

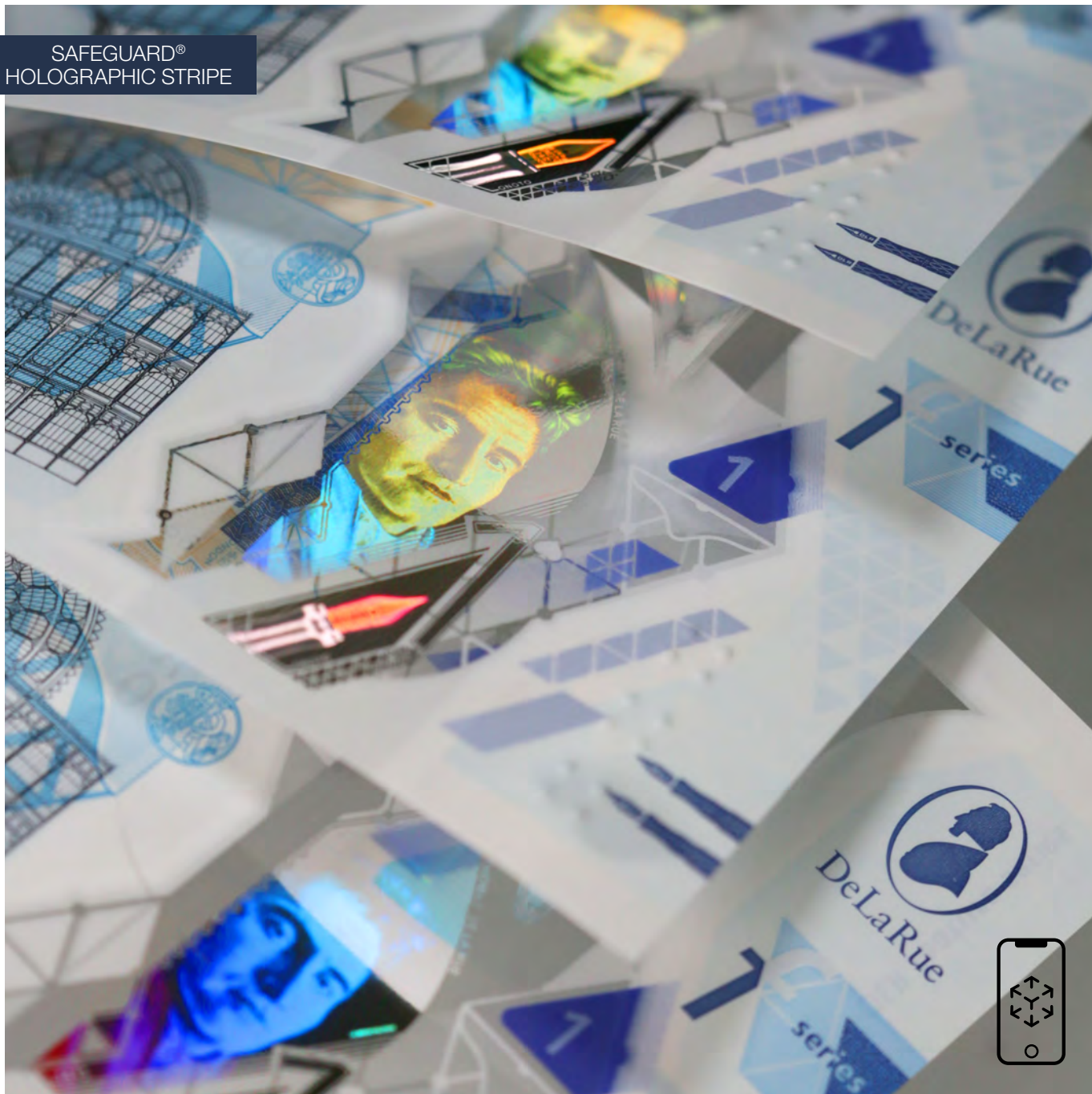


DeLaRue

CURRENCY

SAFEGUARD[®] & Polymer Features

SAFEGUARD®
HOLOGRAPHIC STRIPE



De La Rue Currency

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We provide banknotes that central banks and issuing authorities can be proud of.

More than half of central banks, banknote issuing authorities and state printing works around the world choose De La Rue. We provide market-leading security features, polymer substrate and fully finished banknotes.

De La Rue banknotes are more than just currency – they are secure, functional and inspiring products that countries can take pride in. They represent the very best of British design and innovation by capturing the richness of the cultures they represent with originality and creative flair.

Today, De La Rue is a progressive global company and international manufacturer, building on a heritage of customer focus, invention and expertise. We value our role as a trusted and long-term partner to banknote issuing authorities and respect this role by striving to offer the best products, support and services via a seamless experience from start to finish.

