

# MINT NEWS QUARTERLY™

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## Technical Forum – World Money Fair 2018



A well-established team: Dieter Merkle from Schuler (left) and Thomas Hogenkamp from Spalek (right) hosted the Technical Forum (© WMF/Andreas Schölzel).

In 2018, the Technical Forum of the World Money Fair saw several changes. People already knew the new and larger room, where the presentations were held, but for the first time, the organisers reserved a convention hall nearby specifically for the supplier industry. The exhibitors benefitted from this, because it kept the public visitors from blocking the way of potential customers to their booths. In addition, the slightly changed opening hours were appreciated by everyone.

The traditional welcome of the Technical Forum, which took place on 1 February (the day before the World Money Fair officially opened) was held in the new room, so that the first business conversations at the booths could start happening on Thursday evening, before the WMF opened its doors to the public. The end of the WMF was moved forward to Saturday evening for the suppliers. All attendees of the convention really welcomed this change.

Another innovation had been anticipated more sceptically. For the first time, the organisers charged an attendance fee for the Technical Forum. Many people were unsure if this would impact the number of participants. But the number – 410 – was actually similar to the number in 2017.

They were presented with a diverse programme, with a focus on the most recent technology in coin inspection. Dieter Merkle of Schuler and Thomas Hogenkamp of Spalek, who took turns hosting the Forum, presented an exciting variety of topics of the latest technological innovations to the audience.

### Automated quality inspection

A major focus was on automated quality inspection. Three speakers dedicated their talks to this topic.

Héctor Lorente of Sempsa spoke about the use of digital cameras, which utilise photometric stereo to create a three-dimensional image of a blank and are thus better able to display and evaluate potential flaws.

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## US Mint Resumes Mutilated Coin Redemption Program

The United States Mint has resumed its Mutilated Coin Redemption Program. Established under the authority of 31 U.S.C. § 5120, the program provides an avenue through which individuals and businesses can exchange bent and partial coins (commonly referred to as ‘mutilated coins’) for reimbursement.

In 2015, the Mint suspended the program to assess its security and develop additional safeguards to enhance the integrity of the acceptance and processing of mutilated coinage. The Mint engaged in the rulemaking process to revise the Treasury regulations appearing at 31 C.F.R. part 100, subpart C. Additionally, the US Mint published detailed information on which coins it will accept:

It will accept:

- Bent or partial coins;
- Weighing no less than 1 pound (0.4536 kilograms);
- Separated by denomination category.

It will not accept:

- Bent or partial coins that are not readily and clearly identifiable as to the genuineness and denomination;
- Bent and partial coins not presented separately by denomination category in lots of at least 1 pound for each denomination;
- Fused coins;
- Mixed coins, with the exception of bent or partial one-cent coins and \$1 coins presented in mixed years.

# Award for Sack & Kiesselbach

The 127-year old company Sack & Kiesselbach was honoured for its innovative power with a World Money Fair Award, which cited in particular its newest innovation, the TMA-350 – a table medal automat.

The TMA-350 enables mints to emboss very small batches of coins or medals in the minting quality 'proof' without having to waste a lot of time changing format and tooling when switching the denomination minted. The machine thus takes account of the trend that customers prefer to buy high-quality commemorative coins and medals with very small mintages.

Sack & Kiesselbach is especially proud of the collaboration between generations in order to use existing experience to create new innovations. Consequently, Albert Beck, the founder and honorary president of the World Money Fair, invited not only the owner and CEO Claus Günther Knorr to the stage, but also the oldest and youngest representatives of the engineering team which created the TMA-350 – Wolfgang Schmitz, partner at Sack & Kiesselbach, and Markus Schlein, who has been working as Authorised Manager for Sack & Kiesselbach since 2016. There is an age difference of more than 35 years between these two. And yet they work together perfectly to condition the long-established German company to be fit for the future.

