

Bank of Morocco Issues World's First RollingStar® Security Thread

Bank Al-Maghrib (Morocco's central bank) has modernised its currency, and late last year issued a new banknote series in which the 100 Dirham (DH) became the world's first circulating denomination to feature *RollingStar®* from Louisenthal. The four notes in the series – the DH 20, 50, 100 and 200 – were designed to embody the significant developments that have marked the reign of His Majesty King Mohammed VI. Their production was managed by Bank Al-Maghrib at the Dar As-Sikkah printing works, and they are the first notes to be produced on its new banknote printing and finishing line.

Morocco's first banknotes series, printed by the newly-inaugurated Dar As-Sikkah printworks in 1987, comprised four denominations – the DH 10, 50, 100 and 200. In 1996, the DH 10 was converted to a coin, and a DH 20 note introduced in its place.

For the second series, in 2002, the main change was the replacement of the portrait of the former King, Hassan II on the DH20 and DH50 with his successor, King Mohammed VI, and on the DH 100 and DH 200 with a triumvirate of these two monarchs and King Mohammed V. But the Bank also took the opportunity to improve the quality of the lower denominations, with both the DH 20 and DH 50 produced on durable substrates – Syntech from Louisenthal on the former and *Diamone Composite* from Arjowiggins Security on the latter.

The latest series, meanwhile, features the portrait of King Mohammed VI only, and – while retaining the same colours and broad design as its predecessor – was designed with the objectives of improved public recognition and machine readability and, for the higher denominations, enhanced security.

With respect to the DH 100, these objectives are combined in the key new public feature – the RollingStar thread, which combines micro-mirror technology with *ColourShift* to create a vibrant and dynamic gold/green colour change. The technology is based on an innovative micro-mirror structure in which around 4 million



Morocco's banknotes are printed by the Central Bank of Morocco's printer, Dar As-Sikkah



tiny mirrors are precisely aligned on a surface area of one square centimetre and individually angled to create the travelling reflection. The dynamic movement effect is created by the white light reflection of the mirrors which can be adjusted in shape, travelling length and appearance, while the combination with *ColourShift* delivers a distinctive change of colour when the thread is tilted.

In addition to its movement and colour change, a notable benefit of the thread is its integration into the overall design and the fact that it is matched with other features, in particular the SPARK® feature from SICPA in the shape of a crown. This has a similar colour shift, with the synchronisation of effects providing another validation cross-reference in the banknote. While both features use different production supply chain methodologies, they are incorporated into a banknote in different ways. RollingStar is embedded, whilst SPARK is printed.

Alongside the RollingStar thread, the front of the new note shows the portrait of the King, the Royal Crown (in the form of SPARK) and coat of arms of the Kingdom. A stylized door of the architectural heritage of Morocco recognises the richness of heritage

while symbolizing the openness of the country.

Several themes are represented on the reverse of the note. At the bottom are ornaments inspired by Moroccan carpets from different regions, each with its own character. The Sahara Desert and southern provinces are depicted by the three camels and riders representing the Moussem of Tan-Tan (an annual gathering of nomads in the Sahara that brings together more than thirty tribes of southern Morocco and other parts of northwestern Africa, which was listed by UNESCO in 2005 as an Oral and Intangible Heritage of Humanity). The Moroccan tent on the reverse, meanwhile, symbolises the identity of the Kingdom as well as the values of hospitality and secular festivities, and the multiple voyages undertaken by the Sovereign across the kingdom to meet its people. The wind turbines represent the importance that Morocco attaches to renewable energy through the installation of wind farms, solar power stations and hydroelectric power stations in several regions.

In addition to RollingStar and SPARK, other security features include a watermark portrait of the King with an electrotype of the denomination numeral, and see-through feature, common to all the notes in the new series (along with the intaglio portrait of the King). The notes also include raised bars as a feature for the visually-impaired and blind. And they have been reduced in size – all measuring 70mm in length, with 7mm increments in the width of each denomination.

The DH 100 went into circulation in August last year, one week after the new DH 200. The new DH 50 followed in November, and the DH 20 in December.

Their successful introduction is a culmination of a major project that debuted in 2011 to build a new printworks and production line. The total investment in the new production facility and series was in excess of €100m and was implemented to put Dar As Sikkah, in its words, at the forefront of banknote printing excellence, with one of the most efficient and modern facilities in the world.