FEATURE SERIES HOUSENOTES
SAFEGUARD®



Polymer Expertise

De La Rue is the only fully integrated provider of polymer banknote substrate, security features, designer and printer in the world.

We support every stage from the initial cost-benefit analysis and environmental impact assessment through to the polymer design, production and recycling of used notes at the end of their useful life.

For state printing works and commercial printers, we provide knowledge transfer and technical support to smooth the transition and help realise the manufacturing benefits. To date we have supported 15 external print partners whilst also printing on polymer at our international manufacturing sites.

Today SAFEGUARD® circulates in a range of environments, offering a cleaner, greener, more secure and more durable option for banknote issuing authorities looking to upgrade their banknotes.

The security of banknotes printed on SAFEGUARD® is layered and combines the inherent security features of the substrate with public, machine readable and functional features creating distinct points of engagement, identification and authentication for the banknote throughout the cash cycle.

SAFEGUARD® Timeline

Circulating and Commemorative Banknotes



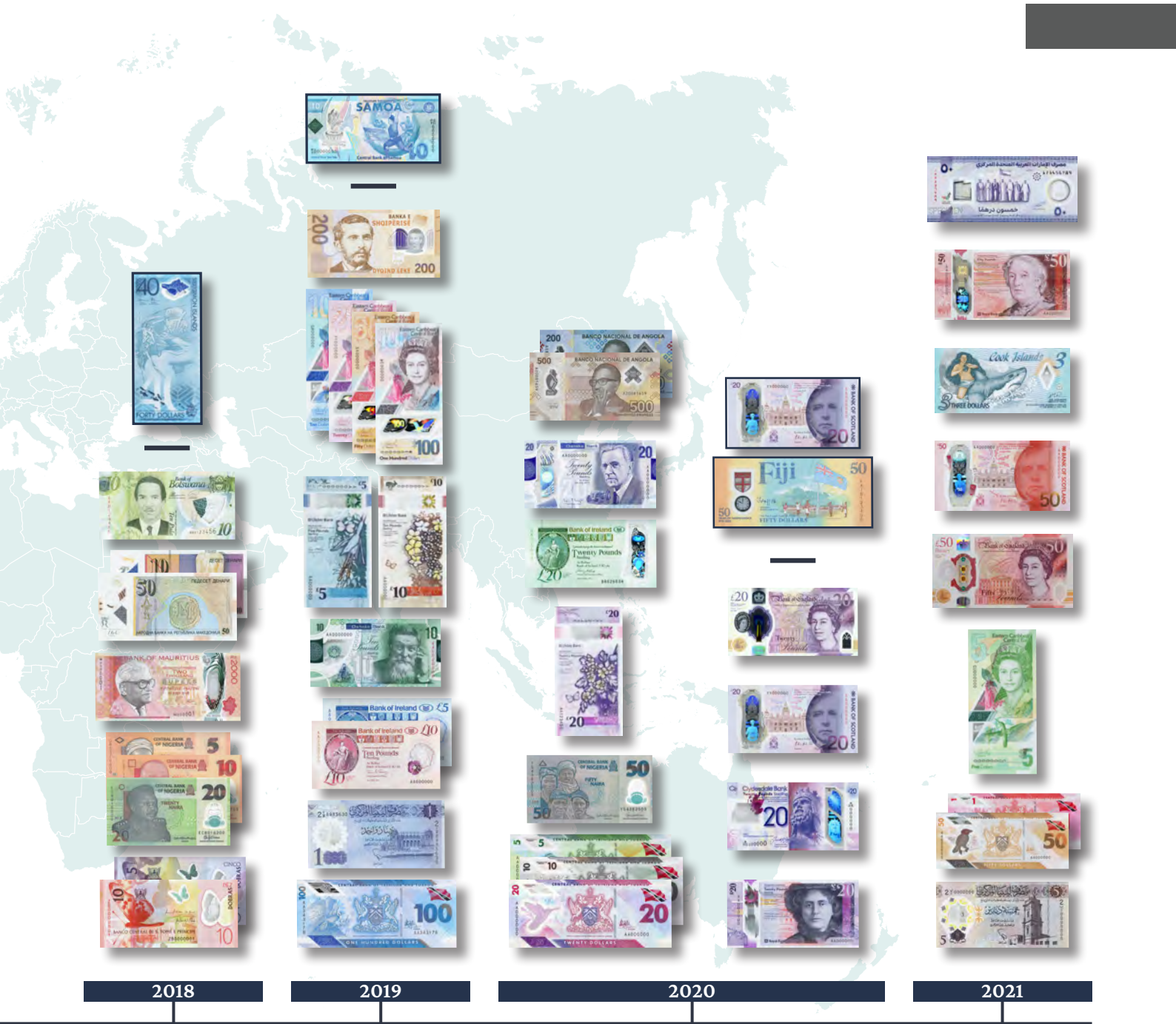
2013

2014

2015

2016

2017



SAFEGUARD®

Benefits

Better Banknotes

De La Rue is the only provider of polymer substrate and manufacturer of finished banknotes, combining substrate and print design for exceptional product integration.

