medical visors to protect health workers on the frontline of the coronavirus outbreak.

While the organisation typically produces coins, its engineers are to manufacture up to 4,000 of the visors a day. The engineers decided to produce these after searching online to see what medical equipment could be easily created on its site. After settling on the visors, their high specification prototype was approved in two days. The Royal Mint says it will post the exact specification for its design online so that other engineers can replicate it.

A spokeswoman for the Royal Mint said it had received requests from health trusts and hospitals across the UK since news of its medical visors was announced. 'We have increased production as a result to help as many as possible,' she added, explaining it should be fairly straightforward for other engineers to produce its visors. 'We are already a fast-moving consumer goods (FMCG) manufacturer so a lot of the techniques could be easily transferred.'

Finland Maintains Coin Production for Denmark

Coins in Denmark will continue to be minted by the Mint of Finland until 2025, following the renewal of its contract with the Danish central bank. Last year, Danmarks Nationalbank launched a tender as its existing agreement with the Mint of Finland is due to expire this May. The Bank started outsourcing its coin requirements when it closed its mint in 2016, and the first three year contract was awarded to Mint of Finland in 2017.

The Bank tendered for the four year production contract, to take effect from 2021, via an EU open procedure and says that the Mint was chosen for providing the best offer overall. The award criteria included not just price, but also quality, security and CSR.

Cash Management in Mozambique

The Bank of Mozambique and the country's credit and financial institutions have signed an MOU to share the responsibility of managing cash in circulation, both notes and coins.

According to the Governor, Rogério Zandamela, the MOU will help to 'promote greater efficiency, to ensure that the selection, counting, transport and distribution of medical banknotes and coins are properly conducted and at low cost.'

The appropriate standards and division of responsibility between the Bank and the financial institutions will be issued 'soon'. But the Bank will retain responsibility for ensuring the integrity of notes and coins in circulation, monitoring their level of quality, as well as educating the public on issues of their handling.

The financial institutions, meanwhile, will be responsible for checking the authenticity of cash to protect themselves from losses due to counterfeiting or forgery, and ensuring that banknotes and coins in circulation are genuine and of good quality.

Anti-Viral Paper

(Continued)

BCS is accredited by ANSI National Accreditation Board (ANAB), the largest accreditation body in North America and also by the National Environmental Laboratory Accreditation Program (NELAP). The Bioguard technology platform, from which Bioguard Enhance has been developed, has already been certified under ISO 10993 in France and in the USA by Biomatech, a NAMSA (North American Science Associates) member company.

Bioguard Enhance has the major advantage that it can be added to an existing series of banknotes without any impact on the visual appearance of the banknotes, security features or machine readability.

According to Oberthur Fiduciaire, the anti-viral properties of Bioguard Enhance have no effect on the banknote's physical properties, are unaffected by lithographic and intaglio printing and by washing and maintain their effectiveness in artificial ageing tests. From a health and safety perspective, the treatment does not result in any additional irritation or sensitisation.

Oberthur Fiduciaire is making Bioguard Enhance available to all accredited banknote paper makers and banknote printers as part of its commitment to assist the world's fightback against COVID-19.

Oberthur Fiduciaire will also provide technical support to all manufacturers who wish to use this anti-viral solution for the first time. A number of paper mills have already had experience of adding the Bioguard family of products to paper – Louisenthal in Germany, Crane in Sweden, FNMT in Spain, Portals in UK and VHP Security Paper in the Netherlands. In this time of crisis, says Oberthur Fiduciaire, it has built on its well proven Bioguard technology to develop an effective anti-viral treatment for banknotes. This solution can be applied to all new banknote orders and Oberthur Fiduciaire has committed to work with all accredited industry suppliers to ensure that every central bank in the world has access to this significant new technology.

Please contact G Tillon of Oberthur Fiduciaire, for further details at G.TILLON@fcf.com

(An interview with Henri Rosset, developer of Bioguard Enhance, can be found on page 10).

COVID-19 and Cash (Continued)

There is a lot of research into how the COVID-19 virus survives on different surfaces, but it's not just cash payments that potentially carry a risk. Using PIN keypads for card payments might be an even more direct way of transmitting the virus. As is touching frequently handled objects such as door handles, petrol pump handles, shopping trolleys, handrails, water taps and light switches.

What are central banks saying?

A number of central banks have made clear statements that banknotes are low risk when it comes to spreading COVID-19.

The Executive Board Member of the Bundesbank, Johannes Beermann, said on 18th March, '...the probability of becoming ill from handling cash is smaller than from many other objects used in everyday life'.

In the same press briefing, René Gottschalk, infectiologist and head of the Frankfurt am Main Health Office, explained that what is decisive is whether there is an infection channel. 'COVID-19 is mainly spread by infected droplets transmitted by coughing, sneezing or also talking.' He did not regard banknotes as providing an infection channel since the physical properties mean banknotes do not particularly lend themselves to transmitting pathogens.

The Bank of Canada and the Bank of England have made statements that almost used the same words, saying the risk of getting COVID-19, '...by handling a polymer note is no greater than touching any other common surface, such as handrails, doorknobs or credit cards.'

The Banque de France has said there is 'no evidence that the COVID-19 was or could be spread by banknotes.' The Oesterreichische Nationalbank, Reserve Bank of New Zealand and the South African Reserve Bank are among several others that have also made similar statements.

How are central banks treating banknotes?

At the same time as saying cash is safe to use, some central banks have also publicised what they are doing to safeguard banknotes against spreading COVID-19.

The People's Bank of China (PBOC) has taken a number of steps such as quarantining of returned banknotes before reissuing them, increasing the issue of new notes and disinfecting areas where cash is handled, and these have been implemented elsewhere (for example, Costa Rica, Indonesia, Iran, Russia, South Korea and Thailand).

Some banks have focused on removing more notes from circulation and putting into circulation only new ones, others such as the Federal Reserve are quarantining repatriated banknotes.

The logic behind central bank decisions to disinfect banknotes, only issue new notes or move to more wipeable polymer or varnished banknotes, is a concern over how long any virus will stay on a banknote.

Stephanie Brickman from the WHO said, 'we do not know (how long the virus lasts on banknotes), but we estimate not longer than two hours. The virus will not survive for very long on surfaces, particularly on a dry surface like a banknote.'

