

2M



AUTOMATION LTD

Automatic Packing, Labelling & Verification System

Project Brief

Key 2M Services Supplied:

- Visual Basic Front End
- Database functionalities including:
High Speed Record Import
High Speed Record Detection
& Manipulation
High Speed Record Deletion
- Serial Communication
- Barcode Verification

Key Components Used:

- Visual Basic Version 6
- Microsoft Access 2000
- Datalogic Scanners
- Zebra PAX4 Label Printers
- RS232 Communication to exchange signals & data with the BVM Siemens PLC

Imagine a database that at any one time is stocked with anywhere between 500,000 and 1 million records. 2M was approached with the challenge to dramatically improve such a system. They proceeded to treble the speed with which any record was located, retrieved, and processed, and that was just the beginning of their dynamic system overhaul.

The Catalogue Shop Industry has expanded drastically within the past decade with more and more customers opting for the time-saving method of having orders delivered straight to their homes. Indeed, one by one, high street stores have expanded into this sphere to increase their revenues.

Customer orders are sorted by warehouse operatives before being placed onto the packing and labelling lines. Each order is accompanied by its data sheet which bears a unique order ID barcode. These barcodes are scanned automatically as the products are transferred by the conveying system towards the BVM packing system.

On scanning each barcode, the system must access the database, retrieve the data, identify which label design is to be used, and finally populate and print the label. The label is then applied to the package inside the BVM as the packing is being formed.

One of the key requirements of the project was to guarantee

Damart, a mainstream player in the international home shopping market, processes between 20,000 and 30,000 orders every day. They initially had 2 Automatic Packing and Labelling Lines installed at their plant in Steeton.



These 2 lines suffer a great deal from inconsistency in cycle time when it comes to scanning, printing, applying and verifying the address labels on each package. The systems are also

very slow when importing new records and deleting old ones.

2M Automation was asked by Adpak Machinery Systems (the provider of the conveyors and the BVM packing System) and Identapply (the provider of the barcode scanners, label printers and applicators) to play an active and challenging role in providing a new software solution to handle the entire data manipulation and communication for a new 3rd line.

Our goal for the new system was not only to provide a fast, reliable and consistent system, but also to provide proper verification techniques, unlike the unreliable and expensive vision system on the previous lines.

Design Philosophy

that this process of processing data should not exceed 6 seconds. 2M Automation managed to achieve this in an average of 3 seconds cycle time by applying sophisticated techniques to optimise the database.

