

The potential of track & trace

To prevent misuse and counterfeiting, and ensure reliable accounting of orders, central banks and government bodies increasingly ask that printers provide proof of the processes involved in the manufacture of banknotes and security documents. Banknote production is a typical use case for Zeiser's track & trace solution. But it also has a lot more to offer.

by Stefan Rowinski, Business Development, Zeiser GmbH

In the production of banknotes and other high-security documents, physical, manual systems are being replaced by reliable electronic proof of processes and the volume of good, poor and rejected sheets, an approach that is gradually becoming standard.

Sheet printing machines have mechanical counters, and additional counting machines can be deployed. Manual intervention, including extraction of sheet proofs during the printing process and restacking of sheets at the drying stage, poses a risk of miscounting that can be reduced only by stringent processes and instructions for handling. Finding and correcting faults often requires a great deal of effort.

The security printing industry is less open to process change than other industries, and there has been limited deployment of electronic, networked systems to date. The primary focus is on the quality of the end product, and a high degree of manual effort is still involved in meeting the demanding requirements of end customers. However, the industry is slowly recognising the benefits of electronic solutions.

Harmony for track & trace

Zeiser's Harmony product family is a solution for traceability of printed materials used in production and packaging. Depending on the customer's requirements, it can be configured and deployed for a single machine, a production line or an entire production facility. The package generally encompasses software, inkjet printers, camera systems and sensors, along with other peripherals.

The process begins with the inkjet printer, which prints a barcode on the margin of each print sheet, accurately and at high speed. This barcode is read by a camera at the start and end of each production step.

Next, in a database the number of the print sheet is linked to the individual serial numbers of the banknotes it contains. An optical system (Scanbar) is used to inspect the banknotes and read the serial numbers. This device, which was developed by Zeiser, can review and read nine ROIs (regions of interest) on up to 12,000 banknotes per hour at a resolution of 300 DPI (dots per inch).

The system thus ensures the traceability of each individual banknote throughout all process steps, up to the cutting of the sheets, arrangement into stacks of notes, and dispatch.

From numerous discussions with production managers, we have learned that reliability of readback is the key factor in the successful deployment of a track & trace solution. Our system achieves a readback rate of 99.998%.

Harmony not only ensures that the data and electronic evidence required for accurate billing is available, but also collects other production data from all networked machines and stores it for later evaluation and analysis, which optimizes processes and reduces rejects.

Scalable and easy to integrate

The wide range of use cases makes the solution particularly compelling for security printers. In addition to banknotes, Harmony can also be deployed in the production of passports, tax stamps, visa documents, certificates and other security documents. The system is modular and can be scaled up from individual machines to multiple machines. This makes the introduction of a track & trace system easy and low-risk for our customers, with phased rollout to minimise production downtime.

With every print sheet electronically and individually recorded in each system, counting is reliable and each sheet can be traced at any given moment with a high degree of precision. The production manager has a dashboard that provides a complete overview of the print run and the machines at all times. Materials and storage management can also be integrated. The software provides real-time productivity reports for management and can also process target figures and create simulations. Interfaces with ERP systems (including SAP) facilitate controlling in a familiar system environment.

For most customers, the introduction of a track & trace system in a security printer comes with process changes that affect different areas of the company and a range of requirements that must be harmonized and considered in budgeting. As such, rollout to a new business can easily take two or more years.

With 50 years' experience in mechanical engineering and profound understanding of the processes involved in security printing, Zeiser is well known as an expert in the individualisation and installation options of systems in existing printing facilities.



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