SAFEGUARD® polymer banknote substrate was launched in response to central bank demand in 2012 and is De La Rue's fastest growing product. Today 57 circulating banknotes are on SAFEGUARD® and 21 issuing authorities have issued a SAFEGUARD® note.*

The transition to polymer banknotes has accelerated in recent years. The global transition to polymer banknotes has accelerated in recent years, supported by De La Rue's excellence in design, manufacturing capability and customer focus - central banks across Europe, Africa, Asia and the Americas have demonstrated that both polymer substrates can co-circulate and even be used for the same denomination.

Security, durability, cleanliness and environmental benefits are frequently cited as reasons that central banks transition to polymer.

Cleaner

Polymer banknotes stay cleaner for longer. The non-porous surface of polymer means dirt is not visibly picked-up by the banknote over time. Polymer banknotes can also be easily wiped clean or sanitised.

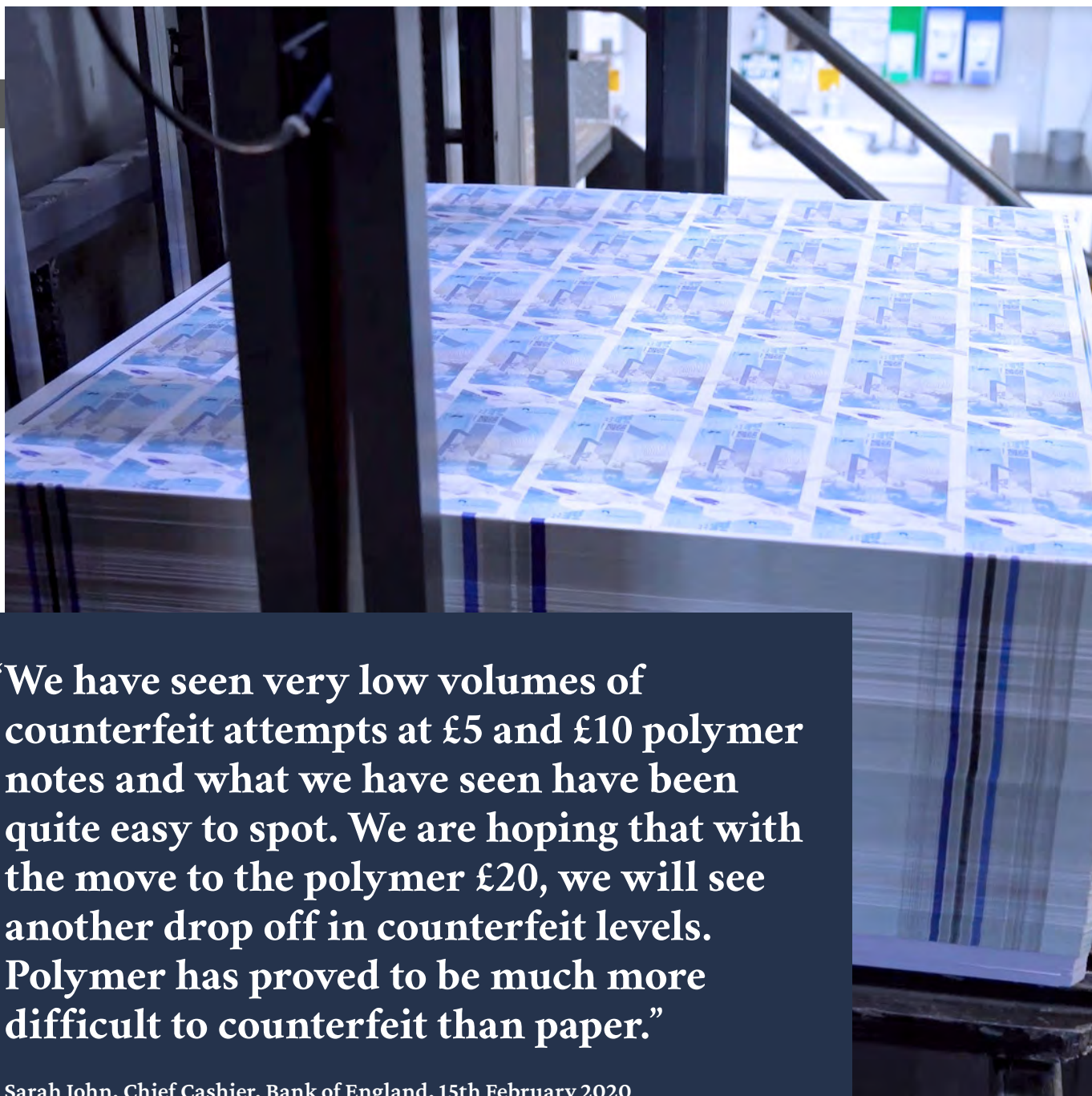
Soiling is one of the primary reasons for paper banknotes failing. Heavily soiled banknotes can lead to a loss of confidence from the public. If a large number of heavily soiled banknotes are in circulation it can make it harder to authenticate a banknote and consequently easier for a counterfeit banknote to pass as a genuine note.