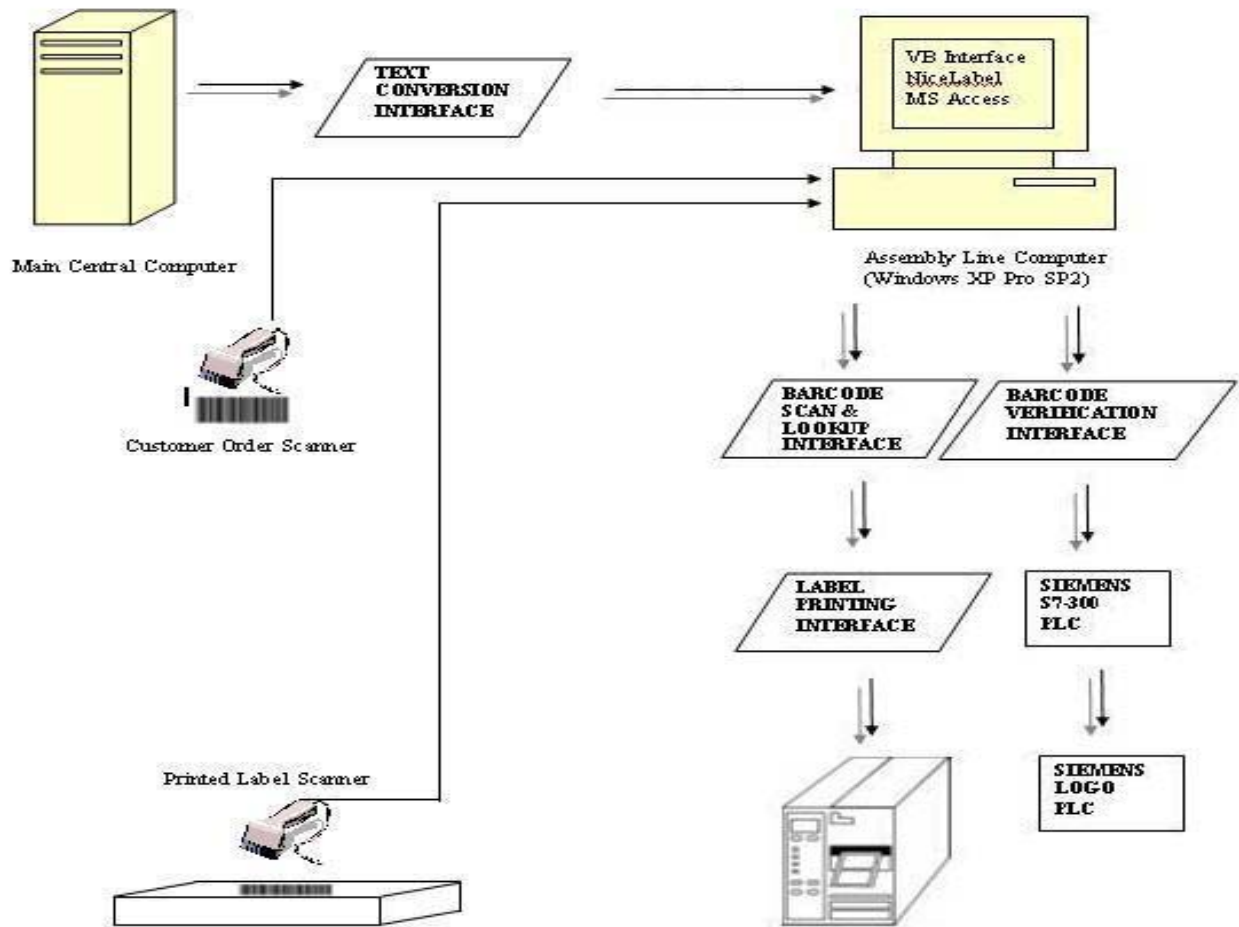
Secondly, as the pack exits the BVM, the labels must be verified. Therefore, they are scanned by another barcode scanner—this time to verify that the labels are free of errors. This final measure prevents any package from leaving the line with an incorrect label, a poor quality label, or without a label.

Previously, this process had involved a vision system that had proven to be unreliable and difficult to set up for certain

label designs. Also, only the label quality was checked by the vision system, thus neglecting the necessary checks on data integrity. 2M's verification system is cheaper, easy to set-up, and most importantly, absolutely reliable.

In addition, the speed of the process of importing new data, which is carried out once every morning, was trebled.

Furthermore, the process of record deletion which is carried out once every 2-3 weeks also received attention. Whereas the system on lines 1 & 2 takes an overnight stretch to delete the required records, the system on line 3 ensures that the process is carried out in just a couple of minutes.



Technical Risk Management

Consistency and Robustness

- Lines 1 & 2 use a third-party engine to locate records and suffer from unreliable and unpredictable performance when it comes to printing labels. Line 3, on the other hand, uses our own developed code in Visual Basic rather than relying on third-party facilities and hence provides a more predictable and robust response time.

Barcode Verification

- In this industry, data integrity and the assurance that the right products are sent to the right customer, are of paramount importance. The quality of the printed labels can be checked by readily available commercial devices. However, these devices are very expensive and only perform a quality check on the printed barcodes. Using ordinary scanners and conventional software techniques, 2M managed to ensure not only barcode verification, but also the data checks on the printed labels to make sure that parcels are headed for the right customer.

“ 2M Automation inspired confidence from day one, due to their speedy and thorough understanding of the complex issues involved in our automated packing and labelling application. Analysis, specification, documentation and finished product were all of exceptionally high quality. Their willingness to support us during the tricky deployment stage was also excellent. We highly recommend this professional, enthusiastic company. ”

Tony Abott, IT Manager, Damart