De La Rue research during the H5N1 flu in 2006 suggested that as little as 10 % of COVID-19es (with feline COVID-19's being specifically tested) were still present after four hours. This research concluded that overnight storage was likely to be adequate to ensure that the virus was no longer present. Other studies, that are relevant but not directly translatable to banknotes, suggest between hours and days.

Can the industry help?

As described elsewhere in this issue, Oberthur Fiduciaire have brought out a new anti-viral substrate, *Bioguard Enhance*. There are claims of other substrates out there too – from Goznak and Intace for example, while Inovink is about to launch an anti-microbial additive for banknote varnish and substrates called *BioNote*®.

Whether or not there is a need for such substrates given the lack of evidence and consensus that viruses survive for any significant length of time on banknotes is beside the point; the ability to address such concerns, legitimate or otherwise, with a tailor-made solution could be key to helping regain trust in banknotes.

A detailed analysis of the various industry technique and products to help fight COVID-19, or fears of COVID-19, will be the topic of a special report to be distributed with the next issue of Currency News.

The Stars of Aruba – Issuing Banknotes with Humour and Public Interaction

Last year, the Centrale Bank van Aruba (CBA) introduced a new banknote series, its first in 16 years – a decision that was not taken lightly given the popularity of the existing series in this small but beautiful island in the southern Caribbean. But after intense preparations with many stakeholders and the decisions to also include humour in the public awareness campaigns, the 120,000 residents of Aruba now have one of the most innovative and modern banknote series in the world. And ones they appear to like as much, if not more, than the previous notes.



Jeanette Semeleer, centre, at the launch of Aruba's new banknote series.

Currency News™ spoke to Jeanette Semeleer, President of the CBA, about the motivation behind the new series and how the public were converted to their new notes.

Q: First of all, can you give some headline comments about the new series, and the factors behind it?

A: The new series was hatched several years ago – to make people proud of their country and to show the world the rich life of Aruba.

But replacing a complete banknote series was not an easy task. The CBA decided early on to take on the whole experience of creating a family of banknotes by themselves – albeit together with a network of local partners and international experts and advisors.

We are all very pleased with the result, but the project was huge and we underestimated the magnitude of the work needed to be done. It took about seven years to accomplish everything, including the legislative process as approval of the Parliament was necessary to change the relevant law, which also put an extra burden on the staff.

Q: What was the reason for issuing the new series in the first place?

A: Throughout the years, the CBA had done a number of updates of the old series but came to a point when it was too cumbersome. The old banknotes had fallen out of step with the functional and security needs of modern banknotes. They were also quickly soiled, especially the highly circulated 10 florin note, and contained a lot of white areas which attracted dirt.

Another tipping point was the emergence of counterfeited banknotes. Not many, but the central bank's strategy is to communicate immediately any counterfeits to the public.

We then set the goals for the new series already from the start. It had to be modern, use the best security features available to prevent counterfeits, convey a clear message to the public, and be a full family of new notes. And not the least be sustainable over time – we didn't want to start all over again for the next ten years.

We launched the new series on 17 May 2019, and made it available to the public on 3 June. Five new banknotes, of which one has a new denomination, were issued after what were years of intensive preparations and close cooperation with various local stakeholders, including the commercial banks, as well as international suppliers of banknote paper, security features and equipment.

Q: How did you go about deciding on the design and security features?

A: When the decision was taken to work with local Aruban artists, the CBA attended numerous conferences and company visits to find the best designers, printers, and other external experts. A lot of travel and hard work had to be done before choosing the right suppliers.

You have to go out at least four years in advance and attend all conferences, listen to presentations, walk with the experts, feel the products, conduct on-site visits and review advanced security features.

For a small central bank as the CBA, it is crucial to balance the need for efficient anti-counterfeit technology with cost. We selected Crane Currency's micro-optic security feature *MOTION SURFACE*® for the complete series of banknotes – a decision that wasn't taken lightly as it was a first. If you want to be open-minded you have to take some risk, but we didn't want to be a pure test case for new banknote security features either.

It had to be proven technology, and *MOTION SURFACE* is in our view the best available banknote security technology. It has the highest quality and is the most effective feature on the market.

Q: And what about the themes and designs themselves?

A: The new series is very modern, beautiful and colorful. I have shown the new banknotes to international friends and they like them – so much so that they want to take them back home with them.

The public can now explore the 10, 25, 50, 100 and 200 florin banknotes in a new vertical format – each with beautiful artistic elements from the Aruban culture, flora and fauna. These are in combination with the most secure banknote features available, such as high-relief printing, colour-changing ink, *MOTION SURFACE* and 3D moving stripes with miniaturized micro-optics from Crane Currency, which also printed the new series.

People appreciate that they can discover new elements of the banknotes almost every day. On each note, there's a combination of different elements, vibrant colors and messages about nature conservation that fuel curiosity.

Q: How did you implement the public education campaign?

A: We had years of preparations before successfully launching the new series, allowing sufficient time for including as many parts of the society as possible in this important project. And since the co-circulation time was only two months, we implemented an inclusive information campaign to ensure that all members of the Aruban community were immediately aware of the new series and its unique design and features, and the story behind them.

The public information and education involved printed material and instructional movies via various channels such as TV, radio, social media and the central bank's website.

As an addition, the CBA held information sessions in various community locations and schools and presented a 'Treasure Box' to communicate the new banknote series to a younger audience. Using an analogue game in an otherwise digital world was a strategic move to encourage pupils to practice mathematics by managing cash.

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Cash Industry Shares Crash

For most of last year there was talk of a market downturn. Some believed that many companies, and in turn markets, were over-valued. But although there were brief dips, the general downturn never materialised.

Indeed the markets not only bucked a downturn, most recorded gains in the year, enabling our industry to end 2019 in reasonably confident mood. No one saw the current storm coming. The modern world has never experienced anything quite like this highly infectious disease, and we are only currently in its early stages.

Bill Gates forecast a pandemic two years ago and others have sounded warnings, but in the period of austerity following the financial crash of 2008, virtually no country or organisation heeded the warnings and prepared for it. The effect on daily life needs no further description, except to say that that communities, regions and countries are in lockdown and their economies in a state of suspension at the best, meltdown at the worst.

