COIN & MINT NEWS QUARTERLY™

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World Money Fair 2021 – Technical Forum Goes Digital

Due to COVID-19 and associated lockdowns and travel restrictions, the World Money Fair 2021 could not take place as a live event in Berlin this year, greatly disappointing the 20,000 or so people who go every year to meet friends, buy and sell banknotes and coins, see presentations of new collectables from most of the major mints and visit their exhibits, which form just one part of the huge show.

There is something for everyone, including the Technical Forum for engineering and technical specialists from mints and other industry companies all over the world to hear about the latest new developments, technical advances and inventions. The event is the hugely respected. This year there are four sessions, spaced out every four weeks, with each session live-streamed twice a day to accommodate different time zones.

The first session – which took place at the end of February and to which 400 people signed up – was opened by Barbara Balz, World Money Fair Managing Director, and comprised four presentations, each covering a very different topic. It was chaired by organisers Dieter Merkle, Director Global Minting, Schuler and Thomas Hogenkamp, Sales Director for Minting Applications, Spaleck Oberflächentechnik.

The second session took place one month later, with around 450 people taking part. The three presentations in the second session, again chaired by Thomas Hogenkamp and Dieter Merkle, covered the topics of blanking, colouring and minting.

In this special edition of Mint News Quarterly, we cover all seven presentations. The topics and presentations from the third and fourth sessions of the Technical Forum, which take place at the end of April and early June respectively, will be covered in a subsequent special edition, to be published in June.

www.worldmoneyfair.de

Thomas Hogenkamp (left) and Dieter Merkle (right), organisers and co-hosts of the online Technical Forum.

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3-D Measurement of Reliefs and Minting Desirable Coins

Fig 1: A high quality minted coin (left) and a poor quality minted coin (right) which lacks depth and sharp edges, would not be liked by the public, would not be accepted by vending machines and would soon be rejected in circulation. Its circulation life would be short.

It was perhaps appropriate that the Technical Forum should begin with a session that started by asking the question – what makes a coin attractive?

The coin industry should be producing attractively designed coins so that users feel good when using them; they should evoke a positive response. And just as with banknotes, this is where the design theme and the image quality play a large part.

Public perception is very important to both banknotes and coins, not least because both have been under threat from digital payments for some time, and this trend has increased during the pandemic and especially during lockdowns, when the opportunities to pay with cash have been less than normal. However, in 2020 as much as 60% of all transactions in Europe were settled with cash.

The initial point emphasised by Christoph Frenz of Germany's COINstitute was the importance of the coin industry doing everything possible to make coins attractive and of value; in that way coins stood a good chance of being used well into the future.

But what constitutes an attractive coin?

In an interview with Marius Haldiman, the Director of Swissmint in Bern – a mint noted for quality – it was established that a coin not only has to look good but also feel good, because coins are handled in transactions.

And so, the ideal coin, apart from having an evocative and attractive design, should exhibit good relief with sharp, well-defined edges so that when handled it feels precisely made and nothing like you would imagine a very worn or counterfeit to feel. It should convey the impression of quality regardless of its size and value.

When asked to define the difference between a genuine and a counterfeit coin, Marcus Floeth, Head of the Coin Analysis Centre of the Bundesbank, who had cooperated with Christoph on the coin relief project, answered jokingly '20 tonnes of pressure' before confirming the key requirement as a tight specification that defined both depth and sharp angles on sharp corners. Coins so defined and produced will be accepted by all vending machines as well as the public, and will stay in circulation for much longer than a coin with little relief and rounded corners (see Fig 1).

Having established that a good design makes a coin attractive, and that a distinct relief makes a coin valuable and difficult to counterfeit, the surprise was that, while the industry may have intuitively known this and have been producing quality coins, what it has lacked for 4,000 years since the first coin was produced is how to measure the relief of a coin. A project to develop a system was established.

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Fig 2: Relief Measurement of 'Confoederatio Helvetica' coin using an opto-electronic measuring device. The depth measurements are taken from the top edge of the coin.

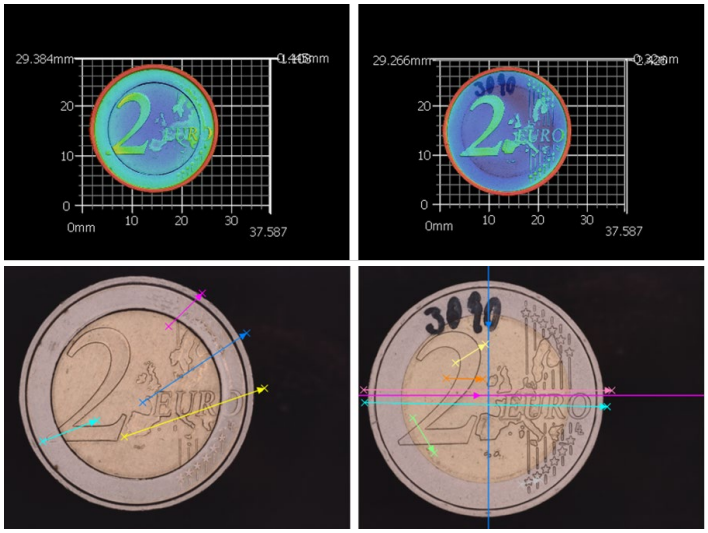

Fig 3: Opto-ectronic measuring device scans of two €2 coins. It is immediately apparent from the scans that the coin of the left is a counterfeit or unfit and the one on the right the genuine or quality coin. The counterfeit lacks depth and sharp edges.

The first decision was to decide whether to measure from the top or the bottom of the coin: the top was chosen. The edge of the coin was chosen as the reference point.

The relief is precisely measured using an opto-electronic measuring device which scans the surface and produces a visual representation of the coin, the physical depth across the surface of the coin in micrometres and histograms. The device generates objective data that can be used to check the quality of coins, detect counterfeits and identify worn coins (see Fig 2).

There are two types of opto-electronic measuring devices – a laboratory version for coin development and quality control, and an automatic version designed for production which runs at fast speeds (up to 1,500/ minute) for checking quality (wear and physical damage) and counterfeits.

Another use of the system is in establishing the specification of a coin, which can be used in a tender if the coins are being outsourced, and also used to ensure the coins supplied meet the specification.

A further use of the 3D opto-electronic system is for 3D inspection of new security features – some new features have been developed already with the system and could become the subject of a presentation at next year's Technical Forum.

However, high quality and productivity do not always go hand in hand. It could be thought that with high relief and sharp edges the coin die life would be greatly reduced.