The World Money Fair Award is an award created to honour exceptional achievements in numismatics or the minting industry. It can be awarded to a person, an institution or a company.



Sack & Kiesselbach (S&K) receives the World Money Fair Award. From left to right: Albert Beck, founder and Honorary President of the World Money Fair; Wolfgang Schmitz, partner at S&K; Markus Schlein, Authorised Manager at S&K; Barbara Balz, Managing Director of the World Money Fair; Claus-Günther Knorr, owner and CEO of S&K; and Jens Heise-Engelschalk, CEO World Money Fair (Photo: Andreas Schoelzel/WMF).

## Technical Forum *(Continued)*

This visual inspection system is paired with an automated packing system that operates contact-free in order to prevent further damage to the blanks.

Dr Ralf Freiburger from Mühlbauer targeted his presentation on counterfeit detection. There is a new feature in the *Coin Inspect* machine which takes exact measurements – diameter and thickness – at several points of up to 3,000 objects per minute. The *Coin Text Station*, which can process 10 objects per minute, can even determine the composition of a coin using X-ray fluorescence. The exact analysis of a coin's relief makes it possible to detect and reject specimens that were minted with a copied die.

Dr Svorad Stolz from the Austrian Institute of Technology (AIT) went as far as to declare that they have re-invented coin inspection. AIT's newly developed digital camera doesn't just take a picture of the minted object, but several pictures in a row, which are all taken with constant illumination. The system thus creates a two-dimensional and a three-dimensional image of the object: this allows for traditional control of the blanks and the minted coins, but also control of the security features like latent images or surface features.

Dr Stolz stated that the system works extremely fast, since it is based on the world's fastest multi-line scan camera, developed by AIT. It allows for an inspection of up to 3,000 coins per minute.

### New high speed counting

The company Velec and its *VELEC SB600* has reached a new dimension of coin counting speed – especially for large coins with diameters up to 40mm and up to 4mm thickness.

Velec has developed a new patented machine which is able to count up to 8,000 coins per minute.

### Finite elements and correcting die profiles

Another focus was on computer programs working on the basis of the finite elements method. They are able to predict the material flow caused by the analysed die. They reduce the applied pressure and the minting force necessary to strike coins, and they extend the life of the dies.

The Portuguese mint INCM has developed a new computer program in association with Técnico Lisboa for this purpose, which was presented by Prof Paulo Martins.

Michael Groves reported on the Royal Canadian Mint's computer program and similar experiences made with it. But much more interesting was his statement that the Mint is now able to produce coins with a relief up to 6 mm(!).

Before this development, the highest reliefs for commemorative coins were reached by the *smartminting*® technology, and this was slightly below 2mm.

### Blank production at the US Mint: how to prevent annealing

The US Mint was looking for a method which superseded their huge annealing furnaces for the production of blanks for circulation coinage. Richard Robidoux from the US Mint and Dr John Briggs from the Fraunhofer Institut USA reported on finding a solution by applying the Pushback Blanking (PBB) method.

The basic problem is that a blank punched out of a coil that has been annealed in the traditional way by the manufacturer is always slightly concave. In order to flatten the blank, the pushback process is divided into two parts. During the first pushback process, a flat pushback pad attached to a spring exerts pressure, which leads to a blank with a flat surface and keeps it in the coil. The blank is only punched out of the coil in the second step.

The method works: to date, the US Mint has minted more than 50 million circulation coins on blanks which were manufactured with the PBB method.

### New oil-hydraulic press from Italy

Dr Giulio Locatelli from the Italian mechanical engineering firm Locatelli Meccanica introduced its new *SH-300*, an oil-hydraulic press which is characterised by its precision and its energy efficiency. In automatic mode, this special press allows for up to 7 objects per minute.

### Special engraving for dies with shaped surface

The latest product from the Mint of Poland is a minted coin in the form of a fish with a flipped tail. To make this possible, a multi-piece die consisting of four elements was necessary. To engrave this die a special laser from ACSYS was used. Alexander Aminidis presented a die that can transfer a design from a flat surface onto any shaped die surface with the help of its new dynamic focus control.