All global equity markets have lost value as many companies have been forced to reduce output or close their doors, either temporarily or permanently. Many governments have pledged eye-watering amounts of financial support, which will have to be recovered once the pandemic is over. Even so, millions will be thrown out of work and there will consequently be a long haul out of recession. Investors are anticipating this.

In the period since last December (ie. the last Industry Watch), every market in the world has fallen in value. In the USA the Dow Jones has fallen 28% and the NASDAQ 13%. In Asia, the Nikkei has fallen 19%, the Hang Seng 17.5% and the Shanghai Composite 8%. In Europe the FT All Share Index has fallen 29%, the FT 100 28%, the SMI 15.5 %, the CAC 28%, the DAX 28% and the FT Eurofirst 350 17.7%.

Whilst the losses in the world's markets are shocking, they are not nearly as substantial as some of those incurred by the companies in our sector which, with one or two exceptions, have fared considerably worse than their respective markets.

Substrates and banknotes

De La Rue's share price fell by 54.3% in the period, reducing its market value from £219.7 million to £59.4 million. As a result, it underperformed its market by 30% and in the 12 months has underperformed by 66%.

Some of this fall reflects the changes that have been taking place in the company's business activities and in management in the last nine months and its unimpressive interim results last autumn. Even though DLR issued a turnaround and trading update at the end of February, with its share price at 140p, this continued falling until it reached a low point of 47p on 23 March. It has since recovered somewhat and ended the period at 57.3p.

Crane Co's share price fell by 42.5% in the period, reducing its market value from \$4.95 billion to \$2.91 billion. In the period it underperformed its market by 20% and in the full year by 24%.

Currency products accounted for 35.3% of revenue in 2019 (see CN February 2020) and although, this represented a fall of 7.9%, its operating profit only fell by 4.7% to \$177.3 million, representing 38.7% of Crane Co's operating profit (prior to asbestos and environmental provisions totalling \$248 million). These provisions seemingly had no impact on the market as the share price held firm until mid February, but then, along with other shares on the Dow Jones Exchange, it began to fall steeply.

Orell Füssli's share price fell from CHF 98 to CHF 93.5 in the period, a 4.6% fall that reduced its market value to CHF 183.5 million. However, it was the only company in the industry to outperform its market in the period with a 10% gain; in the full year it was level with its market.

Spectra Systems Corp's share price fell by 22.8% in the period, reducing its market value from £64.56 million to £50 million, but it only underperformed its market by 2%; in the full year it outperformed its market by 12.5%.

This strong performance compared with others in the industry may well be due to its releasing good results for 2019 and a strong forward outlook (see page 4).

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Company Performances – March 2020

Company	Current Share Price	Market Cap	% Share Price Change – Dec-March 2020	% Change Versus Market – Last 3 months	% Change Versus Market – Last 12 months to Dec 2019
De La Rue	57.1p	£59.4m	-54.3%	-30%	-66%
Crane Co	\$49.22	\$2.91b	-42.5%	-20%	-24%
Orell Füssli	CHF 93.5	CHF 183.5m	-4.6%	+10%	0%
Spectra Systems	110p	£50m	-22.8%	-2%	+12.5%
Brinks	\$51.4	\$2.58b	-44.5%	-19%	-16.5%
G4S	92.5p	£1.44 b	-57.1%	-30%	-35%
Loomis	SEK 191	SEK14.4b	-53.1%	-26.5%	-25%
Prosegur	€2.33	€1.4b	-37.9%	-13.5%	-37%
Diebold Nixdorf	\$3.85	\$298m	-61.5%	-40%	-48.5%
NCR	\$18.26	\$2.36b	-47%	-23.8%	-16%
Glory	¥2560	¥1629b	-23.8%	-4%	+3%

CIT companies hit hard

In the last Industry Watch we reported a strong performance for two of the four CIT companies (for the other two, see page 4). Today their outlook and situation is very different.

Brinks' share price fell by 44.5% in the period, reducing its market value from \$4.64 billion to \$2.54 billion. Its fall exceeded its market by 19% and in the full year it underperformed by 16.5%.

G4S's share price fell by 57.1% in the period, reducing its market value from £3.35 billion to £1.44 billion. It also underperformed its market in the period by 30% and in the year by 35%.

G4S announced the sale of most of its cash business in February to Brinks for £600 million, but this was announced some time after its share price had begun to fall, along with the market. Its recent results (see page 4) did not halt its fall in value.

Loomis released impressive results for 2019 (see last month's CN), but in the period its market value still declined by a very substantial 53% to SEK 14.4 billion and it underperformed its market by 26.5%. In the year it underperformed by 25%.

The fall in its share price started around 19 February (roughly a week later than most other companies in the industry) – from a high of SEK 398 reaching a low point of SEK 158 on 23 March, a fall of 60.3%, before recovering to end the period at SEK 191.

Prosegur's share price, like that of Loomis, also fell from around 19 March. Its high point in March just prior to the fall was €3.91 and its low point €2.03, a fall of 48%, despite releasing encouraging results for 2019 (see page 4).

In the period, Prosegur's market value fell from €3.75 billion to €2.33 billion, a 38% fall. In the period it underperformed its market by 13.5% and in the full year by 37%.

Falls for ATM and service providers

Diebold Nixdorf started this year with confidence as indicated in its 2019 Report and Accounts. However, COVID-19 has knocked that confidence off course. In the period its market value fell by 61.6% – the highest of any company in this portfolio, reducing its market value from \$765.6 million to \$298 million. It also underperformed its market in the period by 40%, and in the year by 48.5%.

NCR's results for 2019 also provided confidence for 2020. But as with others, NCR's market value fell by 47% in the period, reducing its market value by \$1.99 billion to \$2.36 billion. It also underperformed its market by 23.8% and in the 12 months by 16%.

Glory also fell in the market downturn, but to a lesser degree than its US competitors. In the period its market value fell by 23.8% from ¥213.82 billion to ¥162.91 billion, and although in the period it underperformed its market by 4%, in the full year it outperformed by 3%.

Conclusion

The link between the disproportionate fall in value of companies in our sector and the new front that has opened up in the war against cash thanks to the arrival of COVID-19 is inescapable.

