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FNMT Invests €27m in Paper Production

The Spanish security printer, papermaker and mint Fabrica Nacional de Moneda y Timbre-Real Casa de la Moneda (FNMT-RCM) has announced a €27m investment programme for banknote papermaking at its Burgos mill in northern Spain.

The programme involves the complete refurbishment of the FNMT-RCM cylinder mould paper machine and is expected to take two years to complete.

The 52,000 sq m mill employs 165 workers, has a capacity of about 2,000 tonnes per year and is, says FNMT, one of the most advanced and prestigious paper mills in the security paper market, both within the Eurosystem and in the rest of the world. Banknote and other security paper has been produced for the Spanish government in Burgos since 1952 and, in addition to the euro, it has produced paper for banknotes and other high security applications for countries such as Nigeria, Philippines, Mexico, Bangladesh, Turkey and Colombia since the late 1980s. Some 40% of its production is now taken up by euro paper for Spain, and 60% by export customers, both for the euro and other banknotes.

According to the Director of the Burgos mill, Ing Antonio Olmos, paper for the €5 and €10 denominations accounted for 70% of the Burgos mill production in 2013, and based on a successful job, the European Central Bank has chosen Burgos paper as the reference for the €5 and €10 Series II notes. Similarly, the watermarks created there have been selected as the definitive model for these denominations.

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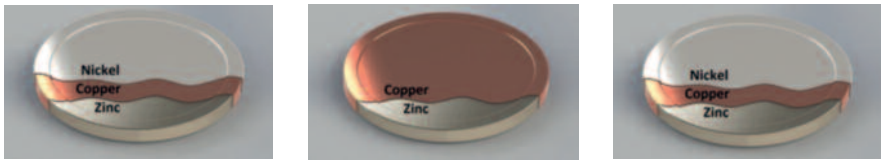
New Coins with Unique Electro Magnetic Signatures



Sample coins in nickel copper plated zinc (left), copper plated zinc (centre) and bronze plated zinc (right)

Coin blank supplier Jarden Zinc Products (JZP) is introducing a new zinc alloy series that, it says, provides a spectrum of unique narrow-band base metal electromagnetic signatures (EMS). These signatures are outside the solid alloy and plated coinage materials commonly used, with the added feature that zinc is non-magnetic. To date, based on four JZP unique EMS zinc alloys and EVA (European Vending Association) coin design guidelines, JZP has a total of 224 different EMS combinations with this new product line, consisting of nickel copper plated zinc, copper plated zinc and bronze plated zinc.

This development comes against a background of growing demand by central banks and mints for more secure and lower cost coins. And while plated coinage has met the cost challenge (offering savings of as much as 50%), it has only partially

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Coins with Unique EMS ...cont

addressed the security challenge, according to JZP.

This is because coins' EMS signals are key for their authentication in vending machines and other coin acceptors (until very recently, EMS was the only machine-read feature). But a drawback with plated coins is that they have a light conductivity signal due to the thinness of the layers (usually copper and nickel), which can show significant variations according to the tolerance of the plating thickness, and wear. Moreover, the steel core has a strong magnetic influence over the conductivity signal, affecting the reliability of the machine authentication of plated coins. This is not so much an issue for low value (change) coins which are neither prone to counterfeiting nor used in vending machines. But it is an issue for mid- to high value coins, particularly in the white metal coin segment which constitutes the bulk of such coins.

Addressing the Issues

Plated zinc, however, addresses the issues of both cost and security, with a range of added benefits as well, says JZP.

For a start, zinc is non-magnetic, thereby lowering the risk of fraud or improper acceptance or rejection of a coin when compared to steel-based plated products. As a coin blank, it requires fewer processing steps, with lower coining scrap, consumes less energy and has a lower density – ie. 9-10% more pieces per kilogram - than most other coinage materials.

Moreover, zinc-based coinage materials have been shown to extend die life as much as 400% due to their ductility and lower hardness compared to other metals (with studies showing a 20% reduction in press loads), and do not require annealing. They also exhibit improved metal flow and fill. And they do not deteriorate to the same extent as other products. In particular, zinc-based coinage is more corrosion resistant than steel-based (which can be aggressive and results in a dark red to black colour on the coins), meaning lower plating thicknesses, which in turn yield lower costs.

Finally, zinc alloys retain an intrinsic value not available with base materials such as steel, and as a commodity, zinc metal has a history of relatively low and stable pricing (in a market very sensitive to the volatility of metal prices).

