


## Would you credit it? 25 years of hologram success on bank cards

**Twenty five years' ago MasterCard International was the first financial institution to issue credit cards featuring hologram technology as a security device, marking the birth of the authentication industry for holograms which is now estimated to be worth \$1.6 billion. In the years since, others have embraced the technology as an effective anti-fraud device on their own cards. Here, Philip Hudson, chairman of the IHMA, traces holographic developments in the card sector over the last quarter of a century.**

1983...Astronaut Sally Ride becomes the first American woman in space, while back on Earth, the Internet Protocol was developed and MasterCard International made what many consider to be the first genuine commercial hologram application with the introduction of the technology on its credit card products. This was followed a year later by Visa, whose eye-catching hologram of a dove had many tilting the card just to catch it moving in the light, and even today this image remains an important part of Visa's branding.

Credit cards first appeared in the 1950s. The first were the Diners Club and American Express cards in 1950 (both of which, strictly-speaking, were charge as opposed to credit cards). In 1958 the first bank credit card – the BankAmericard (the forerunner to Visa) - was issued. By the end of 2007, 3.03 billion bank cards (debit and credit) were in circulation worldwide - 95% of which were Visa and Mastercard (Visa with a 65% market share and Mastercard with 30%). The others are American Express, Discover (formerly Diners Club) and JCB. In production terms, some 2.6 billion bank cards were produced in 2007, while overall card production was just over 4.1 billion, the 'others' being retail, ATM-only and prepaid cards (gift, transport, telephone). While all Visa and Mastercard-branded cards feature holograms, as do the vast majority of American Express and Discover cards (the latter bearing the Mastercard brand), it is estimated that around 50-60% of the other cards also feature holograms. In volume terms, this amounted to over 3.2 billion holograms produced for cards in 2007.

When holograms first appeared on credit cards it was to tackle fraud, which in the early 1980s had just started to emerge as a threat to the national and international banking infrastructures.



Back then, the two-dimensional hologram worked by making the cards extremely difficult to duplicate. Few had access to the laser technology, and being able to copy exactly the hologram design meant having exactly the same artwork or model as Mastercard and Visa respectively - and of course these were well-secured.

They had immediate impact, significantly reducing the amount of credit card fraud, although levels had started to creep back up again by the end of the decade and through the early 1990s. By then, however, there had been several major advances in holographic imaging technology (advances which continue to this day) and Mastercard in particular began a series of modifications to its globe hologram to enhance security.

Since then the use of holograms on credit cards and debit cards (which now outstrip the former in volume terms) has continued apace, with different holograms of various designs, sizes and images being used. As the importance of the security code on the back of cards has increased the hologram has also moved with the times, and today many cards carry the hologram on the reverse side.

This has given designers more scope and space for logos on the front of the card and has made it easier to check the validity of the card when the hologram and security code can be scrutinised together.

Ever more complex holograms are being produced to thwart even the most sophisticated counterfeiters, while the origination of holograms is no longer the unique province of lasers - electron beam systems have now been in use for over ten years and surface relief holograms are no longer always aluminium-backed. And photopolymer reflection holograms have joined surface relief holograms as a mass-producible anti-counterfeiting and authentication device (although none, as yet, have been used on cards).

Of course, attempts are often made to illegally reproduce credit and debit cards. The plastic rectangle cards with embossed numbers are easily made and key personal data can be extracted from existing cards through the practice of skimming or cloning. Where the difficulty lies is in duplicating the hologram. Here, the quality of the counterfeit hologram has invariably been so poor that it is fairly evident, even at a cursory glance, that the cards are not genuine.

It is, after all, much harder to accurately copy a hologram than it is to copy the other components of plastic card. It is, therefore, the presence of a genuine or defective hologram that allows a trained inspector to detect a fake document or product – a fact well recognised by established users such as Visa and MasterCard, as well as enforcement officers from Hong Kong to the US Secret Service, who point out that the hologram is the first thing they look at on a suspect card.

## Evolving Role

In this sense, the hologram has evolved from its original role as an anti-copying device to its present role as a detection device. The inspection and enforcement agencies that work to detect fakes also know this, still recognising the examination of the hologram as a focus for the quickest way to spot a fake (although then this will then be backed up by detailed forensic examination).


Holograms can be a naturally useful security device, especially at the point-of-sale because the human eye is often caught by the dynamic, often three-dimensional imagery. Therefore, people will naturally take the time to look at a hologram – a crucial first step in establishing the validity of the card. In order to best capitalise on this natural curiosity the images used should be large enough to be easily seen, clearly visible without overcomplicated image embossing and easily recognisable.