The World Health Organisation (WHO) has a lot to answer for in this, having issued a statement saying that the coronavirus was carried on banknotes and that people could become infected this way. The story spread rapidly and although the WHO retracted its statement later, the damage – as noted in this month's editorial – has been done.

Stories on various attempts to clean notes via, for example, disinfection, were also widely published, simply adding weight to the story, with the result that cash – mainly banknotes but also coins – is widely seen as a means of spreading and catching the virus and so unsafe to use.

Central banks have been too slow to reassure the public that cash is no less safe than other products or surfaces with which people interact on a daily basis. And some have been actively promoting cashless alternatives. Meanwhile the industry – albeit now coming to the defence of cash – has also been too slow and too fragmented in its approach.

The consequences are that retailers are refusing to accept cash, with a corresponding increase in alternative payments, particularly contactless. At the same time, economic activity has nosedived, further suppressing demand for cash and all the normal activities in the cash cycle.

It follows that investors, having absorbed these negative aspects, both short and long term, are steering clear of the cash industry – certainly for the time being. Will this be permanent? Only time will tell. But in all crises, there are always winners and losers. And in this particular crisis, cash is definitely proving to be a loser.

The Stars of Aruba *(Continued)*

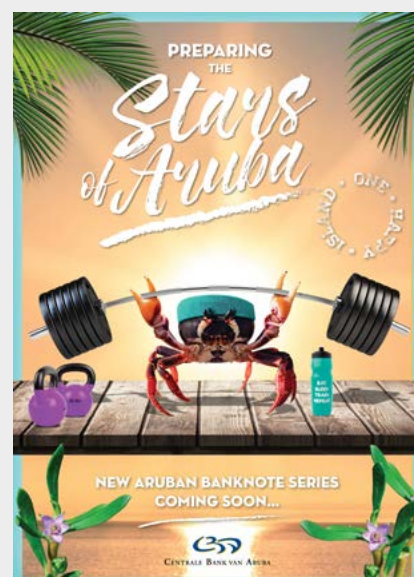
Q: Given that the population was perfectly happy with the existing notes, what were the messages you used to convert them to the new one?

A: We had to present a better product that the public could fall in love with – and we succeeded. The reactions since the launch have been very positive.

We did this by taking the decision to step away from being perceived as a dull central bank. To generate attention before the launch, the CBA adopted a humoristic teaser campaign titled the 'Stars of Aruba'. It was created together with Crane Currency and its communication partners in Sweden and leveraged the island's vibrant social media channels, in particular Facebook and Instagram. The peculiarity and uniqueness of some indigenous animals, also key elements of the previous series, were maintained but updated for the new banknotes.

You have to make people curious, and we definitely succeeded. The Arubans were very surprised when the first campaign ads came out and wanted to learn more about the new banknotes. Each day people were looking forward to the next ad to see which animal we had put into the spotlight. And the public started asking for the next teaser animal, sending in suggestions to us with arguments for their favourite animal.

This was indeed one of the most effective marketing strategies that we could have used. It worked very well – and an innovative and creative way to show that the CBA also has normal people as its staff!.



The Science Behind Bioguard Enhance

Currency News was keen to find out more about Oberthur Fiduciaire's new **Bioguard Enhance™** anti-viral treatment so we met, on the phone of course, with **Henri Rosset – Research Centre Manager, VHP Security Paper, which is a subsidiary of Oberthur Fiduciaire.**



Henri Rosset.

Q: *At this time, everyone in the world is considering how they can protect themselves from the threat of COVID-19. We know that the virus can survive on many surfaces and is transmitted via the hand to the face. How does your solution break this cycle for banknotes?*

A: Well, all viruses die naturally on banknotes, like any other inert material. What Bioguard Enhance does is to accelerate the dying process.

The laboratory tests that were conducted on Bioguard Enhance measured the remaining viruses that survived after five hours on both a regular PVOH (polyvinyl alcohol) paper sample and a paper sample treated with Bioguard Enhance. On the untreated PVOH paper, 92.4% of the viruses had died after five hours, while on the sample treated with Bioguard Enhance more than 99.9% of the viruses were destroyed. This means that the remaining amount of the virus is 100 times less than it would otherwise have been.

By accelerating the destruction process, Bioguard Enhance effectively diminishes the probability of contamination through exchange of banknotes.

Q: *Can you tell us a little more about Bioguard Enhance?*

A: It is a combination of Bioguard in paper and Bioguard in the varnish, applied post print. This combination is called Bioguard Enhance.

Q: *From our understanding, Bioguard is an anti-bacterial defence. How is this new solution different?*

A: Bioguard is indeed an anti-bacterial (and anti-fungus treatment) but it also builds on the previous work undertaken by the R&D teams against banknotes carrying the influenza virus. This new solution is different because it is effectively the combination of Bioguard in the paper and Bioguard in the varnish which enlarges the activity spectrum and provides us with a much more powerful solution.

Q: *Can you provide some more details about the science behind Bioguard Enhance?*

A: It is well known that silver has anti-bacterial and anti-viral properties. So, we use a silver-based component in both the paper and varnish treatments which are active against bacteria and also viruses when introduced into both paper base and into the varnish: this combination enables significant anti-viral activity.

The Bioguard Enhance anti-viral activity was assessed against a seasonal coronavirus, the OC43 which comes from the coronavirus family to which COVID-19 belongs. The results showed that our solution offers a significant anti-viral protection.

And yes, it continues to protect against bacteria and microscopic fungi. In particular, Bioguard treatment has been tested to demonstrate its effectiveness against the bacteria responsible for carrying plague and cholera.

Q: *Where banknotes are circulating fast, they wear and soil fast. How robust will Bioguard Enhance be in circulation?*

A: Good question! We have experimented with the components in our Bioguard paper for many years with papers stored in normal conditions. Of course, when banknotes become unfit and severely soiled through circulation it increases their weight because of the accumulated dirt and the anti-microbial protection can be reduced as any other paper property would be. This is why Bioguard Enhance was developed in order to ensure the optimisation and long-lasting impact of the inherent properties.

We therefore recommend Bioguard Enhance as a combination of a paper and varnish to give protection throughout the banknote life in circulation.