Greener

The lower environmental impact of polymer is linked to their higher durability, remaining cleaner in circulation for longer and the ease of recycling. Polymer banknotes need replacing less frequently, meaning that fewer raw materials are consumed, and transport associated with replacing notes in the cash cycle is reduced.



*as of April 2021



“We have seen very low volumes of counterfeit attempts at £5 and £10 polymer notes and what we have seen have been quite easy to spot. We are hoping that with the move to the polymer £20, we will see another drop off in counterfeit levels. Polymer has proved to be much more difficult to counterfeit than paper.”

Sarah John, Chief Cashier, Bank of England, 15th February 2020

SAFEGUARD®

Benefits *(continued)*

More Durable

Polymer banknotes have been recorded lasting up to 7.3 times longer than the equivalent paper banknotes. On average, polymer notes last 2.5 times longer than paper banknotes, as quantified by 12,531 data points in DLR Analytics™. This is a statistically significant difference that stands out despite all the other factors that influence banknote lifetime.

The increased durability is due to the Biaxially Orientated Polypropylene (BOPP) core. BOPP has a range of physical and optical properties that benefit banknotes, for instance enabling secure windows. It also has superior tensile strength, stiffness and resistance to double folds that is comparable to paper.

More Secure

Banknotes counterfeiting levels are typically so low that they are reported in parts per million. This is in part because currency issuing authorities and suppliers continue to invest in the latest security products. The central banks who publish their counterfeiting levels show a reduction in counterfeiting when their banknotes have transitioned to polymer substrate. Printing on polymer requires specialist materials, knowledge and equipment that is not readily available.

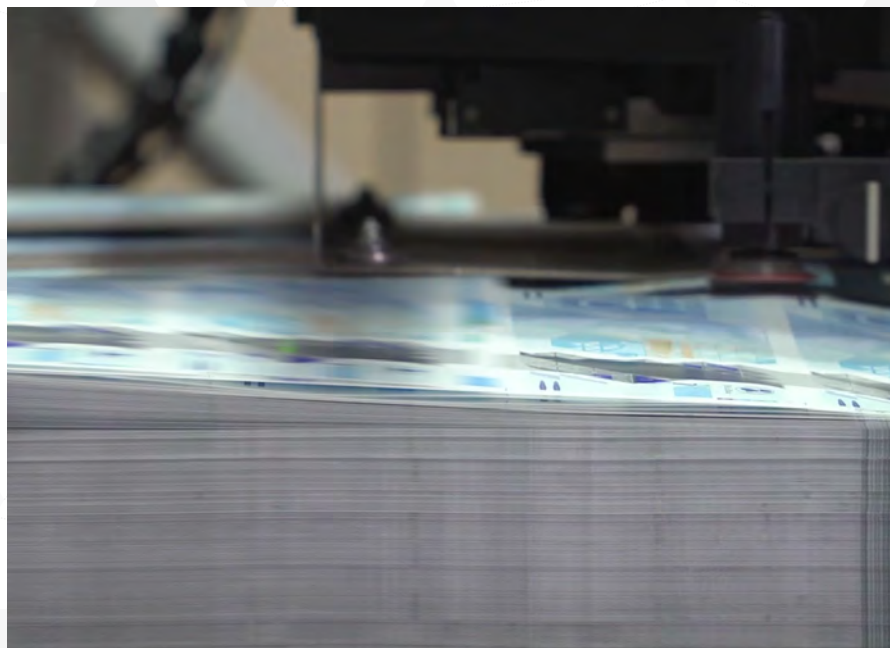
The security of banknotes printed on SAFEGUARD® is layered and combines the inherent security features of the substrate with integrated print features, creating multiple complementary and distinct points of engagement to aid identification and authentication of the banknote throughout the cash cycle.

Sustainable Banknotes

Polymer banknotes last longer, requiring fewer notes to be printed, which

reduces printing costs and greenhouse gas emissions from manufacturing.