This aspect was investigated as part of the research with the cooperation of a number of mints. In fact, by optimising the design and the processes from strip or blank or coin, the mints were able to achieve high reliefs and sharp edges as well as a high die life; for example, a die life of 1-1.5 million was achieved even on the small 5 rappen Swiss coin by Swissmint.

It may have taken 4,000 years but this development to improve the quality of coins should help to keep them in use for many decades to come, although another 4,000 might be a little ambitious.

Platit – PVD Coating System for Coin Dies

Dieter Merkle introduced the second presentation by explaining that as most mints are situated in cities and built-up areas, the environmental aspects of their production are very important.

One area that required change was the use of chromium plating to harden coin dies, a method of increasing die production life. However, chromium, if released into the air, soil or water supplies, can have extremely negative consequences. And other substances such as cadmium and cyanide, also used in the chrome-plating process, can also cause serious damage.

Platit, a Swiss company represented by Dr Juri Mehrs, has a solution for long die life – a state of the art, in-house PVD (Physical Vapour Deposition) machine, the S-MPulse.

Coin dies have a very high surface quality with mirror polished areas with roughness in the order of a few hundred nanometres. Within the same stamp are micro-patterned areas with roughness in the area of several thousand or even tens of thousands of nanometres, which is more than one order of magnitude difference in surface roughness.

Platit has developed the S-MPulse to perfectly replicate this surface with a 2.5 micrometre chromium nitride layer, which has perfect adhesion to the coin die and provides maximum durability in the stamping application. Importantly, PVD coatings are environmentally friendly as they work without any harmful substances or chemicals (see Fig 1).

The S-MPulse is a custom designed coating system for coin stamps with a footprint of 3m x 1.7m and designed to be able to easily fit even small areas. It produces high quality sputter coatings with a wide choice available, including chromium nitride and titanium diboride, which is a purely ceramic coating, as well as carbon-based coatings and others at customers' request.

The machine is capable of high volumes – up to 18 in a single batch – and is easy to use. The machine can be supplied as a single unit or as a turnkey system which includes the PVD coating unit as the centrepiece with all other necessary equipment (see Fig 2).

Platit claims that the PVD coating unit is easy to handle. The coin stamps are loaded into the vacuum chamber using a centrally mounted sample holding disc. The sample holders have pre-defined standard sizes, or they can made to order. The cleaned dies are loaded into the discs which can have all one size, or several different size holders, in which case the level of the area to be coated on each die should be more or less the same level. Once loaded, the vacuum chamber is closed and the vacuum process started.

Coating cycle

There are four basic steps – (1) pumping (to remove all air) followed by heating to 200-240°C (1 hour). The next step (2) is plasma cleaning (etching) to remove a thin oxide layer from the surface of the die and takes about 35 minutes, after which (3) coating takes place for around 35-40 minutes. Finally (4) are cooling (30-60 minutes) and venting (5 minutes). The whole process takes around four hours, allowing 4-6 batches a day, which is really fast given 18 dies (small) can be loaded into a single batch (see Fig 3).

Using a high-powered microscope, the PVD 2.5mm chromium nitride coatings can be shown to have formed a perfect, even depth bond with the different types of surface on the die (see Fig 4).

Chromium nitride PVD coatings can increase the lifetime and productivity of coin dies significantly when compared to galvanic chromium coatings. Highly specialised PVD coatings that are perfectly matched to the stamping material can achieve even higher multiples of coin die life, concluded Dr Mehrs.

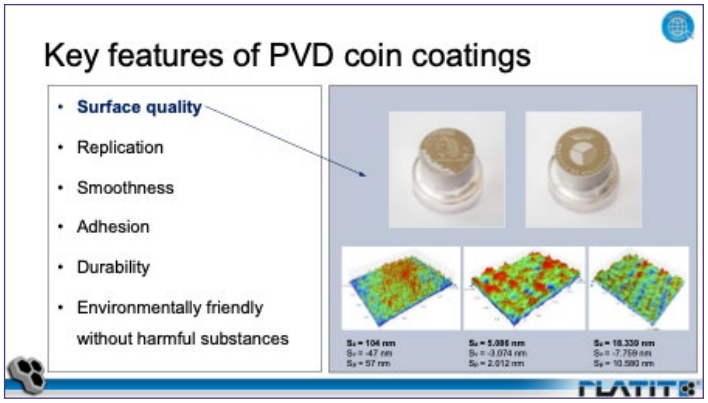

Fig 1: Key features of PVD coin coatings.

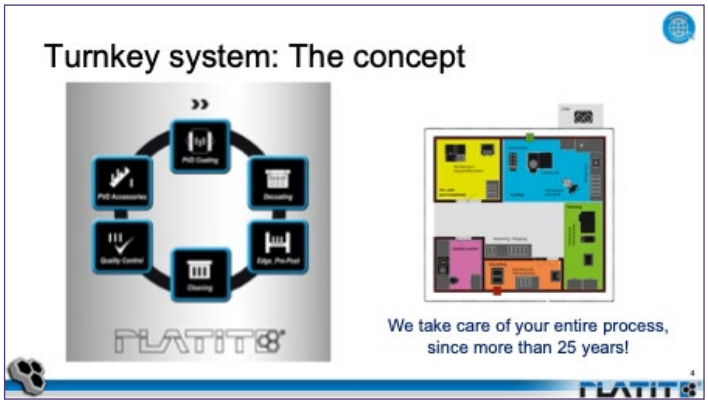

Fig 2: The Platit turnkey system.

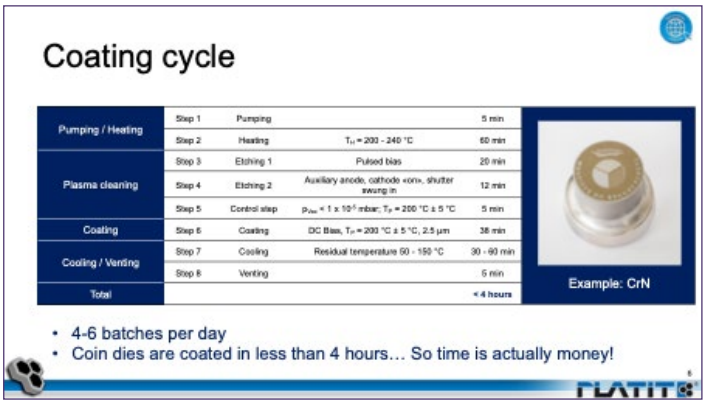

Fig 3: Coating cycle.

