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Think & Do Featured Applications

Video Cassette packaging at McGilvery Machine

Introduction

McGilvery Machine Company has been building specialty machines for over ten years. They have typically used PLCs for the control. Recently they began development on a new type of machine that can label video cassettes in a very cost effective and high speed fashion. For this machine they decided to use the SDS (Smart Distributed System) device network from Honeywell as well as a PC-based control software package from **Think & Do Software** for the machine control logic and HMI (Human Machine Interface).

Why PC Based Control?

What are some of the indicators that determined a PC-based control solution is advantageous over the traditional PLC type of solution for this machine design:

- **A sophisticated touch screen HMI** was required to give the operator diagnostics information about the machine and status on it's performance. **Think & Do** provides an integrated tagname database for HMI as well as logic development. This allowed McGilvery to endeavor to have it [the machine] as user friendly as possible so that the customer's personnel will be able to understand and utilize the options provided in the least amount of time .
- **SDS device network** was used for sensor and proximity switch IO. SDS allowed the IO to be distributed around the machine without having to run individual sensor wires back to a junction box. This type of distributed IO results in much smaller control cabinet space requirements. SDS also has sophisticated diagnostics that tells you when a sensor is damaged or on the verge of requiring maintenance. Using a PC-based control solution like **Think & Do** made the SDS system very easy to use (compared to using a PLC with SDS).
- **Motion control of stepper motors** was required for running a few of the different conveyors on this machine. Various conveyors move individual video cassette's around on the machine for loading and labelling. These conveyor's speed/accel/decel needed to be controlled in a flexible manner. **Think & Do** has a motion control interface (Douloi Automation's Motion Server) that allowed the motion control to be programmed from the flowchart blocks directly within **Think & Do**. There was only one programming language required to program the entire machine logic (flowcharts in **Think & Do**). Using one programming language for the entire machine has other hidden advantages in terms of integrating discrete material handling logic with the motion control requirements.
- An easy to learn flowchart programming language was used for all the machine logic. Ladder logic was not used. The logic was programmed by a young man (Sam -16 years of age) who is very computer literate but had never done any control logic design before this job. With minimal training Sam was able to get the machine operating at a higher production rate than was originally anticipated by the mechanical design. This process was augmented by the fact that Sam has a lot of knowledge about how the machine should function mechanically and was able to work closely with the mechanical designer (Pat McGilvery).

Conclusion

McGilvery is able to deliver a PC-based solution for a very sophisticated machine - in their own words - "*The software has been a benefit to us, as a machine builder, due to the flexibility and control that it offers as we begin to operate the various areas [of the machine]. We are hopeful that the benefit to the customer provided by the ease of operation and accessibility of data, will further enhance acceptance of this new type of machine control in the factory environment*". McGilvery will also integrate this system of machine control into their fully automatic line for handling cut sheets from a web press or sheeter.

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