Switching to a polymer substrate reduces the financial and environmental cost of banknotes. Polymer banknotes provide an economy with secure, modern banknotes that will endure repeated journeys through the cash cycle.



Sustainable Choices

01 GREENER

Polymer substrate is 100% recyclable at the end of its life. De La Rue offers solutions and guidance for end of life banknote waste recycling.

02 CLEANER

Polymer banknotes are non-porous which prevents dirt and moisture penetrating into the substrate. This means polymer notes stay cleaner and look better for longer.



03 MORE DURABLE

Polymer banknotes last on average two and a half times longer than paper notes and are in circulation in all types of climates.

04 COST EFFECTIVE

Greater cleanliness and longer banknote life mean fewer banknotes need to be printed, reducing the overall cost and environmental impact when using polymer banknotes.



www.delarue.com

05 MORE SECURE

Polymer substrate is inherently secure. The substrate requires special techniques to make the ink adhere. Windows within polymer banknotes are complex and hard to replicate.

Secure, durable & sustainable

Explained

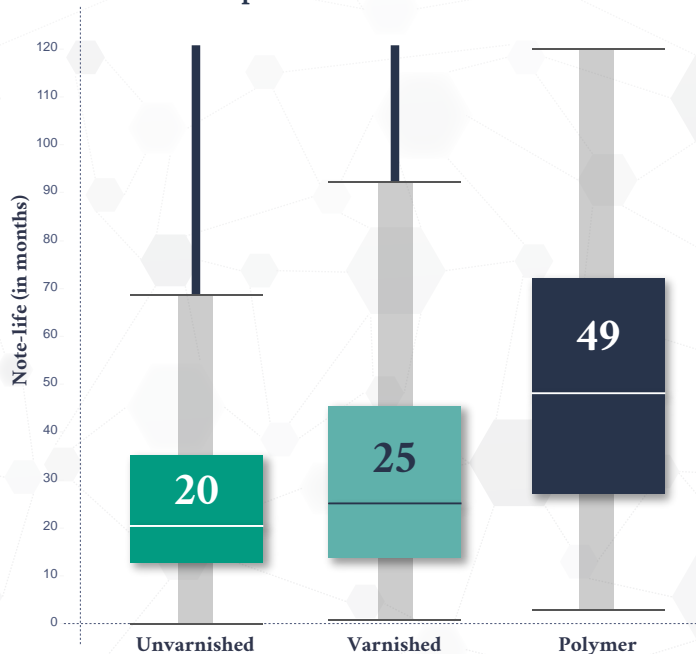
Polymer substrate is difficult for counterfeiters to print on because digital inkjet and toner print do not adhere to the substrate surface. Many countries have reported a drop in counterfeiting levels following the introduction of polymer banknotes.

As the only integrated design, polymer substrate manufacturer and banknote printer in the industry, De La Rue has the ability to enhance the security of polymer banknotes by fully integrating the SAFEGUARD® substrate and features within the final banknote design.

Examples include windows in a building that are actual windows in the polymer banknote or a flower that appears in the gravure layers that appears to be feeding the hummingbird in the hologram that appears in the window.

In addition to our experience in banknote design and manufacture, there is a wide range of security features available for SAFEGUARD® that enhance the security and complement the aesthetics of the banknote or banknote series.

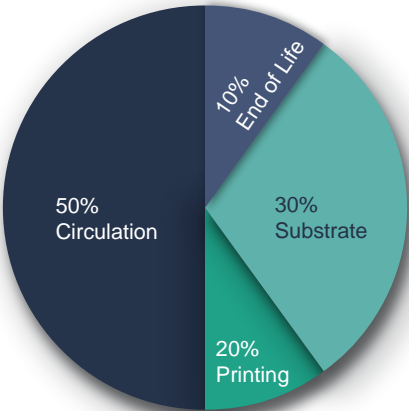
Note life comparison



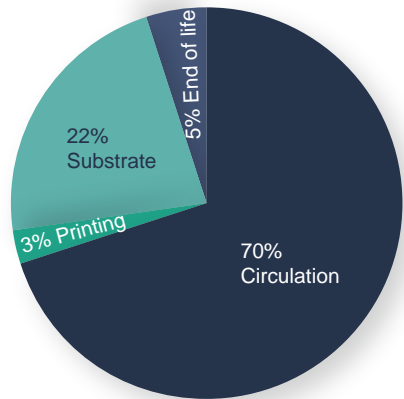
Source: DLR Analytics™

**“SAFEGUARD®
substrate raises
barriers to
counterfeiters
and provides
new design
options for
banknotes”**

**Carbon emission comparison
paper vs polymer**



Paper banknotes
160t / CO₂e per million notes



Polymer banknotes
59t / CO₂e per million notes

Cleaner	SAFEGUARD® banknotes look better for longer
Greener	Reduced carbon footprint and 100% recyclable material
More secure	SAFEGUARD® substrate properties, design techniques and manufacturing processes make counterfeit attempts extremely difficult
More durable	Up to 2.5x times more durable than paper
More cost-effective	Greater cleanliness and longer banknote lifetimes mean that fewer banknotes need to be printed