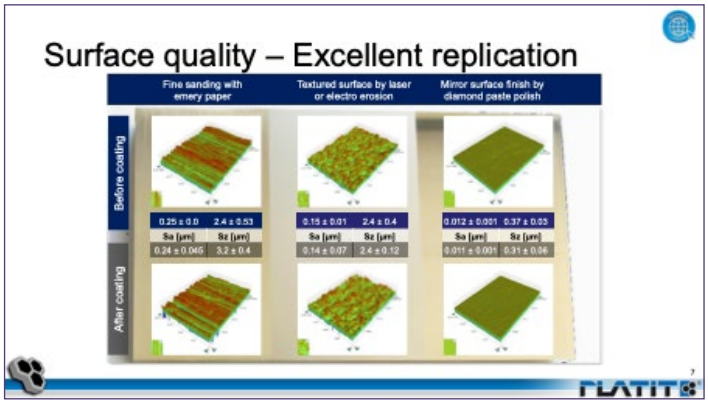

Fig 4: Surface quality before and after coating.

Laser Engraving for Minting Dies – Achieving Finest Details

GF Machining Solutions – a global company specialising in industrial tool manufacturing – has developed a new laser, the P 400 U Femto FlexiPulse™. The machine has the capability to switch the engraving conditions from infrared to green wavelength according to the material and, says the company, has great significance for die making in the coin industry.

The presenters – Benjamin Paganelli and Frederic Goudard – chose three examples of the same image (a sailing ship coin with the text 'WORLD MONEY FAIR' and the company's logo, +GF+) to demonstrate the new laser machine's capability and flexibility.

In particular the objective was to demonstrate the great detail and different kinds of surface finishes that could be achieved using the same file and the same hardware.

The first material to be engraved involved a very hard material, steel. The aim was to show the great detail and number of high quality different finishes that can be achieved on this material, which not all lasers would be able to match.

The next material to be engraved was tungsten carbide (HM HS40). Although this is a much softer material than steel, the engraved quality was virtually the same – demonstrating the flexibility of the laser machine.

The third material was sapphire, a fragile material using most of the same design. This was engraved with the machine's lower powered femto with'green wavelength'. A fine result was achieved and the sapphire did not crack. A higher powered laser could well have destroyed this soft material.

As can be seen from the illustrations, the three materials required very different conditions of laser strength and engraving times for the different finishes, demonstrating clearly the flexibility of this new laser machine with its two different laser strengths.

The GF laser systems also have the ability to provide 5-axes texturing, blasting and engraving and demonstrated this using a particular glass model.

In summary, said the two presenters, the new Laser P400 U Femto Flexipulse machine is unique in having two different laser wavelengths, yet is easy to operate. The infrared beam is around 1030 nm and 40W power and the green beam 520nm and 22W power; the size of the red beam is around 30 microns and the green around 10-15 microns. It also has a 3D file, which is CARVECO compatible, enabling laser texturing, frosting, engraving and the 5-axes capability.

In addition, some new hardware is being introduced. The first is an automatic vision system which is particularly useful for checking all the different effects in designs. The second is a 3D touch probe for moving parts in the machine itself.

Fig 1: The Laser P400U GF Femto FlexiPulse™.

Fig 2: Steel K390 62 Hrc. Engraving time 11 hours 30 minutes 27 seconds; cleaning and frosting 28 minutes 5 seconds; maximum engraving depth 30mm. (image

Fig 3: Tungsten carbide HM HS40. Engraving time 9 hours 11 minutes 17 seconds; cleaning and frosting-28 minutes 33 seconds.

Fig 4: Sapphire. Maximum engraving depth 1.1mm. Engraving times – sea 6 hours 45 minutes, GF logo 16 minutes. There were no cracked edges, no grainy textures, no remelted surfaces and it was reproduced with great detail.

Ceramic High Definition – A New Finishing Media to Please an Old Desire

The 'old desire' referred to in the title of this fourth and last presentation of the 1st session of the 2021 Technical Forum is to have the 'perfect' or highest quality on coin blanks prior to striking. The presentation covers the research work carried out by the Spaleck team and was presented by Ingo Loeken.

Coin blanks require a very special surface finish, one that has a positive impact on product properties such as mint quality and the coin's service life, as well as minting dies. The objective of this research programme was to further improve the quality of coin blanks by developing an innovative new finishing media.

The finishing media plays a key role in the finishing process, where the target is to eliminate rolling marks, storage and transport effects such as oxidation and contamination. The objective is to achieve a bright and clean metal surface prior to the striking process from which a clean, bright, perfect coin should be produced.

SPALECK Oberflächentechnik, which has more than 25 years of experience in the international mint industry, has developed and introduced a new type of finishing media – a high performance ceramic – which it named Ceramic-High-Definition (CHD) media.

CHD media is available in different shapes, such as 3mm balls, but also in a more robust form such as roller cylinders with a 5mm diameter and length. The company carried out extensive research comparing the industry's standard media, stainless steel balls, with the new ceramic media and a hybrid of the two using two blank types (see Fig 1), sterling silver and fine silver blanks all prepared from the same lot and in an identical manner.

All the trials were performed in Spaleck's technical demonstration centre using a Spaleck Z4 centrifugal finishing machine with a working bowl volume of around 25 litres.

The parameters used to treat the different blanks were identical. The procedure started with a small pickling step, followed by the polishing phase and finally rinsing was applied to remove any residue from the compound before separating the media from the blanks. The total processing time was 30 minutes. The blanks were then dried with a textile drier prior to analysis.

The results for sterling silver roughness can be seen in Fig 2, reflecting the weight and geometry of the media as well as the media mixture. The values of the surface measurement increased as the weight of the media increased. Also, according to the mixture and geometry – satellites and pins (edges) generated a more structured surface, having a higher Rz value.

One of the objectives is to eliminate the rolling marks and hide scratches from the surface, which can be achieved efficiently with the stainless steel satellites as well as creating an orange peel effect which improves the material flow during the minting process.

Similar effects were created using the CHD pins media, which are also heavy and have edges.

The fine silver blanks, which are softer than those of sterling silver, also showed similar trends, with results improving with weight, geometry and mixture (see Fig 3).

However, the most significant information from the study are the striking results from the various blanks. This testing was done in Bulgaria at the Bulmint using a press with 180 tonnes press force and four times stroke.

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Fig 1: Trial programme using different media.