This new feature can be integrated into nanosecond- and picosecond lasers. Picosecond lasers show better and faster results with engraving, while a nanosecond laser offers more opportunities for fine frostings.

The following reception, which took place in the new convention hall for the suppliers for the first time, was a welcome opportunity to talk about the presentations and discuss the latest technological developments.

Abstracts of all the presentations are available at [www.coinsweekly.com](http://www.coinsweekly.com).

# 2018 Coin of the Year: And the Winner is...

The Coin of the Year Award is – at least for the minting industry – a little bit like the Oscars for the entertainment industry. There may be other distinctions, but the ‘COTY’ has become the best known award among collectors. Coins which receive that award usually go up in price.

The Coin of the Year Award is an internationally conducted program sponsored by Krause Publications. The COTY trophies for 2018 were awarded at the World Money Fair Berlin, on 3 February 2018. All coins in the contest are dated 2016.

From the 10 winners of the first round in different categories the international panel of judges chose the Coin of the Year: the 5 euro polymer coin from Germany.



Dr Peter Huber, Mint Master of the State Mints of Baden-Württemberg, Günther Waadt, Bavarian Mint, and Dr Thomas Dress, representative for coinage of the German Bundesverwaltungsamt.

## These are the winners:

### Most Historically Significant Coin

France / 200 euros gold / Joan of Arc



### Best Silver Coin

Australia / 5 dollars silver / Northern Sky Cassiopeia, Dome-Shaped



### Best Circulating Coin

China / 10 Yuan Bi-Metallic / Year of the Monkey, with Security Features



### Best Contemporary Event Coin

Switzerland / 20 Francs silver / Gottardo Tunnel



### Best Bi-Metallic Coin

Austria / 25 euros / Bi-Metallic Niobium Silver / Time



### Best Gold Coin

Austria / 100 euros gold / Wildlife in Our Sights



### Best Crown Coin

France / 50 euros silver / Van Cleef and Arpels



# Canadian Mint Solves White Spot Issue

## Most Artistic Coin

Latvia / 5 euros / silver / National Entrepreneur, Multi-Faceted and QR Code



## Most Innovative Coin

Germany / 5 euros silver / Planet Earth, Polymer Ring with Different Blue Pigment



## Most Inspirational Coin

Canada / 20 dollars silver / Mother Earth, 3-D-Droplet



Don Everhart II received the Lifetime Achievement Award in Coin Design. He is a retired designer, sculptor and engraver of the US Mint whose works have won many awards.



One of the many coins designs of Don Everhart, which won last year's COTY as Most Inspirational Coin.



The Canadian Silver Maple Leaf bullion coin which is prone to gather white spots (Source: Royal Canadian Mint).

**White spots on silver bullion coins have been a known issue in the global bullion market for years. While white spots do not change the purity or composition of bullion coins, investors and collectors do not like to see them. This fact was a challenge for the R&D and engineering teams at the Royal Canadian Mint.**

Determined to get to the bottom of the elusive white spot problem, the Mint engaged in a four-year process of research and exploration that culminated in 2018 with the announcement of *Mintshield* surface protection, the first proven, proprietary solution for significantly reducing the occurrence of white spots.

### What are white spots?

White spotting is not like tarnishing or other oxidation phenomena. Its appearance is unpredictable and irregular. The Mint's engineering team knew the first order of business was to identify the root cause of the spots.

'Our team considered every factor that could possibly play a role, including chemical, environmental, handling and storage conditions,' explained Dr Xianyao Li, Chief Technology Officer at the Royal Canadian Mint. 'We used the full range of tools at our disposal: image analysis system, X-ray spectroscopy for compositional analyses, and surface microstructure and morphology examinations.'

