



# MINT INDUSTRY COMMUNIQUÉ

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**Günther Waadt**  
Managing Director  
Bavarian State Mint

## INNOVATION - A TESSELLATION WITH MULTIPLE PATTERNS

The Bavarian State Mint founded in 1158, hence one of the oldest mints worldwide, took active part in an innovation process which lasted almost a decade and included a considerable part of the supply chain in the minting business.

The development of the Tri-Material-Coin (TMC) was undertaken by a start-up team composed of the State Mints of Baden-Württemberg, Crane Payment Innovations, Mint of Finland, DWI Leibniz Institute for Interactive Material, Deutsche Bundesbank and the Bavarian State Mint. At a later stage of the project two more stakeholders, Fischer and Schuler Pressen, joined in.

The debate with the vending and sorting industry about the unstable junction resistance of bicolor coins was the impulse for a long journey to the innovative status quo. In fact it started already in the past Millennium during the planning of the

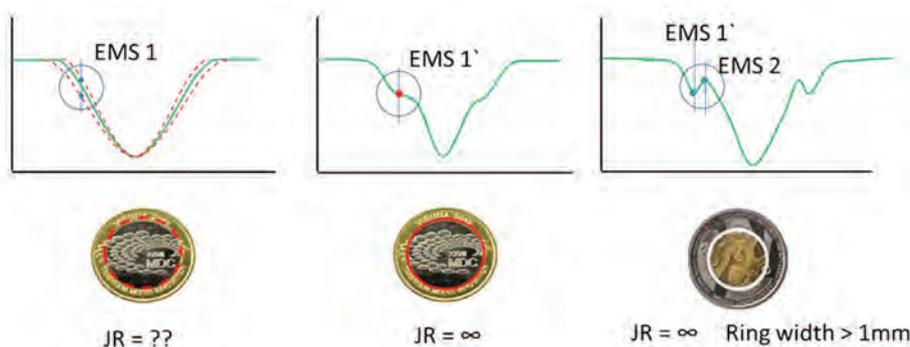
Euro. After the Euro was launched in 2000 a mandate was given to the Technical Subgroup (TSG) of the Mint Directors Working Group (MDWG) to investigate technical capabilities to enhance the security of coins among others to stabilise the junction resistance.

The mandate was not to create a "supercoin" but to prepare solutions of a bundle of security features. The mandate ended up with a final report of the group to EU authorities mentioning proposals for short, mid and long term solutions. Since at the EU level no further activities were mandated the work ceased semi-finished.

In parallel the aforementioned start-up team decided to deal in detail with the stabilising of the junction resistance. The target was to bring in an insulation

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### EMS READINGS WITH DIFFERENT JUNCTION RESISTANCE



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## ROYAL CANADIAN MINT – COVID 19 PULSE SURVEY

This year brought many unexpected challenges with the onset of COVID-19. During the pandemic, the Royal Canadian Mint (RCM) has put the health and safety of its employees at the centre of its decision-making process, prioritizing critical activities in support of Canada's financial and mining sectors and ensuring Canadians continue to have access to coins when and where they need them.

Through its unique Coin Lifecycle Management Service, the RCM ensures that Canadians continue to have uninterrupted access to coins when and where they need them and that Canada is well prepared in the event that ePayment infrastructure is unavailable.

The RCM conducted a study regarding consumers' cash and coin behaviour during the COVID-19 pandemic. The survey was administered to the general Canadian public in July 2020 and included 1,550 participants from across the country with a margin of error of +/- 2.47%, 19 times out of 20.

A significant finding from the research was that 78% of respondents indicated that they will continue to use cash (i.e. notes and coins) post-COVID-19. Of those respondents, 45% believe they will continue using the same amount of cash or more. Those who responded they would be using less cash were influenced by the

## THE KRUGERRAND, THE WORLD'S MOST TRADED GOLD COIN...

The legend in the coin industry was conceived in 1964 when the concept of a legal tender gold coin linked to the daily gold price, was introduced in South Africa. The Krugerrand was the first gold coin to be traded on the weight of gold it contains, not on a value stamped on the reverse. It was struck for the first time in 1967 and continues to be produced every year since by the South African Mint. Unlike most other gold coins which are 24 carat, the Krugerrand is made up of 22 carat gold. It is also unique among modern gold coins in that it doesn't have a currency denomination on the reverse, and it's denominated in ounces of pure gold (the first in the world).

The name Krugerrand is a combination of South Africa's fifth president – Paul Kruger and the South African currency – Rand. Standard bullion Krugerrands are minted at high speed in the hundreds of thousands, with little emphasis on the quality of the final struck coin, but the proof version is minted in limited editions, and each coin is struck individually up to three times for an increased amount of glimmer and shine. Bullion and proof Krugerrands can be differentiated by the number of serrations on the edge of the coin, with the bullion version having 180 compared to the 220 on the proof. The flagship product of the Krugerrand family, the 1oz gold Krugerrands' classic size has been central to the Krugerrand collection for over 50 years.