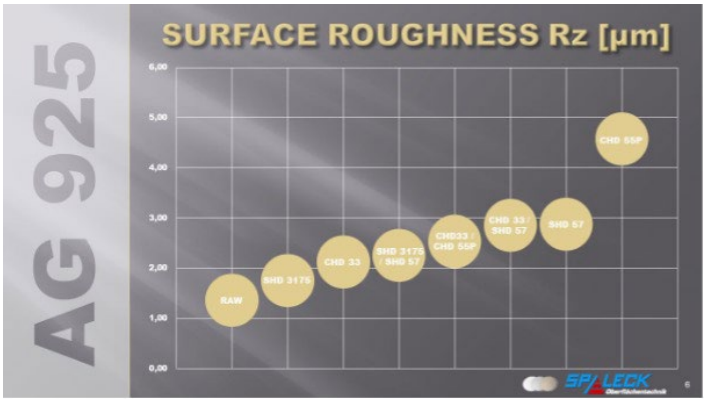

Fig 2: Surface roughness results for sterling silver blanks.

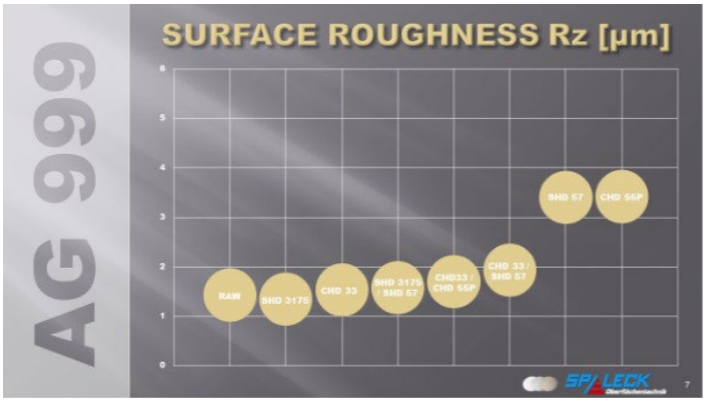

Fig 3: Surface roughness results with fine silver blanks.

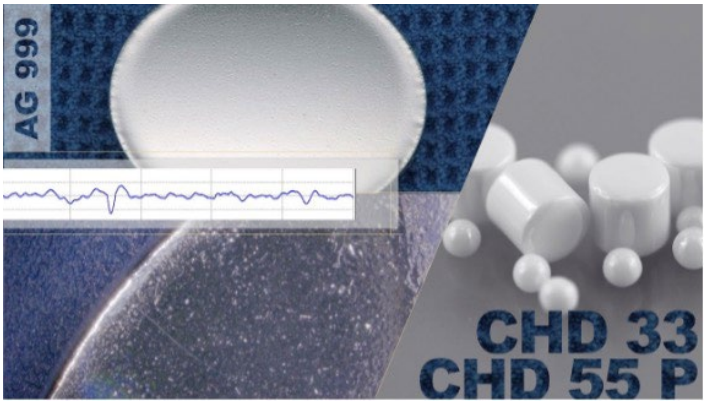

Fig 4: Ag 999 – fine results produced with a combination of CHD ceramic balls and pins.

The quality from the stainless steel satellites was very good and proof level but under closer scrutiny small dents were visible, caused by the textured surface edges of the steel satellites. These were not visible using the ceramic CHD balls, which produced a very smooth surface.

For the softer fine silver striking tests, less aggressive stainless steel balls were used and achieved proof quality results with a smooth surface similar to that achieved using ceramic CHD balls. But by using a slightly more aggressive mixture, ceramic CHD pins and balls, an exceptionally smooth surface was achieved (see Fig 4).

The media were also tested to establish their performance (chemical resistance) to pickling compounds. Three media types – a lower quality stainless steel (316), a higher quality stainless steel (316L) and ceramic balls CHD 33 were immersed in strong pickling acid for one week.

The lower quality stainless steel showed considerable deterioration of its surface. The better quality stainless steel, which is more the industry norm, showed some but less deterioration than the lower quality stainless steel. There was no evidence of chemical attack on the CHD ceramic balls.

In summary, the trials indicated that, having strong chemical resistance, the now commercially available ceramic CHD media, either alone or in mixtures with stainless steel media to tailor the surface structure, could produce blanks with homogeneous surface structures that produced excellent striking results on silver blanks as shown in the study.

But the application range is not limited to precious metals. The new media generation is also designed for the finishing of circulation coin blanks, especially the new CHD satellite shape.

Coins and Medals – Nanotechnology Meets Pad Printing

Colours on coins is not new. The three well known techniques are pad printing, laser engraving and PVD (physical vapour deposition) coatings. Two companies, Inorcoat and Teca-Print, have explored the possibility of combining the benefits of these known technologies to create unique coins, as Roman Waidelich (CEO of the former) and Daniel Fahl (CEO of the latter) explained in their presentation.

Inorcoat, which was founded in 2019 with sites in Germany and Bulgaria, produces plasma components and PVD equipment, along with solutions for die coating and decorative coating on coins. Teca-Print AG, founded in 1973, is based in Switzerland with subsidiaries in Germany, Hungary and France, and produces pad printing machines and consumables.

Laser engraving is a structure applied by a laser onto a die which is then used to strike blanks to produce coins. Laser engraved dies produce coins that show rainbow colours due to interference, ie. the relief matrix created by the laser reflects light in different directions.

When making such dies, it is important the design allows for a sufficient number of strikes before the die is replaced due to wear, enabling an economic quantity of coins to be produced. One method used to increase die life is PVD coating.

Pad printing is a flexible process enabling ink to be printed by direct contact in a specific place on the minted coin. It offers a wide choice of designs, for example using CMYK printing (Cyan, Magenta, Yellow and Black) or using specific colours created by mixing pantone or RAL colours. It can also be used for special inks such as those with sparkle effects, those which glow in the dark, interference inks (the colour shade is changes depending on the angle of view), etc.

The process enables sharp images anywhere on the coin. It can be a single print unit or as a high speed automated unit with multiple stations. A limitation of pad printing, however, is printing into sharp engraved edges.

PVD is a physical, environmentally friendly process and, although a range of colours or interference colours can be created, each will be all over on surface of the coin unless a mask is used, but this is complex and costly. However, an advantage of this process is that the PVD reaches virtually all areas, so it penetrates the deep engraved areas which the pad printer cannot.

The challenge was to combine pad printing and PVD coating techniques to create a new and unique type of coin. This could be cost effective, especially if the two processes already exist in the mint.

The method chosen was to pad print on to pre-PVD coated coins. This worked extremely well, not least because the PVD coating presented a highly receptive surface for the pad printing, resulting in high ink adhesion.

Having proven that the two processes could be combined to create unique coins, the two companies tackled the question of 'where next?'.