Q: *Are there any trade-offs required to adopt this solution?*

A: There are no changes required at all for the banknotes – existing security features, designs, and machine reading features can continue as today. This makes the technology available to every part of our banknote community.

Q: *Will you make this available to other paper makers, not just for banknotes?*

A: Yes, very much so! We see this as an industry solution. The world is facing a pandemic which affects us all – our friends, families and our whole industry. I am very pleased to know that Oberthur Fiduciaire is keen to share its solution with other providers, competitors and all those in the supply chain.

As far as other industries are concerned, we are obviously open to share the technology, bearing in mind that it is valuable for any object that is handled frequently by humans.

Q: *How long have you been working on this solution?*

A: I have personally been working in this field for 15 years and I have constantly been trying to find solutions in this area. To discover that our products work against coronavirus OC43, a representative of the coronavirus family that includes COVID-19, was a very exciting moment for me, personally.

Q: *How confident are you in the performance of Bioguard Enhance?*

A: We are scientists and look at the results in an objective way and that is why we are quite confident.

We have been working with a leading laboratory, using standardised procedures with detailed protocols in the field of pathogen testing in the USA and so our lab test results are credible and robust.

We believe, given their similarities in structure (they're both enveloped viruses), that it is logical that all coronaviruses and H1N1 influenza type viruses will react similarly to this treatment. For H1N1 influenza type viruses, tests are ongoing. This is as far as we can go. Nobody can tell you from what virus the next pandemic will spring. What we think is that the banknotes would be more protected with this treatment and less able to contribute to general contagion.

We are very transparent with the performance of our paper and can provide any information related to the test results to whomever would like to see them.

Windows of Opportunity from KURZ

At the Banknote Conference in Dallas in 2018, foil manufacturer KURZ unveiled its new banknote window feature – *KINEGRAM® APL* (Applied Patch Label). At the more recent HSP EMEA conference in Lisbon, it revealed the first application of this feature on two sample (concept) notes designed by György Pálkás and produced by the Hungarian Banknote Printing Company / Pénzjegynyomda Zrt (HBPC).



While window features are becoming increasingly popular, the options for central banks wishing to specify these are limited to either the use of polymer or compost substrates, or to having the foil applied over the window at the paper mill, which has

confined the design to a stripe application format. *KINEGRAM APL* overcomes this limitation by enabling banknote printers to create window features for paper notes in their own premises, thus retaining both value and process control.

The two concept notes designed and produced by HBPC feature Ottó Herman, one of Hungary's most productive and internationally known scientists. Reflecting his passion for birds, insects and spiders, both sample notes illustrate biodiversity. KURZ provided two *KINEGRAM APL* features for these notes, applied on the latest Gietz *FSA 1060 Foil Commander* foiling machine.

The first involves an eye-catching butterfly *APL* applied over a die-cut window. The patch incorporates *KINEGRAM COLORS®* technology, showing different colours on the front and back of the foil. The feature also included a striking *FLUX* effect that exhibits several movements in different directions. In addition to the Flux effect, the foil contains delicate fine line movements and a virtual 3D surface relief effect.

For the second concept note, the *APL* depicts a spider which is again applied over a die-cut window and uses *KINEGRAM COLORS* technology. *KINEGRAM ZERO*. *ZERO®* partial metallisation is also used, allowing filigree line resolution down to 40µm, and perfect registration of the optical effects with the metallisation. The authentic impression of the spider is produced by the surface relief 3D effect combined with pumping and transformation movements. Both sample banknotes were industrially produced under real-life banknote printing conditions, and tested against banknote industry quality standards.



EyeQ – Truth is in the Eye of the Beholder

Bank Innovation Systems LLC (BIS) was established in 2006 by the engineering team of BARS, who make banknote sorting equipment. While it still produces sorters, BIS has focused on the creation of finishing quality inspection systems and has been working with Goznak's paper and banknote production teams to create a comprehensive quality control and production records system. This so-called track and trace system – *EyeQ* - is now ready for wider use.

Currency News' Directory of Currency Suppliers lists 27 companies active in supplying quality control and inspection systems for banknotes, so BIS are entering a crowded field with their new *EyeQ* system, which is designed to enhance the economic efficiency of banknote printing by providing process-oriented/production support departments and management with on-line production data, including equipment types and operators involved.

The approach BIS are taking is to use a standalone device to add a unique barcode to identify each sheet of paper. In the printworks each production process has barcode readers integrated into them to track the sheet at every stage.

At the numbering machines, the serial numbers applied are linked to the barcodes on each sheet so that, after cutting, it is still possible to connect the individual banknote back to the sheet it came from.

As well as tracking the sheets, the system creates a quality record for each sheet process by process. The data is used to generate reports on the quality and performance achieved for each sheet for each process step, including on the people working at the time. A history of every end-product sheet is created as it passes through production so that it is possible to know what was done by whom, when and on what equipment.

The *EyeQ* uploads data from the printing quality control systems to analyse product quality and the reasons for quality rejects, allowing timely and detailed analysis, with every defect traceable back to the process and shift that made it. *EyeQ* is intended to be used to recognise latent problems and, consequently, allow production to be restructured to resolve them.

EyeQ can be used with a wide range of high-performance systems, including those of BIS, such as its *QIS 700* complete inspection system for sheets with a

throughput of 10,000 sheets per hour, its *BISM* complete finishing single note inspection system with a throughput of 388,000 notes per hour, and its *QIS 300* sampling inspection system for sheets.

According to BIS estimates, through the implementation of the system, overall throughput increases by 10%, while industrial and technical rejects are reduced by 50%.

In paper mills the system marks each sheet of white paper with a unique bar code. In paper factories, marked sheets are tracked at every production step, and - if numbering machines are used - banknote numbers are matched to a sheet number.

The BIS team has about 25 years of experience in developing and delivering integrated solutions for support of the full life cycle of banknotes and printed security products. *EyeQ* systems have been integrated at all of Goznak's production sites throughout Russia, two paper mills and two banknote printing factories, where they are used in all steps of the banknote production cycle. Clearly the system is well established in Goznak, but the company's customers are also located in 10 countries worldwide.

