



Application Story

Black & Decker Uses Vision Series PLCs in a New Automated Printing Machine

Growing customer demand has provided the incentive for Black & Decker to search for innovative solutions. One system which required greater throughput was an automated printing machine, which situates and prints artwork onto finished jigsaw blades.



A new system was designed, and in order to keep pace with the rapid increase in demand, the solution was divided into two stages. The first stage was to build a high-speed manual system requiring two operators, and shortly afterwards - an automated loading and unloading station was added.

The target was to increase the volume of blades produced while reducing costs. Therefore, the system required a controller that would supply easy-to-use, intuitive operator interface, on-board performance tracking, and connectivity to the plant data collection system.

Unitronics' Vision280™ integrated PLC & HMI was chosen to automate the main system. This controller's built-in touchscreen HMI became the operators' control terminal, accepting input such as part number and operator identification, and providing performance data such as efficiency trends, fault history and hourly counts, right at the machine. To dynamically store this information, an extensive use of on-board data tables was made—to house performance information, parts and operator data, and fault histories.

The Vision280™ was connected to the shop floor data system via Ethernet, to synchronize production rate with the actual product demand.

The second stage development then started, utilizing the compact Vision120™ PLC & graphic HMI for controlling the automated loader and unloader. The local HMI greatly enhanced development, allowing the designers to build and test these stations as stand-alone pieces of equipment, without interfering with production on the finished first stage.

Vision120's™ two serial ports were set to RS485 and a MODBUS network was created, to connect the PLC with external remote I/O units. These built-in communication options added speed and flexibility to the construction of the load and unload stations.

When the time came to install the additional stations, the systems were tied together via the Vision's built-in CANbus. The complete system was restored and running in a very short period of time, minimizing impact to production.

Timothy Moulder, Black & Decker's engineer responsible for the design and construction of the controls for the new system, defined the operation as "resounding success". Increased efficiency and reduced costs targets were accomplished quickly and elegantly. "We gave the system quite a workout", he says, explaining that communication options and control features were the main criteria in choosing the Vision PLCs for this job. Nevertheless, "the products' low cost, free software and outstanding customer support gave them the cutting edge advantage".