The potential for uniqueness using the process described is limited only by PVD coating colours and graphic designs; in effect, almost limitless possibilities exist.

So, more work to design and create unique and attractive coins using the two processes continues and a mint is being sought to cooperate on this programme. A further project is to develop selective PVD coatings

Eliminating harmful plating

A related but different opportunity has been identified.

One of the last galvanic treatments in the industry is the selective plating of gold and silver on coins and other materials. As such it is one of the last harmful processes in the industry.

This process could, potentially, be eliminated by PVD coating. This could be achieved by creating a mask using the pad printing process prior to PVD coating the gold or silver. The mask would have to survive the environment in the PVD coating process and be easily removed after the coins have been coated.

Research has begun on this project.

New and Improved Brass Plating Process for ZincSecure

ARTAZN, based in Greenville, Tennessee, was established over 50 years ago and has produced blanks for more than 300 billion circulating coins. One of its developments, ZincSecure®, comprising zinc-based alloys, offers high security in both single piece and bimetal blanks.

Dr Vishal Agarwal, ARTAZN's Manager, Technical Services, covered the development of a new product, a gold-coloured version of ZincSecure using plated brass created in a process that is more environmentally friendly and cost effective than the traditional brass plating process, and which can be used for both ZincSecure and steel coin blanks.

The development process started with an investigation of bath chemistries followed by the measurement of plating stress; the ones showing the lowest stress values (around 40% lower than with steel – see Fig 1) were chosen for further experimentation.

The next step was to model a Design of Experiments (DOE) based on different parameters such as chemical composition of bath, pH, temperature and current density. The coin blanks produced from the DOE were analysed for criteria important to customers – coinability, tarnish and wear resistance.

Coinability provides a good measure of edge quality and, said Vishal, the results obtained were excellent for a range of compositions (varying amounts of copper), most being above 90% (see Fig 2).

The next evaluation was tarnish resistance to give customers a measure of how well the brass plated ZincSecure coins retain their shiny appearance during circulation. Extensive testing was carried out in ammonia, steam and sulphur atmospheres; the results obtained were similar to those of the traditional process with steel, confirming no performance loss.

Colour parameter was evaluated using the standard L*a* b* method. It was found to be extremely consistent over a wide range of compositions, an advantage for customers if they want a 'gold' finish for a specific brass composition.

The final stage is the transition from development to production using the widely accepted automotive standard, IATF 16949 process. Following this process ensures complete and systematic knowledge transfer from R&D to production.

Bimetal Coins

The study was not just limited to single piece coins – it was extended to include bimetal ZincSecure coins as well.

Using the new brass plating process, ZincSecure bimetal coins with brass-plated inserts and nickel-plated rings were analysed. Security and performance testing were conducted to demonstrate the feasibility of using the bimetal ZincSecure coins for high denominations due to their enhanced security.

Security is always the prime focus for high value denominations. Measurements of electromagnetic signature, an existing security validating parameter, were conducted on various bimetal ZincSecure combinations. Each of the combinations gave multiple unique signals that were distinct from each other and from other circulating bimetal coins.

Meanwhile, separation force testing was conducted on various sets of bimetal coins made of different ZincSecure alloys and compared with existing bimetal circulating coins (see Figure 3). Due to excellent groove filling in the core, said Vishal, the results were deemed to be more than satisfactory for ZincSecure alloys.

Conclusion

The new brass ZincSecure blank, having met or surpassed specifications, now completes the ZincSecure portfolio, which can provide coins with white (nickel), yellow (brass / bronze) and red (copper) finishes.

The new brass process is cost effective as it needs no annealing treatment like that required on steel. The extensive testing has demonstrated that brass plated ZincSecure coins meet or exceed all current performance criteria (tarnish resistance, coinability, adhesion to the substrate and wear resistance).

Furthermore, the process is environmentally sustainable as brass on ZincSecure substrate is completely recyclable – the coin blanks can be re-melted in the furnace. Additionally, the process uses a lower concentration of chemicals, reducing waste treatment requirement and the associated costs.

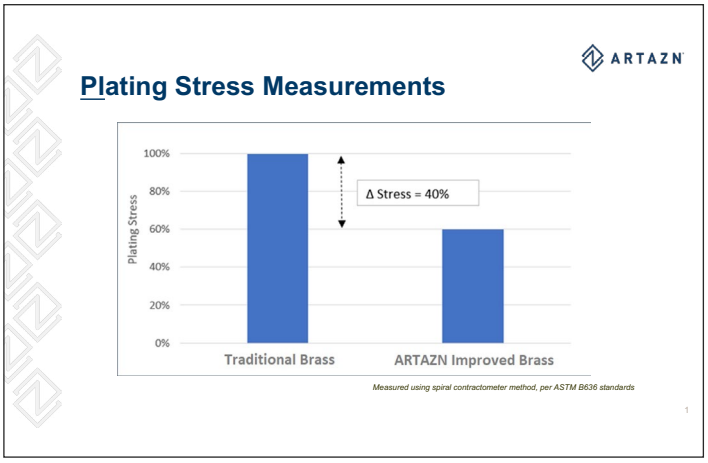

Fig 1: Plating stress measurements.

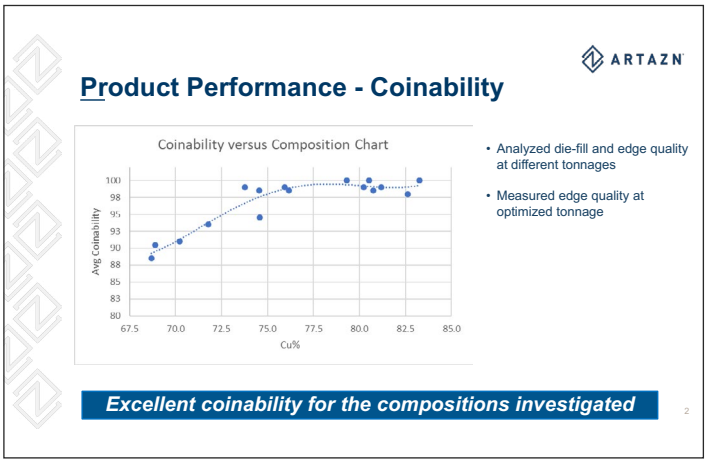

Fig 2: Product performance – coinability.

