

Hitachi's Automated Teller Machine and Cash Recycling Module for the World Market

Takeshi Kanagawa
Kunihisa Matsuura

OVERVIEW: In an attempt to provide cash-handling solutions in the field of banking automation, Hitachi has developed a new ATM (automated teller machine) with cash recycling capabilities for use worldwide. This ATM can handle banknotes of various currencies and sizes, and it enables automated deposit and banknote recycling for self-service solutions. These features help expand banking services, strengthen ATM management performance and improve the efficiency of fund application. The ATM features enhanced hardware and software, based on the concepts of versatility and flexibility, making good use of Hitachi's technologies and experience. With this cash-recycling ATM, Hitachi fulfills various requirements and specific conditions of its global customers.

INTRODUCTION

IN 2000, the world market of ATM/CDs (cash dispensers) has seen sales of over 200,000 units⁽¹⁾, a figure that is expected to grow 10% a year.

As part of its cash-handling solutions, Hitachi has developed a new ATM with automated deposit and banknote recycling functions for the world market.

ATMs with automated deposit and cash recycling functions are quite common in Japan. In many countries, however, depositing cash in an envelope or by check is a standard method of making a deposit.

To fulfill various requirements and specific conditions of its global customers, Hitachi introduced new concepts in its design of cash-recycling ATMs providing versatility and flexibility in the module configuration and performance. Using its experience with ATMs in Japan and taking advantage of its advanced, highly reliable technologies, Hitachi intends to make cash-recycling ATMs available globally.

FEATURES OF ATMS FOR THE WORLD MARKET

With its new cash module with banknote recycling functions, the new ATM, HT-2845, provides new services and improves the efficiency of banking management for the world market (Fig. 1).

This ATM has the following four features:

(1) Versatility and flexibility

The HT-2845 ATM can handle banknotes of various currencies, of different sizes, and in various conditions.

The handling of a particular currency can be customized by simply uploading validation software.

Various operations, such as cash recycling, non-recycling or deposit-only operations, for a number of denominations in use, can be performed by simply changing the type and number of banknote cassettes.

This ATM can be applied to the banks' various installation conditions because the banknote cassettes are designed to be accessed from both the front and the rear.



Fig. 1— Hitachi's New ATM (HT-2845) for World Market. This ATM is equipped with a banknote recycling system and based on the concepts of versatility and flexibility.

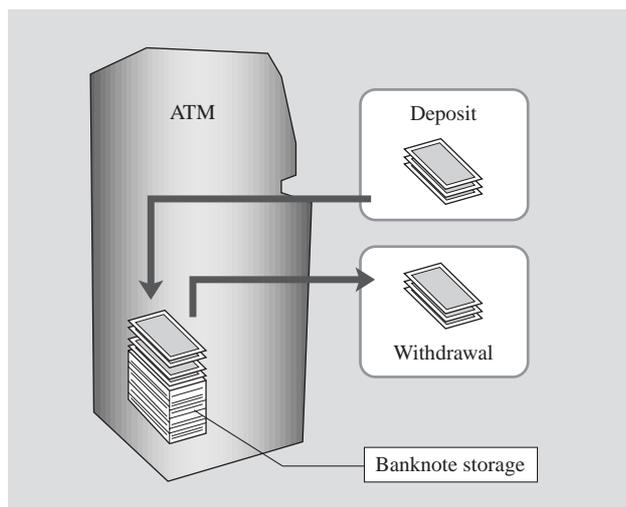


Fig. 2— Banknote Recycling System.
This ATM has the same banknote storage space for both deposit and withdrawal transactions.



Fig. 3— Hitachi's New Cash Module (HT-3842).
HT-3842 is installed in the new ATM for world market.

(2) User-friendly operation

Users enjoy easy-to-do operation, with bulk deposits and withdrawals of up to 100 notes through a single cash slot. Banknotes of different sizes can be handled at once.

A 15-inch large liquid-crystal display with a touch panel provides user-friendly operation and offers a

variety of functions from the menu.

Bank staff can easily access banknote cassettes which are installed adjacent to one another.

(3) Compactness and large capacity

The HT-2845 ATM has a small footprint of 570×630 mm, which is about 60% that of Hitachi's preceding ATM. The ATM can still have a large number of banknote cassettes, each holding up to 2,000–2,900 banknotes due to the use of a simple two-way paper-path configuration and a smart stacking mechanism.

The large capacity accepts big changes and concentrations of traffics.

(4) Expandability of banking services

An open-platform and Web-software-based browser in the HT-2845 ATM provides easy customization of the operation menu and interfaces at local vendors.

ADVANTAGES OF AUTOMATED DEPOSIT AND BANKNOTE RECYCLING

The HT-2845 ATM has the following advantages:

(1) Automated deposit function

With the automated deposit function, the HT-2845 ATM can adjust account information immediately after the deposit transaction. This function eliminates the need for the bank staff to count and record the deposited banknotes in the back office.

(2) Banknote recycling system

The banknote recycling system can divert deposited banknotes into use for subsequent withdrawal transactions, storing banknotes in the same place for both deposit and withdrawal (see Fig. 2).

This system reduces the required space for storing cash needed for withdrawal, and banks can release their funds for alternative use.

Banks can also reduce ATM running costs, because frequent cash replenishment is not needed.

HITACHI'S NEW CASH MODULE

This chapter describes Hitachi's new Cash Module (HCM), HT-3842, which enables the HT-2845 ATM to have the features described above (Fig. 3).

Configuration and Actions

The HT-3842 HCM is divided into an upper and a lower unit (see Fig. 4).

The upper unit is a note-recognition unit consisting of a cash in and out slot, a bill validator, a temporary stacker, and note-transport mechanisms. The lower unit is a banknote storage and it can be installed in a security safe.

