CAN Newsletter Online

CARDING MACHINE

Using a host controller with two CAN ports

Horner Automation supplies to an Italian textile machine manufacturer CAN connectable host controllers and I/O modules.

Inside of the carding machine cabinet (Source: Horner)

Carding machines are a key element of the textile industry. They are designed to organize raw textile fibers, such as wool and cotton, in a way that untangles and cleans them. The fibers are passed through carding machines in the same direction creating more uniformed materials for further processing. Less than 100 km west of Milan, Italy's fashion capital, is a city steeped in textile history. Biella is a small northern Italian city, which can trace its role in wool and textile production back to the 11th century. Horner Automation was approached by one of Biella's prominent textile producers with a project to update its textile carding machines.

Objectives of the project

"At the start of this project, the client was in the process of moving equipment to a new plant," explained Olivia Flynn from Horner Automation. "That is where we came in." The primary goal of the new plant was to achieve the same level of production by reducing the number of textile carding machines used in the process from three to just two. "The new plant should reduce the height compared to the working plant from 2,5 m to 1,5 m," said Olivia Flynn. "The first challenge of the project was to keep in line with regulatory standards. These included energy efficiency and standards around how waste materials such as pineapple leaves were used to produce special fibers."

Each machine also had different requirements. "Working closely with the client's team, we decided that the best controllers for this project were the eXL10 plus SmartRail and WebMI for every machine," added Ms. Flynn. "We chose WebMI for remote access of the plant, changing recipes and production control & variation of frequency and brushless drives and motion controllers." The primary reason, EX10e controllers have been selected, was their wide-ranging functionality.

Some networking details

The carding machines in this project included a breaker and finisher. A breaker produces jute slivers by breaking up the fibers. The finisher on the other hand is fed with the slivers from the breaker to produce a stronger, better-quality jute. These machines have at least nine frequency inverters in the CANopen network. In order to avoid the risk of losing finesse in acceleration and deceleration ramps, which are created in the eXL10 controller and then sent to the drives via the CANopen network, the I/O devices are all on smart rail in a separate, proprietary CsCAN network. "This allows communication to other controllers in the plant for data exchange and ramp synch," explained Olivia Flynn. "Ethernet channels are used for remote access and intranet connection."

Many features within the Horner controllers were useful for this project, for example two CAN and two Ethernet ports. These ports provide sufficient network capabilities. One Ethernet port is used for local programming and the other Ethernet port can be used by the end-user or by WebMI. "The CANopen protocol allows the user to know more about the drive functionality," remarked Olivia Flynn. "This gives the user more information and more parameters, resulting in more control for the user." In terms of software and programming, this project was created using advanced ladder logic. The project also used Horner's WebMI software. This facilitated the monitoring of progress using a PC, but it is also possible to do this with the touch-screen controller.

"Another reason the eXL10 controller was used, was the flexibility it offers for future modifications," commented Olivia Flynn. "For example, the host controller is easy to expand as it has two CANopen ports. Having these two ports gives easy networking to I/O devices and other controllers by Horner."

The Irish company located in Cork was founded in 1997. "Our ethos is to design and manufacture innovative products that are extremely easy to use and provide significant value to our customers," said Olivia Flynn. "We pride ourselves on being the industry leading provider of all-in-one controllers. We offer all-in-one control solutions for OEM's, integrators, and end-users." The company provides programmable logic controllers (PLC) and human machine interface (HMI) devices. "Our specialty is designing products that exactly suit the customer's needs," summarized Ms. Flynn. "If our general product range does not meet the customer's requirements, there is every possibility that we can produce a custom product that will."

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The eXL10 programmable logic controller and human machine interface device in the machine's cabinet (Source: Horner)