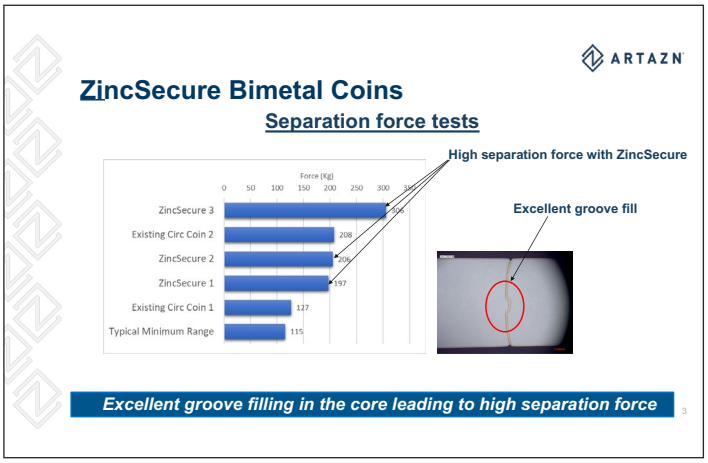

Fig 3: Separation force tests.

Reinventing the Possible – Next Generation of Circulating Coins: Phase 2

Xianyau Li – Chief Technology Officer, R&D Centre of Excellence, Royal Canadian Mint – opened his presentation by reviewing the MC³ multi component circulation coins with a tri-metal structure presented at the Technical Forum in 2019.

This was based on a tri-metal structure with one common ring but two cores or two inserts stuck together. The coins could be struck at 400 per minute. The MC³, which went on to win the IACA Best Coin Innovation award in 2019, enabled some new and unique features.

The new development, the MC⁴ coin, builds on the MC³ technology by adding a fourth component to the coin structure, which acts as a separator by separating the outer ring and the two inserts (see Fig 1).

The fourth component can be made from a wide variety of materials – it can be metallic, non-metallic, composite, solid or any other special materials, and it can be plain or coloured to best coordinate with the two inserts and outer ring. It can also be used to differentiate the EMS for enhanced security.

There can be variations of the coin structure achieved through different geometries and material selections of the separators as well as the inserts. These variations can enhance the visual effects. Different visible or hidden microtext or micro images provide enhanced security, as can other covert and overt features.

A good example is a coin where there is an outer ring, one core with a normal round shape but the other core with a hole in the centre. To match, the separator on one side has a centre post to fit the core with the hole and is plain on the reverse side to match the flat core.

Once assembled, one side of the coin has three different coloured components – brown outer ring, light grey insert and red core while on the other side there are also three colours but in four separate places – light grey centre, dark grey core, light grey insert, and brown outer ring.

However, the main task facing the development team was not only the design of the coin structure but also how to assemble the four components at a speed of at least 300 coins per minute. This would involve feeding four components simultaneously and locking them together to form the coin, all at high speed to mimimise cost.

The development team rose to the challenge by developing a four-part assembly system that delivered the coins to the coining press at a speed of around 350ppm.

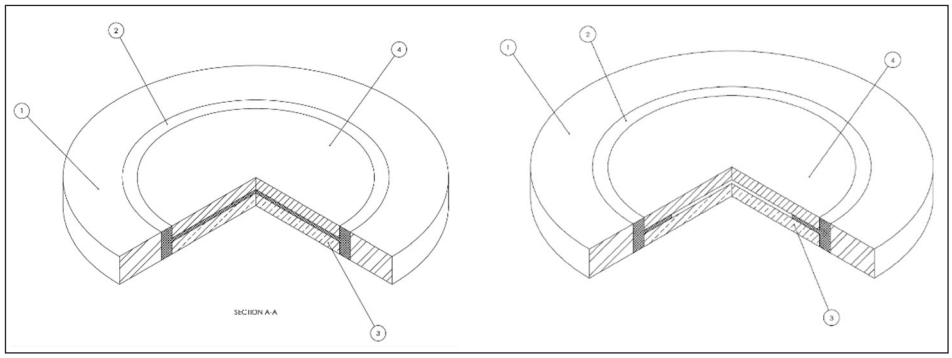

Fig 1: MC⁴ coin structure.

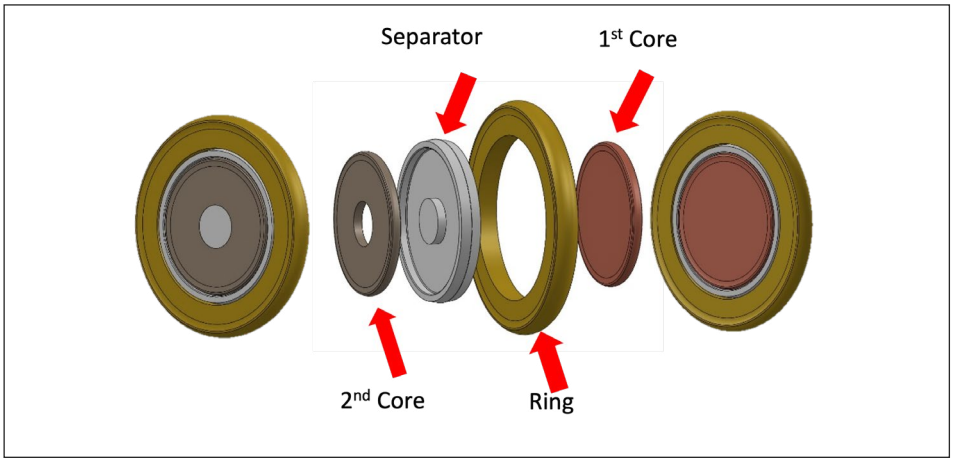

Fig 2: MC⁴ enhanced features.