Diameter: 32.69mm  
Mass: 33.930g  
Limited Edition: 1,000



## INNOVATION - A TESSELLATION WITH MULTIPLE PATTERNS

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layer between the two metal parts. This definitely would enhance security of high denomination coins in bicolor technology. The following challenges were figured out: We need a security feature which can be detected in validators and sorting equipment which are already in the field. This shall be realized with as little modifications as possible – and definitely no hardware modifications. Secondly the feature should support the detection at both kinds of transactions, hand-to-hand and automatically performed use. Last but not least it needs to be processed at a reasonable speed in mass production. After several theoretical sessions in order to finish the configuration of the samples with two different metals and the insulation ring, we produced tokens for tests among the vending and sorting community (EVA). The result of these tests was that a thin insulation layer is useful to eliminate the

influence of the junction resistance. But trailblazing was that we simply increased the width of the layer up to 1 mm and higher. Using this configuration delivered unique readings in the vending and sorting equipment. In parallel the handling of the ring was enhanced in comparison to a thin layer foil. To overcome the challenge of capable mass production, the team was enlarged by two more members, Fischer to produce the polymer ring and Schuler Pressen to join the three components under high speed conditions. By the way the weight of the polymer ring is 0.1 g! No existing coining press was able to process such a part so far. Hence a completely new machine generation had to be developed. Since the Federal Republic of Germany represented by the coin issuing authority, the Federal Ministry of Finances, was the launch partner for this new and innovative

product and intended to issue a coin, "Planet Earth", in TMC technology in 2016, there was only very limited time to prepare mass production and to develop the assembling machine. It took roughly one year to set up the new production center from a blank sheet of paper. That was really high speed development in an otherwise thoughtful and considerate industry as the minting branch is – and it worked. We were on time; in April 2016 the first TMC was issued by the Federal Ministry of Finances of Germany. The TMC "Planet Earth" retrospectively was an extraordinary success as a product but also an example of excellent trans-sectorial cooperation of our industries' whole value chain, starting from science and ending up with marketing and sales. Each stakeholder represents an indispensable tessera of the complete picture of this exquisite story.



Please circulate to relevant staff and interested industry members and help build our collective voice. To sign up for the Mint Industry Communique email [mint.industry@ramint.gov.au](mailto:mint.industry@ramint.gov.au)

## MINT DIRECTOR APPOINTMENTS



### Paulo Alexandrino

has been announced as the new Director of Imprensa Nacional Casa da Moeda.

With a degree in Materials Engineering Mr Alexandrino

has worked at the Portuguese Mint (Coin Department) since 1999. He was Production Manager from 2003 to 2016 and was Deputy Director from December 2016 to 2020. He took up his new position in March this year.

The Portuguese Mint is perhaps the earliest factory in the Portuguese State, with a continuous operation since at least the end of the 13th century.



### Benjamin Hechler

has been appointed to replace Dr Peter Huber as the Director of the Staatliche Munzen Baden-Württemberg.

Among other roles Mr Hechler has worked as a freelance journalist and in the PR industry. He was Head of Press and Public Relations at the Ministry of Finance from 2016 to 2020 and took up the role of Mint Director in July this year.

With its locations in Stuttgart and Karlsruhe, the state-owned company State Coins Baden-Württemberg is the largest mint in Germany.

## ROYAL CANADIAN MINT – COVID 19 PULSE SURVEY

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anticipation of retail environments moving away from cash in the future.

The RCM found a significant decrease in cash usage during the pandemic. While six in ten respondents (60%) indicated they were reducing their cash usage during the pandemic, the research shows that the decline in cash usage was more strongly linked to respondents' reduced opportunity to spend cash. This was due to store closures and lockdown measures, rather than the fear of contracting COVID-19. Seventy-two per cent of respondents indicated that they were shopping once a week or less.

When asked about the health risks of using cash, two in three (66% of respondents) felt that using coins and bank notes posed a low to moderate risk of contracting COVID-19. This was in sharp contrast to attending gatherings or touching surfaces such as door handles, both of which were seen by the majority of respondents as high-risk activities for contracting COVID-19. 'Tap and Go' was seen as the



payment option for limiting the chance of contracting COVID-19.

When specifically asked about how often coins are used to make purchases, only 25% of all respondents indicated that they were using coins as frequently as once a week or more, with most respondents (54%) only using coins once a month or less.

Analyzing cash usage in a retail environment showed that 12% of respondents were refused when attempting to purchase items with cash but the majority of respondents (55%) felt discouraged from using cash even where it was accepted. When confronted with refusal to accept cash, seven in ten respondents paid with another method, while 26% did not purchase the item or went to another retailer. It is estimated that 3% of Canadian adults (approximately one million individuals) went to a different

## DISADVANTAGES OF A CASHLESS SOCIETY

- The risk of hackers: Electronic money means vulnerability to hackers. Although your money is protected in the majority of circumstances under law, it can be very inconvenient and stressful if your bank account is hacked and possibly drained.
- The temptation to splurge: with no physical banknotes leaving your hand when you make a purchase, psychologically it may be able to spend more frequently and more per transaction without noticing. Many popular digital banks that promote a cashless way of living provide users with information and tools in saving and staying in control of money.
- Relying on technology: if systems malfunctions or servers face an error, money in your account would be inaccessible, and there would be no emergency cash to use for the time being.
- The economic divide: a cash-free society would mean nearly all money management and transfers would have to be done via the internet or on a mobile app. Accessibility to these devices and services would be much more limited to those who could not afford to buy a phone or home computer. Those with no fixed address would also not be able to open a bank account at all, creating a further rift between the rich and the poor.

Source: *Fintech Magazine, September 5, 2020*

retailer or did not complete a purchase as a result of cash refusal.

This survey was a valuable tool in understanding Canadian's behaviours during the COVID-19 pandemic. As Canada enters a second wave of the pandemic, the RCM will be conducting regular surveys to gauge how those behaviours are changing. RCM is dedicated to ensuring that people and businesses across Canada have the coins they need for trade and commerce, while ensuring that the coin distribution system remains resilient.

Please circulate to relevant staff and interested industry members and help build our collective voice. To sign up for the Mint Industry Communique email [mint.industry@ramint.gov.au](mailto:mint.industry@ramint.gov.au)