

Flexibility Pulls Cables to New Areas

MUCH OF THE PRESENT data processing revolution is completely supported and dependent on huge infrastructures of servers and other equipment tied together by, you guessed it, lots of cables.

“There’s been a lot of growth lately in the use of sensors related to more sophisticated automation, more components for new system installations and increasing use of intelligent robots, and all of them need more and different types of cables and connectors,” says Dale Long, industrial applications engineer at C&M (www.cmc-corporation.com). “It’s not just power anymore. It’s communication and control, and so we see more demand for 600 V rated, multi-conductor, and fieldbus cables with some power.”

As a result, for the past two years, instead of making custom cable from scratch, C&M developed a base-level common platform, including copper in different stranding counts and lengths, standard insulation and jacketing compounds, and common braiding gauges with tinned copper. It then fine tunes this platform to meet each individual customer’s needs, such as adding the right jacketing for that user’s environment—sort of a modular machine building method for wire. “For instance, we’re also seeing more composite cables, such as 44 conductors around DeviceNet core,” Long says. “This allows greater flexibility while maintaining the cable’s electric capabilities, which is what’s needed by a lot of robots.”

Ethernet is getting into more specific types of controls and electrical equipment manufacturing, such as switchgears and motor control centers (MCCs), says Frank Koditek, product manager for industrial cable at Belden (www.belden.com). “These typically need NEMA and UL ratings, and so the cables need them, too,” he says. “Ethernet also is proliferating everywhere on the controls layer, and down to the I/O layer and devices such as machines, robots and other motion applications. So they need more high-flexibility, longer-life cables.”

To help users meet these needs, Koditek reports, Belden recently added a 600 V, AWM-rated cable to its DataTuff industrial Ethernet line for use in many of these low-voltage circuits and applications. AWM designates compliance with the Appliance Wiring Materials standard, which

allows these wires and other components to be used in MCCs, switchgears and other electrical devices. “This isn’t power-carrying cable. It’s communication cable,” Koditek says. “However, we still went to UL, and they applied voltage to it to make sure it met the requirements for 600 V cable. Industry has embraced Ethernet, and manufacturers are comfortable putting it anywhere.”

More flexible cable is also valuable to users because its generally rounder jackets and lower durometer—a measure of stiffness—means that longer lengths of it can be pulled much faster, adds Rick Orsini, senior product manager for Olflex at Lapp Group (www.lappusa.com). “Softer, more supple cable might cost 15-20% more, but if you’ve got to make five turns to go from point A to point B, then it can save a lot on labor at installation and long-term durability.”

Besides flexibility, Orsini adds, Lapp also sees more demand for oil resistance and for wire and cable that has the right UL listings for use in existing machines and in new applications such as wind turbines. “After RoHS requirements made

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cables stiffer, many suppliers went back to the drawing board, reexamined their formulations, and recently came up with several advances based on new combinations of ingredients for oil resistance, durometer and fire resistance,” Orsini says. “We’ve been a part of this, and we’re about to introduce new Olflex tray cables for connecting machines, on-machine control cables, and VFD cables for motors and drives. Besides added flexibility, these cables have improved oil resistance, better cold-temperature properties and more abrasion resistance. A lot of machine building has gone from North America, but a lot of equipment is still used here, and users are looking for better, more durable wire and cable. Also, wind turbine components must now meet the UL 2227 standard, and so the cables running up and down them need to be fire-resistant, rated as 1,000 V/ Wind Turbine Tray Cable (WTTC), rated Oil Resistant 1 and 2, and able to handle down to -25 °F or -40 °F, so they can pivot in cold weather.” 