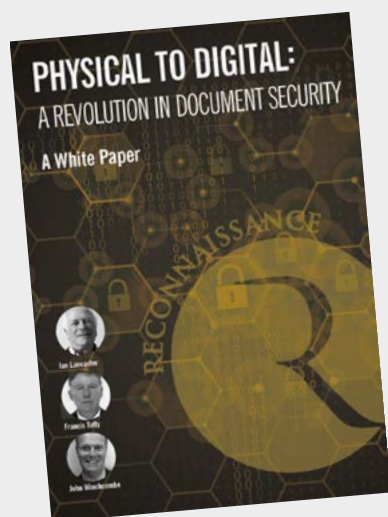
Physical to Digital: a Revolution in Document Security

Reconnaissance International – co-publisher of *Currency News*[™] – has recently published a free to download white paper titled *'Physical to Digital: A Revolution in Document Security.'*

This examines this transition in security documents from physical to digital, the perception that digitisation is the future for payments and identity and that the transition is well underway, inevitable, unstoppable and irrevocable, driven by convenience.

With an emphasis on cash/payments and personal ID, the paper outlines how physical documents are tangible, known and are designed to be secure first and foremost. Moreover, there is 1,000 years of history and experience in the world of banknotes, passports and other secured documents, and a key driver for specifiers and designers is security and document protection. Digital financial transaction systems and identity credentials, by comparison, have a 30-year history and this field is technology, not security, driven – starting with the innovation of the internet and the smartphone.

The white paper examines the way forward in this transition, or revolution, and whether the commitment to security and protection that drives the physical secured document field can be inculcated among digital systems developers and adopters. And if so, how?



To download the free white paper visit www.digitaldocumentsecurity

HSP EMEA – Success in the Sun Despite Gathering Storm Clouds

Despite the gathering storm clouds of coronavirus, over 270 delegates from across Europe and beyond converged on Lisbon, sunny capital city of Portugal, to make *High Security Printing*[™] (EMEA) 2020, which took place 9-11 March, a highly successful conference – as well as probably the last industry event for some months to come.

The currency agenda was as strong as ever, despite a handful of speakers being unable to attend due to travel restrictions. But communication technology allowed all but one of these to present and so the programme was virtually unaffected by events.

As ever, delegates had a strong mix of design, production, policy and operational topics with two important pre-seminars subjects to start. Innovation, whether in design, security features or manufacturing was the underlying theme for the conference, providing much to think about.

The conference started with two pre-seminars that were well supported, one on the environmental and climate change impact of cash and the other on how well the new Europa series of euro banknotes is performing against the counterfeiter.

The environmental seminar was ambitious in that it covered every step of the cash cycle. There were some excellent examples of change and improvement and real detail about what is significant and what makes a difference. Future conferences will continue on this topic – building on Lisbon but moving to a workshop structure.

This was followed by an unusually open and frank session from Manuel Mourato, Senior Forensic Expert from the Judiciary Police National Counterfeiting Analysis Centre in Portugal, who not only gave his view on how secure those banknotes are and if the new features will be sufficient to prevent counterfeiting, but also provided numerous examples of counterfeit features for the audience to examine and handle. The good news for the Europa series is that the combined effect of the changes is working, and counterfeiting is reducing noticeably.

The conference itself was formally opened by Hélder Rosalino, Member of the Board, Banco de Portugal. He was followed by Sérgio São João, who heads up Valora, the printworks set up in 1999 as a joint venture with De La Rue to print Portugal's indent of the euro, but which is now wholly owned by the central bank. He reviewed the company's recent development strategy and the changes it is making to meet the new challenges of euro production.

The launch of the Bank of England's latest polymer note, the £20, was covered by the Bank itself and then by the production team giving both the design and policy story behind the note and how De La Rue and Komori ran a structured programme to reduce waste while maintaining quality and output against a tight schedule. The central banks of Armenia and Morocco also introduced their new series and a commemorative note respectively.

Technology had a prominent place in the agenda in the context of security features, increased printing efficiency and environmental changes. There were some familiar faces, such as Landqart and KURZ, who provided examples of where and why their products are being used today. There were some new entrants, for example Demax (new optically variable features), Regula (analysis of soft and hard magnetic printing), Seprinto (a new plate and chablon approach) and SPGPrints (improving rotary screen pre-press and printing).

KBA-NotaSys spoke about their new approach to intaglio plate making and printing which reduces a seven-step process to three, reducing time, material usage and saving ink. WTG Water Treatment also spoke about the environment and the benefits of their approach.

Two new studies were presented. The first, which has just been completed, was about the history and development of security threads up to the latest technology. The second is in progress and is collecting cash in circulation data from every central bank to understand what is happening by denomination to currency around the world. The study is looking for useful lessons for all day-to-day as well as general trends and patterns for a range of groupings such as geography, GDP, adoption of non-cash payment means etc.

The final currency session focused on counterfeiting. The Bank of Russia explained their highly structured and thorough approach to combatting the counterfeiter, and Jura, on behalf of the National Bank of Hungary, talked about the smartphone app introduced by the Bank to authenticate their banknotes.

The currency agenda delivered a rich and broad programme with some strong themes for the future, to be continued and developed at the HSP sister events in Latin America and Asia, as well as the next HSP EMEA, the dates and location of which are to be announced, but which will take place in Spring 2021.

Three Winners of Regional Banknote Awards in Lisbon

New banknotes from Armenia, England and Poland were all winners in the HSP EMEA Regional Banknote of the Year awards in Lisbon.

The awards are made for banknotes which reach the highest levels of achievement in design, technical sophistication and security and there are three categories – Best New Series, Best New Banknote, and Best New Commemorative Banknote. Their presentation formed the highlight of the HHSP EMEA gala dinner that took place on 10 March at the stunning SUD Lisboa Restaurant on the banks of the Rio Tejo.

The Central Bank of Armenia's new drams won the accolade for the Best New Series, reflecting the country's commitment to improve the quality of its currency in the face of one of the toughest environments in the world for circulating notes.

The series – in denominations of 500, 1,000, 2,000, 5,000, 10,000, 20,000 and 50,000 drams – is produced on a composite substrate that combines the durability of polymer with the printability and inclusion of paper to produce highly durable and secure banknotes. The design of the notes also reflects the historical, cultural and religious themes of Armenia, which is the first country in the world to have an entire banknote series printed on Louisenthal's Hybrid® ADDvance paper/polymer composite.