And not only is the image inherently recognisable because of its visual effects, but also because of its familiarity. Despite different iterations to the MasterCard globe over the years, it has been around for so long that it has become iconic. The same is true of the Visa hologram; such is its familiarity that changes to the original design have been minimal, even at the expense of upgrading the security, in order to maintain continuity of recognition and branding. And indeed, as anyone in the holographic industry will know, the simplest way of describing what a hologram is to a lay person is to refer them to either the dove or the globe.

As mentioned above, the use of holograms on cards 25 years ago paved the way for their use as an authentication feature on a wide variety of other financial and ID documents (banknotes, cheques, gift vouchers, tickets, along with passports, drivers licences and ID cards) and branded goods (pharmaceuticals, software, automotive components to name a few). And while their future in such markets appears secure, what does it hold for debit and credit card holograms?

The advent of 'chip and pin' technology in several countries means that today merchants in those countries rarely examine the cards, they just ask the customer to put them in the reader. The internet has further distanced the customer and their card from the point-of-sale.

It could also be argued that holograms on credit and debit cards may become redundant as the new generation of 'smart cards', with a microchip containing details about the card holder come into force. However, these developments and others still appear to be some way off due to the huge cost of implementing the scheme on a scale that would make it viable.




Added to this, as has been exemplified in many other sectors, the introduction of digital and electronic security features has not been at the expense of physical features such as holograms. Such developments tend to be incremental, adding to the portfolio of existing features rather than replacing them – principally because, ultimately, there remains a role for security features that the public can identify without the need for special readers or networks. The best example of this is in the passport industry where, despite the introduction of e-passports with biometric data, the role of the holographic laminate to protect the datapage and provide a visible means of authentication, is as important as ever.

The need for multiple levels of security is becomes evident when one looks at the nature of card fraud and counterfeiting. There are many different types of fraud – several unrelated to the physical security of the card itself – and since the card companies do not publish fraud figures, it is impossible to assess the actual amount. It is, however, estimated to run to billions of dollars annually (in the US alone, where 35% of all bank cards are in circulation, the Nilson Report puts the figure at \$1.14 billion). One organisation, however, that does publish detailed figures each year – not only on the losses due to fraud but also the types of fraud – is the UK payment organisation APACS, which provides a useful pointer.

According to APACS' figures for 2007, losses reached £554m in the UK in 2007 – a rise of 25% over 2006. Of this, counterfeit cards (involving the skimming or cloning of genuine cards) accounted for £144m, a rise of 46%. Other types of fraud include phone, mail and internet (ie card-not-present) fraud, with losses of £290.5m (up 37%), fraud on lost or stolen cards (down 18% to £56.2m), card ID theft (up 7% to £34.1m) and non-receipt of mailed cards (down 34% to £10.2m).

The interesting figure here is the growth of losses due to counterfeit cards, which was higher than any other type of fraud, demonstrating that, while public attention is currently focused on ID theft and card-not-present fraud thanks to the rise of internet transactions, the problem of counterfeit cards themselves is acute as ever and will prompt the card companies and issuers to seek improved authentication features for their cards, including enhancements to the holograms.

So there is still a gap to fill and the IHMA predicts that the hologram will long continue to play a key role in the next few years in the battle against counterfeiters and fraudsters.



Here, the ability of holograms to contain machine-readable features that could be scanned when a card is swiped is of interest to the likes of Visa and MasterCard. This could be easily implemented and at a relatively low cost when compared to the alternative 'smart card' technology. Holographic techniques have been introduced by leading producers to protect the magnetic stripe on the back of cards. The combination of a security hologram with a magnetic stripe prevents the skimming of cards while providing functional and design benefits to card issuers. There were problems with the initial versions of the holographic magstripe, in that they created static in some card readers, but these problems have now been solved and combination magnetic/holographic stripes are now appearing on cards from several issuers.

Twenty five years on from its MasterCard debut, the future use of holograms on credit cards stands at a crossroads.

Although it's not entirely clear which direction the technology will take many experts believe the distinctiveness, flexibility and cost effectiveness of holograms ensure their place on the next generation of bank credit and debit cards. The developments that are taking place all the time within the holographic industry – advanced optical origination techniques, machine read features, layered security and combination technologies, and the development of simple counterfeit verification systems to name but a few - only serve to reinforce the belief that holograms have a bright future.

1983 was a milestone for the holographic industry and the role of the hologram on cards has proved to be one of its more enduring success stories. All evidence points to this success continuing – as long as counterfeiter remain in business, so will there be a role for holograms.

ENDS

### **Note to editors**

The International Hologram Manufacturers Association (IHMA) is made up of 90 of the world's leading hologram companies. IHMA members are the leading producers and converters of holograms for banknote security, anti-counterfeiting, brand protection, packaging, graphics and other commercial applications around the world. IHMA member companies actively cooperate to maintain the highest professional, security and quality standards.

For further information on the IHMA, contact +44 1932 269917 or visit the website – [www.ihma.org](http://www.ihma.org).