The lower unit can be equipped with up to five

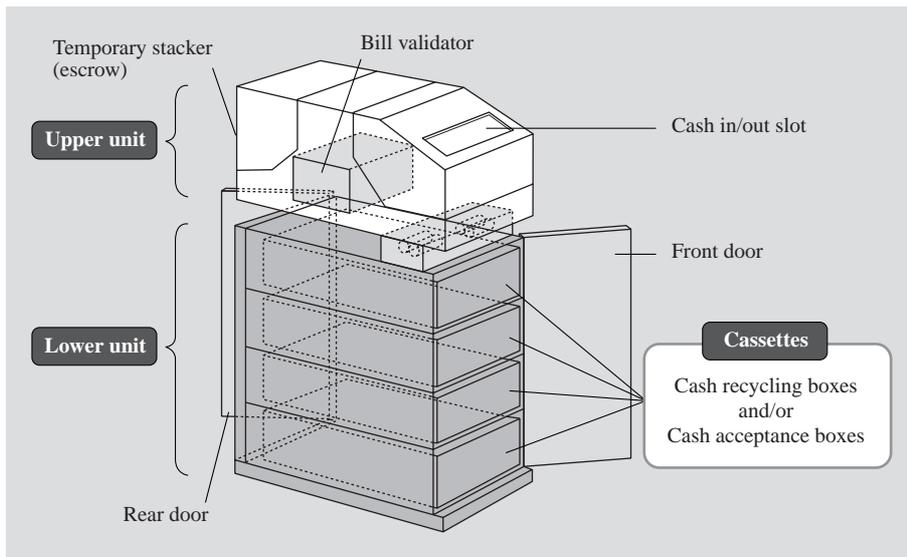


Fig. 4— Modular Configuration of Hitachi's Cash Module (HT-3842). The banknote storage can be installed in a security safe, due to the separate configuration of the upper and lower units.

cassettes.

Communicating with the ATM, the HT-3842 HCM processes banknotes as follows:

- (1) It counts and validates the banknotes deposited by a customer and sends them to the temporary stacker (escrow).
- (2) It sends banknotes from the temporary stacker and stacks them in the cassettes.
- (3) It dispenses banknotes from the cassettes and sends them to the cash in/out slot, validating each banknote in the process.

Key Mechanisms

The HT-3842 HCM has the following key mechanisms for the excellent performance of its functions.

(1) Cash in and out slot

A single cash slot can handle bulk notes for both deposit and withdrawal transactions. This enables simple and easy operation for ATM users.

Notes in bad condition are detected by a sensing system and returned immediately.

The distance between banknotes fed into the system is strictly controlled.

The controlling system with paddle-roller rotation enables stacking banknotes of various sizes in good condition.

These mechanisms prevent the jamming of banknotes.

(2) Banknote transport mechanism

A simple two-way mechanical configuration provides high transport reliability.

Using highly flexible and low-load durable transport belts, HCM can process banknotes at a speed of approximately 8 notes a second, which is the highest speed for banknote recycling modules handling world currencies.

Optical sensors along the path are tuned automatically to prevent sensing troubles caused by dust.

(3) Temporary stacker (escrow)

The temporary stacker has a drum wheel that rolls up and winds off banknotes in the deposit process. This mechanism enables handling banknotes of various sizes and those in bad condition.

(4) Cassettes

The cassettes can hold a large number of banknotes, by stacking banknotes vertically and lining them up horizontally.

ROLLING OUT INTO THE WORLD MARKET

In 2000, Hitachi participated in CIFTEE (China International Exhibition on Financial Technology and Equipment) in Beijing to demonstrate its HT-2845 ATM, which was approved by Chinese government leaders and bank executives. In March, 2001, the ATM began its operation in China, and so far about 100 ATMs with cash recycling are in use.

Hitachi is now providing its cash-handling module, HT-3842 HCM, to global ATM manufacturers. Some manufacturers have already exhibited their original cash-recycling ATM integrating HT-3842 (Retail Delivery Show, U.S.A., January 2000; CeBIT, Germany, March 2001).

CONCLUSIONS

Hitachi has developed a new cash-recycling ATM with a cash module with cash recycling features that offers high-speed processing and a large banknote capacity for use worldwide.

Hitachi customized this HT-2845 ATM for the Japanese market and already installed more than 2,000 units throughout Japan.

As part of its cash-handling solutions in the field of banking automation and in alliance with global ATM manufacturers, Hitachi intends to make its cash-recycling ATM available globally not only in Asia but also in Europe and the Americas.

In the second half of 2002, Hitachi will add to HT-3842 HCM a tracing function to identify account holders depositing counterfeit banknotes, in order to comply with the Council Regulation of the European Central Bank. Hitachi is going to produce such HCMs for the European market.

Hitachi intends to continue its effort to follow market requirements in banking automation and will

keep promoting new banking solutions for the world market.

REFERENCE

(1) H. Spencer Nilson, THE NILSON REPORT, May (2001).

ABOUT THE AUTHORS



Takeshi Kanagawa

Joined Hitachi, Ltd. in 1991, and now works at the Overseas Business Project Team of the Mechatronics Systems Division. He is currently engaged in the promotion of Hitachi's cash module worldwide.

Mr. Kanagawa can be reached by e-mail at takeshi-kanagawa@itg.hitachi.co.jp.



Kunihisa Matsuura

Joined Hitachi, Ltd. in 1980, and now works at the Overseas Business Project Team of the Mechatronics Systems Division. He is currently engaged in supervising world businesses and solutions.

Mr. Matsuura is a member of The Japan Society of Mechanical Engineers and can be reached by e-mail at kunihisa-matsuura@itg.hitachi.co.jp.