Measurable benefits

Explained



Cleaner and greener

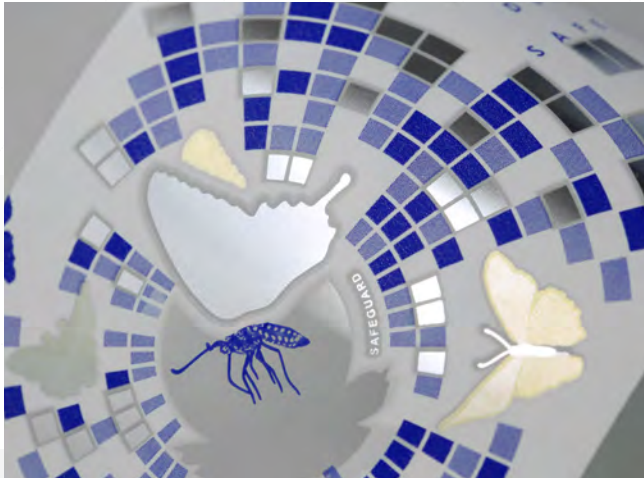
Polymer banknotes have a much greater resistance to soiling as they are non-porous, meaning the dirt cannot penetrate the substrate. The notes look better for longer.

Polymer substrate is 100% recyclable and De La Rue is able to provide customer specific solutions and guidance for large and small volumes of banknote waste recycling.

More durable

The increased durability of polymer banknotes will mean significant cost savings over the lifetime of a new series.

Polymer banknotes last on average 2.5 times longer than paper notes and are circulating around the world in every type of climate.



More secure

Polymer substrate is more difficult for counterfeiters to print on because digital inkjet and toner print do not adhere to it.

The window of the note can adopt different shapes and sizes, requiring specialist materials, inks and know-how. Integrating security features like holographic stripes, Illuminate™ and Argentum™ into the windows enhances the counterfeit resilience.

More cost-effective

Greater cleanliness and longer banknote lifetimes mean that fewer banknotes need to be printed and the notes look better in circulation for longer.

The durability, cleanliness, security and reduced environmental impact of polymer make it an economically sensible and ethical choice when considering changes to a substrate specification.

SAFEGUARD® Windows

Explained

Unique to polymer

The layered construction of the SAFEGUARD® substrate allows the creation of distinctive and easily identifiable windows to be designed into the banknote. This is a feature unique to polymer banknote substrate.

Modern windows are complex and hard to replicate.

They can appear fully transparent, as half windows, embossed or include a vignette or portrait. When combined with security features and design details, the security features become more distinctive and much harder to copy.

Creating a window requires the correct substrate and techniques and it is obvious if the window is lacking. This feature of the substrate raises the threshold for the counterfeiter forcing them to use new materials and techniques.

Framing

SAFEGUARD® windows act as a frame for primary security features like holographic stripes or gravure effects. Pseudo-relief imagery and dynamic effects mean that the next generation of holographic stripes are more secure and more engaging than ever before.

Holographic stripes in windows are a very popular choice for mid to high tier denominations. They can capture people, animals and objects in high resolution and full three dimensions, creating secure art within the feature. Other denominations can use the same window shape and design elements to carry a thematic element, using other security features such as gravure or ARGENTUM™, a mirror-like free form print effect.

Integrated security

De La Rue is the only fully integrated provider of polymer banknote substrate, security features, designer and printer in the world. We leverage our knowledge and experience to create remarkable banknotes.

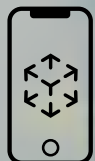
SAFEGUARD® provides De La Rue's banknote designers with a platform to create polymer specific designs that take full advantage of the SAFEGUARD® substrate and enable the creation of a secure, pleasing and consistently themed series.

Banknotes designed on SAFEGUARD® can adopt a more modern aesthetic to stand out or blend into an existing series of banknotes.

“Modern windows are complex and hard to replicate”



SAFEGUARD® WITH
ARGENTUM™



SAFEGUARD® Windows features

Specifications



Holographic Stripe

A primary security feature, holographic stripes enable virtually any image to come alive with movement or appear in three dimensions. The size of the stripe enables multiple different effects and images, including combinations requiring different origination techniques. This means that a holographic stripe can provide multiple barriers to simulation within one security feature.