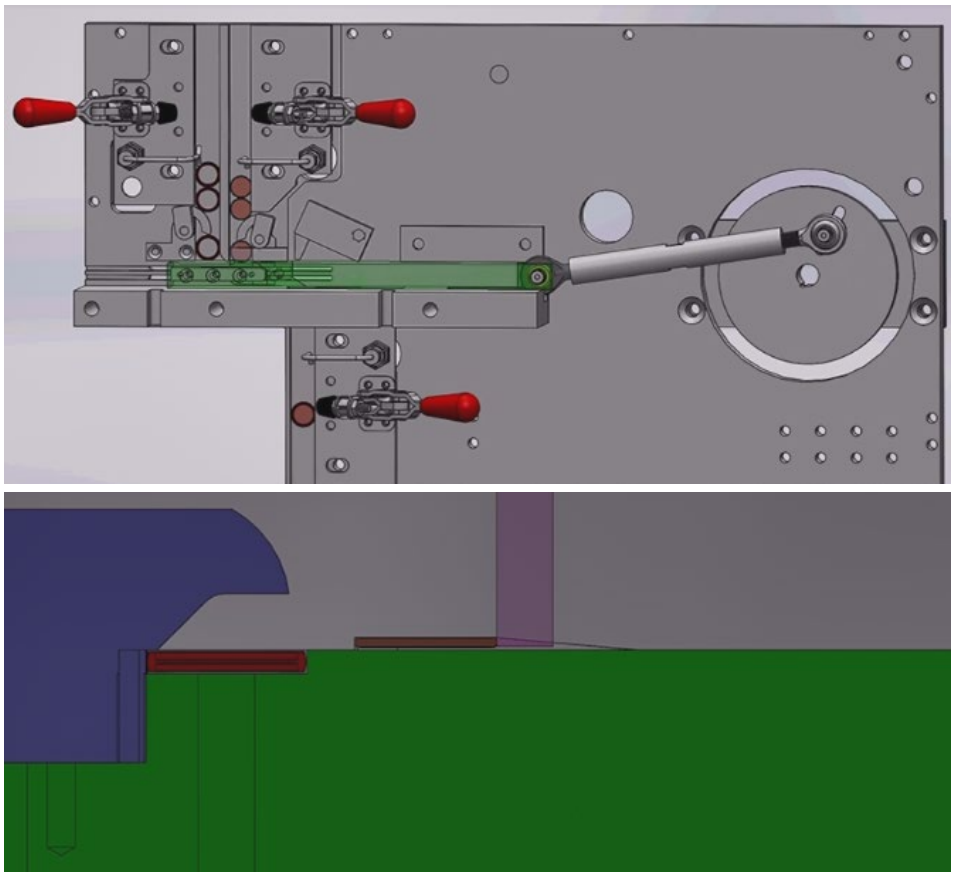

Fig 3: MC⁴ coin assembly process.

Two World Record Breakers from Switzerland

Switzerland's federal mint, Swissmint, has been awarded two numismatic world records. Guinness World Record™ has recognised the ¼ franc gold coin issued in 2020 as the world's smallest commemorative coin, and the 10 centime coin, first issued in 1879, as the oldest unaltered coin still in circulation.

The ¼ franc gold coin has a diameter of just 2.96mm and weighs 0.063g. Despite its diminutive size, the coin's obverse and reverse are machine-minted, each with a different design. For the obverse, Swissmint drew its inspiration from Albert Einstein's determination and patience, with the coin featuring the famous image of the great physicist sticking out his tongue, along with the year 2020. The reverse shows the nominal value of ¼ franc together with the inscription 'HELVETIA' and the Swiss cross.

The coin also contains images that cannot be seen with the naked eye, so the special packaging came with a magnifying glass and light. Only 999 coins were produced, selling out in no time.

The 10 centime coin, meanwhile, was first issued in 1853, five years after the Swiss Federal Constitution was introduced. The original images were replaced, in 1879, by a woman's head in profile, looking to the right and bearing a diadem, and the inscriptions 'LIBERTAS' and the transcription 'CONFOEDERATIO HELVETICA'.

Apart from the year date, the obverse and reverse of the 10 centime coin have remained the same ever since.

Guinness World Records – originally the Guinness Book of Records – first started out in the UK as a book of facts to solve arguments in pubs. It is now the ultimate authority on record-breaking achievements around the world in all spheres of human and natural life.

UK and Canadian Mints Team up to Mark Special Birthday

In a rare collaboration between the UK's Royal Mint and the Royal Canadian Mint, the two organisations have produced a special coin set to celebrate the 95th birthday of HM Queen Elizabeth II on 21 April, featuring fine silver keepsakes crafted by both mints.

The pure silver coin featuring a detailed engraving of the first-ever equine statue of Queen Elizabeth, proudly displayed in Canada's national capital. Its British counterpart features a rich tapestry of royal iconography and floral symbols of the United Kingdom.

Canada's contribution to the '2021 Two-Coin Set – A Royal Celebration' features imagery of Her Majesty on both sides of a 1oz pure silver coin. The reverse displays a reproduction of The Queen Elizabeth II Equestrian Monument, sculpted by Canadian artist Jack Harman and unveiled in 1992 by the Queen on Parliament Hill in Ottawa. This monument, showing the Queen astride her horse Centenial, presently graces the entrance to Rideau Hall, the official residence of Canada's Governor-General. The obverse is a numismatic history showcase, with fine engravings of all four effigies of Queen Elizabeth to have appeared on Canadian coins throughout her reign.

The Royal Mint recruited British heraldic artist Timothy Noad to design its pure silver coin. Its reverse, dated 1926-2021, includes the Royal Cypher, floral emblem of the nations of the United Kingdom, as well as the inscription 'MY HEART AND MY DEVOTION', from the Queen's first televised Christmas message in 1957. The obverse features the effigy portrait of the Queen by Royal Mint designer Jody Clark. This portrait was launched in September 2015 in conjunction with Queen Elizabeth becoming Britain's longest serving monarch.

The two-coin set, limited to a mintage of 6,500, is packaged in a black presentation box bearing the logos of both mints. The packaging includes a certificate of authenticity for each coin and a serialised card with a message from both mints.

The Royal Mint has also struck a limited number of sovereigns to mark the Queens' birthday, and will be gifting 95 UK citizens who also turn 95 years old this year with a special Queens' 95th Birthday £5 commemorative coin.

Buffalo Coin Completes South Africa's Big Five Series

The South African Mint has released two new coin ranges for 2021 including the highly anticipated Big Five African buffalo coin, which concludes the series first introduced in 2019 and also features the Elephant, Lion, Rhinoceros and the Leopard.

The range, issued twice annually, six months apart, sees each of the majestic creatures issued as a brilliant uncirculated quality coin struck from 999.9 fine silver and a proof-quality version of the same (only available in a double capsule), a 1oz gold coin, a 1oz platinum coin, and two combination sets.

Of the two combination sets, one houses the 1oz silver proof quality buffalo coin, with a 1oz fine silver proof Krugerrand which bears a special buffalo mint mark paying homage to the wildlife series. The second set features a single 1oz gold buffalo coin and a 1oz gold proof mint marked Krugerrand.

The reverse of the coin features two halves of the face of the buffalo and when two coins are placed next to each other, a complete close-up image of the face is seen. When multiple coins are placed next to each other, a herd of buffalos is formed.

The obverse features a striking design of the buffalo, the words 'South Africa', 'Big 5 2021' below the image, and the national coat-of-arms signifying its legal tender status.

The Eagle has Landed, and Won this Year's COTY Award

'The Eagle has landed' – the now-famous phrase spoken by US astronaut Neil Armstrong – was a victory cry heard across the globe when he and Buzz Aldrin were the first humans to land on the moon on 20 July 1969.

