Strip – crimp – push:
Making it work in the real world

Summary

- Forpak, an OEM in the food packaging industry, wanted to minimize cabinet space and reduce labor costs

- While working with Phoenix Contact, Forpak discovered the company's push-in connection technology (PT), which saves up to 35 percent cabinet space compared with other terminal blocks and reduces installation time

- Using the Crimpfox 4-in-1 helps Forpak engineers save even more time, while the Marking Box System ensures efficient labeling

Figure 1: Forpak, an OEM based in suburban Minneapolis, manufactures custom equipment for automation of food packaging. Because Forpak takes a personal approach with each of its customers, machines require a lot of custom wiring to meet customer specifications.

Customer profile

Forpak, an OEM based in suburban Minneapolis, manufactures custom equipment for automation of food packaging. Forpak does a lot of custom wiring per customers' specifications – some extensive, some simple.

Forpak takes a personal approach with each of its customers. Each project has a single, dedicated point of contact who liaises between the customer's company and Forpak's engineering/design team and skilled tradesman. This mutual trust results in an efficient and significant return on investment for the customer.

Challenge: Shrinking control cabinets

Throughout the food packaging and many machine-building industries, customers are demanding smaller footprints and more compact control cabinets.

Slim, inexpensive, and individually configurable: today's electrical engineers need to minimize cabinet space and reduce labor costs, and Forpak was no exception. The key question is how to achieve maximum quality, flexibility, and cost optimization over the entire process chain.

Solution: Strip – crimp – push

While working with Phoenix Contact, Forpak discovered the company's push-in technology (PT). Forpak originally used another company's terminals and relays with a third-party labeling system.

Push-in technology has proven successful in modular terminal blocks. The technology enables consistent wiring without tools, from the field to the power and control levels. Control cabinets can be built more simply and cost-effectively. This creates opportunities for new, efficient machine and system installations.

With push-in technology, the user can wire the entire control cabinet more quickly. The easy and safe handling prevents wiring errors. This saves a few seconds per terminal point when compared with screw connection technology. Over the installation time of a complete control cabinet, this amounts to considerable time savings and significantly reduces start-up time.

Figure 2: With the 1.5-mm terminals, Forpak saves at least 20 percent on the terminal space needed for sensors and servo encoder cables, and sometimes as much as 35 percent.

Phoenix Contact's push-in connection technology reduces insertion forces by 50 percent when compared with other spring-connection technology. The terminals have an integrated lever, which makes it easy to release using any type of tool.

Results: Easy installation takes up less space

Forpak controls designer Joshua Pillsbury stated, "The PT terminals have saved us both space and time with the ability to terminate without the need of a tool. Using the 1.5-mm terminals for things like sensors and servo encoder cables, we have saved at least 20 percent of terminal space, sometimes up to 35 percent on bigger jobs. These cable terminations never need to be adjusted as they pass through to I/O, and since they're 24 AWG conductors, they're very secure with ferrules in conjunction with the Phoenix Contact crimper. As far as the 3-mm terminals, these are a godsend. In the field with multiple upgrades and a lot of rewiring, the ability to save time with terminations is fantastic. Along with the ease of terminating, they also fit a 14 AWG conductor with ferrule. Additionally, being three tiers makes three-phase wiring a breeze, and a huge space saver compared to the other terminal blocks out there. Distributing three-phase has never been easier and looks as clean as I/O wiring."

Along with the PT's time savings, Pillsbury says he saved even more time with the Crimpfox 4-in-1: "This has replaced three of my tools on my tool belt and made it a lot lighter. It literally takes me half the time making a termination of any wire from 14 AWG down to 22 AWG. It couldn't be easier, and for all that in one tool is amazing. The crimps from the 4-in-1 are just as good as the Crimpfox itself."

Forpak's Phoenix Contact Marking Box System further aids to improve their manufacturing efficiency. Pillsbury stated that it "works like a top; since we are a custom shop we need the flexibility to make changes on the fly, and the Marker System fits the bill. Also, the ability to make custom equipment labels and pushbutton labels has added flexibility for our one-off customer requests. Finally, for changes in the field, we can make a label with zero lead time and ship the next day, which keeps our customers happy. Overall, we are pleased with the flexibility and time savings the Marking Box provides."

Pillsbury concluded, "All in all, moving to Phoenix Contact PT Terminals has been one of the easiest decisions as far as inventory I've ever had to make. Phoenix Contact also makes a lot of other products that we use daily that also incorporate the PT, and having that feature added to many more components has made Phoenix Contact an integral part of my design."

Figure 3: The 3-mm terminals have three levels, which "makes three-phase wiring a breeze," according to Forpak. To release the connections, the user simply presses on the orange actuation lever.