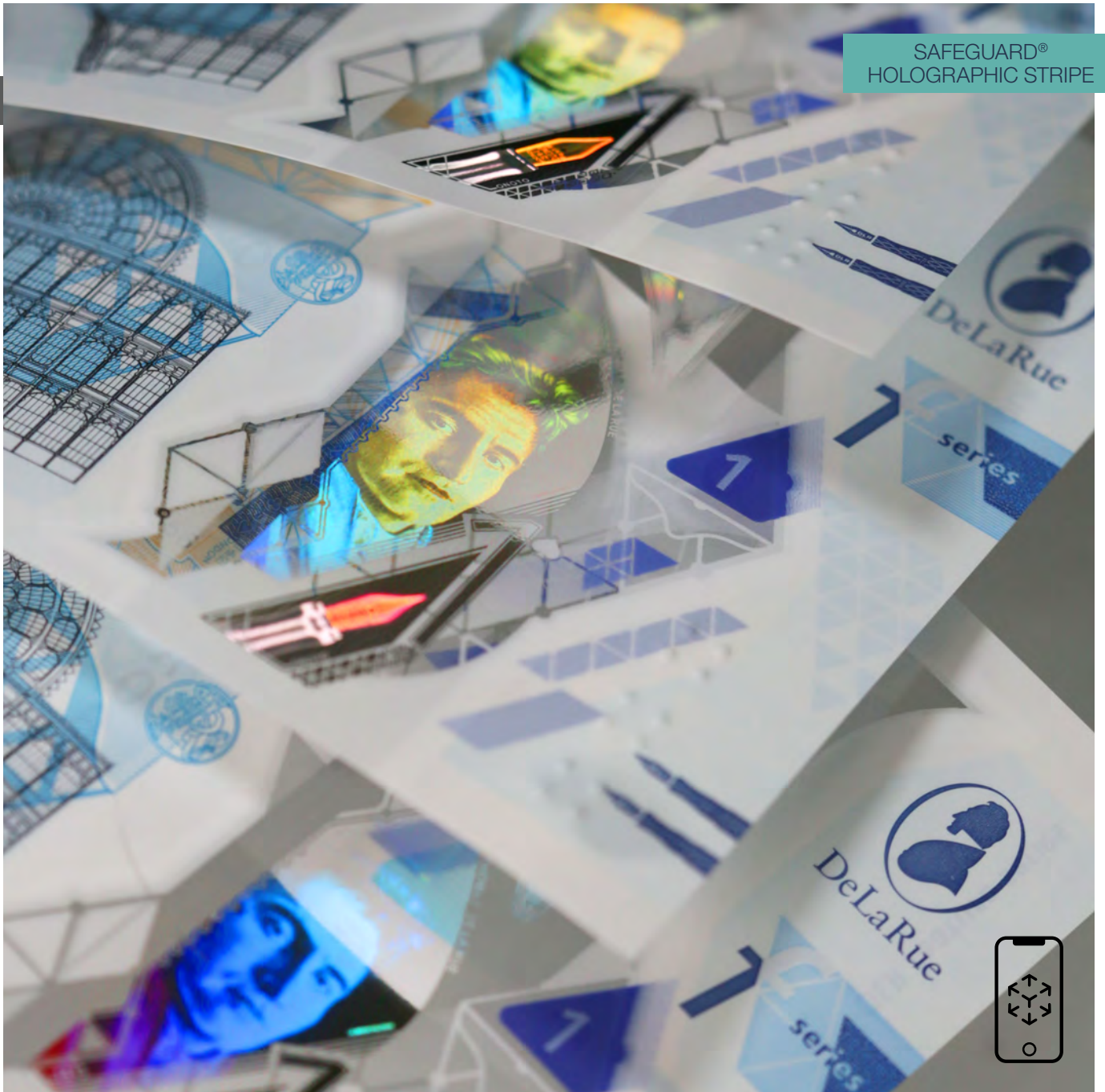
The holographic design and origination techniques used by De La Rue produce some of the most sophisticated and secure holographic stripes available. Combining image based classical holography and vivid colour through movement and effects allows for a modern and interactive yet intrinsically secure feature.



Integrating the holographic stripe into the window of a polymer substrate increases the security even further and enables the effects and imagery to be seen on both sides of the note.

Holographic stripes can include PUREIMAGE™, DEPTH™, TRUEIMAGE™, DUAL™ Image and MULTI™ Image effects. These effects enable a mixture of three-dimensional, depth, switching, dynamic movement and animation effects to be incorporated into the security feature.