To expand the scope of its investigation, the Mint collaborated with a local Canadian university to take advantage of its laboratories.

The Mint's research concluded there is no single cause of white spots. Multiple factors have an impact, including the way silver reacts with contaminants in processing, handling and storage. While this makes it challenging to come up with a single, definitive solution to the issue, by the end of its intensive investigation, the Mint believed it had identified a way to reduce and contain white spots.

### How can white spotting be avoided?

With a prospective solution identified, the Mint began testing. On a small scale, the results were positive. The Mint's technique reduced the occurrence of white spots. But the real measure of success was confirming it worked at production scale, with consistent outcomes even across different coin finishes and textures. Accelerated testing confirmed the surface protection would significantly reduce the appearance of white spots for years.

All along the Mint's research team knew the viability of the solution depended on its ability to integrate with existing production and quality control processes. 'That was one of our mandates right from the beginning,' said Dr. Li. 'Mintshield needed to fit with what we already do while delivering on quality and manufacturing efficiencies.'

All Silver Maple Leaf bullion coins dated 2018 and later are now protected with Mintshield, significantly reducing the occurrence of white spots.

# First Female Chief Appointed to The Royal Mint

The Royal Mint has appointed Anne Jessopp as its new Chief Executive and Deputy Master of the Mint. She will lead work to provide Britain with its cutting-edge secure currency and will also develop the commemorative coin and bullion arm of the business. On a visit to The Royal Mint, the Exchequer Secretary officially confirmed her appointment – the first female to take up the role in The Royal Mint's 1,100-year history.

*Mint News Quarterly™* spoke to her after her appointment.

**Q:** *You have worked for ten years at The Royal Mint: could you tell our readers what your responsibilities have been?*

**A:** When I started at The Royal Mint ten years ago I came in as HR Director, helping The Royal Mint to transition from civil service status into a business. After that I took on the responsibility of looking after a number of the important central functions in the organisation, for example, the central business services unit.

After that came the exciting role of leading the very busy, extremely successful commemorative coin consumer division. I have overseen its expansion to include a number of additional services such as our Collector Services division, incorporating the new Historical Coins, Valuation and Authentication and Secure Storage services. It has been a very exciting few years in terms of the sort of coins we have been producing, too. The highlights for me have been the old and new commemorative £1 coins, celebrations of royal events such as the Sapphire Jubilee, Longest Reigning Monarch and Her Majesty The Queen's 90th Birthday, and, of course, the wonderful Beatrix Potter collection, with Peter Rabbit and other characters – quite a departure from The Royal Mint's traditional standard themes, but extremely popular with collectors.

**Q:** *Do you think that there will be things that are done differently by a woman when leading a big enterprise like The Royal Mint?*

**A:** I believe that whether male or female, every person would do this job differently. I think we need to value every person for the attributes they bring to the job, and it's only when you bring a team of skilled people together, be they male or female, that you actually make the most of all those attributes on offer. So yes, I probably will be likely to do this differently to anybody else for that reason.



Anne Jessopp, Britain's first female Deputy Master of the Mint.

We live in a challenging world, so a mix of attributes is a good thing to equip us all to face those challenges.

**Q:** *Are there any topics which will be really important for you as Chief Executive at The Royal Mint?*

**A:** It is important to me to make sure, right across The Royal Mint, whatever part of the business we are in, that we really understand our customers and deliver exactly what it is that they want. I see this as being vital to securing and maintaining customer loyalty, and I want to ensure that all Royal Mint divisions work together to achieve this.

It is also important to me that we shout about what The Royal Mint does. We may have been around for over 1,100 years, but we shouldn't assume that the outside world knows what we do today. It's important that people know that we don't just manufacture coins, although that is of course at the core of what we do, and really important to the business, but we have a number of other strings to our bow too.