Suren Simonyan, Head of Currency Issue Coordination Centre of the Central Bank of Armenia, which won the Best New Series award.

The Best New Banknote award went to the Bank of England for its new eye-catching £20 note featuring renowned English artist JMW Turner. Produced on De La Rue's Safeguard® polymer substrate alongside CCL's Guardian® substrate, the banknote has two windows and incorporates several innovative features, including a registered KINEGRAM® COLORS foil stripe from KURZ.



Melanie Huttenen of De La Rue collected the Best New Banknote award on behalf of the Bank of England.

The note has also been designed to withstand the rigours of the modern cash cycle and incorporates a special tactile feature to aid the visually impaired. Several overt and covert design features include a metallised 3D image of the coronation crown on the front with a purple foil patch based on the staircase at the Tate Britain on the reverse side.

The Best New Commemorative Banknote accolade went to the National Bank of Poland for its 19 Zloty, which commemorates the 100th anniversary of the Polish Security Printing Works being established. The banknote, which went into circulation in October 2019, stood out because the face value – 19 – is unusual, while the combination of traditional design and modern security features also impressed.



Marzena Sadecka of PWPW receiving the award for the Best New Commemorative Banknote.

It's also among the first banknotes with a registered KINEGRAM® HDM (High Definition Metallization) foil stripe from KURZ applied over a die-cut window and the first with SICPA's new SPARK® Live colour combination – violet to bronze (which reflects the principal colours of the note).

Cash Innovation Comes to Prague with WBS 2020

100 delegates, 43% of whom were representatives from 29 central banks and state printing works, met in Prague at the end of February at the World Banknote Summit (WBS) 2020.

The topics ranged from a printer forum led by Banco de México and Valora PT through to presentations on Central Bank Digital Currency (CBDCs) by the Bank of International Settlements, which laid out the landscape, and the Banco Central del Uruguay and the South African Reserve Bank giving us their experience of doing it for real. There were three overriding impressions from the conference.

Firstly, the breadth of the formats offered in the programme. In addition to presentations, there were panel immersion sessions, workshops, the printer forum and a new innovation, the 'Chatbox', where delegates could join a group discussion led by an expert on a topic. There were seven topics and two sessions. Interestingly the three most popular topics were 'measuring cash usage and the cost of cash' (University of St Gallen), 'how to create a banknote specification like an expert' (UGRA) and Barzahlen's '21st century cash payment solution'.

Secondly, how genuinely international WBS was, with 14 countries and 26 delegates from outside of Europe. This mix of attendees, along with the human scale of the event, led to an interactive, varied and active question time after each session.

Finally, in addition to speakers on topics familiar to most conferences, the WBS organisers also managed to attract speakers not normally heard. For example, two retailers speaking about their view of cash and central banks who are leading in new areas, such as Norway and the Netherlands addressing less cash, the Bank of Israel and Bundesbank on data analytics and Morocco on the use of augmented reality in public education. Add in CBDCs, Bitcoin Suisse, Barzahlen and eCurrency, and new technology was also covered.

WBS 2021 will be 27-29 September in Antwerp. The organisers have promised even more innovation for 2021.

Some Progress but More to Do for Gender Diversity in Currency

8 March 2020 was International Women's Day and people around the world celebrated the social, economic, cultural and political achievements of all women.

This event marks a call to action for accelerating women's equality and highlights that no country in the world has yet achieved gender equality. There is no simple solution but the case for gender equality is now clear. Diversity expands the talent pool, encourages more competition and leads to better longer-term performance. When formulating policy it means that a range of views help inform risk management and decision making.

The 7th OMFIF Gender Balance Index reports some progress towards gender diversity at senior levels of financial institutions, stating that it is slow but in the right direction. The European Central Bank now has Christine Lagarde as its first female President, there are 14 female central bank governors and several female chief cashiers.

This means only 7% of all central banks currently have a female governor and institutions headed by women represent less than 30% of the global economy. 20% of all central banks lack any female in any senior position, defined as governor, deputy governor, member of monetary policy setting committees or an executive board director.

The lack of diversity is also seen in banknotes, in part reflecting that banknotes often honour the ruler of their country. Quartz recently analysed 622 banknotes from the 75 largest economies and found that only 12% of banknotes depicted a named woman, whereas 84% featured a named man. Excluding Queen Elizabeth II, Australia is the only nation to have a woman on every one of their currently issued banknotes and one of only a minority of other countries, such as Sweden, Japan and Denmark where men and women are represented equally.

Of the women on banknotes, Cash Essentials recently pointed out that half of those banknotes featured Queen Elizabeth II – ie. 42 notes, mostly from countries where she is the head of state. These account for half of all banknotes featuring women.



Yet there is progress towards gender diversity and the currency industry is naturally diverse in places. Conferences are regularly attended by female representatives of regions all around the world, and conference speakers and panellists are regularly women. When BBC Radio wanted to talk about the future of cash recently, its panel of experts was predominantly female. Among currency suppliers there are also some signs of progress; for instance half of De La Rue's Executive Leadership Team is now female. The owner of Giesecke + Devrient and one of her supervisory board members are female. Three of the leading mints on the international stage – those of the UK, Canada and South Africa – are all headed by women. And on International Women's Day 2020, social media revealed the event being celebrated by many central banks around the world.

This is encouraging, and this year OMFIF's gender balance index improved to 28% (up from 25% in 2019, with 100% representing perfect gender balance). But the think-tank noted that 'action is needed to correct opportunity asymmetries and level the playing field and create more inclusive and supportive work environments.'

So the world is changing and the industry is evolving too, but perhaps not yet quite quickly enough.