SAFEGUARD®
HOLOGRAPHIC STRIPE



SAFEGUARD® Windows features

Specifications *(continued)*



Gravure Design

Complex, high resolution images can be designed and printed into the polymer window. Detailed portraits, imagery and patterns serve as primary features with unique and recognisable designs public recognition and authentication.



ARGENTUM™

A primary feature, ARGENTUM™ is a specialist silver ink that creates a highly reflective and visually striking image. Through clever design, the silver can be used as a standalone effect or incorporated into the ILLUMINATE™ and INTEGRATE™ features, creating eye-catching designs that are intricate and difficult to replicate.



ILLUMINATE™

Integration of different inks into the polymer window, building up different textures, colours and sheen effects to create a complex and striking window.



PRINTMARK

A simulated watermark image that is visible when held up to the light, but not in reflected light. This can be designed to match paper watermarks helping with the conversion from paper to polymer substrate.

PRINTMARK exists within the substrate so has a high durability. It is easy to explain and recognise, whilst being difficult to accurately reproduce.



Half Window

A reflective appearance for symbols, text or patterns is created by removing the white ink from one side of the substrate allowing the transparent core to show through.

These designs extend the security of the transparent window, acting as a reflective form of watermark in the SAFEGUARD® substrate.

This ability to add custom designs into the banknote can carry themes across a series or when transitioning across substrates.



Blind Emboss

Blind emboss is a simple and effective way of customising the transparent areas of the SAFEGUARD® window.

The use of non-inked intaglio artwork creates an embossed image that can be seen when reflected in daylight. This can be used to add denominations, text or imagery to the window, allowing customisation across the SAFEGUARD® banknote family or individually to further integrate with the overall banknote design.

SAFEGUARD® Substrate features

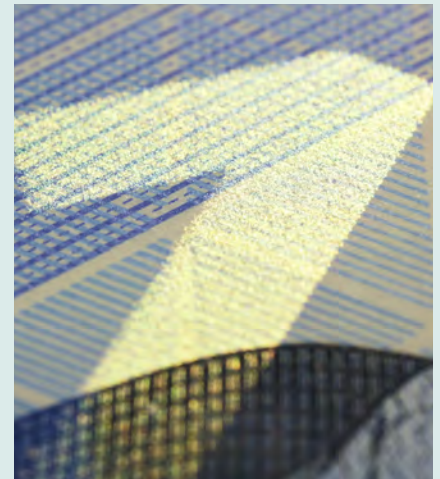
Specifications

The flat surface and clarity of SAFEGUARD® grants excellent ink adherence and vivid colouration during printing. There are several security features and effects which are unique to polymer substrates



ARGENTUM™

A specialist silver ink that creates a highly reflective and visually striking image. Through sophisticated design the silver can be used as a standalone effect or incorporated into the ILLUMINATE™ and INTEGRATE™ features, creating eye-catching designs that are intricate and difficult to replicate.



Iridescence

Coloured gravure inks to either tint polymer overall colour or print strong.



INTEGRATE™

This feature lays colour directly into the print layers of the substrate, allowing different depths of colour and shade to emerge through the note, depending on where the colour has been applied. Utilising the full colour palette, creating tonal variation and depth within the design.



ROTATE™

A fully registered image pairing on both sides of the polymer note. The two image outlines are perfectly aligned, front and back, but with non-identical images within the outline.



MASK™

A hide and reveal print feature for polymer (and paper) substrates. It uses secure print processes to transform from a simple pattern to a hidden image when held up to the light.

MASK™ is a cost-effective means of visually linking banknotes in the same series, appearing as coloured or shape variants in a similar position on the note throughout the series.

SAFEGUARD® Substrate features

Specifications *(continued)*



Colour Gravure

Coloured gravure can be used both in the polymer window and embedded in the white areas allowing full integration with the print design.

There is a wide spectrum of matt colours available to use within SAFEGUARD®. These can be designed in solid and gradated tones enabling aesthetic flexibility and sophisticated design.



Colour Effect

Colour effect inks have novel colour changing properties to enhance the design and provide simple colour changing authentication.



SAFEGUARD® Magnetix™

A printed machine-readable thread, SAFEGUARD® Magnetix™ is applied using a modification of the gravure inks to include machine readable elements into the banknote design.

The feature provides level 1 and level 2b functionality whilst retaining a fully flexible shape and utilising the CLEARTEXT™ demetallisation which appears when viewed in transmission. The thread can be printed in a variety of widths and can appear in different shapes and patterns around the CLEARTEXT™.

SAFEGUARD® Magnetix™ is an ideal crossover feature when migrating a banknote design from paper to polymer substrate as it offers similar elements of functionality and the same level of machine readability as the paper substrate MAGFORM™ feature.

ENHANCED GEMINI™

series

f series



SPOTLIGHT™ WITH
PUREIMAGE™



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