The monumental feat was celebrated worldwide, and more recently by the US mint with its 2019-dated silver coin commemorating the 50th anniversary of the Apollo 11 lunar landing, which has been named the winner of the 2021 Coin of the Year awards.

The Coin of the Year (COTY) program, now in its 38th year, is an internationally conducted competition presented by World Coin News to recognise outstanding coin design and innovation worldwide. The 2021 program — sponsored by The Journal of East Asian Numismatics, NumisCollect, and China Gold Coin Incorporation – honours coins dated 2019 in 10 different categories of competition as decided by an international panel of judges.

The 50th Anniversary of the Moon Landing coin is a 5oz, three-inch-diameter Proof silver dollar with a curved shape. It won two COTY category awards.

The obverse, concave, side of the coin depicts a footprint on the lunar surface. Inscriptions MERCURY, GEMINI, and APOLLO are separated by phases of the moon. Together, these design elements represent the efforts of the United States space program leading up to the first manned moon landing.

The Mint invited American artists to design a common obverse image that is emblematic of the program. The Secretary of the Treasury selected the design from a juried competition. Gary Cooper of Belfast, Maine, created the winning design that adapts the well-known photograph of an astronaut's boot-print taken by Aldrin. Cooper's concept was adapted by Joseph F Menna, who is now chief engraver at the US Mint.

The reverse, convex, design features a representation of a close-up of the famous 'Buzz Aldrin on the Moon' photograph taken 20 July 1969, that shows just the visor and part of his helmet. The reflection in the helmet includes Armstrong, the US flag, and the lunar lander, 'Eagle'. It was created by Phebe Hemphill, US Mint sculptor-engraver.

'Our team was proud to be a part of commemorating the 50th anniversary of the first manned landing on the moon by NASA's Apollo 11 crew,' the US Mint said in an acceptance statement for the two category awards. 'Produced in 2019, the [coin] was the United States Mint's first curved five-ounce silver coin and represented a special achievement in the Mint's technical capabilities'.

The 2021 Coin of the Year category winners

Most Historically Significant Coin
Austrian Mint: €100 – gold
Magic of Gold: The Gold of Mesopotamia

Best Contemporary Event and Best Silver Coin
United States Mint: $1 – five ounce silver
50th Anniversary of the Moon Landing

Best Gold Coin
China Gold Coin Inc: 100 yuan – gold
Art of Chinese Calligraphy

Best Crown Coin
Monnaie de Paris: €10 – silver, gilt, rhodium
Paris' Treasures, City of Lights: Eiffel Tower

Best Circulating Coin
German Mints: €2 – bimetallic
30th Anniversary of the Fall of the Berlin Wall

Best Bimetallic Coin
Austrian Mint: €25, bimetallic (silver, niobium)
Artificial Intelligence

Most Artistic Coin
Monnaie de Paris: €10 – silver
Fall of the Berlin Wall

Most Innovative Coin
NumisCollect, Cook Islands: $20 – silver
Meteorites: Chicxulub Crater

Most Inspirational Coin
The Royal Mint: 50 pence – silver
Innovation in Science: Stephen Hawking

Upcoming Events

23 APRIL 2021
MDC WEBINAR
click here to Register

29 APRIL 2021
TECHNICAL FORUM PART 3
World Money Fair
www.worldmoneyfair.de/forums/technical-forum/programme/

10 JUNE 2021
TECHNICAL FORUM PART 4
World Money Fair
www.worldmoneyfair.de/forums/technical-forum/programme/

3–5 OCTOBER 2021
CENTRAL BANK DIGITAL CURRENCY CONFERENCE
www.cbdc-conference.com

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News from MDC – Events, Webinars and Awards

The MDC Conference, originally planned for April 2020 in Cape Town and then for later this year, has been postponed until 2022 at the earliest.

The Managing Director of host organiser the South African Mint, Honey Mamabolo, presented a number of options at the MDC Internal Affairs meeting in February. One option is to delay the date but to keep the location in South Africa. Another is to hold it in Canada first, and then hold the following event in South Africa.

The options are being considered through a survey, and the results of that survey will be announced in the April edition of the Mint Industry Communique. The MDC has confirmed, however, that subject to a continuing improvement in the management of the COVD pandemic, the conference will take place in 2022.

Filling the gap

To fill the information gap, the MDC is organising a series of webinar for the industry and the wider coin and cash community.

The first of these – 'Cash, Coins and COVID – the Perfect Storm' – took place in December and attracted a virtual audience of 150.

The second, sponsored by Poongsan, will take place on Friday, 23 April at 16.00 BST on the subject of 'The Critical Role of Banknotes and Coins in a Functioning Payment System'.

The last year has seen payments in general, and coins in particular, disrupted by the pandemic. As yet the future 'steady state' is unclear but sufficient time has passed to consider some of the big questions raised by what has happened. Although the focus is on coins, the webinar will consider payments in the round.

The webinar is in three parts.

Firstly, panellists will be asked about their experiences in the last 12 months, how did changing consumer, retail and banking behaviour impact payments, and coins in particular, and what decisions and actions had to be taken.

Secondly, there will be a discussion about where they think payments will land. What decisions need to be taken now, what are the long term affects that they believe will stick going forwards and what options need to be considered and prepared for? Some of these are policy decisions, some operational. Given all stakeholders are likely to be affected, how do they work together, who faces the biggest change?

Finally, panellists will take questions from the audience.

The panel comprises Kathleen Young, Senior Vice President of FedCash Business Operations for the Federal Reserve System's Cash Product Office, Jim Douthitt, Head of Treasury at Coinstar who has worked on the Coin Taskforce with Kathleen, David Hensley who is on the Access to Cash committee in the UK, runs a payment consultancy and used to be responsible for coins as part of the UK's Cash Services, and Ross MacDiarmid, recently retired from running the Royal Australian Mint and who is Chair of the MDC.

It will be moderated by John Winchcombe of Reconnaissance International and Editor of Cash & Payment News™.

Click here to register for the webinar.

Coin awards go online

Finally, MDC Directors have also agreed to hold a virtual Coin awards program in 2021 to recognise those submissions received by the South African Mint in the lead up to the originally scheduled MDC 2020 Conference. The awards will be judged and a virtual announcement 'ceremony' conducted this year. The event will involve the South African Mint and MDC Secretariat, and will be conducted and facilitated by Reconnaissance.

Details relating to the competition, judging panel and timing of the announcement of winners will be made available shortly.