Continued on page 16 >

The 14 Women in Charge of Central Banks

Anita Angelovska Bezhoska – Governor of the National Bank of North Macedonia (*since May 2018*)

Caroline Abel – Governor of the Central Bank of Seychelles (*since March 2012*)

Catia Tomasetti – Chairman of the Central Bank of the Republic of San Marino (*since May 2018*)

Christine Lagarde – Incoming President of the European Central Bank (*starting November 2019*)

Cindy Scotland – Managing Director of the Cayman Islands Monetary Authority (*since June 2002*)

Elvira Nabiullina – Governor of the Central Bank of Russia (*since June 2013*)

Irma Margarita Martínez Castrillón – Minister President of the Central Bank of Cuba (*since June 2017*)

Jeanette Semeleer – Governor of the Central Bank of Aruba (*since September 2008*)

Jorgovanka Tabaković – Governor of the National Bank of Serbia (*since August 2012*)

Joy Grant – Governor of the Central Bank of Belize (*since October 2016*)

Maiava Ainuu-Enari – Governor of the Central Bank of Samoa (*since August 2011*)

Nor Shamsiah Mohd Yunus – Governor of Bank Negara Malaysia (*since July 2018*)

Retselisitsoe Matlanyane – Governor of the Central Bank of Lesotho (*since January 2012*)

Verónica Artola Jarrín – General Manager of the Central Bank of Ecuador (*since May 2017*)

Namibia Celebrates Peace, Stability and Progress

The Bank of Namibia has launched a commemorative N\$30 banknote to celebrate the country's 30th independence anniversary. While the Bank has issued commemorative coins in the past, this marks the first time it has issued a commemorative note. The themes of the note are three decades of independence, the smooth transition of power between three presidents, and peace, stability and progress.



Symbolising these themes, on the front of the note are images of the three heads of state since independence, namely the founding President Dr Sam Nujoma, former President Dr Hifikepunye Pohamba, and current President Dr Hage G Geingob. The reverse depicts the Black Namibian Rhino, which is facing extinction as one of the world's most endangered species. The image supports Namibia's campaign to end rhino-poaching and demonstrates its commitment to natural resource management.

Other notable features of the note, which is printed on *Guardian*[®] polymer, include a large window with an image of a black rhino, a gold-to-blue *G-Switch* design and six clusters of raised dots in the top right corner, which helps visually impaired and partially sighted people to identify the value.

The N\$30 commemorative banknote will co-circulate with the current series, issued in 2012. A public education campaign is currently underway. The Bank is likely to put the new note into circulation in May.

In Other News...

- The Royal Monetary Authority of Bhutan has announced the launch of new 5 and 10 ngultrum (Nu) circulating coins to coincide with the 40th birthday of HM the Druk Gyalp. The current highest denomination coin is the Nu1. It is assumed that the new coins will replace the banknotes of the same denominations. Both coins are made from nickel-plated steel and have tactile edges, microdots, microtext and a latent image. The Nu10 features a portrait of the present king, and the Nu5 a portrait of his father.

- The Bangladesh Bank has launched commemorative 100 and 200 taka banknotes in celebration of the 100th anniversary of the birth of the Bangabandhu Sheikh Mujibur Rahman, often known as Father of the Nation. Both banknotes contain the secure next-generation threads from De La Rue – *Kinetic StarChrome*[®] in the case of the 200 taka and, making its debut in the 100 taka, the new *Ignite*[®] thread launched by the company in 2018.



- The National Bank of Belarus is continuing the upgrade of its banknotes with the introduction of new versions of the 20 and 50 rubles. Printed by Goznak, they have an additional watermark and wider security threads than the previous versions.

- The Bulgarian National Bank (BNB) has issued a new 20 lev note, the third in its new series which began with the 100 levs in 2018 followed by the 50 levs in 2019. Still to come are the 5 and 10 levs.

The series follows the style and themes of its predecessor but has upgraded security features. These include *RollingStar*[®] LEAD stripe and *RollingStar*[®] thread, as well as *SPARK*[®] Live. The notes have been produced by Oberthur Fiduciaire AD, the joint venture between Oberthur Fiduciaire and BNB Printing Works Corporation.

- The Central Bank of Tunisia has issued a new 10 dinar banknote, featuring a woman for the first time in Tunisian currency. Dr Tewhida Ben Sheikh, born in 1909 was the first Muslim woman to become a physician in North Africa in the 20th century, and was particularly renowned for her work in women's health. Security features of the new note include a watermark of Dr Ben Sheikh with an electrotype of the denomination numeral and a *MOTION*[®] *RAPID* security thread.

- The East Caribbean Central Bank has announced that a new \$5 note, the last in its new series, will be put into circulation in September.

- The new £20 notes on *Safeguard*[®] polymer issued by two of Scotland's three note issuing banks last month have been joined by the third, from the Royal Bank of Scotland (RBS). Also produced on *Safeguard*, the £20 is the third in RBS' series of 'Fabric of Nature' themed notes, in keeping with which it features red squirrels on the reverse and also the blaeberry fruit.

The portrait on the front is of Kate Cranston, a turn-of-the-(19th) century entrepreneur – continuing the RBS' tradition of celebrating in its notes Scottish women who have made an impact (both the £5 and £10 also feature 'notable' women).



Gender Diversity in Currency *(Continued)*

Note-able women.

Below are three examples of banknotes featuring notable (or note-able) women.



Top: **Viola Desmond** was a Canadian civil rights campaigner and businesswoman of Black Nova Scotian descent who challenged racial segregation in 1946 by refusing to leave a whites-only area at a cinema. Her act of defiance helped start the modern civil rights movement in Canada. She is commemorated on the country's newest \$10 bill, issued in 2018.

Centre: The **Mirabel sisters** were political activists and opponents of the country's brutal military dictator Trujillo, who were murdered in 1960. The three sisters are not just heroines in the Dominican Republic, where their portraits appear on the 200 Peso Oro note issued in 2007, but are also symbols of women and human rights worldwide.

Bottom: in 1903 the renowned scientist **Marie Curie**, was awarded the Nobel Prize for Physics together with her husband for their work on radioactivity. In 1911 she won the Nobel Prize in Chemistry for her work on polonium and radium.

These achievements made her the first woman to ever receive the Nobel Prize, and the only woman to date to have received two. To celebrate the 100th anniversary of her Nobel Prize in Chemistry, the National Bank of Poland issued a 20 zloty banknote with her image in 2011.

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Events

Virtually all the currency and cash-related conferences taking from March through to June have now been postponed until later in the year.

31 AUGUST– 2 SEPTEMBER 2020

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28–29 OCTOBER 2020

THE FUTURE OF CASH
Madrid, Spain
thefutureofcash.com

2–5 NOVEMBER 2020

BANKNOTE 2020
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