The Royal Mint's bullion business is respected across the world, trading both wholesale and online via [royalmintbullion.com](http://royalmintbullion.com). I have already mentioned our Collector Services division, and our thriving tourist attraction in South Wales, UK – The Royal Mint Experience – has welcomed over 150,000 visitors in its first two years.

This wonderful business diversity is how we will ensure that The Royal Mint not only has an impressive past, but a great future as well.

## MDC 2018

The 30th Mint Directors Conference will take place from 22-26 April at the Grand InterContinental Seoul Parnas in Seoul.

It is being hosted by the Korea Minting, Security Printing & ID Card Operating Corporation (KOMSCO). Sponsors are Poongsan, The Singapore Mint, MingFeng Packaging, Consolidated Coin Company, Spaleck, Universal Machine Company and the MDC itself.

The speakers and a preliminary program of the conference have not been announced yet, but a preview on the participants who have signed up already can be viewed at [www.mdc2018.com/eng/R/participants/list.do](http://www.mdc2018.com/eng/R/participants/list.do).

Registration, which is open until 31 March, can be done at [www.mdc2018.com](http://www.mdc2018.com). Any problems with registration can be addressed by contacting Taehoon Lee who is in charge of the secretariat team. It is possible to contact her directly by means of the webpage, or by phone (Tel: +82-2-2152-5062. Mobile: +82-10-7456-4028).



# Royal Mint Breaks Fresh Ground with A to Z of Britain

The Royal Mint has announced a new series of 10p coins featuring what makes Britain great – not in the past, but today. The British public was asked about their favourite landmarks, sites, film characters, sports, food, myths, drinks – and their answers have been transposed into 26 coin designs corresponding to the letters of the alphabet.

The topics are:

- A – Angel of the North
- B – Bond...James Bond
- C – Cricket
- D – Double Decker Bus
- E – English Breakfast
- F – Fish & Chips
- G – Greenwich Mean Time
- H – Houses of Parliament
- I – Ice-Cream Cone
- J – Jubilee
- K – King Arthur
- L – Loch Ness Monster
- M – Mackintosh
- N – National Health Service
- O – Oak Tree
- P – Post Box
- Q – Queuing
- R – Robin
- S – Stonehenge
- T – Teapot
- U – Union Flag
- V – Village
- W – World Wide Web
- X – X Marks the Spot
- Y – Yeoman
- Z – Zebra Crossing

No coin series before has found its subjects in popular culture to such an extent.

The 10p coins will certainly attract a lot of attention, especially as The Royal Mint is combining their issue with an event called the 'Great British Coin Hunt'. That's an app, allowing coin hunters to create a digital collection of the coins they find in their change.

Users can download the app for free, from the App Store or Google Play, to scan the coin with their camera, unlocking exclusive content and placing their coin into a digital folder. They can also link the app to their social media to share the treasures they find in their pockets and wallets.

There will also be a heatmap within the app, showing where different coins are being found around the country and directing them to swap shops where they can trade coins with fellow collectors. Users can even use the app to have a go at designing their own coin.



The entire collection will be rolling out into circulation across the country from this month.

Many other mints will no doubt be interested in the results in order to mint their own national coin alphabets.

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## US Mint Names New Director

The United States Mint announced that **David Motl** retired from Federal Service on 31 January, 2018, and that **David Croft**, who served as acting Chief Administrative Officer, has assumed the duties of acting Director, and senior career official, of the Mint.

David Croft joined the US Mint in 2007 as Superintendent of the Denver Mint. In 2014, he was selected as Associate Director of Manufacturing for the Mint. In June 2017, he became the Mint's acting Chief Administrative Officer.

Prior to joining the Mint, Mr Croft worked in the automotive industry for 30 years where he was the plant manager at four different facilities.

He holds an MSc in Engineering from Rensselaer Polytechnic Institute and a Bachelor's Degree in Mechanical Engineering with a minor in Electrical Engineering from General Motors Institute.



David Croft (left) together with Superintendent Mark Woods (right) in 2015.