

Installation of Prepaid Franking Readers at the Deutsche Post AG Letter-Sorting Centers

Task

During the automated sorting of small-, medium- and large-sized letters at the letter sorting centers of the Deutsche Post AG, the recipient address, along with the other information on the front side of the letter, is automatically read and evaluated.

For this purpose VITRONIC has supplied prepaid franking readers, which recognize and read the printouts from classic franking machines ("AFM-Frinking," see Fig. 1), digital franking types that are based on a data matrix code (e.g., STAMPIT, DV, FRANKIT, etc., see Fig. 2-5) and additional letter service comments (e.g., Registered, COD, etc., see Fig. 6). To this extent, plain text information (postage fees, identifiers, code letters), barcodes and data matrix codes are read under often difficult circumstances, for example obstructed print image, partially displaced or covered codes. If the reading fails due to excessive obstruction, most of the printouts are still recognized by means of geometric checks and the verification of other print characteristics (e.g., the post horn).

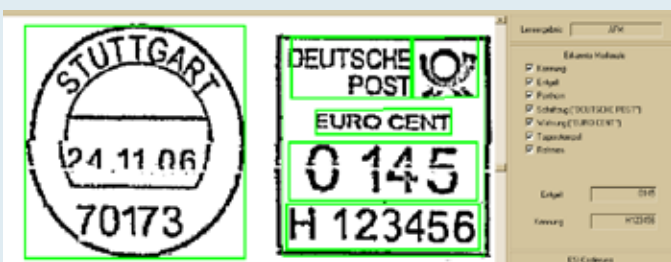


Figure 1: Verified characteristics of an "AFM-Frinking"



Figure 2: Recognized prepaid STAMPIT franking with an unreadable data matrix code



Figure 3: DV franking with partially covered but read data matrix code



Figure 4: Prepaid FRANKIT franking with partially displaced but read data matrix code and two unrecognized characteristics



Figure 5: Read post matrix code on a "Plusbrief" (envelope with a printed postage stamp on it)

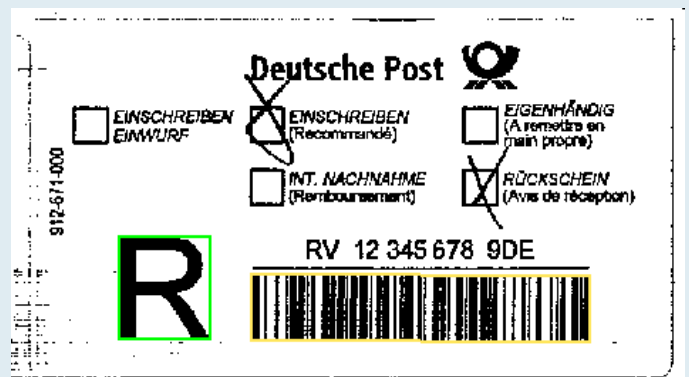


Figure 6: Registered mail label with read code letter and unreadable, but geometrically verified, barcode

Benefits

Due to the quantitative evaluation of the AFM-printouts on all letters and the calculation of the fees read during this process, the Deutsche Post AG can obtain information on possibly manipulated franking machines for senders. The validity of digitally franked items is checked by evaluating encrypted parts of the data matrix code content. Mailings with additional letter services are automatically sorted in order to be further processed manually.

Realization

751 prepaid franking readers in all are currently installed in the 82 national letter sorting centers and the two international postal centers of the Deutsche Post AG. Since the beginning of 2007, such a reader is no longer a real server, but rather a "virtual machine" within the virtualization software VMware ESX. Several of these virtual franking readers are installed together on a blade server system in the server room of each letter sorting center. The letter sorting machines send binary images of all processed letters to the prepaid franking readers via a central Image Management Module (IMM). The prepaid franking readers analyze these images and send the obtained results back to the sorting machines via the IMM. In large letter sorting centers, the prepaid franking reader system easily manages throughputs in excess of 100 letters per second. For redundancy purpose the number of prepaid franking readers in each letter sorting center was chosen such

that the maximum throughput can still be handled if one of the readers does not work. Since the initial installation of the prepaid franking readers in the year 2002, this made it possible to continuously ensure 100% availability in all letter sorting centers. An intuitively operated user interface, which can be run on any of the readers, graphically illustrates the current status and the current performance data of the whole franking reader system. Control and configuration of the system are also realized with the aid of this user interface. An "analysis tool" makes it possible to display data sets stored in the archive and to subject the archived data to various analyses. The results of these analyses can be exported in the form of selected accompanying data or result lists for further external processing. In addition, the prepaid franking readers also provide a network interface for archive searches and direct access to the stored data, which is primarily used for analysis purpose by the technical branch of the Deutsche Post AG.

According to the specifications of the Deutsche Post AG, the software of the prepaid franking readers is subject to continuous additional development. New functions and the recognition of new franking types are periodically implemented. Software updates are simply distributed via network to the letter sorting centers and can be activated on the user interface even during the letter sorting process, without data losses.

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