



Print Registration Control System

Project Brief

So we turned our attentions to a global leader that helps businesses in an array of industries—including retail, financial, travel, hospitality, gaming, and entertainment—to enhance their customer interactions across all channels (including online, mobile, kiosk, ATM and more).

And how does it do this? By supplying printed till rolls for use in their equipment. These till rolls have customised print depending on the customer, which include some world renowned banks and retail outlets.

The pressure now is to deliver these prints with ever increasing tight tolerances on print registration.

The introduction of different print media like Thermal paper also means that old flexographic print machines require upgrading control systems to take advantage of newer technology.

with the rest of the colours at the front of the receipt.

We upgraded the registration system from an old DC Motor with phase-locking unit to 5.7" Power Panel with servo motion

- ### Key 2M services Supplied
- Servo Motion Control
 - High Speed Registration Control
 - PLC & HMI Programming
 - DC Drives Integration



2M Automation was called to upgrade a downstream print unit that prints on the back of a standard till receipt. This print had to be in register

capabilities. The result was reduction in set up time, increased production speed, and reduced downtime

- ### Key Components Used
- B&R 5.7" Power Panel PP45
 - B&R ACOPOS Servo Drive
 - B&R X20 Remote I/O System

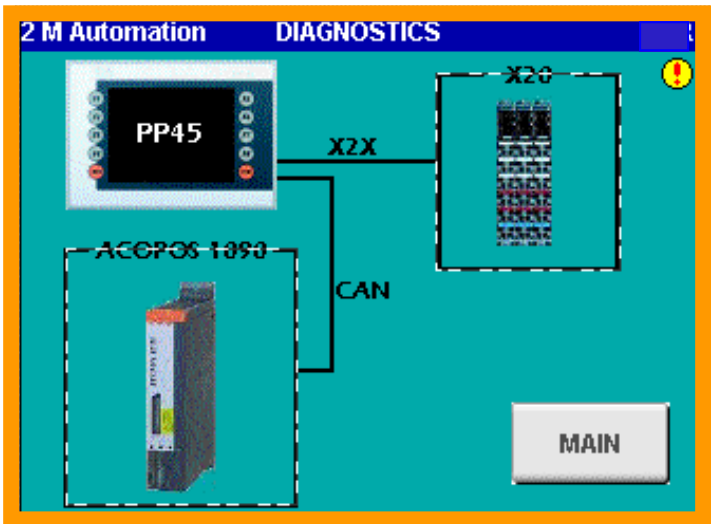
Design Philosophy

2M had to first understand the problems the client was having with their existing system:

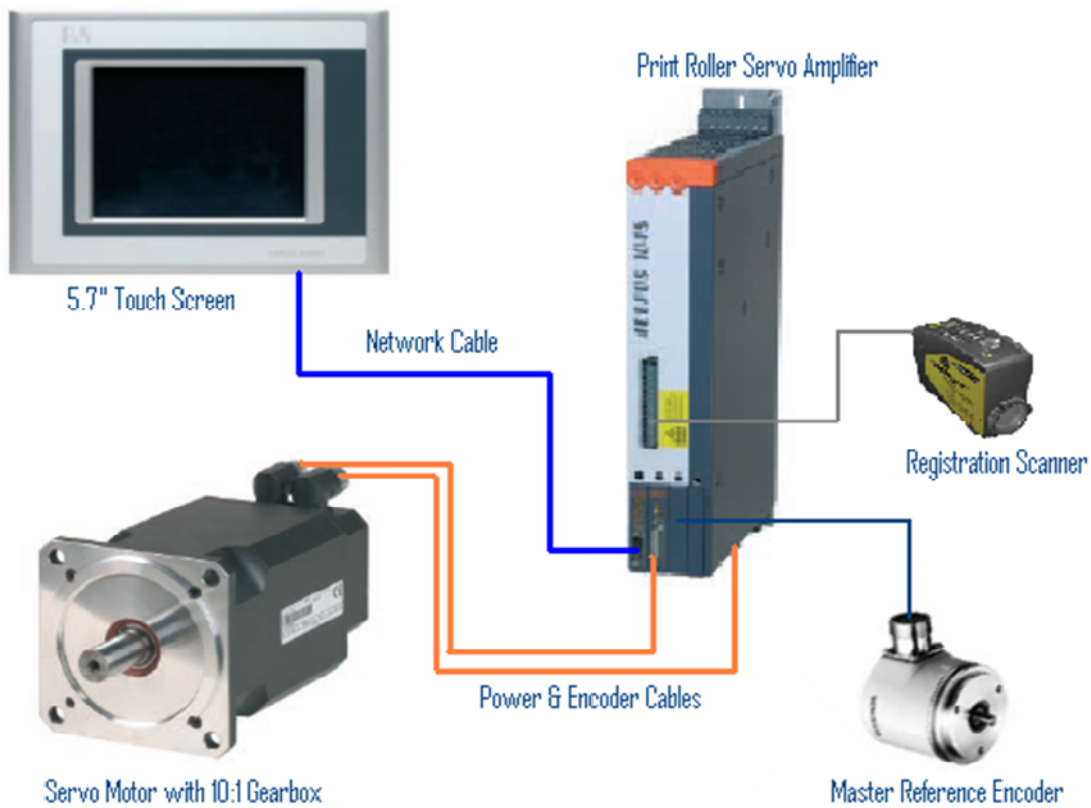
- The registration sensor was in a very awkward position making manual teaching very difficult.
- The registration sensor could only pick up on very defined black marks.
- The diagnostics on the system were very poor, leading to long down-times.
- The system was unreliable, breaking down more than twice per reel.

2M went ahead and designed, through rigorous off-site bench-testing, a

system that would overcome all of the client's listed problems.



System Overview



Technical Risk Management

Registration Marks

From experience 2M know that tension can affect how registration works. Software was used to measure the length of each repeat and the average then displayed. Therefore the operator could see if tension was stretching the material.

2M also used a new type of registration sensor that had remote teaching capabilities. This overcame the problem of accessing the registration sensor manually.

Furthermore, the new sensor also picks up on the cross print found on all printed material so that operators do not have to ink up with black ink just to print the mark.

Diagnostics

With the new servo system, the torque on the motor is continuously monitored. That way potential problems are detected before any damage is incurred on the system.

An increase in lag error on the servo motor also gives an indication that something untoward is occurring on the system.

In addition, the system continuously monitors the registration error as well as counting the number of consecutive missed marks.