Security Benefits

The cost and production benefits of zinc aside, it is the security benefit that JZP is keen to stress. These have been supported by the recent study commissioned by the US Mint from CTC into alternative coin materials, according to which 'the…plated zinc…had notably consistent EMS readings'. It added that the zinc-based test coins were 'clearly unique and distinguishable from other coins throughout the world, with a very narrow band of properties'. Zinc, the report concluded is a highly secure material option and a strong candidate for use in higher denomination coins.

Distinctly Different

The new range of zinc-based plated blanks was tested on a *Scan Coin 4000* unit. Chart 1 demonstrates that the zinc alloys are distinctly different to one another and to existing coinage materials, while Chart 2 demonstrate that the plated zinc coins are unique and distinct from solid alloys and other plated coins.

Through the provision of the 224 different EMS combination, JZP says that it can provide central banks and mints with electro-magnetic signatures unique to their country, resulting in all the security benefits of solid alloys but at plated coinage prices.

Although JZP's main strength is in zinc-based coinage materials, it also offers other base coin materials (including steel), and both single and multi-layer plated products in variety of colours and finishes. It has produced some 300 billion coin blanks since it entered the market in 1980, and its customer base in 30 counties includes the US Mint, for which it has supplied copper plated zinc coin blanks since 1981 (the world's first plated circulation coin), brass and bronze plated steel products worldwide since 2004, and nickel plated products since 2006. The company has produced zinc strip for 129 years, with production in Greeneville, TN, USA for the past 40 years.

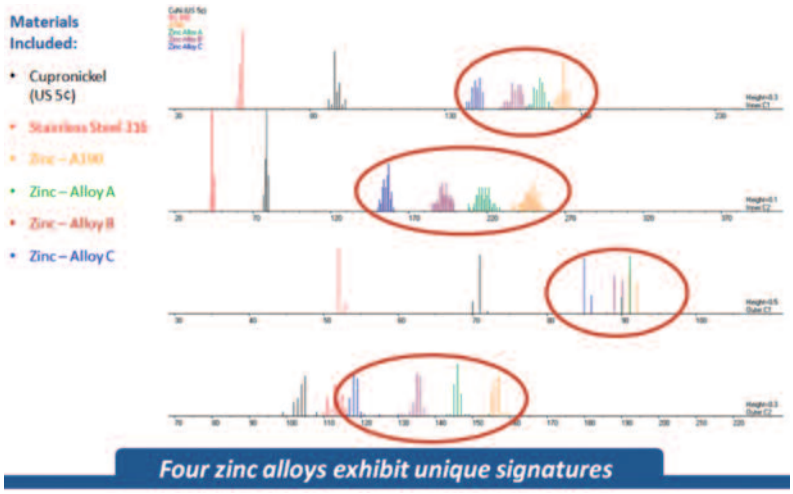

Chart 1: Examples of the zinc based products unique and narrow electro-magnetic signature using an SC 4000

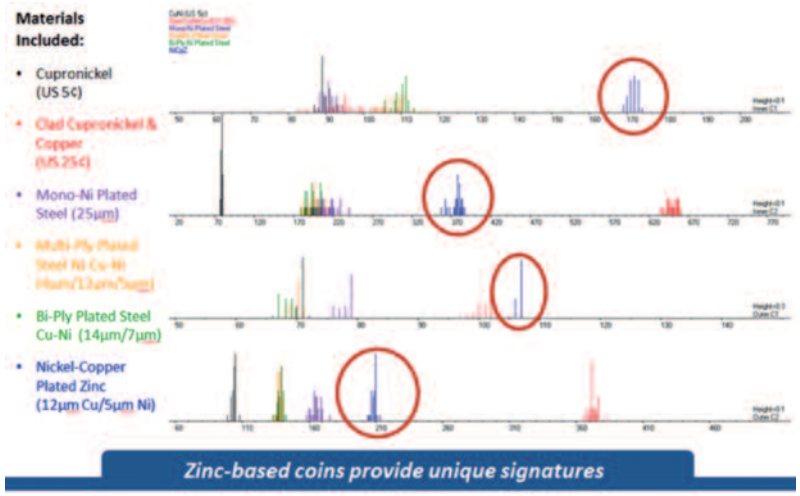

Chart 2 - Examples of the zinc based product unique electro-magnetic signature compared to other common solid alloy and plated coinage products, using an SC 4000.